

2514096 CRIMSON SEMICONDUCTOR INC

99D 00293 D T-29-01

| DEVICE  | TYPE | PACKAGE | BVCEO   | BVCBO   | BVEBO   | ICBO @ VCB   | HFE @ VC & IC |         | COB | FT  | NF |          |
|---------|------|---------|---------|---------|---------|--------------|---------------|---------|-----|-----|----|----------|
|         |      |         | (V) MIN | (V) MIN | (V) MIN | (-A) MAX (V) | MIN           | MAX     |     |     |    | (-A) MIN |
| 2N1507  | NPN  | TO-5    | 30      | 60      | 5       | 500          | 30            | 100-300 | 10  | 150 | 35 | 50       |
| 2N1566  | NPN  | TO-5    | 60      | 80      | 5       | 500          | 40            | 60-200  | 5   | 5   | 10 | 60       |
| 2N1613  | NPN  | TO-5    | 50      | 75      | 7       | 10           | 60            | 40-120  | 10  | 150 | 25 | 60       |
| 2N1711  | NPN  | TO-5    | 50      | 75      | 7       | 10           | 60            | 100-300 | 10  | 150 | 25 | 70       |
| 2N1889  | NPN  | TO-5    | 60      | 100     | 7       | 10           | 75            | 40-120  | 10  | 150 | 15 | 50       |
| 2N1890  | NPN  | TO-5    | 60      | 100     | 7       | 10           | 75            | 100-300 | 10  | 150 | 15 | 60       |
| 2N1893  | NPN  | TO-5    | 80      | 120     | 7       | 10           | 90            | 40-120  | 10  | 150 | 15 | 50       |
| 2N1973  | NPN  | TO-5    | 60      | 100     | 7       | 25           | 75            | 75-     | 10  | 10  | 15 | 60       |
| 2N1974  | NPN  | TO-5    | 60      | 100     | 7       | 25           | 75            | 35-     | 10  | 10  | 15 | 50       |
| 2N1975  | NPN  | TO-5    | 60      | 100     | 7       | 25           | 75            | 15-     | 10  | 10  | 15 | 40       |
| 2N1983  | NPN  | TO-5    | 25      | 50      | 5       | 500          | 30            | 70-210  | 5   | 1   | 45 | 40       |
| 2N1984  | NPN  | TO-5    | 25      | 50      | 5       | 500          | 30            | 35-100  | 5   | 1   | 45 | 40       |
| 2N1985  | NPN  | TO-5    | 25      | 50      | 5       | 500          | 30            | 15-45   | 5   | 1   | 45 | 40       |
| 2N1986  | NPN  | TO-5    | 25      | 50      | 5       | 500          | 30            | 60-240  | 10  | 150 | 35 | 40       |
| 2N1987  | NPN  | TO-5    | 25      | 50      | 5       | 500          | 30            | 20-80   | 10  | 150 | 35 | 40       |
| 2N1988  | NPN  | TO-5    | 45      | 100     | 5       | 500          | 50            | 35-120  | 10  | 30  | 20 | 40       |
| 2N1989  | NPN  | TO-5    | 45      | 100     | 5       | 500          | 50            | 20-60   | 10  | 30  | 20 | 40       |
| 2N1990  | NPN  | TO-5    | 60      | 100     | 3       | 500          | 75            | 20-     | 10  | 30  | 20 | 40       |
| 2N1991  | PNP  | TO-5    | 20      | 30      | 5       | 500          | 10            | 15-     | 10  | 150 | 45 | 40       |
| 2N2008  | NPN  | TO-5    | 110     | 175     | 8       | 50           | 100           | 40-120  | 10  | 50  | 15 | 40       |
| 2N2017  | NPN  | TO-39   | 60      | 60      | 8       | 500          | 30            | 50-200  | 10  | 200 | 15 | 60       |
| 2N2049  | NPN  | TO-5    | 40      | 75      | 7       | 10           | 60            | 100-300 | 10  | 150 | 25 | 50       |
| 2N2102  | NPN  | TO-39   | 65      | 120     | 7       | 2            | 60            | 40-120  | 10  | 150 | 15 | 60       |
| 2N2192  | NPN  | TO-39   | 40      | 60      | 5       | 10           | 30            | 100-300 | 10  | 150 | 20 | 50       |
| 2N2193  | NPN  | TO-39   | 50      | 80      | 8       | 10           | 60            | 40-120  | 10  | 150 | 20 | 50       |
| 2N2195  | NPN  | TO-39   | 25      | 45      | 5       | 100          | 30            | 20-     | 10  | 150 | 20 | 50       |
| 2N2205  | NPN  | TO-18   | 12      | 25      | 3       | 25           | 15            | 20-     | 1   | 10  | 6  | 200      |
| 2N2218  | NPN  | TO-5    | 30      | 60      | 5       | 10           | 50            | 40-120  | 10  | 150 | 8  | 250      |
| 2N2218A | NPN  | TO-5    | 40      | 75      | 6       | 10           | 60            | 40-120  | 10  | 150 | 8  | 250      |
| 2N2219  | NPN  | TO-5    | 30      | 60      | 5       | 10           | 50            | 100-300 | 10  | 150 | 8  | 250      |
| 2N2219A | NPN  | TO-5    | 40      | 75      | 6       | 10           | 60            | 100-300 | 10  | 150 | 8  | 300      |
| 2N2221  | NPN  | TO-18   | 30      | 60      | 5       | 10           | 50            | 40-120  | 10  | 150 | 8  | 250      |
| 2N2221A | NPN  | TO-18   | 40      | 75      | 6       | 10           | 60            | 40-120  | 10  | 150 | 8  | 250      |
| 2N2222  | NPN  | TO-18   | 30      | 60      | 5       | 10           | 50            | 100-300 | 10  | 150 | 8  | 250      |
| 2N2222A | NPN  | TO-18   | 40      | 75      | 6       | 10           | 60            | 100-300 | 10  | 150 | 8  | 300      |
| 2N2224  | NPN  | TO-5    | 40      | 65      | 5       | 10           | 50            | 40-120  | 1   | 150 | 8  | 250      |
| 2N2242  | NPN  | TO-18   | 15      | 40      | 5       | 100          | 20            | 40-120  | 1   | 10  | 6  | 250      |
| 2N2243  | NPN  | TO-39   | 80      | 120     | 7       | 10           | 60            | 40-120  | 10  | 150 | 15 | 50       |
| 2N2270  | NPN  | TO-39   | 45      | 60      | 7       | 50           | 60            | 50-200  | 10  | 150 | 15 | 100      |
| 2N2297  | NPN  | TO-5    | 35      | 80      | 7       | 10           | 60            | 40-120  | 10  | 150 | 12 | 60       |
| 2N2303  | NPN  | TO-5    | 35      | 50      | 5       | 500          | 30            | 75-200  | 10  | 150 | 45 | 60       |
| 2N2368  | NPN  | TO-18   | 15      | 40      | 4.5     | 400          | 20            | 20-60   | 1   | 10  | 4  | 400      |
| 2N2369  | NPN  | TO-18   | 15      | 40      | 4.5     | 400          | 20            | 40-120  | 1   | 10  | 4  | 500      |
| 2N2369A | NPN  | TO-18   | 15      | 40      | 4.5     | 400          | 20            | 40-120  | 3.5 | 10  | 4  | 500      |
| 2N2405  | NPN  | TO-39   | 90      | 120     | 7       | 10           | 90            | 60-200  | 10  | 150 | 15 | 50       |

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| DEVICE  | TYPE | PACKAGE    | BVCEO   | BVCBO   | BVEBO   | ICBO     | VCB | HFE @     | VC & IC | COB | FT | NF   |      |
|---------|------|------------|---------|---------|---------|----------|-----|-----------|---------|-----|----|------|------|
|         |      |            | (V) MIN | (V) MIN | (V) MIN | (mA) MAX | (V) | MIN - MAX | (V)     |     |    |      | (mA) |
| 2N2475  | NPN  | TO-18      | 6       | 15      | 4       | 50       | 5   | 30-150    | .4      | 20  | 3  | 600  |      |
| 2N2476  | NPN  | TO-5       | 20      | 60      | 5       | 200      | 30  | 20-       | .4      | 150 | 10 | 250  |      |
| 2N2477  | NPN  | TO-5       | 20      | 60      | 5       | 200      | 30  | 40-       | .4      | 150 | 10 | 250  |      |
| 2N2481  | NPN  | TO-18      | 15      | 40      | 5       | 50       | 20  | 40-120    | 1       | 10  | 5  | 300  |      |
| 2N2483  | NPN  | TO-18      | 60      | 60      | 6       | 10       | 45  | 40-120    | 5       | .01 | 6  | 60   | 4    |
| 2N2484  | NPN  | TO-18      | 60      | 60      | 6       | 10       | 45  | 100-500   | 5       | .01 | 6  | 60   | 3    |
| 2N2501  | NPN  | TO-18      | 20      | 40      | 6       | 25       | 20  | 50-150    | 1       | 10  | 4  | 350  |      |
| 2N2509  | NPN  | TO-18      | 80      | 125     | 7       | 5        | 100 | 40-       | 5       | 10  | 6  | 45   |      |
| 2N2510  | NPN  | TO-18      | 65      | 100     | 7       | 5        | 80  | 150-500   | 5       | 10  | 6  | 45   |      |
| 2N2511  | NPN  | TO-18      | 50      | 80      | 7       | 5        | 60  | 240-750   | 5       | 10  | 6  | 45   |      |
| 2N2539  | NPN  | TO-18      | 30      | 60      | 5       | 250      | 40  | 50-150    | 10      | 150 | 8  | 250  |      |
| 2N2540  | NPN  | TO-18      | 30      | 60      | 5       | 250      | 40  | 100-300   | 10      | 150 | 8  | 250  |      |
| 2N2586  | NPN  | TO-18      | 45      | 60      | 6       | 2        | 45  | 120-360   | 5       | .01 | 7  | 45   |      |
| 2N2616  | NPN  | TO-18      | 15      | 30      | 3       | 10       | 15  | 20-       | 1       | 3   | 3  | 600  |      |
| 2N2645  | NPN  | TO-18      | 40      | 75      | 7       | 10       | 60  | 100-300   | 10      | 150 | 25 | 50   |      |
| 2N2696  | PNP  | TO-18      | 25      | 25      | 4       | 25       | 10  | 30-130    | 1       | 50  | 20 | 100  |      |
| 2N2710  | NPN  | TO-18      | 20      | 40      | 5       | 30       | 20  | 40-       | 1       | 10  | 4  | 500  |      |
| 2N2714  | NPN  | TO-92 (74) | 18      | 18      | 5       | 500      | 18  | 75-225    | 4.5     | 2   | 12 | 80   |      |
| 2N2801  | PNP  | TO-39      | 35      | 50      | 5       | 100      | 25  | 75-225    | 10      | 150 | 25 | 120  |      |
| 2N2845  | NPN  | TO-18      | 30      | 60      | 5       | 200      | 30  | 30-120    | 10      | 150 | 8  | 250  |      |
| 2N2846  | NPN  | TO-5       | 30      | 60      | 5       | 200      | 30  | 30-120    | 10      | 150 | 8  | 250  |      |
| 2N2847  | NPN  | TO-18      | 20      | 60      | 5       | 200      | 30  | 40-140    | 10      | 150 | 8  | 250  |      |
| 2N2848  | NPN  | TO-5       | 20      | 60      | 5       | 200      | 30  | 40-140    | 10      | 150 | 8  | 250  |      |
| 2N2857  | NPN  | TO-72      | 15      | 30      | 2.5     | 10       | 15  | 30-150    | 1       | 3   | 1  | 1000 |      |
| 2N2868  | NPN  | TO-5       | 40      | 60      | 7       | 10       | 30  | 40-120    | 10      | 150 | 20 | 50   |      |
| 2N2894  | PNP  | TO-18      | 12      | 12      | 4       | 80       | 6   | 40-150    | .5      | 30  | 6  | 400  |      |
| 2N2895  | NPN  | TO-18      | 65      | 120     | .7      | 2        | 60  | 40-120    | 10      | 150 | 15 | 120  |      |
| 2N2896  | NPN  | TO-18      | 90      | 140     | 7       | 10       | 90  | 60-200    | 10      | 150 | 15 | 120  |      |
| 2N2897  | NPN  | TO-18      | 45      | 60      | 7       | 50       | 60  | 50-200    | 10      | 150 | 15 | 100  |      |
| 2N2904  | PNP  | TO-5       | 40      | 60      | 5       | 20       | 50  | 40-120    | 10      | 150 | 8  | 200  |      |
| 2N2904A | PNP  | TO-5       | 60      | 60      | 5       | 10       | 50  | 40-120    | 10      | 150 | 8  | 200  |      |
| 2N2905  | PNP  | TO-5       | 40      | 60      | 5       | 20       | 50  | 100-300   | 10      | 150 | 8  | 200  |      |
| 2N2905A | PNP  | TO-5       | 60      | 60      | 5       | 10       | 50  | 100-300   | 10      | 150 | 8  | 200  |      |
| 2N2906  | PNP  | TO-18      | 40      | 60      | 5       | 20       | 50  | 40-120    | 10      | 150 | 8  | 200  |      |
| 2N2906A | PNP  | TO-18      | 60      | 60      | 5       | 10       | 50  | 40-120    | 10      | 150 | 8  | 200  |      |
| 2N2907  | PNP  | TO-18      | 40      | 60      | 5       | 20       | 50  | 100-300   | 10      | 150 | 8  | 200  |      |
| 2N2907A | PNP  | TO-18      | 60      | 60      | 5       | 10       | 50  | 100-300   | 10      | 150 | 8  | 200  |      |
| 2N2923  | NPN  | TO-92 (74) | 25      | 25      | 5       | 100      | 25  | 90-180    | 10      | 2   | 10 |      |      |
| 2N2924  | NPN  | TO-92 (74) | 25      | 25      | 5       | 100      | 25  | 150-300   | 10      | 2   | 10 |      |      |
| 2N2925  | NPN  | TO-92 (74) | 25      | 25      | 5       | 100      | 25  | 235-470   | 10      | 2   | 10 |      |      |
| 2N2926  | NPN  | TO-92 (74) | 18      | 18      | 5       | 500      | 18  | 35-470    | 10      | 2   | 10 |      |      |
| 2N3010  | NPN  | TO-18      | 6       | 15      | 4       | 100      | 5   | 25-125    | .4      | 10  | 3  | 600  |      |
| 2N3011  | NPN  | TO-18      | 12      | 30      | 5       | 400      | 20  | 30-120    | .35     | 10  | 4  | 400  |      |
| 2N3012  | PNP  | TO-18      | 12      | 12      | 4       | 80       | 6   | 30-120    | .5      | 30  | 6  | 400  |      |
| 2N3015  | NPN  | TO-5       | 30      | 60      | 5       | 200      | 30  | 30-120    | 10      | 150 | 8  | 250  |      |

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| DEVICE  | TYPE | PACKAGE    | BVCEO   | BVCBO   | BVEBO   | ICBO @ VCB | HFE @ VC & IC |           | COB | FT  | NF  |     |
|---------|------|------------|---------|---------|---------|------------|---------------|-----------|-----|-----|-----|-----|
|         |      |            | (V) MIN | (V) MIN | (V) MIN | (mA) MAX   | (V)           | MIN - MAX |     |     |     | (V) |
| 2N3019  | NPN  | TO-5       | 80      | 140     | 7       | 10         | 90            | 100-300   | 10  | 150 | 12  | 100 |
| 2N3020  | NPN  | TO-5       | 80      | 140     | 7       | 10         | 90            | 40-120    | 10  | 150 | 12  | 100 |
| 2N3053  | NPN  | TO-39      | 40      | 60      | 5       | 250        | 30            | 50-250    | 10  | 150 | 15  | 100 |
| 2N3053A | NPN  | TO-39      | 60      | 80      | 5       | 250        | 60            | 50-250    | 10  | 150 | 15  | 100 |
| 2N3072  | PNP  | TO-5       | 60      | 60      | 4       | 10         | 30            | 30-130    | 1   | 50  | 10  | 130 |
| 2N3073  | PNP  | TO-18      | 60      | 60      | 4       | 10         | 30            | 30-130    | 1   | 50  | 10  | 130 |
| 2N3107  | NPN  | TO-5       | 60      | 100     | 7       | 10         | 60            | 100-300   | 1   | 150 | 20  | 70  |
| 2N3108  | NPN  | TO-5       | 60      | 100     | 7       | 10         | 60            | 40-120    | 1   | 150 | 20  | 60  |
| 2N3109  | NPN  | TO-5       | 40      | 80      | 7       | 10         | 60            | 100-300   | 1   | 150 | 25  | 70  |
| 2N3110  | NPN  | TO-5       | 40      | 80      | 7       | 10         | 60            | 40-120    | 1   | 150 | 25  | 60  |
| 2N3114  | NPN  | TO-5       | 150     | 150     | 5       | 10         | 100           | 30-120    | 10  | 30  | 9   | 40  |
| 2N3115  | NPN  | TO-18      | 20      | 60      | 5       | 25         | 50            | 40-120    | 10  | 150 | 8   | 250 |
| 2N3116  | NPN  | TO-18      | 20      | 60      | 5       | 25         | 50            | 100-300   | 10  | 150 | 8   | 250 |
| 2N3117  | NPN  | TO-18      | 60      | 60      | 6       | 10         | 45            | 250-500   | 5   | .01 | 4.5 | 60  |
| 2N3120  | PNP  | TO-5       | 45      | 45      | 4       | 10         | 30            | 30-130    | 1   | 50  | 10  | 130 |
| 2N3121  | PNP  | TO-18      | 45      | 45      | 4       | 10         | 30            | 30-130    | 1   | 50  | 10  | 130 |
| 2N3133  | PNP  | TO-5       | 35      | 50      | 4       | 50         | 30            | 40-120    | 10  | 150 | 10  | 200 |
| 2N3134  | PNP  | TO-5       | 35      | 50      | 4       | 50         | 30            | 100-300   | 10  | 150 | 10  | 200 |
| 2N3135  | PNP  | TO-18      | 35      | 50      | 4       | 50         | 30            | 40-120    | 10  | 150 | 10  | 200 |
| 2N3136  | PNP  | TO-18      | 35      | 50      | 4       | 50         | 30            | 100-300   | 10  | 150 | 10  | 200 |
| 2N3209  | PNP  | TO-18      | 20      | 20      | 4       | 80         | 10            | 30-120    | .5  | 30  | 5   | 400 |
| 2N3210  | NPN  | TO-18      | 15      | 40      | 5       | 10         | 20            | 30-120    | 1   | 10  | 6   | 300 |
| 2N3211  | NPN  | TO-18      | 15      | 40      | 5       | 25         | 20            | 50-150    | 1   | 10  | 4   | 350 |
| 2N3227  | NPN  | TO-18      | 20      | 40      | 6       | 200        | 20            | 100-300   | 1   | 10  | 4   | 500 |
| 2N3244  | PNP  | TO-39      | 40      | 40      | 5       | 50         | 30            | 50-150    | 1   | 500 | 25  | 175 |
| 2N3245  | PNP  | TO-39      | 50      | 50      | 5       | 50         | 50            | 30-90     | 1   | 500 | 25  | 150 |
| 2N3246  | NPN  | TO-18      | 40      | 60      | 8       | 5          | 40            | 200-600   | 5   | .01 | 5   | 60  |
| 2N3250  | PNP  | TO-18      | 40      | 50      | 5       | 20         | 40            | 50-150    | 1   | 10  | 6   | 250 |
| 2N3250A | PNP  | TO-18      | 60      | 60      | 5       | 20         | 40            | 50-150    | 1   | 10  | 6   | 250 |
| 2N3251  | PNP  | TO-18      | 40      | 50      | 5       | 20         | 40            | 100-300   | 1   | 10  | 6   | 300 |
| 2N3251A | PNP  | TO-18      | 60      | 60      | 5       | 20         | 40            | 100-300   | 1   | 10  | 6   | 300 |
| 2N3252  | NPN  | TO-5       | 30      | 60      | 5       | 500        | 40            | 30-90     | 1   | 500 | 12  | 200 |
| 2N3253  | NPN  | TO-5       | 40      | 75      | 5       | 500        | 60            | 25-75     | 1   | 375 | 12  | 175 |
| 2N3299  | NPN  | TO-5       | 30      | 60      | 5       | 10         | 50            | 40-120    | 10  | 150 | 8   | 250 |
| 2N3300  | NPN  | TO-5       | 30      | 60      | 5       | 10         | 50            | 100-300   | 10  | 150 | 8   | 250 |
| 2N3301  | NPN  | TO-18      | 30      | 60      | 5       | 10         | 50            | 40-120    | 10  | 150 | 8   | 250 |
| 2N3302  | NPN  | TO-18      | 30      | 60      | 5       | 10         | 50            | 100-300   | 10  | 150 | 8   | 250 |
| 2N3304  | PNP  | TO-92 (72) | 6       | 6       | 4       | 10         | 3             | 30-120    | .3  | 10  | 3.5 | 500 |
| 2N3326  | NPN  | TO-39      | 45      | 60      | 5       | 10         | 50            | 40-120    | 10  | 150 | 8   | 250 |
| 2N3390  | NPN  | TO-92 (74) | 25      | 25      | 5       | 100        | 18            | 400-800   | 4.5 | 2   | 10  |     |
| 2N3391  | NPN  | TO-92 (74) | 25      | 25      | 5       | 100        | 18            | 250-500   | 4.5 | 2   | 10  |     |
| 2N3391A | NPN  | TO-92 (74) | 25      | 25      | 5       | 100        | 18            | 250-500   | 4.5 | 2   | 10  |     |
| 2N3392  | NPN  | TO-92 (74) | 25      | 25      | 5       | 100        | 18            | 150-300   | 4.5 | 2   | 10  |     |
| 2N3393  | NPN  | TO-92 (74) | 25      | 25      | 5       | 100        | 18            | 90-180    | 4.5 | 2   | 10  |     |
| 2N3394  | NPN  | TO-92 (74) | 25      | 25      | 5       | 100        | 18            | 55-110    | 4.5 | 2   | 10  |     |

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| DEVICE | TYPE | PACKAGE    | BVCEO   | BVCBO   | BVEBO   | ICBO @ VCB | HFE @   | VC & IC |         | COB | FT  | NF  |
|--------|------|------------|---------|---------|---------|------------|---------|---------|---------|-----|-----|-----|
|        |      |            | (V) MIN | (V) MIN | (V) MIN | (mA) MAX   | (V) MIN | MAX     | (V) MIN |     |     |     |
| 2N3395 | NPN  | TO-92 (74) | 25      | 25      | 5       | 100        | 18      | 150-500 | 4.5     | 2   | 10  |     |
| 2N3396 | NPN  | TO-92 (74) | 25      | 25      | 5       | 100        | 18      | 90-500  | 4.5     | 2   | 10  |     |
| 2N3397 | NPN  | TO-92 (74) | 25      | 25      | 5       | 100        | 18      | 55-500  | 4.5     | 2   | 10  |     |
| 2N3398 | NPN  | TO-92 (74) | 25      | 25      | 5       | 100        | 18      | 55-800  | 4.5     | 2   | 10  |     |
| 2N3414 | NPN  | TO-92 (74) | 25      | 25      | 5       | 100        | 25      | 75-225  | 4.5     | 2   | 10  |     |
| 2N3415 | NPN  | TO-92 (74) | 25      | 25      | 5       | 100        | 25      | 180-540 | 4.5     | 2   | 10  |     |
| 2N3416 | NPN  | TO-92 (74) | 50      | 50      | 5       | 100        | 25      | 75-225  | 4.5     | 2   | 10  |     |
| 2N3417 | NPN  | TO-92 (74) | 50      | 50      | 5       | 100        | 25      | 180-540 | 4.5     | 2   | 10  |     |
| 2N3439 | NPN  | TO-5       | 350     | 450     | 7       | 20         | 360     | 40-160  | 10      | 20  | 10  | 15  |
| 2N3440 | NPN  | TO-5       | 250     | 300     | 7       | 20         | 250     | 40-160  | 10      | 20  | 10  | 15  |
| 2N3444 | NPN  | TO-39      | 50      | 80      | 5       | 500        | 60      | 20-60   | 1       | 500 | 12  | 150 |
| 2N3467 | PNP  | TO-39      | 40      | 40      | 5       | 100        | 30      | 40-120  | 1       | 500 | 25  | 175 |
| 2N3468 | PNP  | TO-39      | 50      | 50      | 5       | 100        | 30      | 25-75   | 1       | 500 | 25  | 150 |
| 2N3478 | NPN  | TO-72      | 15      | 30      | 2       | 20         | 1       | 25-120  | 8       | 2   | 1   | 750 |
| 2N3494 | PNP  | TO-39      | 80      | 80      | 4.5     | 100        | 50      | 40-     | 10      | 50  | 7   | 200 |
| 2N3495 | PNP  | TO-39      | 120     | 120     | 4.5     | 100        | 90      | 40-     | 10      | 50  | 6   | 150 |
| 2N3496 | PNP  | TO-18      | 80      | 80      | 4.5     | 100        | 50      | 40-     | 10      | 50  | 7   | 200 |
| 2N3497 | PNP  | TO-18      | 120     | 120     | 4.5     | 100        | 90      | 40-     | 10      | 50  | 6   | 150 |
| 2N3498 | NPN  | TO-39      | 100     | 100     | 6       | 50         | 50      | 40-120  | 10      | 150 | 10  | 150 |
| 2N3499 | NPN  | TO-39      | 100     | 100     | 6       | 50         | 50      | 100-300 | 10      | 150 | 10  | 150 |
| 2N3500 | NPN  | TO-39      | 150     | 150     | 6       | 50         | 75      | 40-120  | 10      | 150 | 8   | 150 |
| 2N3501 | NPN  | TO-39      | 150     | 150     | 6       | 50         | 75      | 100-300 | 10      | 150 | 8   | 150 |
| 2N3502 | PNP  | TO-5       | 45      | 45      | 5       | 10         | 30      | 100-300 | 10      | 150 | 8   | 200 |
| 2N3503 | PNP  | TO-5       | 60      | 60      | 5       | 10         | 30      | 100-300 | 10      | 150 | 8   | 200 |
| 2N3504 | PNP  | TO-18      | 45      | 45      | 5       | 10         | 30      | 100-300 | 10      | 150 | 8   | 200 |
| 2N3505 | PNP  | TO-18      | 60      | 60      | 5       | 10         | 30      | 100-300 | 10      | 150 | 8   | 200 |
| 2N3547 | PNP  | TO-18      | 60      | 60      | 6       | 10         | 45      | 100-500 | 5       | 1   | 10  |     |
| 2N3548 | PNP  | TO-18      | 45      | 60      | 6       | 10         | 45      | 150-600 | 5       | 1   | 10  |     |
| 2N3549 | PNP  | TO-18      | 60      | 60      | 6       | 10         | 45      | 200-800 | 5       | 1   | 10  |     |
| 2N3550 | PNP  | TO-18      | 45      | 60      | 6       | 10         | 45      | 300-800 | 5       | 1   | 10  |     |
| 2N3600 | NPN  | TO-72      | 15      | 30      | 3       | 10         | 15      | 20-150  | 1       | 3   | 1   | 850 |
| 2N3634 | PNP  | TO-39      | 140     | 140     | 5       | 100        | 100     | 50-150  | 10      | 50  | 10  | 150 |
| 2N3635 | PNP  | TO-39      | 140     | 140     | 5       | 100        | 100     | 100-300 | 10      | 50  | 10  | 200 |
| 2N3636 | PNP  | TO-39      | 175     | 175     | 5       | 100        | 100     | 50-150  | 10      | 50  | 10  | 150 |
| 2N3637 | PNP  | TO-39      | 175     | 175     | 5       | 100        | 100     | 100-300 | 10      | 50  | 10  | 200 |
| 2N3662 | NPN  | TO-92 (74) | 12      | 18      | 3       | 500        | 15      | 20-     | 8       | 10  | 1.7 | 700 |
| 2N3663 | NPN  | TO-92 (74) | 12      | 30      | 3       | 500        | 15      | 20-     | 8       | 10  | 1.7 | 700 |
| 2N3665 | NPN  | TO-39      | 80      | 120     | 10      | 50         | 60      | 40-120  | 10      | 150 | 12  | 60  |
| 2N3666 | NPN  | TO-39      | 80      | 120     | 10      | 50         | 60      | 100-300 | 10      | 150 | 12  | 60  |
| 2N3671 | PNP  | TO-5       | 50      | 60      | 5       | 10         | 50      | 75-225  | 10      | 150 | 9   | 200 |
| 2N3672 | PNP  | TO-18      | 50      | 60      | 5       | 10         | 50      | 75-225  | 10      | 150 | 9   | 200 |
| 2N3678 | NPN  | TO-5       | 55      | 75      | 6       | 10         | 60      | 40-120  | 10      | 150 | 8   | 250 |
| 2N3700 | NPN  | TO-18      | 80      | 140     | 7       | 10         | 90      | 100-300 | 10      | 150 | 12  | 100 |
| 2N3701 | NPN  | TO-18      | 80      | 140     | 7       | 10         | 90      | 40-120  | 10      | 150 | 12  | 80  |
| 2N3702 | PNP  | TO-92 (74) | 25      | 40      | 5       | 100        | 20      | 60-300  | 5       | 50  | 12  | 100 |

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| DEVICE  | TYPE | PACKAGE    | BVCEO   | BVCBO   | BVEBO   | ICBO @ VCB |         | HFE @ VC & IC |         | COB | FT  | NF   |
|---------|------|------------|---------|---------|---------|------------|---------|---------------|---------|-----|-----|------|
|         |      |            | (V) MIN | (V) MIN | (V) MIN | (mA) MAX   | (V) MIN | (mA) MAX      | (V) MIN |     |     |      |
| 2N3703  | PNP  | TO-92 (74) | 30      | 50      | 5       | 100        | 20      | 30-150        | 5       | 50  | 12  | 100  |
| 2N3704  | NPN  | TO-92 (74) | 30      | 50      | 5       | 100        | 20      | 100-300       | 2       | 50  | 12  | 100  |
| 2N3705  | NPN  | TO-92 (74) | 30      | 50      | 5       | 100        | 20      | 50-150        | 2       | 50  | 12  | 100  |
| 2N3706  | NPN  | TO-92 (74) | 20      | 40      | 5       | 100        | 20      | 30-600        | 2       | 50  | 12  | 100  |
| 2N3707  | NPN  | TO-92 (74) | 30      | 30      | 6       | 100        | 20      | 100-400       | 5       | 1   |     |      |
| 2N3708  | NPN  | TO-92 (74) | 30      | 30      | 6       | 100        | 20      | 45-660        | 5       | 1   |     |      |
| 2N3709  | NPN  | TO-92 (74) | 30      | 30      | 6       | 100        | 20      | 45-165        | 5       | 1   |     |      |
| 2N3710  | NPN  | TO-92 (74) | 30      | 30      | 6       | 100        | 20      | 90-330        | 5       | 1   |     |      |
| 2N3711  | NPN  | TO-92 (74) | 30      | 30      | 6       | 100        | 20      | 180-660       | 5       | 1   |     |      |
| 2N3721  | NPN  | TO-92 (74) | 18      | 18      | 5       | 500        | 18      | 60-660        | 10      | 2   |     |      |
| 2N3722  | NPN  | TO-5       | 60      | 80      | 6       | 500        | 40      | 40-150        | 1       | 100 | 10  |      |
| 2N3723  | NPN  | TO-5       | 80      | 100     | 6       | 500        | 50      | 40-150        | 1       | 100 | 9   |      |
| 2N3724  | NPN  | TO-39      | 30      | 50      | 6       | 1.7UA      | 40      | 60-150        | 1       | 100 | 12  | 300  |
| 2N3724A | NPN  | TO-39      | 30      | 50      | 6       | 500        | 40      | 60-150        | 1       | 100 | 12  | 300  |
| 2N3725  | NPN  | TO-39      | 50      | 80      | 6       | 1.7UA      | 60      | 60-150        | 1       | 100 | 10  | 300  |
| 2N3725A | NPN  | TO-39      | 50      | 80      | 6       | 500        | 60      | 60-150        | 1       | 100 | 10  | 300  |
| 2N3742  | NPN  | TO-39      | 300     | 300     | 7       | 200        | 200     | 20-200        | 10      | 30  | 6   | 60   |
| 2N3794  | NPN  | TO-92 (74) | 20      | 40      | 5       | 500        | 15      | 100-600       | 10      | 10  | 10  | 100  |
| 2N3799  | PNP  | TO-18      | 60      | 60      | 5       | 10         | 50      | 300-900       | 5       | .5  |     |      |
| 2N3825  | NPN  | TO-92 (74) | 15      | 30      | 4       | 100        | 15      | 20-           | 10      | 2   | 3.5 | 200  |
| 2N3826  | NPN  | TO-92 (74) | 45      | 60      | 4       | 100        | 30      | 40-160        | 10      | 10  | 3.5 | 200  |
| 2N3827  | NPN  | TO-92 (74) | 45      | 60      | 4       | 100        | 30      | 100-400       | 10      | 10  | 3.5 | 200  |
| 2N3839  | NPN  | TO-72      | 15      | 30      | 2.5     | 10         | 15      | 30-150        | 1       | 3   | 1   | 1000 |
| 2N3858  | NPN  | TO-92 (74) | 30      | 30      | 4       | 500        | 18      | 60-120        | 4.5     | 2   | 4   | 90   |
| 2N3858A | NPN  | TO-92 (74) | 60      | 60      | 6       | 500        | 18      | 60-120        | 1       | 10  | 4   | 90   |
| 2N3859  | NPN  | TO-92 (74) | 30      | 30      | 4       | 500        | 18      | 100-200       | 4.5     | 2   | 4   | 90   |
| 2N3859A | NPN  | TO-92 (74) | 60      | 60      | 6       | 500        | 18      | 100-200       | 1       | 10  | 4   | 90   |
| 2N3860  | NPN  | TO-92 (74) | 30      | 30      | 4       | 500        | 18      | 150-300       | 4.5     | 2   | 4   | 90   |
| 2N3877  | NPN  | TO-92 (74) | 70      | 70      | 4       | 500        | 70      | 20-250        | 4.5     | 2   |     | 5    |
| 2N3877A | NPN  | TO-92 (74) | 85      | 85      | 4       | 500        | 70      | 20-250        | 4.5     | 2   |     | 5    |
| 2N3900  | NPN  | TO-92 (74) | 18      | 18      | 5       | 100        | 18      | 250-500       | 4.5     | 2   |     | 5    |
| 2N3901  | NPN  | TO-92 (74) | 18      | 18      | 5       | 100        | 15      | 350-700       | 4.5     | 2   |     | 5    |
| 2N3903  | NPN  | TO-92 (72) | 40      | 60      | 6       | 50         | 30      | 50-150        | 1       | 10  | 4   | 250  |
| 2N3904  | NPN  | TO-92 (72) | 40      | 60      | 6       | 50         | 30      | 100-300       | 1       | 10  | 4   | 300  |
| 2N3905  | PNP  | TO-92 (72) | 40      | 40      | 5       | 50         | 30      | 50-150        | 1       | 10  | 4.5 | 200  |
| 2N3906  | PNP  | TO-92 (72) | 40      | 40      | 5       | 50         | 30      | 100-300       | 1       | 10  | 4.5 | 250  |
| 2N3932  | NPN  | TO-72      | 20      | 30      | 2.5     | 10         | 15      | 40-150        | 8       | 2   | .55 | 750  |
| 2N3933  | NPN  | TO-72      | 30      | 40      | 2.5     | 10         | 15      | 60-200        | 8       | 2   | .55 | 750  |
| 2N3945  | NPN  | TO-39      | 50      | 70      | 8       | 40         | 60      | 40-250        | 10      | 150 | 12  | 60   |
| 2N3946  | NPN  | TO-18      | 40      | 60      | 6       | 10         | 40      | 50-150        | 1       | 10  | 4   | 250  |
| 2N3947  | NPN  | TO-18      | 40      | 60      | 6       | 10         | 40      | 100-300       | 1       | 10  | 4   | 300  |
| 2N3962  | PNP  | TO-18      | 60      | 60      | 6       | 10         | 50      | 100-450       | 5       | 1   | 6   | 40   |
| 2N3963  | PNP  | TO-18      | 80      | 80      | 6       | 10         | 70      | 100-450       | 5       | 1   | 6   | 40   |
| 2N3964  | PNP  | TO-18      | 45      | 45      | 6       | 10         | 40      | 250-600       | 5       | 1   | 6   | 50   |
| 2N3965  | PNP  | TO-18      | 60      | 60      | 6       | 10         | 50      | 250-600       | 5       | 1   | 6   | 50   |

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| DEVICE | TYPE | PACKAGE    | BVCEO   | BVCBO   | BVEBO   | ICBO        | VCB     | HFE     | VC & IC  |     | COB  | FT       | NF    |
|--------|------|------------|---------|---------|---------|-------------|---------|---------|----------|-----|------|----------|-------|
|        |      |            | (V) MIN | (V) MIN | (V) MIN | (mA) MAX    | (V) MIN | (V) MIN | (mA) MAX | (V) | (mA) | (pI) MAX | (MHz) |
| 2N4013 | NPN  | TO-18      | 30      | 50      | 6       | 1.7 $\mu$ A | 40      | 60-150  | 1        | 100 | 12   | 300      |       |
| 2N4014 | NPN  | TO-18      | 50      | 80      | 6       | 1.7 $\mu$ A | 60      | 60-150  | 1        | 100 | 10   | 300      |       |
| 2N4026 | PNP  | TO-18      | 60      | 60      | 5       | 50          | 50      | 40-120  | 5        | 100 | 20   | 100      |       |
| 2N4027 | PNP  | TO-18      | 80      | 80      | 5       | 50          | 60      | 40-120  | 5        | 100 | 20   | 100      |       |
| 2N4028 | PNP  | TO-18      | 60      | 60      | 5       | 50          | 50      | 100-300 | 5        | 100 | 20   | 150      |       |
| 2N4029 | PNP  | TO-18      | 80      | 80      | 5       | 50          | 60      | 100-300 | 5        | 100 | 20   | 150      |       |
| 2N4030 | PNP  | TO-5       | 60      | 60      | 5       | 50          | 50      | 40-120  | 5        | 100 | 20   | 100      |       |
| 2N4031 | PNP  | TO-5       | 80      | 80      | 5       | 50          | 60      | 40-120  | 5        | 100 | 20   | 100      |       |
| 2N4032 | PNP  | TO-5       | 60      | 60      | 5       | 50          | 50      | 100-300 | 5        | 100 | 20   | 150      |       |
| 2N4033 | PNP  | TO-5       | 80      | 80      | 5       | 50          | 60      | 100-300 | 5        | 100 | 20   | 150      |       |
| 2N4034 | PNP  | TO-18      | 40      | 40      | 5       | 15          | 30      | 70-200  | 1        | 10  | 3.5  | 400      |       |
| 2N4035 | PNP  | TO-18      | 40      | 40      | 5       | 15          | 30      | 150-300 | 1        | 10  | 3.5  | 450      |       |
| 2N4036 | PNP  | TO-39      | 65      | 90      | 7       | 20          | 60      | 40-140  | 10       | 150 | 30   | 60       |       |
| 2N4037 | PNP  | TO-39      | 40      | 60      | 7       | 250         | 60      | 50-250  | 10       | 150 | 30   | 60       |       |
| 2N4046 | NPN  | TO-5       | 30      | 50      | 6       | 1.7 $\mu$ A | 40      | 40-150  | 1        | 100 | 12   | 500      |       |
| 2N4047 | NPN  | TO-5       | 50      | 80      | 6       | 1.7 $\mu$ A | 60      | 40-150  | 1        | 100 | 10   | 500      |       |
| 2N4058 | PNP  | TO-92 (74) | 30      | 30      | 6       | 100         | 20      | 100-400 | 5        | 0.1 | 10   |          | 5     |
| 2N4059 | PNP  | TO-92 (74) | 30      | 30      | 6       | 100         | 20      | 45-660  | 5        | 1   | 10   |          | 5     |
| 2N4060 | PNP  | TO-92 (74) | 30      | 30      | 6       | 100         | 20      | 45-165  | 5        | 1   | 10   |          | 5     |
| 2N4061 | PNP  | TO-92 (74) | 30      | 30      | 6       | 100         | 20      | 90-330  | 5        | 1   | 10   |          | 5     |
| 2N4062 | PNP  | TO-92 (74) | 30      | 30      | 6       | 100         | 20      | 180-660 | 5        | 1   | 10   |          | 5     |
| 2N4123 | NPN  | TO-92 (72) | 30      | 40      | 5       | 50          | 20      | 50-150  | 1        | 2   | 4    | 250      |       |
| 2N4124 | NPN  | TO-92 (72) | 25      | 30      | 5       | 50          | 20      | 120-360 | 1        | 2   | 4    | 300      |       |
| 2N4125 | PNP  | TO-92 (72) | 30      | 30      | 4       | 50          | 20      | 50-150  | 1        | 2   | 4.5  | 200      |       |
| 2N4126 | PNP  | TO-92 (72) | 25      | 25      | 4       | 50          | 20      | 120-360 | 1        | 2   | 4.5  | 250      |       |
| 2N4207 | PNP  | TO-18      | 6       | 6       | 4.5     | 10          | 3       | 50-120  | .3       | 10  | 3    | 650      |       |
| 2N4208 | PNP  | TO-18      | 12      | 12      | 4.5     | 10          | 6       | 30-120  | .3       | 10  | 3    | 700      |       |
| 2N4209 | PNP  | TO-18      | 15      | 15      | 4.5     | 10          | 8       | 50-120  | .3       | 10  | 3    | 850      |       |
| 2N4234 | PNP  | TO-5       | 40      | 40      | 7       | 100         | 40      | 30-150  | 1        | 250 |      |          |       |
| 2N4235 | PNP  | TO-5       | 60      | 60      | 7       | 100         | 60      | 30-150  | 1        | 250 |      |          |       |
| 2N4236 | PNP  | TO-5       | 80      | 80      | 7       | 100         | 80      | 30-150  | 1        | 250 |      |          |       |
| 2N4237 | NPN  | TO-5       | 40      | 50      | 6       | 100         | 50      | 30-150  | 1        | 250 |      |          |       |
| 2N4238 | NPN  | TO-5       | 60      | 80      | 6       | 100         | 80      | 30-150  | 1        | 250 |      |          |       |
| 2N4239 | NPN  | TO-5       | 80      | 100     | 6       | 100         | 100     | 30-150  | 1        | 250 |      |          |       |
| 2N4259 | NPN  | TO-72      | 30      | 40      | 2.5     | 10          | 15      | 60-250  | 8        | 2   | .55  | 750      |       |
| 2N4286 | NPN  | TO-92 (74) | 25      | 30      | 6       | 50          | 25      | 150-600 | 5        | 1   | 6    | 40       | 5     |
| 2N4287 | NPN  | TO-92 (74) | 45      | 45      | 7       | 10          | 30      | 150-600 | 5        | 1   | 6    | 40       | 5     |
| 2N4288 | PNP  | TO-92 (74) | 25      | 30      | 6       | 50          | 25      | 150-600 | 5        | 1   | 8    | 40       | 4     |
| 2N4289 | PNP  | TO-92 (74) | 45      | 60      | 7       | 10          | 45      | 150-600 | 5        | 1   | 8    | 40       | 4     |
| 2N4290 | PNP  | TO-92 (74) | 20      | 30      | 5       | 500         | 20      | 50-300  | 10       | 100 | 10   | 100      |       |
| 2N4291 | PNP  | TO-92 (74) | 30      | 40      | 6       | 200         | 30      | 100-300 | 10       | 100 | 10   | 100      |       |
| 2N4292 | NPN  | TO-92 (74) | 15      | 30      | 3       | 500         | 15      | 20-     | 1        | 3   | 3.5  | 600      |       |
| 2N4293 | NPN  | TO-92 (74) | 15      | 30      | 3       | 500         | 15      | 20-     | 1        | 3   | 3.5  | 600      |       |
| 2N4294 | NPN  | TO-92 (74) | 12      | 30      | 4.5     | 400         | 20      | 30-120  | 1        | 10  | 5    | 400      |       |
| 2N4295 | NPN  | TO-92 (74) | 15      | 40      | 5       | 100         | 20      | 40-120  | 1        | 10  | 4    | 500      |       |

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99D 00299

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T-29-01

| DEVICE | TYPE | PACKAGE    | BVCEO   | BVCBO   | BVEBO   | ICBO @ VCB   | HFE @ VC & IC | COB             | FT    | NF       |
|--------|------|------------|---------|---------|---------|--------------|---------------|-----------------|-------|----------|
|        |      |            | (V) MIN | (V) MIN | (V) MIN | (mA) MAX (V) | MIN.-MAX. (V) | (mA) - (pI) MAX | (MHz) | (db) MAX |
| 2N4314 | PNP  | TO-39      | 65      | 90      | 7       | 250          | 60 50-250     | 10 150          | 30    | 60       |
| 2N4384 | NPN  | TO-18      | 30      | 40      | 5       | 10           | 30 100-500    | 5 .01           | 8     | 30       |
| 2N4386 | NPN  | TO-18      | 30      | 40      | 5       | 10           | 30 40-500     | 5 .01           | 8     | 30       |
| 2N4400 | NPN  | TO-92 (72) | 40      | 60      | 6       | 100          | 35 50-150     | 1 150           | 6.5   | 200      |
| 2N4401 | NPN  | TO-92 (72) | 40      | 60      | 6       | 100          | 35 100-300    | 1 150           | 6.5   | 250      |
| 2N4402 | PNP  | TO-92 (72) | 40      | 40      | 5       | 100          | 35 50-150     | 2 150           | 8.5   | 150      |
| 2N4403 | PNP  | TO-92 (72) | 40      | 40      | 5       | 100          | 35 100-300    | 2 150           | 8.5   | 200      |
| 2N4404 | PNP  | TO-39      | 80      | 80      | 5       | 25           | 60 40-120     | 1 150           | 10    | 200      |
| 2N4405 | PNP  | TO-39      | 80      | 80      | 5       | 25           | 60 100-300    | 1 150           | 10    | 200      |
| 2N4409 | NPN  | TO-92 (72) | 50      | 80      | 5       | 10           | 60 60-400     | 1 10            | 12    | 60       |
| 2N4410 | NPN  | TO-92 (72) | 80      | 120     | 5       | 10           | 100 60-400    | 1 10            | 12    | 60       |
| 2N4424 | NPN  | TO-92 (74) | 40      | 40      | 5       | 100          | 25 180-540    | 4.5 2           |       |          |
| 2N4924 | NPN  | TO-39      | 100     | 100     | 5       | 100          | 50 40-120     | 10 150          | 10    | 10       |
| 2N4951 | NPN  | TO-92 (74) | 30      | 60      | 5       | 50           | 40 60-200     | 10 150          | 8     | 250      |
| 2N4952 | NPN  | TO-92 (74) | 30      | 60      | 5       | 50           | 40 100-300    | 10 150          | 8     | 250      |
| 2N4953 | NPN  | TO-92 (74) | 30      | 60      | 5       | 50           | 40 200-600    | 10 150          | 8     | 250      |
| 2N4954 | NPN  | TO-92 (74) | 30      | 40      | 5       | 50           | 30 60-600     | 10 150          | 8     | 250      |
| 2N4960 | NPN  | TO-39      | 60      | 60      | 6.5     | 10           | 50 100-300    | 10 150          | 15    | 250      |
| 2N4961 | NPN  | TO-39      | 80      | 80      | 6.5     | 10           | 50 100-300    | 10 150          | 15    | 250      |
| 2N4962 | NPN  | TO-18      | 60      | 60      | 6.5     | 10           | 50 100-300    | 10 150          | 15    | 250      |
| 2N4963 | NPN  | TO-18      | 80      | 80      | 6.5     | 10           | 50 100-300    | 10 150          | 15    | 250      |
| 2N4966 | NPN  | TO-92 (72) | 40      | 50      | 6       | 25           | 25 40-200     | 5 .01           | 6     | 40       |
| 2N4967 | NPN  | TO-92 (72) | 40      | 50      | 6       | 25           | 25 100-600    | 5 .01           | 6     | 40       |
| 2N4968 | NPN  | TO-92 (72) | 25      | 30      | 6       | 50           | 25 40-200     | 5 .01           | 6     | 40       |
| 2N5086 | PNP  | TO-92 (72) | 50      | 50      | 3       | 50           | 35 150-500    | 5 .1            | 4     | 40       |
| 2N5087 | PNP  | TO-92 (72) | 50      | 50      | 3       | 50           | 35 250-800    | 5 .1            | 4     | 40       |
| 2N5088 | NPN  | TO-92 (72) | 30      | 35      | 4.5     | 50           | 20 300-900    | 5 .1            | 4     | 50       |
| 2N5089 | NPN  | TO-92 (72) | 25      | 30      | 4.5     | 50           | 15 400-1200   | 5 .1            | 4     | 50       |
| 2N5172 | NPN  | TO-92 (74) | 25      | 25      | 5       | 100          | 25 100-500    | 10 10           | 10    |          |
| 2N5179 | NPN  | TO-72      | 12      | 20      | 2.5     | 20           | 15 25-250     | 1 3             | 1     | 900      |
| 2N5180 | NPN  | TO-72      | 15      | 30      | 2       | 500          | 8 20-200      | 8 2             | 1     | 650      |
| 2N5189 | NPN  | TO-39      | 35      | 60      | 5       | 500          | 30 35-        | 1 500           | 12    | 250      |
| 2N5209 | NPN  | TO-92 (72) | 50      | 50      | 4.5     | 50           | 35 100-300    | 5 .1            | 4     | 30       |
| 2N5210 | NPN  | TO-92 (72) | 50      | 50      | 4.5     | 50           | 35 200-600    | 5 .1            | 4     | 30       |
| 2N5219 | NPN  | TO-92 (72) | 15      | 20      | 3       | 100          | 10 35-500     | 10 2            | 4     | 150      |
| 2N5220 | NPN  | TO-92 (72) | 15      | 15      | 3       | 100          | 10 30-600     | 10 50           | 10    | 100      |
| 2N5221 | PNP  | TO-92 (72) | 15      | 15      | 3       | 100          | 10 30-600     | 10 50           | 15    | 100      |
| 2N5222 | NPN  | TO-92 (72) | 15      | 20      | 2       | 100          | 10 20-1500    | 10 4            | 1.3   | 450      |
| 2N5223 | NPN  | TO-92 (72) | 20      | 25      | 3       | 100          | 10 50-800     | 10 2            | 4     | 150      |
| 2N5224 | NPN  | TO-92 (72) | 12      | 25      | 5       | 500          | 15 40-400     | 1 10            | 4     | 250      |
| 2N5225 | NPN  | TO-92 (72) | 25      | 25      | 4       | 300          | 15 30-600     | 10 50           | 20    | 50       |
| 2N5226 | PNP  | TO-92 (72) | 25      | 25      | 4       | 300          | 15 50-600     | 10 50           | 20    | 50       |
| 2N5227 | PNP  | TO-92 (72) | 30      | 30      | 3       | 100          | 10 50-700     | 10 2            | 5     | 100      |
| 2N5228 | PNP  | TO-92 (72) | 5       | 5       | 3       | 100          | 4 30-         | .3 10           | 5     | 300      |
| 2N5354 | PNP  | TO-92 (74) | 25      | 25      | 4       | 100          | 25 40-120     | 1 50            | 8     |          |

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| DEVICE  | TYPE | PACKAGE     | BVCEO   | BVCBO   | BVEBO   | ICBO     | V <sub>CB</sub> | HFE      | VC & IC  | COB   | FT       | NF |
|---------|------|-------------|---------|---------|---------|----------|-----------------|----------|----------|-------|----------|----|
|         |      |             | (V) MIN | (V) MIN | (V) MIN | (mA) MAX | (V) MIN-MAX     | (V) (-A) | (pF) MAX | (MHz) | (db) MAX |    |
| 2N5355  | PNP  | TO-92 (74)  | 25      | 25      | 4       | 100      | 25              | 100-300  | 1 50     | 8     |          |    |
| 2N5365  | PNP  | TO-92 (74)  | 40      | 40      | 4       | 100      | 40              | 40-120   | 1 50     | 8     |          |    |
| 2N5366  | PNP  | TO-92 (74)  | 40      | 40      | 4       | 100      | 40              | 100-300  | 1 50     | 8     |          |    |
| 2N5400  | PNP  | TO-92 (72)  | 120     | 130     | 5       | 100      | 100             | 40-180   | 5 10     | 6     | 100      |    |
| 2N5401  | PNP  | TO-92 (72)  | 150     | 160     | 5       | 50       | 120             | 60-240   | 5 10     | 6     | 100      |    |
| 2N5447  | PNP  | TO-92 (77)  | 25      | 40      | 5       | 100      | 20              | 60-300   | 5 50     | 12    | 100      |    |
| 2N5448  | PNP  | TO-92 (77)  | 30      | 50      | 5       | 100      | 20              | 30-150   | 5 50     | 12    | 100      |    |
| 2N5449  | NPN  | TO-92 (77)  | 30      | 50      | 5       | 100      | 20              | 100-300  | 2 50     | 12    | 100      |    |
| 2N5450  | NPN  | TO-92 (77)  | 30      | 50      | 5       | 100      | 20              | 50-150   | 2 50     | 12    | 100      |    |
| 2N5451  | NPN  | TO-92 (77)  | 20      | 40      | 5       | 100      | 20              | 30-600   | 2 50     | 12    | 100      |    |
| 2N5550  | NPN  | TO-92 (72)  | 140     | 160     | 6       | 100      | 100             | 60-250   | 5 10     | 6     | 100      |    |
| 2N5551  | NPN  | TO-92 (72)  | 160     | 180     | 6       | 50       | 120             | 80-250   | 5 10     | 6     | 100      |    |
| 2N5769  | NPN  | TO-92 (72)  | 15      | 40      | 4.5     | 400      | 20              | 40-120   | 35 10    | 4     | 500      |    |
| 2N5770  | NPN  | TO-92 (72)  | 15      | 30      | 4.5     | 10       | 15              | 50-200   | 10 8     | 1 1   | 900      |    |
| 2N5771  | PNP  | TO-92 (72)  | 15      | 15      | 4.5     | 10       | 8               | 50-120   | 3 10     | 3     | 850      |    |
| 2N5772  | NPN  | TO-92 (72)  | 15      | 40      | 5       | 500      | 20              | 30-120   | 4 30     | 5     | 350      |    |
| 2N5845  | NPN  | TO-92 (72)  | 40      | 50      | 6       | 500      | 40              | 25-150   | 1 500    | 9     | 200      |    |
| 2N5845A | NPN  | TO-92 (72)  | 40      | 50      | 6       | 500      | 40              | 35-150   | 1 500    | 9     | 250      |    |
| 2N6067  | PNP  | TO-92 (72)  | 40      | 50      | 5       | 500      | 30              | 50-200   | 1 100    | 16    | 150      |    |
| MPQ2222 | NPN  | TO-116 (39) | 40      | 60      | 5       | 50       | 50              | 100-     | 10 150   | 8     | 200      |    |
| MPQ2907 | PNP  | TO-116 (39) | 40      | 60      | 5       | 50       | 50              | 100-     | 10 150   | 8     | 200      |    |
| MPQ3467 | PNP  | TO-116 (39) | 40      | 40      | 5       | 200      | 30              | 20-      | 1 500    | 25    | 125      |    |
| MPQ3725 | NPN  | TO-116 (39) | 40      | 60      | 5       | 500      | 40              | 35-200   | 1 100    | 10    | 250      |    |
| MPQ3904 | NPN  | TO-116 (39) | 40      | 60      | 6       | 50       | 40              | 75-      | 1 10     | 4     | 250      |    |
| MPQ3906 | PNP  | TO-116 (39) | 40      | 40      | 5       | 50       | 30              | 75-      | 1 10     | 4.5   | 200      |    |
| MPS2714 | NPN  | TO-92 (72)  | 18      | 18      | 5       | 500      | 18              | 75-225   | 4.5 2    | 12    | 80       |    |
| MPS2923 | NPN  | TO-92 (72)  | 25      | 25      | 5       | 100      | 25              | 90-180   | 10 2     | 10    |          |    |
| MPS2924 | NPN  | TO-92 (72)  | 25      | 25      | 5       | 100      | 25              | 150-300  | 10 2     | 10    |          |    |
| MPS2925 | NPN  | TO-92 (72)  | 25      | 25      | 5       | 100      | 25              | 235-470  | 10 2     | 10    |          |    |
| MPS2926 | NPN  | TO-92 (72)  | 18      | 18      | 5       | 500      | 18              | 35-470   | 10 2     | 10    |          |    |
| MPS3390 | NPN  | TO-92 (72)  | 25      | 25      | 5       | 100      | 18              | 400-800  | 4.5 2    | 10    |          |    |
| MPS3391 | NPN  | TO-92 (72)  | 25      | 25      | 5       | 100      | 18              | 250-500  | 4.5 2    | 10    |          |    |
| MPS3392 | NPN  | TO-92 (72)  | 25      | 25      | 5       | 100      | 18              | 150-300  | 4.5 2    | 10    |          |    |
| MPS3393 | NPN  | TO-92 (72)  | 25      | 25      | 5       | 100      | 18              | 90-180   | 4.5 2    | 10    |          |    |
| MPS3394 | NPN  | TO-92 (72)  | 25      | 25      | 5       | 100      | 18              | 55-110   | 4.5 2    | 10    |          |    |
| MPS3395 | NPN  | TO-92 (72)  | 25      | 25      | 5       | 100      | 18              | 150-500  | 4.5 2    | 10    |          |    |
| MPS3396 | NPN  | TO-92 (72)  | 25      | 25      | 5       | 100      | 18              | 90-500   | 4.5 2    | 10    |          |    |
| MPS3397 | NPN  | TO-92 (72)  | 25      | 25      | 5       | 100      | 18              | 55-500   | 4.5 2    | 10    |          |    |
| MPS3398 | NPN  | TO-92 (72)  | 25      | 25      | 5       | 100      | 18              | 55-800   | 4.5 2    | 10    |          |    |
| MPS3414 | NPN  | TO-92 (72)  | 25      | 25      | 5       | 100      | 25              | 75-225   | 4.5 2    | 10    |          |    |
| MPS3415 | NPN  | TO-92 (72)  | 25      | 25      | 5       | 100      | 25              | 180-540  | 4.5 2    | 10    |          |    |
| MPS3416 | NPN  | TO-92 (72)  | 50      | 50      | 5       | 100      | 25              | 75-225   | 4.5 2    | 10    |          |    |
| MPS3417 | NPN  | TO-92 (72)  | 50      | 50      | 5       | 100      | 25              | 180-540  | 4.5 2    | 10    |          |    |
| MPS3662 | NPN  | TO-92 (72)  | 12      | 18      | 3       | 500      | 15              | 20-      | 8 10     | 1 7   | 700      |    |
| MPS3663 | NPN  | TO-92 (72)  | 12      | 30      | 3       | 500      | 15              | 20-      | 8 10     | 1 7   | 700      |    |



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| DEVICE   | TYPE PACKAGE   | BVCEO   | BVCBO   | BVEBO   | ICBO @ VCB | HFE @ VC & IC | COB      | FT       | NF    |
|----------|----------------|---------|---------|---------|------------|---------------|----------|----------|-------|
|          |                | (V) MIN | (V) MIN | (V) MIN | (mA) MAX   | (V) MIN -MAX  | (V) (mA) | (pF) MAX | (MHz) |
| MPS3702  | PNP TO-92 (72) | 25      | 40      | 5       | 100        | 20 60-300     | 5 50     | 12       | 100   |
| MPS3703  | PNP TO-92 (72) | 30      | 50      | 5       | 100        | 20 30-150     | 5 50     | 12       | 100   |
| MPS3704  | NPN TO-92 (72) | 30      | 50      | 5       | 100        | 20 100-300    | 2 50     | 12       | 100   |
| MPS3705  | NPN TO-92 (72) | 30      | 50      | 5       | 100        | 20 50-150     | 2 50     | 12       | 100   |
| MPS3706  | NPN TO-92 (72) | 20      | 40      | 5       | 100        | 20 30-600     | 2 50     | 12       | 100   |
| MPS3707  | NPN TO-92 (72) | 30      | 30      | 6       | 100        | 20 100-400    | 5 1      |          |       |
| MPS3708  | NPN TO-92 (72) | 30      | 30      | 6       | 100        | 20 45-660     | 5 1      |          |       |
| MPS3709  | NPN TO-92 (72) | 30      | 30      | 6       | 100        | 20 45-165     | 5 1      |          |       |
| MPS3710  | NPN TO-92 (72) | 30      | 30      | 6       | 100        | 20 90-330     | 5 1      |          |       |
| MPS3711  | NPN TO-92 (72) | 30      | 30      | 6       | 100        | 20 180-660    | 5 1      |          |       |
| MPS3721  | NPN TO-92 (72) | 18      | 18      | 5       | 500        | 18 60-660     | 10 2     |          |       |
| MPS3794  | NPN TO-92 (72) | 20      | 40      | 5       | 500        | 15 100-600    | 10 10    | 10       | 100   |
| MPS3825  | NPN TO-92 (72) | 15      | 30      | 4       | 100        | 15 20-        | 10 2     | 3.5      | 200   |
| MPS3826  | NPN TO-92 (72) | 45      | 60      | 4       | 100        | 30 40-160     | 10 10    | 3.5      | 200   |
| MPS3827  | NPN TO-92 (72) | 45      | 60      | 4       | 100        | 30 100-400    | 10 10    | 3.5      | 200   |
| MPS3858  | NPN TO-92 (72) | 30      | 30      | 4       | 500        | 18 60-120     | 4.5 2    | 4        | 90    |
| MPS3858A | NPN TO-92 (72) | 60      | 60      | 6       | 500        | 18 60-120     | 1 10     | 4        | 90    |
| MPS3859  | NPN TO-92 (72) | 30      | 30      | 4       | 500        | 18 100-200    | 4.5 2    | 4        | 90    |
| MPS3859A | NPN TO-92 (72) | 60      | 60      | 6       | 500        | 18 100-200    | 1 10     | 4        | 90    |
| MPS3860  | NPN TO-92 (72) | 30      | 30      | 4       | 500        | 18 150-300    | 4.5 2    | 4        | 90    |
| MPS3877  | NPN TO-92 (72) | 70      | 70      | 4       | 500        | 70 20-250     | 4.5 2    |          | 5     |
| MPS3877A | NPN TO-92 (72) | 85      | 85      | 4       | 500        | 70 20-250     | 4.5 2    |          | 5     |
| MPS3900  | NPN TO-92 (72) | 18      | 18      | 5       | 100        | 18 250-500    | 4.5 2    |          | 5     |
| MPS3901  | NPN TO-92 (72) | 18      | 18      | 5       | 100        | 15 350-700    | 4.5 2    |          | 5     |
| MPS4058  | PNP TO-92 (72) | 30      | 30      | 6       | 100        | 20 100-400    | 5 .1     | 10       | 5     |
| MPS4059  | PNP TO-92 (72) | 30      | 30      | 6       | 100        | 20 45-660     | 5 1      | 10       | 5     |
| MPS4060  | PNP TO-92 (72) | 30      | 30      | 6       | 100        | 20 45-165     | 5 1      | 10       | 5     |
| MPS4061  | PNP TO-92 (72) | 30      | 30      | 6       | 100        | 20 90-330     | 5 1      | 10       | 5     |
| MPS4062  | PNP TO-92 (72) | 30      | 30      | 6       | 100        | 20 180-660    | 5 1      | 10       | 5     |
| MPS4286  | NPN TO-92 (72) | 25      | 30      | 6       | 50         | 25 150-600    | 5 1      | 6        | 40 5  |
| MPS4287  | NPN TO-92 (72) | 45      | 45      | 7       | 10         | 30 150-600    | 5 1      | 6        | 40 5  |
| MPS4288  | PNP TO-92 (72) | 25      | 30      | 6       | 50         | 25 150-600    | 5 1      | 8        | 40 4  |
| MPS4289  | PNP TO-92 (72) | 45      | 60      | 7       | 10         | 45 150-600    | 5 1      | 8        | 40 4  |
| MPS4290  | PNP TO-92 (72) | 20      | 30      | 5       | 500        | 20 50-300     | 10 100   | 10       | 100   |
| MPS4291  | PNP TO-92 (72) | 30      | 40      | 6       | 200        | 30 100-300    | 10 100   | 10       | 100   |
| MPS4292  | NPN TO-92 (72) | 15      | 30      | 3       | 500        | 15 20-        | 1 3      | 3.5      | 600   |
| MPS4293  | NPN TO-92 (72) | 15      | 30      | 3       | 500        | 15 20-        | 1 3      | 3.5      | 600   |
| MPS4294  | NPN TO-92 (72) | 12      | 30      | 4.5     | 400        | 20 30-120     | 1 10     | 5        | 400   |
| MPS4295  | NPN TO-92 (72) | 15      | 40      | 5       | 100        | 20 40-120     | 1 10     | 4        | 500   |
| MPS4424  | NPN TO-92 (72) | 40      | 40      | 5       | 100        | 25 180-540    | 4.5 2    |          |       |
| MPS4951  | NPN TO-92 (72) | 30      | 60      | 5       | 50         | 40 60-200     | 10 150   | 8        | 250   |
| MPS4952  | NPN TO-92 (72) | 30      | 60      | 5       | 50         | 40 100-300    | 10 150   | 8        | 250   |
| MPS4953  | NPN TO-92 (72) | 30      | 60      | 5       | 50         | 40 200-600    | 10 150   | 8        | 250   |
| MPS4954  | NPN TO-92 (72) | 30      | 40      | 5       | 50         | 30 60-600     | 10 150   | 8        | 250   |
| MPS5172  | NPN TO-92 (72) | 25      | 25      | 5       | 100        | 25 100-500    | 10 10    | 10       |       |

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| DEVICE    | TYPE PACKAGE   | BVCEO   | BVCBO   | BVEBO   | ICBO @ VCB | HFE @ VC & IC | COB      |         | FT    | NF       |
|-----------|----------------|---------|---------|---------|------------|---------------|----------|---------|-------|----------|
|           |                | (V) MIN | (V) MIN | (V) MIN | (mA) MAX   | (V) MIN - MAX | (V) (mA) | (p) MAX | (MHz) | (dB) MAX |
| MPS5354   | PNP TO-92 (72) | 25      | 25      | 4       | 100        | 25 40-120     | 1        | 50      | 8     |          |
| MPS5355   | PNP TO-92 (72) | 25      | 25      | 4       | 100        | 25 100-300    | 1        | 50      | 8     |          |
| MPS5365   | PNP TO-92 (72) | 40      | 40      | 4       | 100        | 40 40-120     | 1        | 50      | 8     |          |
| MPS5366   | PNP TO-92 (72) | 40      | 40      | 4       | 100        | 40 100-300    | 1        | 50      | 8     |          |
| MPS6507   | NPN TO-92 (72) | 20      | 20      | 3       | 50         | 15 25-        | 10       | 2       | 2.5   | 700      |
| MPS6511   | NPN TO-92 (72) | 20      | 30      | 3       | 50         | 15 25-        | 10       | 10      | 2.5   |          |
| MPS6512   | NPN TO-92 (72) | 30      | 40      | 4       | 50         | 30 50-100     | 10       | 2       | 3.5   | 250      |
| MPS6513   | NPN TO-92 (72) | 30      | 40      | 4       | 50         | 30 90-180     | 10       | 2       | 3.5   | 250      |
| MPS6514   | NPN TO-92 (72) | 25      | 40      | 4       | 50         | 30 150-300    | 10       | 2       | 3.5   | 390      |
| MPS6515   | NPN TO-92 (72) | 25      | 40      | 4       | 50         | 30 250-500    | 10       | 2       | 3.5   | 390      |
| MPS6516   | PNP TO-92 (72) | 40      | 40      | 4       | 50         | 30 50-100     | 10       | 2       | 4     | 200      |
| MPS6517   | PNP TO-92 (72) | 40      | 40      | 4       | 50         | 30 90-180     | 10       | 2       | 4     | 200      |
| MPS6518   | PNP TO-92 (72) | 40      | 40      | 4       | 50         | 30 150-300    | 10       | 2       | 4     | 340      |
| MPS6519   | PNP TO-92 (72) | 25      | 25      | 4       | 50         | 20 250-500    | 10       | 2       | 4     | 340      |
| MPS6520   | NPN TO-92 (72) | 25      | 40      | 4       | 50         | 30 200-400    | 10       | 2       | 3.5   | 390      |
| MPS6521   | NPN TO-92 (72) | 25      | 40      | 4       | 50         | 30 300-600    | 10       | 2       | 3.5   | 390      |
| MPS6522   | PNP TO-92 (72) | 25      | 25      | 4       | 50         | 20 200-400    | 10       | 2       | 3.5   | 340      |
| MPS6523   | PNP TO-92 (72) | 25      | 25      | 4       | 50         | 20 300-600    | 10       | 2       | 3.5   | 340      |
| MPS6530   | NPN TO-92 (72) | 40      | 60      | 5       | 50         | 40 40-120     | 1        | 100     | 5     | 390      |
| MPS6531   | NPN TO-92 (72) | 40      | 60      | 5       | 50         | 40 90-270     | 1        | 100     | 5     | 390      |
| MPS6532   | NPN TO-92 (72) | 30      | 50      | 5       | 100        | 30 30-        | 1        | 100     | 5     | 390      |
| MPS6533   | PNP TO-92 (72) | 40      | 40      | 4       | 50         | 30 40-120     | 1        | 100     | 6     | 260      |
| MPS6534   | PNP TO-92 (72) | 40      | 40      | 4       | 50         | 30 90-270     | 1        | 100     | 6     | 260      |
| MPS6535   | PNP TO-92 (72) | 30      | 30      | 4       | 100        | 20 30-        | 1        | 100     | 6     | 260      |
| MPS6539   | NPN TO-92 (72) | 20      | 20      | 3       | 50         | 15 20-        | 10       | 4       | 7     | 500      |
| MPS6541   | NPN TO-92 (72) | 20      | 30      | 4       | 50         | 15 25-        | 10       | 4       | 1.7   | 600      |
| MPS6548   | NPN TO-92 (72) | 25      | 30      | 3       | 100        | 25 25-        | 10       | 4       | 7     | 650      |
| MPS6560   | NPN TO-92 (72) | 25      | 25      | 5       | 100        | 20 50-200     | 1        | 500     | 30    | 60       |
| MPS6561   | NPN TO-92 (72) | 20      | 25      | 5       | 100        | 20 50-200     | 1        | 350     | 30    | 60       |
| MPS6562   | PNP TO-92 (72) | 25      | 25      | 5       | 100        | 20 50-200     | 1        | 500     | 30    | 60       |
| MPS6563   | PNP TO-92 (72) | 20      | 25      | 5       | 100        | 20 50-200     | 1        | 350     | 30    | 60       |
| MPS6564   | NPN TO-92 (72) | 45      | 80      | 5       | 500        | 40 25-        | 5        | 10      | 4     | 200      |
| MPS6565   | NPN TO-92 (72) | 45      | 60      | 4       | 100        | 30 40-160     | 10       | 10      | 3.5   | 200      |
| MPS6566   | NPN TO-92 (72) | 45      | 60      | 4       | 100        | 30 100-400    | 10       | 10      | 3.5   | 200      |
| MPS6571   | NPN TO-92 (72) | 20      | 20      | 3       | 50         | 20 250-1000   | 5        | 1       | 4.5   | 50       |
| MPS6573   | NPN TO-92 (72) | 35      | 35      | 4       | 100        | 35 200-500    | 5        | 10      | 12    | 100      |
| MPS6574   | NPN TO-92 (72) | 35      | 35      | 4       | 100        | 35 100-300    | 5        | 1       | 12    | 100      |
| MPS6575   | NPN TO-92 (72) | 45      | 45      | 4       | 100        | 45 200-500    | 5        | 10      | 12    | 100      |
| MPS6576   | NPN TO-92 (72) | 45      | 45      | 4       | 100        | 45 100-300    | 5        | 1       | 12    | 100      |
| MPS8097   | NPN TO-92 (72) | 40      | 60      | 6       | 30         | 40 250-700    | 5        | 1       | 4     | 200      |
| MPS9410AH | NPN TO-92 (72) | 12      | 20      | 4       | 50         | 10 80-160     | 1        | 50      |       |          |
| MPS9410AI | NPN TO-92 (72) | 12      | 20      | 4       | 50         | 10 110-220    | 1        | 50      |       |          |
| MPS9410AJ | NPN TO-92 (72) | 12      | 20      | 4       | 50         | 10 150-300    | 1        | 50      |       |          |
| MPS9410AK | NPN TO-92 (72) | 12      | 20      | 4       | 50         | 10 200-400    | 1        | 50      |       |          |
| MPS9411AH | NPN TO-92 (72) | 18      | 25      | 4       | 50         | 15 80-160     | 1        | 50      |       |          |

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T-29-01

| DEVICE    | TYPE | PACKAGE    | V <sub>CEO</sub><br>(V) MIN. | V <sub>CB0</sub><br>(V) MIN. | V <sub>EB0</sub><br>(V) MIN. | I <sub>CB0</sub><br>(mA) MAX. | V <sub>CB</sub><br>(V) MIN.-MAX. | HFE @<br>MIN.-MAX. | V <sub>C &amp; IC</sub><br>(V) (mA) | COB<br>(pF) MAX. | FT<br>(MHz) | NF<br>(dB) MAX. |
|-----------|------|------------|------------------------------|------------------------------|------------------------------|-------------------------------|----------------------------------|--------------------|-------------------------------------|------------------|-------------|-----------------|
| MPS9411AI | NPN  | TO-92 (72) | 18                           | 25                           | 4                            | 50                            | 15                               | 110-220            | 1 50                                |                  |             |                 |
| MPS9411AJ | NPN  | TO-92 (72) | 18                           | 25                           | 4                            | 50                            | 15                               | 150-300            | 1 50                                |                  |             |                 |
| MPS9411AK | NPN  | TO-92 (72) | 18                           | 25                           | 4                            | 50                            | 15                               | 200-400            | 1 50                                |                  |             |                 |
| MPS9412AH | NPN  | TO-92 (72) | 25                           | 25                           | 4                            | 50                            | 15                               | 80-160             | 1 50                                |                  |             |                 |
| MPS9412AI | NPN  | TO-92 (72) | 25                           | 25                           | 4                            | 50                            | 15                               | 110-220            | 1 50                                |                  |             |                 |
| MPS9412AJ | NPN  | TO-92 (72) | 25                           | 25                           | 4                            | 50                            | 15                               | 150-300            | 1 50                                |                  |             |                 |
| MPS9412AK | NPN  | TO-92 (72) | 25                           | 25                           | 4                            | 50                            | 15                               | 200-400            | 1 50                                |                  |             |                 |
| MPS9416AS | NPN  | TO-92 (72) | 18                           | 18                           | 4                            | 50                            | 15                               | 50-150             | 1 350                               |                  |             |                 |
| MPS9416AT | NPN  | TO-92 (72) | 18                           | 18                           | 4                            | 50                            | 15                               | 100-300            | 1 350                               |                  |             |                 |
| MPS9417AS | NPN  | TO-92 (72) | 25                           | 25                           | 4                            | 50                            | 15                               | 50-150             | 1 350                               |                  |             |                 |
| MPS9417AT | NPN  | TO-92 (72) | 25                           | 25                           | 4                            | 50                            | 15                               | 100-300            | 1 350                               |                  |             |                 |
| MPS9426A  | NPN  | TO-92 (72) | 18                           | 25                           | 4                            | 100                           | 15                               | 25- 50             | 6 1.5                               |                  |             | 400             |
| MPS9426B  | NPN  | TO-92 (72) | 18                           | 25                           | 4                            | 100                           | 15                               | 45- 90             | 6 1.5                               |                  |             | 400             |
| MPS9426C  | NPN  | TO-92 (72) | 18                           | 25                           | 4                            | 100                           | 15                               | 80-160             | 6 1.5                               |                  |             | 400             |
| MPS9427A  | NPN  | TO-92 (72) | 18                           | 25                           | 4                            | 100                           | 15                               | 25- 50             | 6 1.5                               |                  |             | 550             |
| MPS9427B  | NPN  | TO-92 (72) | 18                           | 25                           | 4                            | 100                           | 15                               | 45- 90             | 6 1.5                               |                  |             | 550             |
| MPS9427C  | NPN  | TO-92 (72) | 18                           | 25                           | 4                            | 100                           | 15                               | 80-160             | 6 1.5                               |                  |             | 550             |
| MPS9433G  | NPN  | TO-92 (72) | 30                           | 40                           | 4                            | 50                            | 15                               | 60-120             | 1 50                                |                  |             |                 |
| MPS9433H  | NPN  | TO-92 (72) | 30                           | 40                           | 4                            | 50                            | 15                               | 60-160             | 1 50                                |                  |             |                 |
| MPS9433I  | NPN  | TO-92 (72) | 30                           | 40                           | 4                            | 50                            | 15                               | 110-220            | 1 50                                |                  |             |                 |
| MPS9433J  | NPN  | TO-92 (72) | 30                           | 40                           | 4                            | 50                            | 15                               | 150-300            | 1 50                                |                  |             |                 |
| MPS9433S  | NPN  | TO-92 (72) | 30                           | 40                           | 4                            | 50                            | 15                               | 60-180             | 1 50                                |                  |             |                 |
| MPS9433T  | NPN  | TO-92 (72) | 30                           | 40                           | 4                            | 50                            | 15                               | 100-300            | 1 50                                |                  |             |                 |
| MPS9434F  | NPN  | TO-92 (72) | 50                           | 50                           | 4                            | 100                           | 40                               | 45- 90             | 1 50                                |                  |             |                 |
| MPS9434G  | NPN  | TO-92 (72) | 50                           | 50                           | 4                            | 100                           | 40                               | 60-120             | 1 50                                |                  |             |                 |
| MPS9434H  | NPN  | TO-92 (72) | 50                           | 50                           | 4                            | 100                           | 40                               | 80-160             | 1 50                                |                  |             |                 |
| MPS9434I  | NPN  | TO-92 (72) | 50                           | 50                           | 4                            | 100                           | 40                               | 110-220            | 1 50                                |                  |             |                 |
| MPS9434J  | NPN  | TO-92 (72) | 50                           | 50                           | 4                            | 100                           | 40                               | 150-300            | 1 50                                |                  |             |                 |
| MPS9434K  | NPN  | TO-92 (72) | 50                           | 50                           | 4                            | 100                           | 40                               | 200-400            | 1 50                                |                  |             |                 |
| MPS9434L  | NPN  | TO-92 (72) | 50                           | 50                           | 4                            | 100                           | 40                               | 300-600            | 1 50                                |                  |             |                 |
| MPS9434S  | NPN  | TO-92 (72) | 50                           | 50                           | 4                            | 100                           | 40                               | 50-150             | 1 50                                |                  |             |                 |
| MPS9434T  | NPN  | TO-92 (72) | 50                           | 50                           | 4                            | 100                           | 40                               | 100-300            | 1 50                                |                  |             |                 |
| MPS9434U  | NPN  | TO-92 (72) | 50                           | 50                           | 4                            | 100                           | 40                               | 200-600            | 1 50                                |                  |             |                 |
| MPS9460AH | PNP  | TO-92 (72) | 12                           | 20                           | 4                            | 50                            | 10                               | 80-160             | 1 50                                |                  |             |                 |
| MPS9460AI | PNP  | TO-92 (72) | 12                           | 20                           | 4                            | 50                            | 10                               | 110-220            | 1 50                                |                  |             |                 |
| MPS9460AJ | PNP  | TO-92 (72) | 12                           | 20                           | 4                            | 50                            | 10                               | 150-300            | 1 50                                |                  |             |                 |
| MPS9460AK | PNP  | TO-92 (72) | 12                           | 20                           | 4                            | 50                            | 10                               | 200-400            | 1 50                                |                  |             |                 |
| MPS9461AH | PNP  | TO-92 (72) | 18                           | 25                           | 4                            | 50                            | 15                               | 80-160             | 1 50                                |                  |             |                 |
| MPS9461AI | PNP  | TO-92 (72) | 18                           | 25                           | 4                            | 50                            | 15                               | 110-220            | 1 50                                |                  |             |                 |
| MPS9461AJ | PNP  | TO-92 (72) | 18                           | 25                           | 4                            | 50                            | 15                               | 150-300            | 1 50                                |                  |             |                 |
| MPS9461AK | PNP  | TO-92 (72) | 18                           | 25                           | 4                            | 50                            | 15                               | 200-400            | 1 50                                |                  |             |                 |
| MPS9462AH | PNP  | TO-92 (72) | 25                           | 25                           | 4                            | 50                            | 15                               | 80-160             | 1 50                                |                  |             |                 |
| MPS9462AI | PNP  | TO-92 (72) | 25                           | 25                           | 4                            | 50                            | 15                               | 110-220            | 1 50                                |                  |             |                 |
| MPS9462AJ | PNP  | TO-92 (72) | 25                           | 25                           | 4                            | 50                            | 15                               | 150-300            | 1 50                                |                  |             |                 |
| MPS9462AK | PNP  | TO-92 (72) | 25                           | 25                           | 4                            | 50                            | 15                               | 200-400            | 1 50                                |                  |             |                 |

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D T-29-01

| DEVICE    | TYPE PACKAGE   | BVCEO<br>(V) MIN | BVCEO<br>(V) MIN | BVEBO<br>(V) MIN | ICBO<br>(mA) MAX | VCB<br>(V) MIN | HFE @<br>(V) MIN | VC & IC<br>(mA) | COB<br>(μ) MAX | FT<br>(MHz) | NF<br>(dB) MAX |
|-----------|----------------|------------------|------------------|------------------|------------------|----------------|------------------|-----------------|----------------|-------------|----------------|
|           |                |                  |                  |                  |                  |                |                  |                 |                |             |                |
| MPS9466AS | PNP TO-92 (72) | 18               | 18               | 4                | 50               | 15             | 50-150           | 1               | 350            |             |                |
| MPS9466AT | PNP TO-92 (72) | 18               | 18               | 4                | 50               | 15             | 100-300          | 1               | 350            |             |                |
| MPS9467AS | PNP TO-92 (72) | 25               | 25               | 4                | 50               | 15             | 50-150           | 1               | 350            |             |                |
| MPS9467AT | PNP TO-92 (72) | 25               | 25               | 4                | 50               | 15             | 100-300          | 1               | 350            |             |                |
| MPS9483G  | PNP TO-92 (72) | 30               | 40               | 4                | 50               | 15             | 60-120           | 1               | 50             |             |                |
| MPS9483H  | PNP TO-92 (72) | 30               | 40               | 4                | 50               | 15             | 80-160           | 1               | 50             |             |                |
| MPS9483I  | PNP TO-92 (72) | 30               | 40               | 4                | 50               | 15             | 110-220          | 1               | 50             |             |                |
| MPS9483J  | PNP TO-92 (72) | 30               | 40               | 4                | 50               | 15             | 150-300          | 1               | 50             |             |                |
| MPS9483S  | PNP TO-92 (72) | 30               | 40               | 4                | 50               | 15             | 60-180           | 1               | 50             |             |                |
| MPS9483T  | PNP TO-92 (72) | 30               | 40               | 4                | 50               | 15             | 100-300          | 1               | 50             |             |                |
| MPS9484F  | PNP TO-92 (72) | 50               | 50               | 4                | 100              | 40             | 45-90            | 1               | 50             |             |                |
| MPS9484G  | PNP TO-92 (72) | 50               | 50               | 4                | 100              | 40             | 60-120           | 1               | 50             |             |                |
| MPS9484H  | PNP TO-92 (72) | 50               | 50               | 4                | 100              | 40             | 80-160           | 1               | 50             |             |                |
| MPS9484I  | PNP TO-92 (72) | 50               | 50               | 4                | 100              | 40             | 110-220          | 1               | 50             |             |                |
| MPS9484J  | PNP TO-92 (72) | 50               | 50               | 4                | 100              | 40             | 150-300          | 1               | 50             |             |                |
| MPS9484K  | PNP TO-92 (72) | 50               | 50               | 4                | 100              | 40             | 200-400          | 1               | 50             |             |                |
| MPS9484L  | PNP TO-92 (72) | 50               | 50               | 4                | 100              | 40             | 300-600          | 1               | 50             |             |                |
| MPS9484S  | PNP TO-92 (72) | 50               | 50               | 4                | 100              | 40             | 50-150           | 1               | 50             |             |                |
| MPS9484T  | PNP TO-92 (72) | 50               | 50               | 4                | 100              | 40             | 100-300          | 1               | 50             |             |                |
| MPS9484U  | PNP TO-92 (72) | 50               | 50               | 4                | 100              | 40             | 200-600          | 1               | 50             |             |                |
| MPS9600D  | NPN TO-92 (72) | 12               | 20               | 4                | 50               | 10             | 25-50            | 5               | 1              | 4           | 50             |
| MPS9600E  | NPN TO-92 (72) | 12               | 20               | 4                | 50               | 10             | 35-70            | 5               | 1              | 4           | 50             |
| MPS9600F  | NPN TO-92 (72) | 12               | 20               | 4                | 50               | 10             | 45-90            | 5               | 1              | 4           | 50             |
| MPS9600G  | NPN TO-92 (72) | 12               | 20               | 4                | 50               | 10             | 60-120           | 5               | 1              | 4           | 50             |
| MPS9600H  | NPN TO-92 (72) | 12               | 20               | 4                | 50               | 10             | 80-160           | 5               | 1              | 4           | 50             |
| MPS9600I  | NPN TO-92 (72) | 12               | 20               | 4                | 50               | 10             | 110-220          | 5               | 1              | 4           | 50             |
| MPS9600J  | NPN TO-92 (72) | 12               | 20               | 4                | 50               | 10             | 150-300          | 5               | 1              | 4           | 50             |
| MPS9600R  | NPN TO-92 (72) | 12               | 20               | 4                | 50               | 10             | 25-75            | 5               | 1              | 4           | 50             |
| MPS9600S  | NPN TO-92 (72) | 12               | 20               | 4                | 50               | 10             | 50-150           | 5               | 1              | 4           | 50             |
| MPS9600T  | NPN TO-92 (72) | 12               | 20               | 4                | 50               | 10             | 100-300          | 5               | 1              | 4           | 50             |
| MPS9601D  | NPN TO-92 (72) | 18               | 25               | 4                | 50               | 15             | 25-50            | 5               | 1              | 4           | 50             |
| MPS9601E  | NPN TO-92 (72) | 18               | 25               | 4                | 50               | 15             | 35-70            | 5               | 1              | 4           | 50             |
| MPS9601F  | NPN TO-92 (72) | 18               | 25               | 4                | 50               | 15             | 45-90            | 5               | 1              | 4           | 50             |
| MPS9601G  | NPN TO-92 (72) | 18               | 25               | 4                | 50               | 15             | 60-120           | 5               | 1              | 4           | 50             |
| MPS9601H  | NPN TO-92 (72) | 18               | 25               | 4                | 50               | 15             | 80-160           | 5               | 1              | 4           | 50             |
| MPS9601I  | NPN TO-92 (72) | 18               | 25               | 4                | 50               | 15             | 110-220          | 5               | 1              | 4           | 50             |
| MPS9601J  | NPN TO-92 (72) | 18               | 25               | 4                | 50               | 15             | 150-300          | 5               | 1              | 4           | 50             |
| MPS9601R  | NPN TO-92 (72) | 18               | 25               | 4                | 50               | 15             | 25-75            | 5               | 1              | 4           | 50             |
| MPS9601S  | NPN TO-92 (72) | 18               | 25               | 4                | 50               | 15             | 50-150           | 5               | 1              | 4           | 50             |
| MPS9601T  | NPN TO-92 (72) | 18               | 25               | 4                | 50               | 15             | 100-300          | 5               | 1              | 4           | 50             |
| MPS9602D  | NPN TO-92 (72) | 30               | 30               | 4                | 50               | 15             | 25-50            | 5               | 1              | 4           | 50             |
| MPS9602E  | NPN TO-92 (72) | 30               | 30               | 4                | 50               | 15             | 35-70            | 5               | 1              | 4           | 50             |
| MPS9602F  | NPN TO-92 (72) | 30               | 30               | 4                | 50               | 15             | 45-90            | 5               | 1              | 4           | 50             |
| MPS9602G  | NPN TO-92 (72) | 30               | 30               | 4                | 50               | 15             | 60-120           | 5               | 1              | 4           | 50             |
| MPS9602H  | NPN TO-92 (72) | 30               | 30               | 4                | 50               | 15             | 80-160           | 5               | 1              | 4           | 50             |

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| DEVICE   | TYPE PACKAGE   | BVCEO   | BVCBO   | BVEBO   | ICBO @ VCB | HFE @ VC & IC | COB               | FT    | NF       |
|----------|----------------|---------|---------|---------|------------|---------------|-------------------|-------|----------|
|          |                | (V) MIN | (V) MIN | (V) MIN | (mA) MAX   | (V) MIN MAX   | (V) (mA) (pI) MAX | (MHz) | (db) MAX |
| MPS9602I | NPN TO-92 (72) | 30      | 30      | 4       | 50         | 15 110-220    | 5 1 4             | 50    |          |
| MPS9602J | NPN TO-92 (72) | 30      | 30      | 4       | 50         | 15 150-300    | 5 1 4             | 50    |          |
| MPS9602R | NPN TO-92 (72) | 30      | 30      | 4       | 50         | 15 25- 75     | 5 1 4             | 50    |          |
| MPS9602S | NPN TO-92 (72) | 30      | 30      | 4       | 50         | 15 50-150     | 5 1 4             | 50    |          |
| MPS9602T | NPN TO-92 (72) | 30      | 30      | 4       | 50         | 15 100-300    | 5 1 4             | 50    |          |
| MPS9604D | NPN TO-92 (72) | 18      | 25      | 4       | 50         | 15 25- 50     | 5 1 3             | 80    |          |
| MPS9604E | NPN TO-92 (72) | 18      | 25      | 4       | 50         | 15 35- 70     | 5 1 3             | 80    |          |
| MPS9604F | NPN TO-92 (72) | 18      | 25      | 4       | 50         | 15 45- 90     | 5 1 3             | 80    |          |
| MPS9604G | NPN TO-92 (72) | 18      | 25      | 4       | 50         | 15 60-120     | 5 1 3             | 80    |          |
| MPS9604H | NPN TO-92 (72) | 18      | 25      | 4       | 50         | 15 80-160     | 5 1 3             | 80    |          |
| MPS9604I | NPN TO-92 (72) | 18      | 25      | 4       | 50         | 15 110-220    | 5 1 3             | 80    |          |
| MPS9604R | NPN TO-92 (72) | 18      | 25      | 4       | 50         | 15 25- 75     | 5 1 3             | 80    |          |
| MPS9604S | NPN TO-92 (72) | 18      | 25      | 4       | 50         | 15 50-150     | 5 1 3             | 80    |          |
| MPS9605D | NPN TO-92 (72) | 30      | 30      | 4       | 50         | 15 25- 50     | 5 1 3             | 80    |          |
| MPS9605E | NPN TO-92 (72) | 30      | 30      | 4       | 50         | 15 35- 70     | 5 1 3             | 80    |          |
| MPS9605F | NPN TO-92 (72) | 30      | 30      | 4       | 50         | 15 45- 90     | 5 1 3             | 80    |          |
| MPS9605G | NPN TO-92 (72) | 30      | 30      | 4       | 50         | 15 60-120     | 5 1 3             | 80    |          |
| MPS9605H | NPN TO-92 (72) | 30      | 30      | 4       | 50         | 15 80-160     | 5 1 3             | 80    |          |
| MPS9605I | NPN TO-92 (72) | 30      | 30      | 4       | 50         | 15 110-220    | 5 1 3             | 80    |          |
| MPS9605R | NPN TO-92 (72) | 30      | 30      | 4       | 50         | 15 25- 75     | 5 1 3             | 80    |          |
| MPS9605S | NPN TO-92 (72) | 30      | 30      | 4       | 50         | 15 50-150     | 5 1 3             | 80    |          |
| MPS9610I | NPN TO-237     | 25      | 30      | 6       | 100        | 15 100-200    | 1 50              |       |          |
| MPS9610J | NPN TO-237     | 25      | 30      | 6       | 100        | 15 150-300    | 1 50              |       |          |
| MPS9625D | NPN TO-92 (72) | 12      | 20      | 4       | 50         | 10 25- 50     | 5 1 1.8           | 250   |          |
| MPS9625E | NPN TO-92 (72) | 12      | 20      | 4       | 50         | 10 35- 70     | 5 1 1.8           | 250   |          |
| MPS9625F | NPN TO-92 (72) | 12      | 20      | 4       | 50         | 10 45- 90     | 5 1 1.8           | 250   |          |
| MPS9625G | NPN TO-92 (72) | 12      | 20      | 4       | 50         | 10 60-120     | 5 1 1.8           | 250   |          |
| MPS9625H | NPN TO-92 (72) | 12      | 20      | 4       | 50         | 10 80-160     | 5 1 1.8           | 250   |          |
| MPS9625I | NPN TO-92 (72) | 12      | 20      | 4       | 50         | 10 110-220    | 5 1 1.8           | 250   |          |
| MPS9625J | NPN TO-92 (72) | 12      | 20      | 4       | 50         | 10 150-300    | 5 1 1.8           | 250   |          |
| MPS9625R | NPN TO-92 (72) | 12      | 20      | 4       | 50         | 10 25- 75     | 5 1 1.8           | 250   |          |
| MPS9625S | NPN TO-92 (72) | 12      | 20      | 4       | 50         | 10 50-150     | 5 1 1.8           | 250   |          |
| MPS9625T | NPN TO-92 (72) | 12      | 20      | 4       | 50         | 10 100-300    | 5 1 1.8           | 250   |          |
| MPS9626D | NPN TO-92 (72) | 30      | 30      | 4       | 50         | 15 25- 50     | 5 1 1.4           | 250   |          |
| MPS9626E | NPN TO-92 (72) | 30      | 30      | 4       | 50         | 15 35- 70     | 5 1 1.4           | 250   |          |
| MPS9626F | NPN TO-92 (72) | 30      | 30      | 4       | 50         | 15 45- 90     | 5 1 1.4           | 250   |          |
| MPS9626G | NPN TO-92 (72) | 30      | 30      | 4       | 50         | 15 60-120     | 5 1 1.4           | 250   |          |
| MPS9626H | NPN TO-92 (72) | 30      | 30      | 4       | 50         | 15 80-160     | 5 1 1.4           | 250   |          |
| MPS9626I | NPN TO-92 (72) | 30      | 30      | 4       | 50         | 15 110-220    | 5 1 1.4           | 250   |          |
| MPS9630F | NPN TO-92 (72) | 12      | 20      | 4       | 50         | 10 45- 90     | 5 1               |       |          |
| MPS9630G | NPN TO-92 (72) | 12      | 20      | 4       | 50         | 10 60-120     | 5 1               |       |          |
| MPS9630H | NPN TO-92 (72) | 12      | 20      | 4       | 50         | 10 80-160     | 5 1               |       |          |
| MPS9630I | NPN TO-92 (72) | 12      | 20      | 4       | 50         | 10 110-220    | 5 1               |       |          |
| MPS9630J | NPN TO-92 (72) | 12      | 20      | 4       | 50         | 10 150-300    | 5 1               |       |          |
| MPS9630K | NPN TO-92 (72) | 12      | 20      | 4       | 50         | 10 200-400    | 5 1               |       |          |

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T-29-01

| DEVICE    | TYPE | PACKAGE    | BVCEO   | BVCBO   | BVEBO   | ICBO     | @ VCB   | HFE @    | VC & IC | COB           | FT    | NF       |
|-----------|------|------------|---------|---------|---------|----------|---------|----------|---------|---------------|-------|----------|
|           |      |            | (V) MIN | (V) MIN | (V) MIN | (mA) MAX | (V) MIN | MAX      | (V) MIN | (mA) (pI) MAX | (MHz) | (db) MAX |
| MPS9630L  | NPN  | TO-92 (72) | 12      | 20      | 4       | 50       | 10      | 300-600  | 5       | 1             |       |          |
| MPS9630S  | NPN  | TO-92 (72) | 12      | 20      | 4       | 50       | 10      | 50-150   | 5       | 1             |       |          |
| MPS9630T  | NPN  | TO-92 (72) | 12      | 20      | 4       | 50       | 10      | 100-300  | 5       | 1             |       |          |
| MPS9630U  | NPN  | TO-92 (72) | 12      | 20      | 4       | 50       | 10      | 200-600  | 5       | 1             |       |          |
| MPS9631F  | NPN  | TO-92 (72) | 18      | 25      | 4       | 50       | 15      | 45-90    | 5       | 1             |       |          |
| MPS9631G  | NPN  | TO-92 (72) | 18      | 25      | 4       | 50       | 15      | 60-120   | 5       | 1             |       |          |
| MPS9631H  | NPN  | TO-92 (72) | 18      | 25      | 4       | 50       | 15      | 80-160   | 5       | 1             |       |          |
| MPS9631I  | NPN  | TO-92 (72) | 18      | 25      | 4       | 50       | 15      | 110-220  | 5       | 1             |       |          |
| MPS9631J  | NPN  | TO-92 (72) | 18      | 25      | 4       | 50       | 15      | 150-300  | 5       | 1             |       |          |
| MPS9631K  | NPN  | TO-92 (72) | 18      | 25      | 4       | 50       | 15      | 200-400  | 5       | 1             |       |          |
| MPS9631L  | NPN  | TO-92 (72) | 18      | 25      | 4       | 50       | 15      | 300-600  | 5       | 1             |       |          |
| MPS9631S  | NPN  | TO-92 (72) | 18      | 25      | 4       | 50       | 15      | 50-150   | 5       | 1             |       |          |
| MPS9631T  | NPN  | TO-92 (72) | 18      | 25      | 4       | 50       | 15      | 100-300  | 5       | 1             |       |          |
| MPS9631U  | NPN  | TO-92 (72) | 18      | 25      | 4       | 50       | 15      | 200-600  | 5       | 1             |       |          |
| MPS9632F  | NPN  | TO-92 (72) | 30      | 30      | 4       | 50       | 15      | 45-90    | 5       | 1             |       |          |
| MPS9632G  | NPN  | TO-92 (72) | 30      | 30      | 4       | 50       | 15      | 60-120   | 5       | 1             |       |          |
| MPS9632H  | NPN  | TO-92 (72) | 30      | 30      | 4       | 50       | 15      | 80-160   | 5       | 1             |       |          |
| MPS9632I  | NPN  | TO-92 (72) | 30      | 30      | 4       | 50       | 15      | 110-220  | 5       | 1             |       |          |
| MPS9632J  | NPN  | TO-92 (72) | 30      | 30      | 4       | 50       | 15      | 150-300  | 5       | 1             |       |          |
| MPS9632K  | NPN  | TO-92 (72) | 30      | 30      | 4       | 50       | 15      | 200-400  | 5       | 1             |       |          |
| MPS9632L  | NPN  | TO-92 (72) | 30      | 30      | 4       | 50       | 15      | 300-600  | 5       | 1             |       |          |
| MPS9632S  | NPN  | TO-92 (72) | 30      | 30      | 4       | 50       | 15      | 50-150   | 5       | 1             |       |          |
| MPS9632T  | NPN  | TO-92 (72) | 30      | 30      | 4       | 50       | 15      | 100-300  | 5       | 1             |       |          |
| MPS9632U  | NPN  | TO-92 (72) | 30      | 30      | 4       | 50       | 15      | 200-600  | 5       | 1             |       |          |
| MPS9633A  | NPN  | TO-92 (72) | 30      | 30      | 5       | 100      | 18      | 250-500  | 5       | 2             | 3.5   | 150 2.5  |
| MPS9633B  | NPN  | TO-92 (72) | 30      | 30      | 5       | 100      | 18      | 350-700  | 5       | 2             | 3.5   | 150 2.5  |
| MPS9633C  | NPN  | TO-92 (72) | 30      | 30      | 5       | 100      | 18      | 600-1200 | 5       | 2             | 3.5   | 150 2.5  |
| MPS9633D  | NPN  | TO-92 (72) | 30      | 30      | 5       | 100      | 18      | 900-1800 | 5       | 2             | 3.5   | 150 2.5  |
| MPS9634A  | NPN  | TO-92 (72) | 30      | 30      | 5       | 100      | 18      | 250-500  | 5       | 2             | 3.5   | 150 6    |
| MPS9634B  | NPN  | TO-92 (72) | 30      | 30      | 5       | 100      | 18      | 350-700  | 5       | 2             | 3.5   | 150 6    |
| MPS9634C  | NPN  | TO-92 (72) | 30      | 30      | 5       | 100      | 18      | 600-1200 | 5       | 2             | 3.5   | 150 6    |
| MPS9634D  | NPN  | TO-92 (72) | 30      | 30      | 5       | 100      | 18      | 900-1800 | 5       | 2             | 3.5   | 150 6    |
| MPS9635B  | NPN  | TO-92 (72) | 50      | 50      | 5       | 50       | 50      | 350-700  | 5       | 2             | 3     | 150 1    |
| MPS9635C  | NPN  | TO-92 (72) | 50      | 50      | 5       | 50       | 50      | 600-1200 | 5       | 2             | 3     | 150 1    |
| MPS9660IP | PNP  | TO-237     | 25      | 30      | 6       | 100      | 15      | 100-200  | 1       | 50            |       |          |
| MPS9660JP | PNP  | TO-237     | 25      | 30      | 6       | 100      | 15      | 150-300  | 1       | 50            |       |          |
| MPS9680F  | PNP  | TO-92 (72) | 12      | 20      | 4       | 50       | 10      | 45-90    | 5       | 1             |       |          |
| MPS9680G  | PNP  | TO-92 (72) | 12      | 20      | 4       | 50       | 10      | 60-120   | 5       | 1             |       |          |
| MPS9680H  | PNP  | TO-92 (72) | 12      | 20      | 4       | 50       | 10      | 80-160   | 5       | 1             |       |          |
| MPS9680I  | PNP  | TO-92 (72) | 12      | 20      | 4       | 50       | 10      | 110-220  | 5       | 1             |       |          |
| MPS9680J  | PNP  | TO-92 (72) | 12      | 20      | 4       | 50       | 10      | 150-300  | 5       | 1             |       |          |
| MPS9680K  | PNP  | TO-92 (72) | 12      | 20      | 4       | 50       | 10      | 200-400  | 5       | 1             |       |          |
| MPS9680L  | PNP  | TO-92 (72) | 12      | 20      | 4       | 50       | 10      | 300-600  | 5       | 1             |       |          |
| MPS9680S  | PNP  | TO-92 (72) | 12      | 20      | 4       | 50       | 10      | 50-150   | 5       | 1             |       |          |
| MPS9680T  | PNP  | TO-92 (72) | 12      | 20      | 4       | 50       | 10      | 100-300  | 5       | 1             |       |          |

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| DEVICE   | TYPE PACKAGE   | BVCEO   | BVCBO   | BVEBO   | ICBO @ VCB | HFE @ VC & IC | COB               | FT    | NF       |
|----------|----------------|---------|---------|---------|------------|---------------|-------------------|-------|----------|
|          |                | (V) MIN | (V) MIN | (V) MIN | (mA) MAX   | (V) MIN -MAX  | (V) (mA) (μI) MAX | (MHz) | (db) MAX |
| MPS9680U | PNP TO-92 (72) | 12      | 20      | 4       | 50         | 10 200- 600   | 5                 | 1     |          |
| MPS9681F | PNP TO-92 (72) | 18      | 25      | 4       | 50         | 15 45- 90     | 5                 | 1     |          |
| MPS9681G | PNP TO-92 (72) | 18      | 25      | 4       | 50         | 15 60- 120    | 5                 | 1     |          |
| MPS9681H | PNP TO-92 (72) | 18      | 25      | 4       | 50         | 15 80- 160    | 5                 | 1     |          |
| MPS9681I | PNP TO-92 (72) | 18      | 25      | 4       | 50         | 15 110- 220   | 5                 | 1     |          |
| MPS9681J | PNP TO-92 (72) | 18      | 25      | 4       | 50         | 15 150-300    | 5                 | 1     |          |
| MPS9681K | PNP TO-92 (72) | 18      | 25      | 4       | 50         | 15 200- 400   | 5                 | 1     |          |
| MPS9681L | PNP TO-92 (72) | 18      | 25      | 4       | 50         | 15 300- 600   | 5                 | 1     |          |
| MPS9681S | PNP TO-92 (72) | 18      | 25      | 4       | 50         | 15 50- 150    | 5                 | 1     |          |
| MPS9681T | PNP TO-92 (72) | 18      | 25      | 4       | 50         | 15 100- 300   | 5                 | 1     |          |
| MPS9681U | PNP TO-92 (72) | 18      | 25      | 4       | 50         | 15 200- 600   | 5                 | 1     |          |
| MPS9682F | PNP TO-92 (72) | 30      | 30      | 4       | 50         | 15 45- 90     | 5                 | 1     |          |
| MPS9682G | PNP TO-92 (72) | 30      | 30      | 4       | 50         | 15 60- 120    | 5                 | 1     |          |
| MPS9682H | PNP TO-92 (72) | 30      | 30      | 4       | 50         | 15 80- 160    | 5                 | 1     |          |
| MPS9682I | PNP TO-92 (72) | 30      | 30      | 4       | 50         | 15 110- 220   | 5                 | 1     |          |
| MPS9682J | PNP TO-92 (72) | 30      | 30      | 4       | 50         | 15 150- 300   | 5                 | 1     |          |
| MPS9682K | PNP TO-92 (72) | 30      | 30      | 4       | 50         | 15 200- 400   | 5                 | 1     |          |
| MPS9682L | PNP TO-92 (72) | 30      | 30      | 4       | 50         | 15 300- 600   | 5                 | 1     |          |
| MPS9682S | PNP TO-92 (72) | 30      | 30      | 4       | 50         | 15 50- 150    | 5                 | 1     |          |
| MPS9682T | PNP TO-92 (72) | 30      | 30      | 4       | 50         | 15 100- 300   | 5                 | 1     |          |
| MPS9682U | PNP TO-92 (72) | 30      | 30      | 4       | 50         | 15 200- 600   | 5                 | 1     |          |
| MPSA05   | NPN TO-92 (72) | 60      | 60      | 4       | 100        | 60 50-        | 1 100             |       | 100      |
| MPSA06   | NPN TO-92 (72) | 80      | 80      | 4       | 100        | 80 50-        | 1 100             |       | 100      |
| MPSA09   | NPN TO-92 (72) | 50      | 50      | 3       | 100        | 25 100- 600   | 5 1               | 5     | 30 2     |
| MPSA10   | NPN TO-92 (72) | 40      | 40      | 4       | 100        | 30 40- 400    | 10 5              | 4     | 50       |
| MPSA12   | NPN TO-92 (72) | 20*     | 20      | 10      | 100        | 15 20K-       | 5 10              | 8     | 125      |
| MPSA13   | NPN TO-92 (72) | 30*     | 30      | 10      | 100        | 30 5K-        | 5 10              | 8     | 125      |
| MPSA14   | NPN TO-92 (72) | 30*     | 30      | 10      | 100        | 30 10K-       | 5 10              | 8     | 125      |
| MPSA18   | NPN TO-92 (72) | 45      | 45      | 6.5     | 50         | 30 500-1500   | 5 10              | 3     | 100 1.5  |
| MPSA20   | NPN TO-92 (72) | 40      | 40      | 4       | 100        | 30 40- 400    | 10 5              | 4     | 120      |
| MPSA42   | NPN TO-92 (72) | 300     | 300     | 6       | 100        | 200 40-       | 10 30             | 3     | 50       |
| MPSA43   | NPN TO-92 (72) | 200     | 200     | 6       | 100        | 160 50- 200   | 10 30             | 4     | 50       |
| MPSA55   | PNP TO-92 (72) | 60      | 60      | 4       | 100        | 60 50-        | 1 100             |       | 100      |
| MPSA56   | PNP TO-92 (72) | 80      | 80      | 4       | 100        | 80 50-        | 1 100             |       | 100      |
| MPSA62   | PNP TO-92 (72) | 20*     | 20      | 8       | 100        | 20 20K-       | 5 10              |       | 100      |
| MPSA63   | PNP TO-92 (72) | 30*     | 30      | 8       | 100        | 30 5K-        | 5 10              |       | 100      |
| MPSA64   | PNP TO-92 (72) | 30*     | 30      | 8       | 100        | 30 10K-       | 5 10              |       | 100      |
| MPSA65   | PNP TO-92 (72) | 30*     | 30      | 8       | 100        | 30 50K-       | 5 10              |       | 100      |
| MPSA66   | PNP TO-92 (72) | 30*     | 30      | 8       | 100        | 30 75K-       | 5 10              |       | 100      |
| MPSA70   | PNP TO-92 (72) | 40      | 40      | 4       | 100        | 30 40- 400    | 10 5              | 4     | 125      |
| MPSA92   | PNP TO-92 (72) | 300     | 300     | 5       | 250        | 200 25-       | 10 30             | 6     | 50       |
| MPSA93   | PNP TO-92 (72) | 200     | 200     | 5       | 250        | 160 30- 150   | 10 30             | 8     | 50       |
| MPSL01   | NPN TO-92 (72) | 120     | 140     | 5       | 1μA        | 75 50- 300    | 5 10              | 8     | 60       |
| MPSL51   | PNP TO-92 (72) | 100     | 100     | 4       | 1μA        | 50 40- 250    | 5 50              | 8     | 60       |

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| DEVICE | TYPE | PACKAGE    | BVCEO   | BVCBO   | BVEBO   | ICBO @ VCB | HFE @ VC & IC | COB               | FT    | NF       |
|--------|------|------------|---------|---------|---------|------------|---------------|-------------------|-------|----------|
|        |      |            | (V) MIN | (V) MIN | (V) MIN | (mA) MAX   | (V) MIN - MAX | (V) (mA) (pI) MAX | (MHz) | (db) MAX |
| PN656  | NPN  | TO-92 (72) | 60      | 60      | 8       | 500        | 30 30- 90     | 10 200            | 13    | 70       |
| PN697  | NPN  | TO-92 (72) | 40      | 60      | 5       | 500        | 30 40-120     | 10 150            | 17    | 80       |
| PN699  | NPN  | TO-92 (72) | 80      | 120     | 5       | 500        | 60 40-120     | 10 150            | 12    | 80       |
| PN703  | NPN  | TO-92 (72) | 25      | 25      | 5       | 500        | 10 40-100     | 5 10              | 6     | 70       |
| PN706  | NPN  | TO-92 (72) | 20      | 25      | 3       | 50         | 15 20-        | 1 10              | 6     | 400      |
| PN708  | NPN  | TO-92 (72) | 15      | 40      | 5       | 25         | 20 30-120     | 1 10              | 6     | 300      |
| PN709  | NPN  | TO-92 (72) | 6       | 15      | 4       | 50         | 5 20-120      | 5 10              | 3     | 800      |
| PN718  | NPN  | TO-92 (72) | 40      | 60      | 5       | 500        | 30 40-120     | 10 150            | 17    | 80       |
| PN720  | NPN  | TO-92 (72) | 80      | 120     | 5       | 500        | 60 40-120     | 10 150            | 12    | 80       |
| PN722  | PNP  | TO-92 (72) | 35      | 50      | 5       | 500        | 30 30- 90     | 10 150            | 45    | 60       |
| PN727  | PNP  | TO-92 (72) | 20      | 25      | 5       | 500        | 20 30-120     | 1 10              | 5     | 140      |
| PN731  | NPN  | TO-92 (72) | 40      | 60      | 5       | 500        | 30 40-120     | 10 150            | 35    | 50       |
| PN743  | NPN  | TO-92 (72) | 12      | 20      | 5       | 500        | 20 20- 60     | .35 10            | 5     | 900      |
| PN744  | NPN  | TO-92 (72) | 12      | 20      | 5       | 500        | 20 40-120     | .35 10            | 5     | 900      |
| PN753  | NPN  | TO-92 (72) | 15      | 25      | 5       | 500        | 15 40-120     | 1 10              | 5     | 200      |
| PN760  | NPN  | TO-92 (72) | 45      | 45      | 8       | 200        | 30 76-300     | 5 1               | 8     | 50       |
| PN760A | NPN  | TO-92 (72) | 60      | 60      | 8       | 100        | 30 76-333     | 5 1               | 8     | 50       |
| PN783  | NPN  | TO-92 (72) | 20      | 40      | 5       | 250        | 25 20- 60     | 1 10              | 4     | 200      |
| PN784  | NPN  | TO-92 (72) | 15      | 30      | 5       | 250        | 20 20-        | 1 10              | 4     | 200      |
| PN834  | NPN  | TO-92 (72) | 20      | 40      | 5       | 500        | 20 25-        | 1 10              | 4     | 350      |
| PN835  | NPN  | TO-92 (72) | 20      | 25      | 3       | 500        | 20 20-        | 1 10              | 4     | 300      |
| PN869  | PNP  | TO-92 (72) | 18      | 25      | 5       | 10         | 15 20-120     | 5 10              | 9     | 100      |
| PN869A | PNP  | TO-92 (72) | 18      | 25      | 5       | 10         | 15 40-120     | 5 10              | 6     | 400      |
| PN870  | NPN  | TO-92 (72) | 60      | 100     | 7       | 10         | 75 40-120     | 10 150            | 15    | 50       |
| PN871  | NPN  | TO-92 (72) | 60      | 100     | 7       | 10         | 75 100-300    | 10 150            | 15    | 60       |
| PN910  | NPN  | TO-92 (72) | 60      | 100     | 7       | 25         | 75 75-        | 10 10             | 15    | 60       |
| PN911  | NPN  | TO-92 (72) | 60      | 100     | 7       | 25         | 75 35-        | 10 10             | 15    | 50       |
| PN912  | NPN  | TO-92 (72) | 60      | 100     | 7       | 25         | 75 15-        | 10 10             | 15    | 40       |
| PN914  | NPN  | TO-92 (72) | 15      | 40      | 5       | 25         | 20 30-120     | 1 10              | 6     | 300      |
| PN915  | NPN  | TO-92 (72) | 50      | 70      | 5       | 10         | 60 50-200     | 5 10              | 4     | 250      |
| PN916  | NPN  | TO-92 (72) | 25      | 45      | 5       | 10         | 30 50-200     | 1 10              | 6     | 300      |
| PN917  | NPN  | TO-92 (72) | 15      | 30      | 3       | 1          | 15 20-200     | 1 3               | 3     | 500      |
| PN918  | NPN  | TO-92 (72) | 15      | 30      | 3       | 10         | 15 20-200     | 1 3               | 3     | 600      |
| PN929  | NPN  | TO-92 (72) | 45      | 45      | 5       | 10         | 45 40-120     | 5 .01             | 8     | 30       |
| PN929A | NPN  | TO-92 (72) | 45      | 60      | 6       | 2          | 45 40-120     | 5 .01             | 6     | 45       |
| PN930  | NPN  | TO-92 (72) | 45      | 45      | 5       | 10         | 45 100-300    | 5 .01             | 8     | 30       |
| PN930A | NPN  | TO-92 (72) | 45      | 60      | 6       | 2          | 45 100-300    | 5 .01             | 6     | 45       |
| PN956  | NPN  | TO-92 (72) | 35      | 75      | 7       | 10         | 60 100-300    | 10 150            | 25    | 70       |
| PN981  | NPN  | TO-92 (72) | 80      | 80      | 8       | 1          | 30 36-300     | 5 1               | 5     | 50       |
| PN995  | PNP  | TO-92 (72) | 15      | 20      | 4       | 5          | 15 35-140     | 1 20              | 10    | 100      |
| PN995A | PNP  | TO-92 (72) | 15      | 20      | 4       | 5          | 15 35-140     | 1 1               | 6     | 100      |
| PN996  | PNP  | TO-92 (72) | 12      | 15      | 4       | 5          | 10 35-        | 1 20              | 10    | 100      |
| PN1132 | PNP  | TO-92(72)  | 35      | 50      | 5       | 500        | 30 30- 90     | 10 150            | 45    | 60       |
| PN1253 | NPN  | TO-92(72)  | 20      | 30      | 5       | 500        | 20 30- 90     | 10 150            | 45    | 50       |
| PN1420 | NPN  | TO-92(72)  | 30      | 60      | 5       | 500        | 30 100-300    | 10 150            | 35    | 50       |

\* AVAILA:LE ALSO IN TO-237 PACKAGE



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T-29-01

| DEVICE    | TYPE | PACKAGE    | BVCEO   | BVCBO   | BVEBO   | ICBO @   | VCB          | HFE @    | VC & IC  | COB   | FT       | NF |
|-----------|------|------------|---------|---------|---------|----------|--------------|----------|----------|-------|----------|----|
|           |      |            | (V) MIN | (V) MIN | (V) MIN | (mA) MAX | (V) MIN -MAX | (V) (mA) | (pI) MAX | (MHz) | (db) MAX |    |
| * PN1507  | NPN  | TO-92 (72) | 30      | 60      | 5       | 500      | 30           | 100-300  | 10 150   | 35    | 50       |    |
| * PN1566  | NPN  | TO-92 (72) | 60      | 80      | 5       | 500      | 40           | 60-200   | 5 5      | 10    | 60       |    |
| * PN1613  | NPN  | TO-92 (72) | 50      | 75      | 7       | 10       | 60           | 40-120   | 10 150   | 25    | 60       | 12 |
| * PN1708  | NPN  | TO-92 (72) | 12      | 25      | 3       | 25       | 15           | 20-      | 1 10     | 6     | 200      |    |
| * PN1711  | NPN  | TO-92 (72) | 50      | 75      | 7       | 10       | 60           | 100-300  | 10 150   | 25    | 70       | 8  |
| * PN1889  | NPN  | TO-92 (72) | 60      | 100     | 7       | 10       | 75           | 40-120   | 10 150   | 15    | 50       |    |
| * PN1890  | NPN  | TO-92 (72) | 60      | 100     | 7       | 10       | 75           | 100-300  | 10 150   | 15    | 60       |    |
| * PN1893  | NPN  | TO-92 (72) | 80      | 120     | 7       | 10       | 90           | 40-120   | 10 150   | 15    | 50       |    |
| * PN1973  | NPN  | TO-92 (72) | 60      | 100     | 7       | 25       | 75           | 75-      | 10 10    | 15    | 60       |    |
| * PN1974  | NPN  | TO-92 (72) | 60      | 100     | 7       | 25       | 75           | 35-      | 10 10    | 15    | 50       |    |
| * PN1975  | NPN  | TO-92 (72) | 60      | 100     | 7       | 25       | 75           | 15-      | 10 10    | 15    | 40       |    |
| * PN1983  | NPN  | TO-92 (72) | 25      | 50      | 5       | 500      | 30           | 70-210   | 5 1      | 45    | 40       |    |
| * PN1984  | NPN  | TO-92 (72) | 25      | 50      | 5       | 500      | 30           | 35-100   | 5 1      | 45    | 40       |    |
| * PN1985  | NPN  | TO-92 (72) | 25      | 50      | 5       | 500      | 30           | 15- 45   | 5 1      | 45    | 40       |    |
| * PN1986  | NPN  | TO-92 (72) | 25      | 50      | 5       | 500      | 30           | 60-240   | 10 150   | 35    | 40       |    |
| * PN1987  | NPN  | TO-92 (72) | 25      | 50      | 5       | 500      | 30           | 20- 80   | 10 150   | 35    | 40       |    |
| * PN1988  | NPN  | TO-92 (72) | 45      | 100     | 5       | 500      | 50           | 35-120   | 10 30    | 20    | 40       |    |
| * PN1989  | NPN  | TO-92 (72) | 45      | 100     | 5       | 500      | 50           | 20- 60   | 10 30    | 20    | 40       |    |
| * PN1990  | NPN  | TO-92 (72) | 60      | 100     | 3       | 500      | 75           | 20-      | 10 30    | 20    | 40       |    |
| * PN1991  | PNP  | TO-92 (72) | 20      | 30      | 5       | 500      | 10           | 15-      | 10 150   | 45    | 40       |    |
| * PN2008  | NPN  | TO-92 (72) | 110     | 175     | 8       | 50       | 100          | 40-120   | 10 50    | 15    | 40       |    |
| * PN2017  | NPN  | TO-92 (72) | 60      | 60      | 8       | 500      | 30           | 50-200   | 10 200   | 15    | 60       |    |
| * PN2049  | NPN  | TO-92 (72) | 40      | 75      | 7       | 10       | 60           | 100-300  | 10 150   | 25    | 50       |    |
| * PN2102  | NPN  | TO-92 (72) | 65      | 120     | 7       | 2        | 60           | 40-120   | 10 150   | 15    | 60       |    |
| * PN2192  | NPN  | TO-92 (72) | 40      | 60      | 5       | 10       | 30           | 100-300  | 10 150   | 20    | 50       |    |
| * PN2193  | NPN  | TO-92 (72) | 50      | 80      | 8       | 10       | 60           | 40-120   | 10 150   | 20    | 50       |    |
| * PN2195  | NPN  | TO-92 (72) | 25      | 45      | 5       | 100      | 30           | 20-      | 10 150   | 20    | 50       |    |
| PN2205    | NPN  | TO-92 (72) | 12      | 25      | 3       | 25       | 15           | 20-      | 1 10     | 6     | 200      |    |
| PN2206    | NPN  | TO-92 (72) | 12      | 25      | 3       | 25       | 15           | 40-120   | 1 10     | 6     | 200      |    |
| * PN2218  | NPN  | TO-92 (72) | 30      | 60      | 5       | 10       | 50           | 40-120   | 10 150   | 8     | 250      |    |
| * PN2218A | NPN  | TO-92 (72) | 40      | 75      | 6       | 10       | 60           | 40-120   | 10 150   | 8     | 250      |    |
| * PN2219  | NPN  | TO-92 (72) | 30      | 60      | 5       | 10       | 50           | 100-300  | 10 150   | 8     | 250      |    |
| * PN2219A | NPN  | TO-92 (72) | 40      | 75      | 6       | 10       | 60           | 100-300  | 10 150   | 8     | 300      |    |
| PN2221    | NPN  | TO-92 (72) | 30      | 60      | 5       | 10       | 50           | 40-120   | 10 150   | 8     | 250      |    |
| PN2221A   | NPN  | TO-92 (72) | 40      | 75      | 6       | 10       | 60           | 40-120   | 10 150   | 8     | 250      |    |
| PN2222    | NPN  | TO-92 (72) | 30      | 60      | 5       | 10       | 50           | 100-300  | 10 150   | 8     | 250      |    |
| PN2222A   | NPN  | TO-92 (72) | 40      | 75      | 6       | 10       | 60           | 100-300  | 10 150   | 8     | 300      |    |
| * PN2224  | NPN  | TO-92 (72) | 40      | 65      | 5       | 10       | 50           | 40-120   | 1 150    | 8     | 250      |    |
| PN2242    | NPN  | TO-92 (72) | 15      | 40      | 5       | 100      | 20           | 20-120   | 1 10     | 6     | 250      |    |
| * PN2243  | NPN  | TO-92 (72) | 80      | 120     | 7       | 10       | 60           | 40-120   | 10 150   | 15    | 50       |    |
| * PN2270  | NPN  | TO-92 (72) | 45      | 60      | 7       | 50       | 60           | 50-200   | 10 150   | 15    | 100      |    |
| * PN2297  | NPN  | TO-92 (72) | 35      | 80      | 7       | 10       | 60           | 40-120   | 10 150   | 12    | 60       |    |
| * PN2303  | NPN  | TO-92 (72) | 35      | 50      | 5       | 500      | 30           | 75-200   | 10 150   | 45    | 60       |    |
| PN2351    | NPN  | TO-92 (72) | 50      | 80      | 8       | 10       | 60           | 40-120   | 10 150   | 20    | 50       |    |
| PN2352    | NPN  | TO-92 (72) | 40      | 60      | 5       | 10       | 50           | 20- 60   | 10 150   | 20    | 50       |    |

\* AVAILABLE ALSO IN TO-237 PACKAGE

2514096 CRIMSON SEMICONDUCTOR INC

99D 00310

D T-29-01

| DEVICE  | TYPE | PACKAGE    | BVCEO   | BVCBO   | BVEBO   | ICBO @ VCB | HFE @ VC & IC |         | COB     |          | FT    |          | NF       |
|---------|------|------------|---------|---------|---------|------------|---------------|---------|---------|----------|-------|----------|----------|
|         |      |            | (V) MIN | (V) MIN | (V) MIN | (mA) MAX   | (V) MIN       | MAX     | (V) MIN | (mA) MAX | (MHz) | (dB) MAX | (dB) MAX |
| PN2353  | NPN  | TO-92 (72) | 25      | 45      | 5       | 10         | 30            | 20-     | 10      | 150      | 20    | 50       |          |
| PN2368  | NPN  | TO-92 (72) | 15      | 40      | 4.5     | 400        | 20            | 20- 60  | 1       | 10       | 4     | 400      |          |
| PN2369  | NPN  | TO-92 (72) | 15      | 40      | 4.5     | 400        | 20            | 40-120  | 1       | 10       | 4     | 500      |          |
| PN2369A | NPN  | TO-92 (72) | 15      | 40      | 4.5     | 400        | 20            | 40-120  | 3.5     | 10       | 4     | 500      |          |
| PN2405  | NPN  | TO-92 (72) | 90      | 120     | 7       | 10         | 90            | 60-200  | 10      | 150      | 15    | 50       |          |
| PN2475  | NPN  | TO-92 (72) | 6       | 15      | 4       | 50         | 5             | 30-150  | .4      | 20       | 3     | 600      |          |
| PN2476  | NPN  | TO-92 (72) | 20      | 60      | 5       | 200        | 30            | 20-     | .4      | 150      | 10    | 250      |          |
| PN2477  | NPN  | TO-92 (72) | 20      | 60      | 5       | 200        | 30            | 40-     | .4      | 150      | 10    | 250      |          |
| PN2481  | NPN  | TO-92 (72) | 15      | 40      | 5       | 50         | 20            | 40-120  | 1       | 10       | 5     | 300      |          |
| PN2483  | NPN  | TO-92 (72) | 60      | 60      | 6       | 10         | 45            | 40-120  | 5       | .01      | 6     | 60       | 4        |
| PN2484  | NPN  | TO-92 (72) | 60      | 60      | 6       | 10         | 45            | 100-500 | 5       | .01      | 6     | 60       | 3        |
| PN2501  | NPN  | TO-92 (72) | 20      | 40      | 6       | 25         | 20            | 50-150  | 1       | 10       | 4     | 350      |          |
| PN2509  | NPN  | TO-92 (72) | 80      | 125     | 7       | 5          | 100           | 40-     | 5       | 10       | 6     | 45       | 4        |
| PN2510  | NPN  | TO-92 (72) | 65      | 100     | 7       | 5          | 80            | 150-500 | 5       | 10       | 6     | 45       | 4        |
| PN2511  | NPN  | TO-92 (72) | 50      | 80      | 7       | 5          | 60            | 240-750 | 5       | 10       | 6     | 45       | 4        |
| PN2539  | NPN  | TO-92 (72) | 30      | 60      | 5       | 250        | 40            | 50-150  | 10      | 150      | 8     | 250      |          |
| PN2540  | NPN  | TO-92 (72) | 30      | 60      | 5       | 250        | 40            | 100-300 | 10      | 150      | 8     | 250      |          |
| PN2586  | NPN  | TO-92 (72) | 45      | 60      | 6       | 2          | 45            | 120-360 | 5       | .01      | 7     | 45       | 3        |
| PN2604  | PNP  | TO-92 (72) | 45      | 60      | 6       | 10         | 45            | 40-120  | 5       | .01      | 10    | 6        | 3        |
| PN2605  | PNP  | TO-92 (72) | 45      | 60      | 6       | 10         | 45            | 100-300 | 5       | .01      | 10    | 6        | 3        |
| PN2616  | NPN  | TO-92 (72) | 15      | 30      | 3       | 10         | 15            | 20-     | 1       | 3        | 3     | 600      |          |
| PN2645  | NPN  | TO-92 (72) | 40      | 75      | 7       | 10         | 60            | 100-300 | 10      | 150      | 25    | 50       |          |
| PN2696  | PNP  | TO-92 (72) | 25      | 25      | 4       | 25         | 10            | 30-130  | 1       | 50       | 20    | 100      |          |
| PN2710  | NPN  | TO-92 (72) | 20      | 40      | 5       | 30         | 20            | 40-     | 1       | 10       | 4     | 500      |          |
| PN2801  | PNP  | TO-92 (72) | 35      | 50      | 5       | 100        | 25            | 75-225  | 10      | 150      | 25    | 120      |          |
| PN2845  | NPN  | TO-92 (72) | 30      | 60      | 5       | 200        | 30            | 30-120  | 10      | 150      | 8     | 250      |          |
| PN2846  | NPN  | TO-92 (72) | 30      | 60      | 5       | 200        | 30            | 30-120  | 10      | 150      | 8     | 250      |          |
| PN2847  | NPN  | TO-92 (72) | 20      | 60      | 5       | 200        | 30            | 40-140  | 10      | 150      | 8     | 250      |          |
| PN2848  | NPN  | TO-92 (72) | 20      | 60      | 5       | 200        | 30            | 40-140  | 10      | 150      | 8     | 250      |          |
| PN2857  | NPN  | TO-92 (72) | 15      | 30      | 2.5     | 10         | 15            | 30-150  | 1       | 3        | 1     | 1000     |          |
| PN2868  | NPN  | TO-92 (72) | 40      | 60      | 7       | 10         | 30            | 40-120  | 10      | 150      | 20    | 50       |          |
| PN2894  | PNP  | TO-92 (72) | 12      | 12      | 4       | 80         | 6             | 40-150  | .5      | 30       | 6     | 400      |          |
| PN2895  | NPN  | TO-92 (72) | 65      | 120     | 7       | 2          | 60            | 40-120  | 10      | 150      | 15    | 120      |          |
| PN2896  | NPN  | TO-92 (72) | 90      | 140     | 7       | 10         | 90            | 60-200  | 10      | 150      | 15    | 120      |          |
| PN2897  | NPN  | TO-92 (72) | 45      | 60      | 7       | 50         | 60            | 50-200  | 10      | 150      | 15    | 100      |          |
| PN2904  | PNP  | TO-92 (72) | 40      | 60      | 5       | 20         | 50            | 40-120  | 10      | 150      | 8     | 200      |          |
| PN2904A | PNP  | TO-92 (72) | 60      | 60      | 5       | 10         | 50            | 40-120  | 10      | 150      | 8     | 200      |          |
| PN2905  | PNP  | TO-92 (72) | 40      | 60      | 5       | 20         | 50            | 100-300 | 10      | 150      | 8     | 200      |          |
| PN2905A | PNP  | TO-92 (72) | 60      | 60      | 5       | 10         | 50            | 100-300 | 10      | 150      | 8     | 200      |          |
| PN2906  | PNP  | TO-92 (72) | 40      | 60      | 5       | 20         | 50            | 40-120  | 10      | 150      | 8     | 200      |          |
| PN2906A | PNP  | TO-92 (72) | 60      | 60      | 5       | 10         | 50            | 40-120  | 10      | 150      | 8     | 200      |          |
| PN2907  | PNP  | TO-92 (72) | 40      | 60      | 5       | 20         | 50            | 100-300 | 10      | 150      | 8     | 200      |          |
| PN2907A | PNP  | TO-92 (72) | 60      | 60      | 5       | 10         | 50            | 100-300 | 10      | 150      | 8     | 200      |          |
| PN3009  | NPN  | TO-92 (72) | 15      | 40      | 5       | 500        | 20            | 30-120  | .4      | 30       | 5     | 350      |          |
| PN3010  | NPN  | TO-92 (72) | 6       | 15      | 4       | 100        | 5             | 25-125  | .4      | 10       | 3     | 600      |          |

\* AVAILABLE ALSO IN TO-237 PACKAGE

2514096 CRIMSON SEMICONDUCTOR INC

99D 00311 D

T-29-01

| DEVICE  | TYPE | PACKAGE    | BVCEO    | BVCBO   | BVEBO    | ICBO @ VCB | HFE @ VC & IC |         | COB | FT  | NF  |          |
|---------|------|------------|----------|---------|----------|------------|---------------|---------|-----|-----|-----|----------|
|         |      |            | (VI MIN) | (V MIN) | (VI MIN) | (mA) MAX   | (VI MIN)      | MAX     |     |     |     | (VI (mA) |
| PN3011  | NPN  | TO-92 (72) | 12       | 30      | 5        | 400        | 20            | 30-120  | .35 | 10  | 4   | 400      |
| PN3012  | PNP  | TO-92 (72) | 12       | 12      | 4        | 80         | 6             | 30-120  | .5  | 30  | 6   | 400      |
| PN3013  | NPN  | TO-92 (72) | 15       | 40      | 5        | 300        | 20            | 30-120  | .4  | 30  | 5   | 350      |
| PN3014  | NPN  | TO-92 (72) | 20       | 40      | 5        | 300        | 20            | 30-120  | .4  | 30  | 5   | 350      |
| PN3015  | NPN  | TO-92 (72) | 30       | 60      | 5        | 200        | 30            | 30-120  | 10  | 150 | 8   | 250      |
| PN3019  | NPN  | TO-92 (72) | 80       | 140     | 7        | 10         | 90            | 100-300 | 10  | 150 | 12  | 100      |
| PN3020  | NPN  | TO-92 (72) | 80       | 140     | 7        | 10         | 90            | 40-120  | 10  | 150 | 12  | 100      |
| PN3053  | NPN  | TO-92 (72) | 40       | 60      | 5        | 250        | 30            | 50-250  | 10  | 150 | 15  | 100      |
| PN3053A | NPN  | TO-92 (72) | 60       | 80      | 5        | 250        | 60            | 50-250  | 10  | 150 | 15  | 100      |
| PN3056  | NPN  | TO-92 (72) | 60       | 100     | 7        | 10         | 60            | 40-120  | 10  | 150 | 12  | 80       |
| PN3056A | NPN  | TO-92 (72) | 80       | 140     | 7        | 10         | 90            | 40-120  | 10  | 150 | 12  | 80       |
| PN3057  | NPN  | TO-92 (72) | 60       | 100     | 7        | 10         | 60            | 100-300 | 10  | 150 | 12  | 100      |
| PN3057A | NPN  | TO-92 (72) | 80       | 140     | 7        | 10         | 90            | 100-300 | 10  | 150 | 12  | 100      |
| PN3072  | PNP  | TO-92 (72) | 60       | 60      | 4        | 10         | 30            | 30-130  | 1   | 50  | 10  | 130      |
| PN3073  | PNP  | TO-92 (72) | 60       | 60      | 4        | 10         | 30            | 30-130  | 1   | 50  | 10  | 130      |
| PN3107  | NPN  | TO-92 (72) | 60       | 100     | 7        | 10         | 60            | 100-300 | 1   | 150 | 20  | 70       |
| PN3108  | NPN  | TO-92 (72) | 60       | 100     | 7        | 10         | 60            | 40-120  | 1   | 150 | 20  | 60       |
| PN3109  | NPN  | TO-92 (72) | 40       | 80      | 7        | 10         | 60            | 100-300 | 1   | 150 | 25  | 70       |
| PN3110  | NPN  | TO-92 (72) | 40       | 80      | 7        | 10         | 60            | 40-120  | 1   | 150 | 25  | 60       |
| PN3114  | NPN  | TO-92 (72) | 150      | 150     | 5        | 10         | 100           | 30-120  | 10  | 30  | 9   | 40       |
| PN3115  | NPN  | TO-92 (72) | 20       | 60      | 5        | 25         | 50            | 40-120  | 10  | 150 | 8   | 250      |
| PN3116  | NPN  | TO-92 (72) | 20       | 60      | 5        | 25         | 50            | 100-300 | 10  | 150 | 8   | 250      |
| PN3117  | NPN  | TO-92 (72) | 60       | 60      | 6        | 10         | 45            | 250-500 | 5   | .01 | 4.5 | 60       |
| PN3120  | PNP  | TO-92 (72) | 45       | 45      | 4        | 10         | 30            | 30-130  | 1   | 50  | 10  | 130      |
| PN3121  | PNP  | TO-92 (72) | 45       | 45      | 4        | 10         | 30            | 30-130  | 1   | 50  | 10  | 130      |
| PN3133  | PNP  | TO-92 (72) | 35       | 50      | 4        | 50         | 30            | 40-120  | 10  | 150 | 10  | 200      |
| PN3134  | PNP  | TO-92 (72) | 35       | 50      | 4        | 50         | 30            | 100-300 | 10  | 150 | 10  | 200      |
| PN3135  | PNP  | TO-92 (72) | 35       | 50      | 4        | 50         | 30            | 40-120  | 10  | 150 | 10  | 200      |
| PN3136  | PNP  | TO-92 (72) | 35       | 50      | 4        | 50         | 30            | 100-300 | 10  | 150 | 10  | 200      |
| PN3209  | PNP  | TO-92 (72) | 20       | 20      | 4        | 80         | 10            | 30-120  | .5  | 30  | 5   | 400      |
| PN3210  | NPN  | TO-92 (72) | 15       | 40      | 5        | 10         | 20            | 30-120  | 1   | 10  | 6   | 300      |
| PN3211  | NPN  | TO-92 (72) | 15       | 40      | 5        | 25         | 20            | 50-150  | 1   | 10  | 4   | 350      |
| PN3227  | NPN  | TO-92 (72) | 20       | 40      | 6        | 200        | 20            | 100-300 | 1   | 10  | 4   | 500      |
| PN3244  | PNP  | TO-92 (72) | 40       | 40      | 5        | 50         | 30            | 50-150  | 1   | 500 | 25  | 175      |
| PN3245  | PNP  | TO-92 (72) | 50       | 50      | 5        | 50         | 50            | 30-90   | 1   | 500 | 25  | 150      |
| PN3246  | NPN  | TO-92 (72) | 40       | 60      | 8        | 5          | 40            | 200-600 | 5   | .01 | 5   | 60       |
| PN3250  | PNP  | TO-92 (72) | 40       | 50      | 5        | 20         | 40            | 50-150  | 1   | 10  | 6   | 250      |
| PN3250A | PNP  | TO-92 (72) | 60       | 60      | 5        | 20         | 40            | 50-150  | 1   | 10  | 6   | 250      |
| PN3251  | PNP  | TO-92 (72) | 40       | 50      | 5        | 20         | 40            | 100-300 | 1   | 10  | 6   | 300      |
| PN3251A | PNP  | TO-92 (72) | 60       | 60      | 5        | 20         | 40            | 100-300 | 1   | 10  | 6   | 300      |
| PN3252  | NPN  | TO-92 (72) | 30       | 60      | 5        | 500        | 40            | 30-90   | 1   | 500 | 12  | 200      |
| PN3253  | NPN  | TO-92 (72) | 40       | 75      | 5        | 500        | 60            | 25-75   | 1   | 375 | 12  | 175      |
| PN3299  | NPN  | TO-92 (72) | 30       | 60      | 5        | 10         | 50            | 40-120  | 10  | 150 | 8   | 250      |
| PN3300  | NPN  | TO-92 (72) | 30       | 60      | 5        | 10         | 50            | 100-300 | 10  | 150 | 8   | 250      |
| PN3301  | NPN  | TO-92 (72) | 30       | 60      | 5        | 10         | 50            | 40-120  | 10  | 150 | 8   | 250      |

\* AVAILABLE ALSO IN TO-237 PACKAGE

## 2514096 CRIMSON SEMICONDUCTOR INC

99D 00312 D

T-29-01

| DEVICE   | TYPE | PACKAGE    | BVCEO   | BVCBO   | BVEBO   | ICBO @ VCB | HFE @ VC & IC |         | COB | FT  | NF  |               |
|----------|------|------------|---------|---------|---------|------------|---------------|---------|-----|-----|-----|---------------|
|          |      |            | (V) MIN | (V) MIN | (V) MIN | (mA) MAX   | (V) MIN       | (V) MAX |     |     |     | (mA) (pI) MAX |
| PN3302   | NPN  | TO-92 (72) | 30      | 60      | 5       | 10         | 50            | 100-300 | 10  | 150 | 8   | 250           |
| * PN3326 | NPN  | TO-92 (72) | 45      | 60      | 5       | 10         | 50            | 40-120  | 10  | 150 | 8   | 250           |
| * PN3439 | NPN  | TO-92 (72) | 350     | 450     | 7       | 20         | 360           | 40-160  | 10  | 20  | 10  | 15            |
| * PN3440 | NPN  | TO-92 (72) | 250     | 300     | 7       | 20         | 250           | 40-160  | 10  | 20  | 10  | 15            |
| * PN3444 | NPN  | TO-92 (72) | 50      | 80      | 5       | 500        | 60            | 20- 60  | 1   | 500 | 12  | 150           |
| PN3457   | PNP  | TO-92 (72) | 6       | 6       | 4       | 10         | 3             | 30-120  | 3   | 10  | 5.5 | 500           |
| * PN3467 | PNP  | TO-92 (72) | 40      | 40      | 5       | 100        | 30            | 40-120  | 1   | 500 | 25  | 175           |
| * PN3468 | PNP  | TO-92 (72) | 50      | 50      | 5       | 100        | 30            | 25- 75  | 1   | 500 | 25  | 150           |
| PN3478   | NPN  | TO-92 (72) | 15      | 30      | 2       | 20         | 1             | 25-120  | 8   | 2   | 1   | 750           |
| * PN3494 | PNP  | TO-92 (72) | 80      | 80      | 4.5     | 100        | 50            | 40-     | 10  | 50  | 7   | 200           |
| * PN3495 | PNP  | TO-92 (72) | 120     | 120     | 4.5     | 100        | 90            | 40-     | 10  | 50  | 6   | 150           |
| * PN3496 | PNP  | TO-92 (72) | 80      | 80      | 4.5     | 100        | 50            | 40-     | 10  | 50  | 7   | 200           |
| PN3497   | PNP  | TO-92 (72) | 120     | 120     | 4.5     | 100        | 90            | 40-     | 10  | 50  | 6   | 150           |
| * PN3498 | NPN  | TO-92 (72) | 100     | 100     | 6       | 50         | 50            | 40-120  | 10  | 150 | 10  | 150           |
| * PN3499 | NPN  | TO-92 (72) | 100     | 100     | 6       | 50         | 50            | 100-300 | 10  | 150 | 10  | 150           |
| * PN3500 | NPN  | TO-92 (72) | 150     | 150     | 6       | 50         | 75            | 40-120  | 10  | 150 | 8   | 150           |
| * PN3501 | NPN  | TO-92 (72) | 150     | 150     | 6       | 50         | 75            | 100-300 | 10  | 150 | 8   | 150           |
| * PN3502 | PNP  | TO-92 (72) | 45      | 45      | 5       | 10         | 30            | 100-300 | 10  | 150 | 8   | 200           |
| * PN3503 | PNP  | TO-92 (72) | 60      | 60      | 5       | 10         | 30            | 100-300 | 10  | 150 | 8   | 200           |
| PN3504   | PNP  | TO-92 (72) | 45      | 45      | 5       | 10         | 30            | 100-300 | 10  | 150 | 8   | 200           |
| PN3505   | PNP  | TO-92 (72) | 60      | 60      | 5       | 10         | 30            | 100-300 | 10  | 150 | 8   | 200           |
| PN3547   | PNP  | TO-92 (72) | 60      | 60      | 6       | 10         | 45            | 100-500 | 5   | 1   | 10  |               |
| PN3548   | PNP  | TO-92 (72) | 45      | 60      | 6       | 10         | 45            | 150-600 | 5   | 1   | 10  |               |
| PN3549   | PNP  | TO-92 (72) | 60      | 60      | 6       | 10         | 45            | 200-800 | 5   | 1   | 10  |               |
| PN3550   | PNP  | TO-92 (72) | 45      | 60      | 6       | 10         | 45            | 300-800 | 5   | 1   | 10  |               |
| PN3563   | NPN  | TO-92 (72) | 15      | 30      | 2       | 50         | 15            | 20-200  | 10  | 8   | 1.7 | 600           |
| PN3564   | NPN  | TO-92 (72) | 15      | 30      | 4       | 50         | 15            | 20-500  | 10  | 15  | 3.5 | 400           |
| PN3565   | NPN  | TO-92 (72) | 25      | 30      | 6       | 50         | 25            | 150-600 | 10  | 1   | 4   | 40            |
| PN3566   | NPN  | TO-92 (72) | 30      | 40      | 5       | 50         | 20            | 150-600 | 10  | 10  | 25  | 40            |
| PN3567   | NPN  | TO-92 (72) | 40      | 80      | 5       | 50         | 40            | 40-120  | 1   | 150 | 20  | 60            |
| PN3568   | NPN  | TO-92 (72) | 60      | 80      | 5       | 50         | 40            | 40-120  | 1   | 150 | 20  | 60            |
| PN3569   | NPN  | TO-92 (72) | 40      | 80      | 5       | 50         | 40            | 100-300 | 1   | 150 | 20  | 60            |
| PN3576   | PNP  | TO-92 (72) | 15      | 20      | 5       | 10         | 15            | 40-120  | .5  | 10  | 4.5 | 400           |
| PN3600   | NPN  | TO-92 (72) | 15      | 30      | 3       | 10         | 15            | 20-150  | 1   | 3   | 1   | 850           |
| * PN3634 | PNP  | TO-92 (72) | 140     | 140     | 5       | 100        | 100           | 50-150  | 10  | 50  | 10  | 150           |
| * PN3635 | PNP  | TO-92 (72) | 140     | 140     | 5       | 100        | 100           | 100-300 | 10  | 50  | 10  | 200           |
| * PN3636 | PNP  | TO-92 (72) | 175     | 175     | 5       | 100        | 100           | 50-150  | 10  | 50  | 10  | 150           |
| * PN3637 | PNP  | TO-92 (72) | 175     | 175     | 5       | 100        | 100           | 100-300 | 10  | 50  | 10  | 200           |
| PN3638   | PNP  | TO-92 (72) | 25      | 25      | 4       | 35         | 15            | 30-     | 1   | 50  | 20  | 100           |
| PN3638A  | PNP  | TO-92 (72) | 25      | 25      | 4       | 35         | 15            | 100-    | 1   | 50  | 10  | 150           |
| PN3639   | PNP  | TO-92 (72) | 6       | 6       | 4       | 10         | 3             | 30-120  | .3  | 10  | 3.5 | 300           |
| PN3640   | PNP  | TO-92 (72) | 12      | 12      | 4       | 10         | 6             | 30-120  | .3  | 10  | 3.5 | 300           |
| PN3641   | NPN  | TO-92 (72) | 30      | 60      | 5       | 50         | 50            | 40-120  | 10  | 150 | 8   | 250           |
| PN3642   | NPN  | TO-92 (72) | 45      | 60      | 5       | 50         | 50            | 40-120  | 10  | 150 | 8   | 250           |

\* AVAILABLE ALSO IN TO-237 PACKAGE

2514096 CRIMSON SEMICONDUCTOR INC

99D 00313 D T-29-01

| DEVICE  | TYPE | PACKAGE    | BVCEO   | BVCBO   | BVEBO   | ICBO      | VCB | HFE      | VC & IC |      | COB      | FT    | NF       |
|---------|------|------------|---------|---------|---------|-----------|-----|----------|---------|------|----------|-------|----------|
|         |      |            | (V) MIN | (V) MIN | (V) MIN | (mA) MAX. | (V) | MIN.-MAX | (V)     | (mA) | (pI) MAX | (MHz) | (db) MAX |
| PN3643  | NPN  | TO-92 (72) | 30      | 60      | 5       | 50        | 50  | 100-300  | 10      | 150  | 8        | 250   |          |
| PN3644  | PNP  | TO-92 (72) | 45      | 45      | 5       | 35        | 30  | 100-300  | 10      | 150  | 8        | 200   |          |
| PN3645  | PNP  | TO-92 (72) | 60      | 60      | 5       | 35        | 50  | 100-300  | 10      | 150  | 8        | 200   |          |
| PN3646  | NPN  | TO-92 (72) | 15      | 40      | 5       | 500       | 20  | 30-120   | .4      | 30   | 5        | 350   |          |
| PN3665  | NPN  | TO-92 (72) | 80      | 120     | 10      | 50        | 60  | 40-120   | 10      | 150  | 12       | 60    |          |
| PN3666  | NPN  | TO-92 (72) | 80      | 120     | 10      | 50        | 60  | 100-300  | 10      | 150  | 12       | 60    |          |
| PN3673  | PNP  | TO-92 (72) | 50      | 60      | 5       | 10        | 50  | 75-225   | 10      | 150  | 9        | 200   |          |
| PN3678  | NPN  | TO-92 (72) | 55      | 75      | 6       | 10        | 60  | 40-120   | 10      | 150  | 8        | 250   |          |
| PN3691  | NPN  | TO-92 (72) | 20      | 35      | 4       | 50        | 15  | 40-160   | 1       | 10   | 3.5      | 200   |          |
| PN3692  | NPN  | TO-92 (72) | 20      | 35      | 4       | 50        | 15  | 100-400  | 1       | 10   | 3.5      | 200   |          |
| PN3693  | NPN  | TO-92 (72) | 45      | 45      | 4       | 50        | 35  | 40-160   | 10      | 10   | 3.5      | 200   |          |
| PN3694  | NPN  | TO-92 (72) | 45      | 45      | 4       | 50        | 35  | 100-400  | 10      | 10   | 3.5      | 200   |          |
| PN3700  | NPN  | TO-92 (72) | 80      | 140     | 7       | 10        | 90  | 100-300  | 10      | 150  | 12       | 100   |          |
| PN3701  | NPN  | TO-92 (72) | 80      | 140     | 7       | 10        | 90  | 40-120   | 10      | 150  | 12       | 80    |          |
| PN3722  | NPN  | TO-92 (72) | 60      | 80      | 6       | 500       | 40  | 40-150   | 1       | 100  | 10       |       |          |
| PN3723  | NPN  | TO-92 (72) | 80      | 100     | 6       | 500       | 50  | 40-150   | 1       | 100  | 9        |       |          |
| PN3724  | NPN  | TO-92 (72) | 30      | 50      | 6       | 1.7uA     | 40  | 60-150   | 1       | 100  | 12       | 300   |          |
| PN3724A | NPN  | TO-92 (72) | 30      | 50      | 6       | 500       | 40  | 60-150   | 1       | 100  | 12       | 300   |          |
| PN3725  | NPN  | TO-92 (72) | 50      | 80      | 6       | 1.7uA     | 60  | 60-150   | 1       | 100  | 10       | 300   |          |
| PN3725A | NPN  | TO-92 (72) | 50      | 80      | 6       | 500       | 60  | 60-150   | 1       | 100  | 10       | 300   |          |
| PN3742  | NPN  | TO-92 (72) | 300     | 300     | 7       | 200       | 200 | 20-200   | 10      | 30   | 6        | 60    |          |
| PN3799  | PNP  | TO-92 (72) | 60      | 60      | 5       | 10        | 50  | 300-900  | 5       | .5   |          |       |          |
| PN3839  | NPN  | TO-92 (72) | 15      | 30      | 2.5     | 10        | 15  | 30-150   | 1       | 3    | 1        | 1000  |          |
| PN3932  | NPN  | TO-92 (72) | 20      | 30      | 2.5     | 10        | 15  | 40-150   | 8       | 2    | .55      | 750   |          |
| PN3933  | NPN  | TO-92 (72) | 30      | 40      | 2.5     | 10        | 15  | 60-200   | 8       | 2    | .55      | 750   |          |
| PN3945  | NPN  | TO-92 (72) | 50      | 70      | 8       | 40        | 60  | 40-250   | 10      | 150  | 12       | 60    |          |
| PN3946  | NPN  | TO-92 (72) | 40      | 60      | 6       | 10        | 40  | 50-150   | 1       | 10   | 4        | 250   |          |
| PN3947  | NPN  | TO-92 (72) | 40      | 60      | 6       | 10        | 40  | 100-300  | 1       | 10   | 4        | 300   |          |
| PN3962  | PNP  | TO-92 (72) | 60      | 60      | 6       | 10        | 50  | 100-450  | 5       | 1    | 6        | 40    |          |
| PN3963  | PNP  | TO-92 (72) | 80      | 80      | 6       | 10        | 70  | 100-450  | 5       | 1    | 6        | 40    |          |
| PN3964  | PNP  | TO-92 (72) | 45      | 45      | 6       | 10        | 40  | 250-600  | 5       | 1    | 6        | 50    |          |
| PN3965  | PNP  | TO-92 (72) | 60      | 60      | 6       | 10        | 50  | 250-600  | 5       | 1    | 6        | 50    |          |
| PN4013  | NPN  | TO-92 (72) | 30      | 50      | 6       | 1.7uA     | 40  | 60-150   | 1       | 100  | 12       | 300   |          |
| PN4014  | NPN  | TO-92 (72) | 50      | 80      | 6       | 1.7uA     | 60  | 60-150   | 1       | 100  | 10       | 300   |          |
| PN4026  | PNP  | TO-92 (72) | 60      | 60      | 5       | 50        | 50  | 40-120   | 5       | 100  | 20       | 100   |          |
| PN4027  | PNP  | TO-92 (72) | 80      | 80      | 5       | 50        | 60  | 40-120   | 5       | 100  | 20       | 150   |          |
| PN4028  | PNP  | TO-92 (72) | 60      | 60      | 5       | 50        | 50  | 100-300  | 5       | 100  | 20       | 150   |          |
| PN4029  | PNP  | TO-92 (72) | 80      | 80      | 5       | 50        | 60  | 100-300  | 5       | 100  | 20       | 150   |          |
| PN4030  | PNP  | TO-92 (72) | 60      | 60      | 5       | 50        | 50  | 40-120   | 5       | 100  | 20       | 100   |          |
| PN4031  | PNP  | TO-92 (72) | 80      | 80      | 5       | 50        | 60  | 40-120   | 5       | 100  | 20       | 100   |          |
| PN4032  | PNP  | TO-92 (72) | 60      | 60      | 5       | 50        | 50  | 100-300  | 5       | 100  | 20       | 150   |          |
| PN4033  | PNP  | TO-92 (72) | 80      | 80      | 5       | 50        | 60  | 100-300  | 5       | 100  | 20       | 150   |          |
| PN4034  | PNP  | TO-92 (72) | 40      | 40      | 5       | 15        | 30  | 70-200   | 1       | 10   | 3.5      | 400   |          |
| PN4035  | PNP  | TO-92 (72) | 40      | 40      | 5       | 15        | 30  | 150-300  | 1       | 10   | 3.5      | 400   |          |
| PN4036  | PNP  | TO-92 (72) | 65      | 90      | 7       | 20        | 60  | 40-140   | 10      | 150  | 30       | 60    |          |

\* AVAILABLE ALSO IN TO-237 PACKAGE

2514096 CRIMSON SEMICONDUCTOR INC

99D 00314

D T-29-01

| DEVICE   | TYPE | PACKAGE    | BVCEO   | BVCBO   | BVEBO   | ICBO     | VCB     | HFE      | VC & IC  | COB      | FT    | NF       |
|----------|------|------------|---------|---------|---------|----------|---------|----------|----------|----------|-------|----------|
|          |      |            | (V) MIN | (V) MIN | (V) MIN | (mA) MAX | (V) MIN | MIN -MAX | (V) (mA) | (pI) MAX | (MHz) | (db) MAX |
| * PN4037 | PNP  | TO-92 (72) | 40      | 60      | 7       | 250      | 60      | 50-250   | 10 150   | 30       | 60    |          |
| * PN4046 | NPN  | TO-92 (72) | 30      | 50      | 6       | 1.7uA    | 40      | 40-150   | 1 100    | 12       | 500   |          |
| * PN4047 | NPN  | TO-92 (72) | 50      | 80      | 6       | 1.7uA    | 60      | 40-150   | 1 100    | 10       | 500   |          |
| PN4121   | PNP  | TO-92 (72) | 40      | 40      | 5       | 25       | 30      | 70-200   | 1 10     | 4.5      | 400   |          |
| PN4122   | PNP  | TO-92 (72) | 40      | 40      | 5       | 25       | 30      | 150-300  | 1 10     | 4.5      | 450   |          |
|          |      |            |         |         |         |          |         |          |          |          |       |          |
| PN4140   | NPN  | TO-92 (72) | 30      | 60      | 5       | 100      | 35      | 40-120   | 10 150   | 8        | 250   |          |
| PN4141   | NPN  | TO-92 (72) | 30      | 60      | 5       | 100      | 35      | 100-300  | 10 150   | 8        | 250   |          |
| PN4142   | PNP  | TO-92 (72) | 40      | 60      | 5       | 100      | 35      | 40-120   | 10 150   | 8        | 200   |          |
| PN4143   | PNP  | TO-92 (72) | 40      | 60      | 5       | 100      | 35      | 100-300  | 10 150   | 8        | 200   |          |
| PN4207   | PNP  | TO-92 (72) | 6       | 6       | 4.5     | 10       | 3       | 50-120   | .3 10    | 3        | 650   |          |
|          |      |            |         |         |         |          |         |          |          |          |       |          |
| PN4208   | PNP  | TO-92 (72) | 12      | 12      | 4.5     | 10       | 6       | 30-120   | .3 10    | 3        | 700   |          |
| PN4209   | PNP  | TO-92 (72) | 15      | 15      | 1.5     | 10       | 8       | 50-120   | .3 10    | 3        | 850   |          |
| * PN4234 | PNP  | TO-92 (72) | 40      | 40      | 7       | 100      | 40      | 30-150   | 1 250    |          |       |          |
| * PN4235 | PNP  | TO-92 (72) | 60      | 60      | 7       | 100      | 60      | 30-150   | 1 250    |          |       |          |
| * PN4236 | PNP  | TO-92 (72) | 80      | 80      | 7       | 100      | 80      | 30-150   | 1 250    |          |       |          |
|          |      |            |         |         |         |          |         |          |          |          |       |          |
| PN4237   | NPN  | TO-92 (72) | 40      | 50      | 6       | 100      | 50      | 30-150   | 1 250    |          |       |          |
| PN4238   | NPN  | TO-92 (72) | 60      | 80      | 6       | 100      | 80      | 30-150   | 1 250    |          |       |          |
| PN4239   | NPN  | TO-92 (72) | 80      | 100     | 6       | 100      | 100     | 30-150   | 1 250    |          |       |          |
| PN4248   | PNP  | TO-92 (72) | 40      | 40      | 5       | 10       | 40      | 50-      | 5 .1     | 6        | 40    | 3        |
| PN4249   | PNP  | TO-92 (72) | 60      | 60      | 5       | 10       | 40      | 100-300  | 5 .1     | 6        | 40    | 3        |
|          |      |            |         |         |         |          |         |          |          |          |       |          |
| PN4250   | PNP  | TO-92 (72) | 40      | 40      | 5       | 10       | 40      | 250-700  | 5 .1     | 6        | 50    | 2        |
| PN4250A  | PNP  | TO-92 (72) | 60      | 60      | 5       | 10       | 50      | 250-700  | 5 .1     | 6        | 50    | 3        |
| PN4257   | PNP  | TO-92 (72) | 6       | 6       | 4.5     | 10       | 3       | 30-120   | .3 10    | 3        | 500   |          |
| PN4258   | PNP  | TO-92 (72) | 12      | 12      | 4.5     | 10       | 6       | 30-120   | .3 10    | 3        | 700   |          |
| PN4259   | NPN  | TO-92 (72) | 30      | 40      | 2.5     | 10       | 15      | 60-250   | 8 2      | .55      | 750   |          |
|          |      |            |         |         |         |          |         |          |          |          |       |          |
| PN4274   | NPN  | TO-92 (72) | 12      | 30      | 4.5     | 400      | 20      | 35-120   | 1 10     | 4        | 400   |          |
| PN4275   | NPN  | TO-92 (72) | 15      | 40      | 4.5     | 400      | 20      | 35-120   | 1 10     | 4        | 400   |          |
| PN4313   | PNP  | TO-92 (72) | 12      | 12      | 4.5     | 50       | 10      | 30-120   | .5 30    | 4.5      | 700   |          |
| PN4314   | PNP  | TO-92 (72) | 65      | 90      | 7       | 250      | 60      | 50-250   | 10 150   | 30       | 60    |          |
| PN4354   | PNP  | TO-92 (72) | 60      | 60      | 5       | 50       | 50      | 50-500   | 10 10    | 30       | 100   |          |
|          |      |            |         |         |         |          |         |          |          |          |       |          |
| PN4355   | PNP  | TO-92 (72) | 60      | 60      | 5       | 50       | 50      | 100-400  | 10 10    | 30       | 100   |          |
| PN4356   | PNP  | TO-92 (72) | 80      | 80      | 5       | 50       | 50      | 50-250   | 10 10    | 30       | 100   |          |
| PN4384   | NPN  | TO-92 (72) | 40      | 30      | 5       | 10       | 30      | 100-500  | 5 .01    | 8        | 30    |          |
| PN4386   | NPN  | TO-92 (72) | 40      | 30      | 5       | 10       | 30      | 40-500   | 5 .01    | 8        | 30    |          |
| PN4404   | PNP  | TO-92 (72) | 80      | 80      | 5       | 25       | 60      | 40-120   | 1 150    | 10       | 200   |          |
|          |      |            |         |         |         |          |         |          |          |          |       |          |
| PN4405   | PNP  | TO-92 (72) | 80      | 80      | 5       | 25       | 60      | 100-300  | 1 150    | 10       | 200   |          |
| PN4888   | PNP  | TO-92 (72) | 150     | 150     | 6       | 50       | 100     | 40-400   | 10 10    | 4        | 30    |          |
| PN4889   | PNP  | TO-92 (72) | 150     | 150     | 6       | 10       | 100     | 80-300   | 10 10    | 4        | 40    |          |
| PN4916   | PNP  | TO-92 (72) | 30      | 30      | 5       | 25       | 15      | 70-200   | 1 10     | 4.5      | 400   |          |
| PN4917   | PNP  | TO-92 (72) | 30      | 30      | 5       | 25       | 15      | 150-300  | 1 10     | 4.5      | 450   |          |
|          |      |            |         |         |         |          |         |          |          |          |       |          |
| PN4944   | NPN  | TO-92 (72) | 40      | 80      | 5       | 50       | 40      | 40-120   | 1 150    | 25       | 60    |          |
| PN4945   | NPN  | TO-92 (72) | 60      | 80      | 5       | 50       | 40      | 40-120   | 1 150    | 25       | 60    |          |
| PN4946   | NPN  | TO-92 (72) | 40      | 80      | 5       | 50       | 40      | 100-300  | 1 150    | 25       | 60    |          |
| PN4960   | NPN  | TO-92 (72) | 60      | 60      | 6.5     | 10       | 50      | 100-300  | 10 150   | 15       | 250   |          |
| PN4961   | NPN  | TO-92 (72) | 80      | 80      | 6.5     | 10       | 50      | 100-300  | 10 150   | 15       | 250   |          |

\* AVAILABLE ALSO IN TO-237 PACKAGE

2514096 CRIMSON SEMICONDUCTOR INC

99D 00315 D

T-29-01

| DEVICE | TYPE | PACKAGE    | BVCEO   | BVCBO   | BVEBO   | ICBO @ VCB | HFE @ VC & IC |         | COB | FT  | NF  |          |
|--------|------|------------|---------|---------|---------|------------|---------------|---------|-----|-----|-----|----------|
|        |      |            | (V) MIN | (V) MIN | (V) MIN | (mA) MAX   | (V) MIN       | MAX     |     |     |     | (V) (mA) |
| PN4962 | NPN  | TO-92 (72) | 60      | 60      | 6.5     | 10         | 50            | 100-300 | 10  | 150 | 15  | 250      |
| PN4963 | NPN  | TO-92 (72) | 80      | 80      | 6.5     | 10         | 50            | 100-300 | 10  | 150 | 15  | 250      |
| PN5126 | NPN  | TO-92 (72) | 20      | 20      | 3       | 50         | 10            | 20-350  | 10  | 4   | 1.6 | 300      |
| PN5127 | NPN  | TO-92 (72) | 12      | 20      | 3       | 50         | 10            | 15-300  | 10  | 2   | 3.5 | 150      |
| PN5128 | NPN  | TO-92 (72) | 12      | 15      | 3       | 50         | 10            | 35-350  | 10  | 50  | 10  | 200      |
| PN5129 | NPN  | TO-92 (72) | 12      | 15      | 3       | 50         | 10            | 35-350  | 10  | 50  | 10  | 200      |
| PN5130 | NPN  | TO-92 (72) | 12      | 30      | 1       | 50         | 10            | 15-250  | 10  | 8   | 1.7 | 450      |
| PN5131 | NPN  | TO-92 (72) | 15      | 20      | 3       | 50         | 10            | 30-500  | 1   | 10  | 6   | 100      |
| PN5132 | NPN  | TO-92 (72) | 20      | 20      | 3       | 50         | 10            | 30-400  | 10  | 10  | 3.5 | 200      |
| PN5133 | NPN  | TO-92 (72) | 18      | 20      | 3       | 50         | 15            | 60-1000 | 5   | 1   | 5   | 40       |
| PN5134 | NPN  | TO-92 (72) | 10      | 20      | 3.5     | 400        | 15            | 20-150  | 1   | 10  | 4   | 250      |
| PN5135 | NPN  | TO-92 (72) | 25      | 30      | 4       | 300        | 15            | 50-600  | 10  | 10  | 25  | 40       |
| PN5136 | NPN  | TO-92 (72) | 20      | 30      | 3       | 100        | 20            | 20-400  | 1   | 150 | 35  | 40       |
| PN5137 | NPN  | TO-92 (72) | 20      | 30      | 3       | 100        | 20            | 20-400  | 1   | 150 | 35  | 40       |
| PN5138 | PNP  | TO-92 (72) | 30      | 30      | 5       | 10         | 20            | 50-800  | 10  | 1   | 7   | 30       |
| PN5139 | PNP  | TO-92 (72) | 20      | 20      | 5       | 50         | 15            | 40-     | 1   | 10  | 5   | 300      |
| PN5140 | PNP  | TO-92 (72) | 5       | 5       | 4       | 50         | 3             | 20-140  | 1   | 10  | 5   | 400      |
| PN5141 | PNP  | TO-92 (72) | 6       | 6       | 4       | 100        | 4             | 25-     | 2   | 10  | 7   | 300      |
| PN5142 | PNP  | TO-92 (72) | 20      | 20      | 4       | 35         | 12            | 30-     | 1   | 50  | 10  | 100      |
| PN5143 | PNP  | TO-92 (72) | 20      | 20      | 4       | 35         | 12            | 30-     | 1   | 50  | 10  | 100      |
| PN5179 | NPN  | TO 92 (72) | 12      | 20      | 2.5     | 20         | 15            | 25-250  | 1   | 3   | 1   | 900      |
| PN5180 | NPN  | TO 92 (72) | 15      | 30      | 2       | 500        | 8             | 20-200  | 8   | 2   | 1   | 650      |
| PN5189 | NPN  | TO-92 (72) | 35      | 60      | 5       | 500        | 30            | 35-     | 1   | 500 | 12  | 250      |

\* AVAILABLE ALSO IN TO-237 PACKAGE

2514096 CRIMSON SEMICONDUCTOR INC

99D 00316 D

T-29-01

| DEVICE   | TYPE | PACKAGE    | BVCEO   | BVCBO   | BVEBO   | ICBO     | VCB | HFE @    | VC & IC | COB  | FT       | NF    |          |
|----------|------|------------|---------|---------|---------|----------|-----|----------|---------|------|----------|-------|----------|
|          |      |            | (V) MIN | (V) MIN | (V) MIN | (mA) MAX | (V) | MIN -MAX | (V)     | (mA) | (pf) MAX | (MHz) | (dB) MAX |
| BC107    | NPN  | TO-18      | 45      | 50      | 6       | 15       | 50  | 120-460  | 5       | 2    | 4.5      | 150   | 10       |
| BC107A   | NPN  | TO-18      | 45      | 50      | 6       | 15       | 50  | 120-220  | 5       | 2    | 4.5      | 150   | 10       |
| BC107B   | NPN  | TO-18      | 45      | 50      | 6       | 15       | 50  | 180-460  | 5       | 2    | 4.5      | 150   | 10       |
| BC108    | NPN  | TO-18      | 20      | 30      | 5       | 15       | 30  | 120-800  | 5       | 2    | 4.5      | 150   | 10       |
| BC108A   | NPN  | TO-18      | 20      | 30      | 5       | 15       | 30  | 120-220  | 5       | 2    | 4.5      | 150   | 10       |
| BC108B   | NPN  | TO-18      | 20      | 30      | 5       | 15       | 30  | 180-460  | 5       | 2    | 4.5      | 150   | 10       |
| BC108C   | NPN  | TO-18      | 20      | 30      | 5       | 15       | 30  | 380-800  | 5       | 2    | 4.5      | 150   | 10       |
| BC109    | NPN  | TO-18      | 20      | 30      | 5       | 15       | 30  | 180-800  | 5       | 2    | 4.5      | 150   | 4        |
| BC109B   | NPN  | TO-18      | 20      | 30      | 5       | 15       | 30  | 180-460  | 5       | 2    | 4.5      | 150   | 4        |
| BC109C   | NPN  | TO-18      | 20      | 30      | 5       | 15       | 30  | 380-800  | 5       | 2    | 4.5      | 150   | 4        |
| BC140    | NPN  | TO-39      | 40      | 80      | 7       | 100      | 60  | 40-400   | 1       | 100  | 25       | 50    |          |
| BC140-6  | NPN  | TO-39      | 40      | 80      | 7       | 100      | 60  | 40-100   | 1       | 100  | 25       | 50    |          |
| BC140-10 | NPN  | TO-39      | 40      | 80      | 7       | 100      | 60  | 63-160   | 1       | 100  | 25       | 50    |          |
| BC140-16 | NPN  | TO-39      | 40      | 80      | 7       | 100      | 60  | 100-250  | 1       | 100  | 25       | 50    |          |
| BC140-25 | NPN  | TO-39      | 40      | 80      | 7       | 100      | 60  | 160-400  | 1       | 100  | 25       | 50    |          |
| BC141    | NPN  | TO-39      | 60      | 100     | 7       | 100      | 60  | 40-400   | 1       | 100  | 25       | 50    |          |
| BC141-6  | NPN  | TO-39      | 60      | 100     | 7       | 100      | 60  | 40-100   | 1       | 100  | 25       | 50    |          |
| BC141-10 | NPN  | TO-39      | 60      | 100     | 7       | 100      | 60  | 63-160   | 1       | 100  | 25       | 50    |          |
| BC141-16 | NPN  | TO-39      | 60      | 100     | 7       | 100      | 60  | 100-250  | 1       | 100  | 25       | 50    |          |
| BC141-25 | NPN  | TO-39      | 60      | 100     | 7       | 100      | 60  | 160-400  | 1       | 100  | 25       | 50    |          |
| BC160    | PNP  | TO-39      | 40      | 40      | 5       | 100      | 40  | 40-400   | 1       | 100  | 30       | 50    |          |
| BC160-6  | PNP  | TO-39      | 40      | 40      | 5       | 100      | 40  | 40-100   | 1       | 100  | 30       | 50    |          |
| BC160-10 | PNP  | TO-39      | 40      | 40      | 5       | 100      | 40  | 63-160   | 1       | 100  | 30       | 50    |          |
| BC160-16 | PNP  | TO-39      | 40      | 40      | 5       | 100      | 40  | 100-250  | 1       | 100  | 30       | 50    |          |
| BC160-25 | PNP  | TO-39      | 40      | 40      | 5       | 100      | 40  | 160-400  | 1       | 100  | 30       | 50    |          |
| BC161    | PNP  | TO-39      | 60      | 60      | 5       | 100      | 60  | 40-400   | 1       | 100  | 30       | 50    |          |
| BC161-6  | PNP  | TO-39      | 60      | 60      | 5       | 100      | 60  | 40-100   | 1       | 100  | 30       | 50    |          |
| BC161-10 | PNP  | TO-39      | 60      | 60      | 5       | 100      | 60  | 63-160   | 1       | 100  | 30       | 50    |          |
| BC161-16 | PNP  | TO-39      | 60      | 60      | 5       | 100      | 60  | 100-250  | 1       | 100  | 30       | 50    |          |
| BC161-25 | PNP  | TO-39      | 60      | 60      | 5       | 100      | 60  | 160-400  | 1       | 100  | 30       | 50    |          |
| BC167    | NPN  | TO-92 (74) | 45      | 50      | 6       | 15       | 50  | 120-460  | 5       | 2    | 4.5      | 150   | 10       |
| BC167A   | NPN  | TO-92 (74) | 45      | 50      | 6       | 15       | 50  | 120-220  | 5       | 2    | 4.5      | 150   | 10       |
| BC167B   | NPN  | TO-92 (74) | 45      | 50      | 6       | 15       | 50  | 180-460  | 5       | 2    | 4.5      | 150   | 10       |
| BC168    | NPN  | TO-92 (74) | 20      | 30      | 5       | 15       | 30  | 120-800  | 5       | 2    | 4.5      | 150   | 10       |
| BC168A   | NPN  | TO-92 (74) | 20      | 30      | 5       | 15       | 30  | 120-220  | 5       | 2    | 4.5      | 150   | 10       |
| BC168B   | NPN  | TO-92 (74) | 20      | 30      | 5       | 15       | 30  | 180-460  | 5       | 2    | 4.5      | 150   | 10       |
| BC168C   | NPN  | TO-92 (74) | 20      | 30      | 5       | 15       | 30  | 380-800  | 5       | 2    | 4.5      | 150   | 10       |
| BC169    | NPN  | TO-92 (74) | 20      | 30      | 5       | 15       | 30  | 180-800  | 5       | 2    | 4.5      | 150   | 4        |
| BC169B   | NPN  | TO-92 (74) | 20      | 30      | 5       | 15       | 30  | 180-460  | 5       | 2    | 4.5      | 150   | 4        |
| BC169C   | NPN  | TO-92 (74) | 20      | 30      | 5       | 15       | 30  | 380-800  | 5       | 2    | 4.5      | 150   | 4        |
| BC177    | PNP  | TO-18      | 45      | 50      | 5       | 15       | 50  | 120-460  | 5       | 2    | 4.5      | 150   | 10       |
| BC177A   | PNP  | TO-18      | 45      | 50      | 5       | 15       | 50  | 120-220  | 5       | 2    | 4.5      | 150   | 10       |
| BC177B   | PNP  | TO-18      | 45      | 50      | 5       | 15       | 50  | 180-460  | 5       | 2    | 4.5      | 150   | 10       |
| BC178    | PNP  | TO-18      | 20      | 30      | 5       | 15       | 30  | 120-800  | 5       | 2    | 4.5      | 150   | 10       |
| BC178A   | PNP  | TO-18      | 20      | 30      | 5       | 15       | 30  | 120-220  | 5       | 2    | 4.5      | 150   | 10       |



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| DEVICE  | TYPE | PACKAGE    | BVCEO   | BVCBO   | BVEBO   | ICBO     | VCB | HFE @   |     | VC & IC |      | COB      | FT    | NF       |
|---------|------|------------|---------|---------|---------|----------|-----|---------|-----|---------|------|----------|-------|----------|
|         |      |            | (V) MIN | (V) MIN | (V) MIN | (mA) MAX | (V) | MIN     | MAX | (V)     | (mA) | (pI) MAX | (MHz) | (db) MAX |
| BC178B  | PNP  | TO-18      | 25      | 30      | 5       | 15       | 30  | 180-460 | 5   | 2       | 4.5  | 150      | 10    |          |
| BC178C  | PNP  | TO-18      | 25      | 30      | 5       | 15       | 30  | 380-800 | 5   | 2       | 4.5  | 150      | 10    |          |
| BC179   | PNP  | TO-18      | 20      | 25      | 5       | 15       | 25  | 180-800 | 5   | 2       | 4.5  | 150      | 4     |          |
| BC179B  | PNP  | TO-18      | 20      | 25      | 5       | 15       | 25  | 180-460 | 5   | 2       | 4.5  | 150      | 4     |          |
| BC178C  | PNP  | TO-18      | 20      | 25      | 5       | 15       | 25  | 380-800 | 5   | 2       | 4.5  | 150      | 4     |          |
| BC182K  | NPN  | TO-92 (77) | 50      | 60      | 5       | 15       | 50  | 120-460 | 5   | 2       | 4.5  | 150      | 10    |          |
| BC182KA | NPN  | TO-92 (77) | 50      | 60      | 5       | 15       | 50  | 120-220 | 5   | 2       | 4.5  | 150      | 10    |          |
| BC182KB | NPN  | TO-92 (77) | 50      | 60      | 5       | 15       | 50  | 180-460 | 5   | 2       | 4.5  | 150      | 10    |          |
| BC183K  | NPN  | TO-92 (77) | 30      | 45      | 5       | 15       | 30  | 120-800 | 5   | 2       | 4.5  | 150      | 10    |          |
| BC183KA | NPN  | TO-92 (77) | 30      | 45      | 5       | 15       | 30  | 120 220 | 5   | 2       | 4.5  | 150      | 10    |          |
| BC183KB | NPN  | TO-92 (77) | 30      | 45      | 5       | 15       | 30  | 180-460 | 5   | 2       | 4.5  | 150      | 10    |          |
| BC183KC | NPN  | TO-92 (77) | 30      | 45      | 5       | 15       | 30  | 380-800 | 5   | 2       | 4.5  | 150      | 10    |          |
| BC184K  | NPN  | TO-92 (77) | 30      | 45      | 5       | 15       | 30  | 180 800 | 5   | 2       | 4.5  | 150      | 4     |          |
| BC184KB | NPN  | TO-92 (77) | 30      | 45      | 5       | 15       | 30  | 180 460 | 5   | 2       | 4.5  | 150      | 4     |          |
| BC184KC | NPN  | TO-92 (77) | 30      | 45      | 5       | 15       | 30  | 380 800 | 5   | 2       | 4.5  | 150      | 4     |          |
| BC182L  | NPN  | TO-92 (74) | 50      | 60      | 5       | 15       | 50  | 120-460 | 5   | 2       | 4.5  | 150      | 10    |          |
| BC182LA | NPN  | TO-92 (74) | 50      | 60      | 5       | 15       | 50  | 120 220 | 5   | 2       | 4.5  | 150      | 10    |          |
| BC182LB | NPN  | TO-92 (74) | 50      | 60      | 5       | 15       | 50  | 180 460 | 5   | 2       | 4.5  | 150      | 10    |          |
| BC183L  | NPN  | TO-92 (74) | 30      | 45      | 5       | 15       | 30  | 120-800 | 5   | 2       | 4.5  | 150      | 10    |          |
| BC183LA | NPN  | TO-92 (74) | 30      | 45      | 5       | 15       | 30  | 120-220 | 5   | 2       | 4.5  | 150      | 10    |          |
| BC183LB | NPN  | TO 92 (74) | 30      | 45      | 5       | 15       | 30  | 180 460 | 5   | 2       | 4.5  | 150      | 10    |          |
| BC183LC | NPN  | TO 92 (74) | 30      | 45      | 5       | 15       | 30  | 380-800 | 5   | 2       | 4.5  | 150      | 10    |          |
| BC184I  | NPN  | TO 92 (74) | 30      | 45      | 5       | 15       | 30  | 180-800 | 5   | 2       | 4.5  | 150      | 4     |          |
| BC184IB | NPN  | TO 92 (74) | 30      | 45      | 5       | 15       | 30  | 180 460 | 5   | 2       | 4.5  | 150      | 4     |          |
| BC184IC | NPN  | TO 92 (74) | 30      | 45      | 5       | 15       | 30  | 380 800 | 5   | 2       | 4.5  | 150      | 4     |          |
| BC212K  | PNP  | TO 92 (77) | 50      | 60      | 5       | 15       | 50  | 120 460 | 5   | 2       | 4.5  | 150      | 10    |          |
| BC212KA | PNP  | TO 92 (77) | 50      | 60      | 5       | 15       | 50  | 120 220 | 5   | 2       | 4.5  | 150      | 10    |          |
| BC212KB | PNP  | TO 92 (77) | 50      | 60      | 5       | 15       | 50  | 180-460 | 5   | 2       | 4.5  | 150      | 10    |          |
| BC213K  | PNP  | TO 92 (77) | 30      | 45      | 5       | 15       | 30  | 120-800 | 5   | 2       | 4.5  | 150      | 10    |          |
| BC213KA | PNP  | TO 92 (77) | 30      | 45      | 5       | 15       | 30  | 120-220 | 5   | 2       | 4.5  | 150      | 10    |          |
| BC213KB | PNP  | TO 92 (77) | 30      | 45      | 5       | 15       | 30  | 180-460 | 5   | 2       | 4.5  | 150      | 10    |          |
| BC213KC | PNP  | TO 92 (77) | 30      | 45      | 5       | 15       | 30  | 380-800 | 5   | 2       | 4.5  | 150      | 10    |          |
| BC214K  | PNP  | TO 92 (77) | 30      | 45      | 5       | 15       | 30  | 180-800 | 5   | 2       | 4.5  | 150      | 4     |          |
| BC214KB | PNP  | TO 92 (77) | 30      | 45      | 5       | 15       | 30  | 180-460 | 5   | 2       | 4.5  | 150      | 4     |          |
| BC214KC | PNP  | TO-92 (77) | 30      | 45      | 5       | 15       | 30  | 380-800 | 5   | 2       | 4.5  | 150      | 4     |          |
| BC212L  | PNP  | TO-92 (74) | 50      | 60      | 5       | 15       | 50  | 120-460 | 5   | 2       | 4.5  | 150      | 10    |          |
| BC212LA | PNP  | TO-92 (74) | 50      | 60      | 5       | 15       | 50  | 120-220 | 5   | 2       | 4.5  | 150      | 10    |          |
| BC212LB | PNP  | TO-92 (74) | 50      | 60      | 5       | 15       | 50  | 180-460 | 5   | 2       | 4.5  | 150      | 10    |          |
| BC213L  | PNP  | TO-92 (74) | 30      | 45      | 5       | 15       | 30  | 120-800 | 5   | 2       | 4.5  | 150      | 10    |          |
| BC213LA | PNP  | TO-92 (74) | 30      | 45      | 5       | 15       | 30  | 120-220 | 5   | 2       | 4.5  | 150      | 10    |          |
| BC213LB | PNP  | TO-92 (74) | 30      | 45      | 5       | 15       | 30  | 180-460 | 5   | 2       | 4.5  | 150      | 10    |          |
| BC213LC | PNP  | TO-92 (74) | 30      | 45      | 5       | 15       | 30  | 380-800 | 5   | 2       | 4.5  | 150      | 10    |          |
| BC214L  | PNP  | TO-92 (74) | 30      | 45      | 5       | 15       | 30  | 180-800 | 5   | 2       | 4.5  | 150      | 4     |          |
| BC214LB | PNP  | TO-92 (74) | 30      | 45      | 5       | 15       | 30  | 180-460 | 5   | 2       | 4.5  | 150      | 4     |          |
| BC214LC | PNP  | TO-92 (74) | 30      | 45      | 5       | 15       | 30  | 380-800 | 5   | 2       | 4.5  | 150      | 4     |          |

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| DEVICE | TYPE PACKAGE   | BVCEO   | BVCBO   | BVEBO   | ICBO     | VCB     | HFE          | VC & IC  | COB      | FT    | NF       |
|--------|----------------|---------|---------|---------|----------|---------|--------------|----------|----------|-------|----------|
|        |                | (V) MIN | (V) MIN | (V) MIN | (mA) MAX | (V) MAX | (V) MIN -MAX | (V) (mA) | (pI) MAX | (MHz) | (dB) MAX |
| BC237  | NPN TO-92 (77) | 45      | 50      | 6       | 15       | 50      | 110-450      | 5 2      | 4.5      | 150   | 10       |
| BC237A | NPN TO-92 (77) | 45      | 50      | 6       | 15       | 50      | 110-220      | 5 2      | 4.5      | 150   | 10       |
| BC237B | NPN TO-92 (77) | 45      | 50      | 6       | 15       | 50      | 200-450      | 5 2      | 4.5      | 150   | 10       |
| BC238  | NPN TO-92 (77) | 20      | 30      | 5       | 15       | 30      | 110-800      | 5 2      | 4.5      | 150   | 10       |
| BC238A | NPN TO-92 (77) | 20      | 30      | 5       | 15       | 30      | 110-220      | 5 2      | 4.5      | 150   | 10       |
| BC238B | NPN TO-92 (77) | 20      | 30      | 5       | 15       | 30      | 200-450      | 5 2      | 4.5      | 150   | 10       |
| BC238C | NPN TO-92 (77) | 20      | 30      | 5       | 15       | 30      | 420-800      | 5 2      | 4.5      | 150   | 10       |
| BC239  | NPN TO-92 (77) | 20      | 30      | 5       | 15       | 30      | 200-800      | 5 2      | 4.5      | 150   | 4        |
| BC239B | NPN TO-92 (77) | 20      | 30      | 5       | 15       | 30      | 200-450      | 5 2      | 4.5      | 150   | 4        |
| BC239C | NPN TO-92 (77) | 20      | 30      | 5       | 15       | 30      | 420-800      | 5 2      | 4.5      | 150   | 4        |
| BC257  | PNP TO-92 (74) | 45      | 50      | 5       | 15       | 50      | 120-460      | 5 2      | 6        | 130   | 10       |
| BC257A | PNP TO-92 (74) | 45      | 50      | 5       | 15       | 50      | 120-220      | 5 2      | 6        | 130   | 10       |
| BC257B | PNP TO-92 (74) | 45      | 50      | 5       | 15       | 50      | 180-460      | 5 2      | 6        | 130   | 10       |
| BC258  | PNP TO-92 (74) | 25      | 30      | 5       | 15       | 30      | 120-800      | 5 2      | 6        | 130   | 10       |
| BC258A | PNP TO-92 (74) | 25      | 30      | 5       | 15       | 30      | 120-220      | 5 2      | 6        | 130   | 10       |
| BC258B | PNP TO-92 (74) | 25      | 30      | 5       | 15       | 30      | 180-460      | 5 2      | 6        | 130   | 10       |
| BC258C | PNP TO-92 (74) | 25      | 30      | 5       | 15       | 30      | 380-800      | 5 2      | 6        | 130   | 10       |
| BC259  | PNP TO-92 (74) | 20      | 25      | 5       | 15       | 25      | 180-800      | 5 2      | 6        | 130   | 4        |
| BC259B | PNP TO-92 (74) | 20      | 25      | 5       | 15       | 25      | 180-460      | 5 2      | 6        | 130   | 4        |
| BC259C | PNP TO-92 (74) | 20      | 25      | 5       | 15       | 25      | 380-800      | 5 2      | 6        | 130   | 4        |
| BC286  | NPN TO-5       | 60      | 70      | 5       | 20       | 30      | 20-180       | 2 500    | 12       | 100   |          |
| BC287  | PNP TO-5       | 60      | 60      | 5       | 50       | 30      | 20-200       | 2 500    | 13       | 200   |          |
| BC307  | PNP TO-92 (77) | 45      | 50      | 5       | 15       | 50      | 110-450      | 5 2      | 6        | 130   | 10       |
| BC307A | PNP TO-92 (77) | 45      | 50      | 5       | 15       | 50      | 110-220      | 5 2      | 6        | 130   | 10       |
| BC307B | PNP TO-92 (77) | 45      | 60      | 5       | 15       | 50      | 200-450      | 5 2      | 6        | 130   | 10       |
| BC308  | PNP TO-92 (77) | 25      | 30      | 5       | 15       | 30      | 110-800      | 5 2      | 6        | 130   | 10       |
| BC308A | PNP TO-92 (77) | 25      | 30      | 5       | 15       | 30      | 110-220      | 5 2      | 6        | 130   | 10       |
| BC308B | PNP TO-92 (77) | 25      | 30      | 5       | 15       | 30      | 200-450      | 5 2      | 6        | 130   | 10       |
| BC308C | PNP TO-92 (77) | 25      | 30      | 5       | 15       | 30      | 420-800      | 5 2      | 6        | 130   | 10       |
| BC309  | PNP TO-92 (77) | 20      | 25      | 5       | 15       | 25      | 200-800      | 5 2      | 6        | 130   | 4        |
| BC309B | PNP TO-92 (77) | 20      | 25      | 5       | 15       | 25      | 200-450      | 5 2      | 6        | 130   | 4        |
| BC309C | PNP TO-92 (77) | 20      | 25      | 5       | 15       | 25      | 420-800      | 5 2      | 6        | 130   | 4        |
| BC317  | NPN TO-92 (72) | 45      | 50      | 6       | 30       | 20      | 110-450      | 5 2      | 4        | 100   | 6        |
| BC317A | NPN TO-92 (72) | 45      | 50      | 6       | 30       | 20      | 110-220      | 5 2      | 4        | 100   | 6        |
| BC317B | NPN TO-92 (72) | 45      | 50      | 6       | 30       | 20      | 200-450      | 5 2      | 4        | 100   | 6        |
| BC318  | NPN TO-92 (72) | 30      | 40      | 5       | 30       | 20      | 110-800      | 5 2      | 4        | 100   | 6        |
| BC318A | NPN TO-92 (72) | 30      | 40      | 5       | 30       | 20      | 110-220      | 5 2      | 4        | 100   | 6        |
| BC318B | NPN TO-92 (72) | 30      | 40      | 5       | 30       | 20      | 200-450      | 5 2      | 4        | 100   | 6        |
| BC318C | NPN TO-92 (72) | 30      | 40      | 5       | 30       | 20      | 420-800      | 5 2      | 4        | 100   | 6        |
| BC319  | NPN TO-92 (72) | 20      | 30      | 5       | 30       | 20      | 200-800      | 5 2      | 4        | 100   | 4        |
| BC319B | NPN TO-92 (72) | 20      | 30      | 5       | 30       | 20      | 200-450      | 5 2      | 4        | 100   | 4        |
| BC319C | NPN TO-92 (72) | 20      | 30      | 5       | 30       | 20      | 420-800      | 5 2      | 4        | 100   | 4        |
| BC320  | PNP TO-92 (72) | 45      | 50      | 6       | 30       | 20      | 110-450      | 5 2      | 4        | 100   | 6        |
| BC320A | PNP TO-92 (72) | 45      | 50      | 6       | 30       | 20      | 110-220      | 5 2      | 4        | 100   | 6        |
| BC320B | PNP TO-92 (72) | 45      | 50      | 6       | 30       | 20      | 200-450      | 5 2      | 4        | 100   | 6        |

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T-29-01

| DEVICE   | TYPE | PACKAGE    | BVCEO   | BVCBO   | BVEBO   | ICBO     | VCB     | HFE @ VC & IC |     | COB | FT  | NF  |      |
|----------|------|------------|---------|---------|---------|----------|---------|---------------|-----|-----|-----|-----|------|
|          |      |            | (V) MIN | (V) MIN | (V) MIN | (mA) MAX | (V) MIN | (mA) MAX      | (V) |     |     |     | (mA) |
| BC321    | PNP  | TO-92 (72) | 30      | 40      | 5       | 30       | 20      | 110-800       | 5   | 2   | 4   | 100 | 6    |
| BC321A   | PNP  | TO-92 (72) | 30      | 40      | 5       | 30       | 20      | 110-220       | 5   | 2   | 4   | 100 | 6    |
| BC321B   | PNP  | TO-92 (72) | 30      | 40      | 5       | 30       | 20      | 200-450       | 5   | 2   | 4   | 100 | 6    |
| BC321C   | PNP  | TO-92 (72) | 30      | 40      | 5       | 30       | 20      | 420-800       | 5   | 2   | 4   | 100 | 6    |
| BC322    | PNP  | TO-92 (72) | 20      | 30      | 5       | 30       | 20      | 200-800       | 5   | 2   | 4   | 100 | 4    |
| BC322B   | PNP  | TO-92 (72) | 20      | 30      | 5       | 30       | 20      | 200-450       | 5   | 2   | 4   | 100 | 4    |
| BC322C   | PNP  | TO-92 (72) | 20      | 30      | 5       | 30       | 20      | 420-800       | 5   | 2   | 4   | 100 | 4    |
| BC327    | PNP  | TO-92 (77) | 45      | 50      | 5       | 100      | 45      | 100-630       | 1   | 100 | 12  | 100 |      |
| BC327-16 | PNP  | TO-92 (77) | 45      | 50      | 5       | 100      | 45      | 100-250       | 1   | 100 | 12  | 100 |      |
| BC327-25 | PNP  | TO-92 (77) | 45      | 50      | 5       | 100      | 45      | 160-400       | 1   | 100 | 12  | 100 |      |
| BC327-40 | PNP  | TO-92 (77) | 45      | 50      | 5       | 100      | 45      | 250-630       | 1   | 100 | 12  | 100 |      |
| BC328    | PNP  | TO-92 (77) | 25      | 30      | 5       | 100      | 25      | 100-630       | 1   | 100 | 12  | 100 |      |
| BC328-16 | PNP  | TO-92 (77) | 25      | 30      | 5       | 100      | 25      | 100-250       | 1   | 100 | 12  | 100 |      |
| BC328-25 | PNP  | TO-92 (77) | 25      | 30      | 5       | 100      | 25      | 160-400       | 1   | 100 | 12  | 100 |      |
| BC328-40 | PNP  | TO-92 (77) | 25      | 30      | 5       | 100      | 25      | 250-630       | 1   | 100 | 12  | 100 |      |
| BC337    | NPN  | TO-92 (77) | 45      | 50      | 5       | 100      | 45      | 100-630       | 1   | 100 | 12  | 100 |      |
| BC337-16 | NPN  | TO-92 (77) | 45      | 50      | 5       | 100      | 45      | 100-250       | 1   | 100 | 12  | 100 |      |
| BC337-25 | NPN  | TO-92 (77) | 45      | 50      | 5       | 100      | 45      | 160-400       | 1   | 100 | 12  | 100 |      |
| BC337-40 | NPN  | TO-92 (77) | 45      | 50      | 5       | 100      | 45      | 250-630       | 1   | 100 | 12  | 100 |      |
| BC338    | NPN  | TO-92 (77) | 25      | 30      | 5       | 100      | 25      | 100-630       | 1   | 100 | 12  | 100 |      |
| BC338-16 | NPN  | TO-92 (77) | 25      | 30      | 5       | 100      | 25      | 100-250       | 1   | 100 | 12  | 100 |      |
| BC338-25 | NPN  | TO-92 (77) | 25      | 30      | 5       | 100      | 25      | 160-400       | 1   | 100 | 12  | 100 |      |
| BC338-40 | NPN  | TO-92 (77) | 25      | 30      | 5       | 100      | 25      | 250-630       | 1   | 100 | 12  | 100 |      |
| BC413    | NPN  | TO-92 (77) | 30      | 45      | 5       | 15       | 30      | 180-800       | 5   | 2   | 4   | 150 | 4    |
| BC413B   | NPN  | TO-92 (77) | 30      | 45      | 5       | 15       | 30      | 180-460       | 5   | 2   | 4   | 150 | 4    |
| BC413C   | NPN  | TO-92 (77) | 30      | 45      | 5       | 15       | 30      | 380-800       | 5   | 2   | 4   | 150 | 4    |
| BC414    | NPN  | TO-92 (77) | 45      | 50      | 5       | 15       | 30      | 180-800       | 5   | 2   | 4   | 150 | 4    |
| BC414B   | NPN  | TO-92 (77) | 45      | 50      | 5       | 15       | 30      | 180-460       | 5   | 2   | 4   | 150 | 4    |
| BC414C   | NPN  | TO-92 (77) | 45      | 50      | 5       | 15       | 30      | 380-800       | 5   | 2   | 4   | 150 | 4    |
| BC415    | PNP  | TO-92 (77) | 35      | 45      | 5       | 15       | 30      | 120-800       | 5   | 2   | 4.5 | 150 | 4    |
| BC415A   | PNP  | TO-92 (77) | 35      | 45      | 5       | 15       | 30      | 120-220       | 5   | 2   | 4.5 | 150 | 4    |
| BC415B   | PNP  | TO-92 (77) | 35      | 45      | 5       | 15       | 30      | 180-460       | 5   | 2   | 4.5 | 150 | 4    |
| BC415C   | PNP  | TO-92 (77) | 35      | 45      | 5       | 15       | 30      | 380-800       | 5   | 2   | 4.5 | 150 | 4    |
| BC416    | PNP  | TO-92 (77) | 45      | 50      | 5       | 15       | 30      | 120-800       | 5   | 2   | 4.5 | 150 | 4    |
| BC416A   | PNP  | TO-92 (77) | 45      | 50      | 5       | 15       | 30      | 120-220       | 5   | 2   | 4.5 | 150 | 4    |
| BC416B   | PNP  | TO-92 (77) | 45      | 50      | 5       | 15       | 30      | 180-460       | 5   | 2   | 4.5 | 150 | 4    |
| BC416C   | PNP  | TO-92 (77) | 45      | 50      | 5       | 15       | 30      | 380-800       | 5   | 2   | 4.5 | 150 | 4    |
| BC485    | NPN  | TO-92 (77) | 45      | 45      | 5       | 100      | 30      | 60-400        | 2   | 100 | 7   | 100 |      |
| BC485A   | NPN  | TO-92 (77) | 45      | 45      | 5       | 100      | 30      | 100-250       | 2   | 100 | 7   | 100 |      |
| BC485B   | NPN  | TO-92 (77) | 45      | 45      | 5       | 100      | 30      | 160-400       | 2   | 100 | 7   | 100 |      |
| BC485L   | NPN  | TO-92 (77) | 45      | 45      | 5       | 100      | 30      | 60-150        | 2   | 100 | 7   | 100 |      |
| BC486    | PNP  | TO-92 (77) | 45      | 45      | 5       | 100      | 30      | 60-400        | 2   | 100 | 7   | 100 |      |
| BC486A   | PNP  | TO-92 (77) | 45      | 45      | 5       | 100      | 30      | 100-250       | 2   | 100 | 7   | 100 |      |
| BC486B   | PNP  | TO-92 (77) | 45      | 45      | 5       | 100      | 30      | 160-400       | 2   | 100 | 7   | 100 |      |
| BC486L   | PNP  | TO-92 (77) | 45      | 45      | 5       | 100      | 30      | 60-150        | 2   | 100 | 7   | 100 |      |

## 2514096 CRIMSON SEMICONDUCTOR INC

99D 00320 D T-29-61

| DEVICE   | TYPE | PACKAGE    | BVCEO   | BVCBO   | BVEBO   | ICBO     | VCB     | HFE           | VC & IC  | COB      | FT    | NF       |
|----------|------|------------|---------|---------|---------|----------|---------|---------------|----------|----------|-------|----------|
|          |      |            | (V) MIN | (V) MIN | (V) MIN | (mA) MAX | (V) MIN | (V) MIN - MAX | (V) (mA) | (pF) MAX | (MHz) | (dB) MAX |
| BC527    | PNP  | TO-92 (72) | 60      | 60      | 6       | 100      | 40      | 40-400        | 1 100    | 15       | 100   |          |
| BC527-6  | PNP  | TO-92 (72) | 60      | 60      | 6       | 100      | 40      | 40-100        | 1 100    | 15       | 100   |          |
| BC527-10 | PNP  | TO-92 (72) | 60      | 60      | 6       | 100      | 40      | 63-160        | 1 100    | 15       | 100   |          |
| BC527-16 | PNP  | TO-92 (72) | 60      | 60      | 6       | 100      | 40      | 100-250       | 1 100    | 15       | 100   |          |
| BC527-25 | PNP  | TO-92 (72) | 60      | 60      | 6       | 100      | 40      | 160-400       | 1 100    | 15       | 100   |          |
| BC528    | PNP  | TO-92 (72) | 80      | 80      | 6       | 10       | 60      | 40-400        | 1 100    | 15       | 100   |          |
| BC528-6  | PNP  | TO-92 (72) | 80      | 80      | 6       | 10       | 60      | 40-100        | 1 100    | 15       | 100   |          |
| BC528-10 | PNP  | TO-92 (72) | 80      | 80      | 6       | 10       | 60      | 63-160        | 1 100    | 15       | 100   |          |
| BC528-16 | PNP  | TO-92 (72) | 80      | 80      | 6       | 10       | 60      | 100-250       | 1 100    | 15       | 100   |          |
| BC528-25 | PNP  | TO-92 (72) | 80      | 80      | 6       | 10       | 60      | 160-400       | 1 100    | 15       | 100   |          |
| BC529    | PNP  | TO-92 (72) | 30      | 50      | 6       | 100      | 30      | 60-300        | 5 50     | 12       | 100   |          |
| BC530    | PNP  | TO-92 (72) | 120     | 130     | 6       | 100      | 100     | 40-180        | 5 10     | 6        | 50    |          |
| BC531    | PNP  | TO-92 (72) | 150     | 160     | 6       | 50       | 120     | 60-240        | 5 10     | 6        | 50    |          |
| BC532    | NPN  | TO-92 (72) | 140     | 160     | 6       | 100      | 100     | 60-250        | 5 10     | 6        | 50    |          |
| BC533    | NPN  | TO-92 (72) | 160     | 180     | 6       | 50       | 120     | 80-250        | 5 10     | 6        | 50    |          |
| BC537    | NPN  | TO-92 (72) | 60      | 60      | 6       | 100      | 40      | 40-400        | 1 100    | 15       | 100   |          |
| BC537-6  | NPN  | TO-92 (72) | 60      | 60      | 6       | 100      | 40      | 40-100        | 1 100    | 15       | 100   |          |
| BC537-10 | NPN  | TO-92 (72) | 60      | 60      | 6       | 100      | 40      | 63-160        | 1 100    | 15       | 100   |          |
| BC537-16 | NPN  | TO-92 (72) | 60      | 60      | 6       | 100      | 40      | 100-250       | 1 100    | 15       | 100   |          |
| BC537-25 | NPN  | TO-92 (72) | 60      | 60      | 6       | 100      | 40      | 160-400       | 1 100    | 15       | 100   |          |
| BC538    | NPN  | TO-92 (72) | 80      | 80      | 6       | 10       | 60      | 40-400        | 1 100    | 15       | 100   |          |
| BC538-6  | NPN  | TO-92 (72) | 80      | 80      | 6       | 10       | 60      | 40-100        | 1 100    | 15       | 100   |          |
| BC538-10 | NPN  | TO-92 (72) | 80      | 80      | 6       | 10       | 60      | 63-160        | 1 100    | 15       | 100   |          |
| BC538-16 | NPN  | TO-92 (72) | 80      | 80      | 6       | 10       | 60      | 100-250       | 1 100    | 15       | 100   |          |
| BC538-25 | NPN  | TO-92 (72) | 80      | 80      | 6       | 10       | 60      | 160-400       | 1 100    | 15       | 100   |          |
| BC546    | NPN  | TO-92 (77) | 65      | 80      | 6       | 15       | 30      | 110-450       | 5 2      | 4.5      | 200   | 10       |
| BC546A   | NPN  | TO-92 (77) | 65      | 80      | 6       | 15       | 30      | 110-220       | 5 2      | 4.5      | 200   | 10       |
| BC546B   | NPN  | TO-92 (77) | 65      | 80      | 6       | 15       | 30      | 200-450       | 5 2      | 4.5      | 200   | 10       |
| BC547    | NPN  | TO-92 (77) | 45      | 50      | 6       | 15       | 30      | 110-800       | 5 2      | 4.5      | 200   | 10       |
| BC547A   | NPN  | TO-92 (77) | 45      | 50      | 6       | 15       | 30      | 110-220       | 5 2      | 4.5      | 200   | 10       |
| BC547B   | NPN  | TO-92 (77) | 45      | 50      | 6       | 15       | 30      | 200-450       | 5 2      | 4.5      | 200   | 10       |
| BC547C   | NPN  | TO-92 (77) | 45      | 50      | 6       | 15       | 30      | 420-800       | 5 2      | 4.5      | 200   | 10       |
| BC548    | NPN  | TO-92 (77) | 30      | 30      | 5       | 15       | 30      | 110-800       | 5 2      | 4.5      | 200   | 10       |
| BC548A   | NPN  | TO-92 (77) | 30      | 30      | 5       | 15       | 30      | 110-220       | 5 2      | 4.5      | 200   | 10       |
| BC548B   | NPN  | TO-92 (77) | 30      | 30      | 5       | 15       | 30      | 200-450       | 5 2      | 4.5      | 200   | 10       |
| BC548C   | NPN  | TO-92 (77) | 30      | 30      | 5       | 15       | 30      | 420-800       | 5 2      | 4.5      | 200   | 10       |
| BC549    | NPN  | TO-92 (77) | 30      | 30      | 5       | 15       | 30      | 200-800       | 5 2      | 4.5      | 200   | 4        |
| BC549B   | NPN  | TO-92 (77) | 30      | 30      | 5       | 15       | 30      | 200-450       | 5 2      | 4.5      | 200   | 4        |
| BC549C   | NPN  | TO-92 (77) | 30      | 30      | 5       | 15       | 30      | 420-800       | 5 2      | 4.5      | 200   | 4        |
| BC550    | NPN  | TO-92 (77) | 45      | 50      | 5       | 15       | 30      | 200-800       | 5 2      | 4.5      | 200   | 4        |
| BC550B   | NPN  | TO-92 (77) | 45      | 50      | 5       | 15       | 30      | 200-450       | 5 2      | 4.5      | 200   | 4        |
| BC550C   | NPN  | TO-92 (77) | 45      | 50      | 5       | 15       | 30      | 420-800       | 5 2      | 4.5      | 200   | 4        |
| BC556    | PNP  | TO-92 (77) | 65      | 80      | 5       | 15       | 30      | 110-450       | 5 2      | 4.5      | 150   | 10       |
| BC556A   | PNP  | TO-92 (77) | 65      | 80      | 5       | 15       | 30      | 110-220       | 5 2      | 4.5      | 150   | 10       |
| BC556B   | PNP  | TO-92 (77) | 65      | 80      | 5       | 15       | 30      | 200-450       | 5 2      | 4.5      | 150   | 10       |

2514096 CRIMSON SEMICONDUCTOR INC

99D 00321 D T-29-01

| DEVICE   | TYPE PACKAGE   | BVCEO | BVCBO | BVEBO | ICBO @ VCB | HFE @ VC & IC |         | COB | FT  | NF  |         |          |
|----------|----------------|-------|-------|-------|------------|---------------|---------|-----|-----|-----|---------|----------|
|          |                |       |       |       |            | (V) MIN       | (V) MIN |     |     |     | (V) MIN | (mA) MAX |
| BC557    | PNP TO-92 (77) | 45    | 50    | 5     | 15         | 30            | 110-450 | 5   | 2   | 4.5 | 150     | 10       |
| BC557A   | PNP TO-92 (77) | 45    | 50    | 5     | 15         | 30            | 110-220 | 5   | 2   | 4.5 | 150     | 10       |
| BC557B   | PNP TO-92 (77) | 45    | 50    | 5     | 15         | 30            | 200-450 | 5   | 2   | 4.5 | 150     | 10       |
| BC558    | PNP TO-92 (77) | 30    | 30    | 5     | 15         | 30            | 110-800 | 5   | 2   | 4.5 | 150     | 10       |
| BC558A   | PNP TO-92 (77) | 30    | 30    | 5     | 15         | 30            | 110-220 | 5   | 2   | 4.5 | 150     | 10       |
| BC558B   | PNP TO-92 (77) | 30    | 30    | 5     | 15         | 30            | 200-450 | 5   | 2   | 4.5 | 150     | 10       |
| BC558C   | PNP TO-92 (77) | 30    | 30    | 5     | 15         | 30            | 420-800 | 5   | 2   | 4.5 | 150     | 10       |
| BC559    | PNP TO-92 (77) | 30    | 30    | 5     | 15         | 30            | 110-800 | 5   | 2   | 4.5 | 150     | 4        |
| BC559A   | PNP TO-92 (77) | 30    | 30    | 5     | 15         | 30            | 110-220 | 5   | 2   | 4.5 | 150     | 4        |
| BC559B   | PNP TO-92 (77) | 30    | 30    | 5     | 15         | 30            | 200-450 | 5   | 2   | 4.5 | 150     | 4        |
| BC559C   | PNP TO-92 (77) | 30    | 30    | 5     | 15         | 30            | 420-800 | 5   | 2   | 4.5 | 150     | 4        |
| BC560    | PNP TO-92 (77) | 45    | 50    | 5     | 15         | 30            | 110-800 | 5   | 2   | 4.5 | 150     | 4        |
| BC560A   | PNP TO-92 (77) | 45    | 50    | 5     | 15         | 30            | 110-220 | 5   | 2   | 4.5 | 150     | 4        |
| BC560B   | PNP TO-92 (77) | 45    | 50    | 5     | 15         | 30            | 200-450 | 5   | 2   | 4.5 | 150     | 4        |
| BC560C   | PNP TO-92 (77) | 45    | 50    | 5     | 15         | 30            | 420-800 | 5   | 2   | 4.5 | 150     | 4        |
| BC635    | NPN TO-92 (74) | 45    | 45    | 5     | 100        | 30            | 40-250  | 2   | 150 |     | 100     |          |
| BC636    | PNP TO-92 (74) | 45    | 45    | 5     | 100        | 30            | 40-250  | 2   | 150 |     | 100     |          |
| BC637    | NPN TO-92 (74) | 60    | 60    | 5     | 100        | 30            | 40-160  | 2   | 150 |     | 100     |          |
| BC638    | PNP TO-92 (74) | 60    | 60    | 5     | 100        | 30            | 40-160  | 2   | 150 |     | 100     |          |
| BC728    | PNP TO-92 (72) | 25    | 30    | 5     | 10         | 25            | 63-630  | 1   | 100 | 20  |         |          |
| BC728-10 | PNP TO-92 (72) | 25    | 30    | 5     | 10         | 25            | 63-160  | 1   | 100 | 20  |         |          |
| BC728-16 | PNP TO-92 (72) | 25    | 30    | 5     | 10         | 25            | 100-250 | 1   | 100 | 20  |         |          |
| BC728-25 | PNP TO-92 (72) | 25    | 30    | 5     | 10         | 25            | 160-400 | 1   | 100 | 20  |         |          |
| BC728-40 | PNP TO-92 (72) | 25    | 30    | 5     | 10         | 25            | 250-630 | 1   | 100 | 20  |         |          |
| BC738    | NPN TO-92 (72) | 25    | 30    | 5     | 10         | 25            | 63-630  | 1   | 100 | 20  |         |          |
| BC738-10 | NPN TO-92 (72) | 25    | 30    | 5     | 10         | 25            | 63-160  | 1   | 100 | 20  |         |          |
| BC738-16 | NPN TO-92 (72) | 25    | 30    | 5     | 10         | 25            | 100-250 | 1   | 100 | 20  |         |          |
| BC738-25 | NPN TO-92 (72) | 25    | 30    | 5     | 10         | 25            | 160-400 | 1   | 100 | 20  |         |          |
| BC738-40 | NPN TO-92 (72) | 25    | 30    | 5     | 10         | 25            | 250-630 | 1   | 100 | 20  |         |          |
| BCX58    | NPN TO-92 (72) | 32    | 32    | 7     | 10         | 32            | 120-630 | 5   | 2   | 4.5 | 125     | 6        |
| BCX58-7  | NPN TO-92 (72) | 32    | 32    | 7     | 10         | 32            | 120-220 | 5   | 2   | 4.5 | 125     | 6        |
| BCX58-8  | NPN TO-92 (72) | 32    | 32    | 7     | 10         | 32            | 180-310 | 5   | 2   | 4.5 | 125     | 6        |
| BCX58-9  | NPN TO-92 (72) | 32    | 32    | 7     | 10         | 32            | 250-460 | 5   | 2   | 4.5 | 125     | 6        |
| BCX58-10 | NPN TO-92 (72) | 32    | 32    | 7     | 10         | 32            | 380-630 | 5   | 2   | 4.5 | 125     | 6        |
| BCX59    | NPN TO-92 (72) | 45    | 45    | 7     | 10         | 45            | 120-630 | 5   | 2   | 4.5 | 125     | 6        |
| BCX59-7  | NPN TO-92 (72) | 45    | 45    | 7     | 10         | 45            | 120-220 | 5   | 2   | 4.5 | 125     | 6        |
| BCX59-8  | NPN TO-92 (72) | 45    | 45    | 7     | 10         | 45            | 180-310 | 5   | 2   | 4.5 | 125     | 6        |
| BCX59-9  | NPN TO-92 (72) | 45    | 45    | 7     | 10         | 45            | 250-460 | 5   | 2   | 4.5 | 125     | 6        |
| BCX59-10 | NPN TO-92 (72) | 45    | 45    | 7     | 10         | 45            | 380-630 | 5   | 2   | 4.5 | 125     | 6        |
| BCX73    | NPN TO-92 (72) | 32    | 60    | 5     | 20         | 32            | 100-630 | 1   | 100 | 12  | 100     |          |
| BCX73-16 | NPN TO-92 (72) | 32    | 60    | 5     | 20         | 32            | 100-250 | 1   | 100 | 12  | 100     |          |
| BCX73-25 | NPN TO-92 (72) | 32    | 60    | 5     | 20         | 32            | 160-400 | 1   | 100 | 12  | 100     |          |
| BCX73-40 | NPN TO-92 (72) | 32    | 60    | 5     | 20         | 32            | 250-630 | 1   | 100 | 12  | 100     |          |
| BCX74    | NPN TO-92 (72) | 45    | 75    | 5     | 20         | 45            | 100-630 | 1   | 100 | 12  | 100     |          |
| BCX74-16 | NPN TO-92 (72) | 45    | 75    | 5     | 20         | 45            | 100-250 | 1   | 100 | 12  | 100     |          |

## 2514096 CRIMSON SEMICONDUCTOR INC

99D 00322 D' T.29.01

| DEVICE   | TYPE | PACKAGE    | BVCEO   | BVCBO   | BVEBO   | ICBO     | VCB          | HFE               | VC & IC  | COB      | FT  | NF |
|----------|------|------------|---------|---------|---------|----------|--------------|-------------------|----------|----------|-----|----|
|          |      |            | (V) MIN | (V) MIN | (V) MIN | (mA) MAX | (V) MIN -MAX | (V) (mA) (pF) MAX | (MHz)    | (dB) MAX |     |    |
| BCX74-25 | NPN  | TO-92 (72) | 45      | 75      | 5       | 20       | 45           | 160-400           | 1 100    | 12       | 100 |    |
| BCX74-40 | NPN  | TO-92 (72) | 45      | 75      | 5       | 20       | 45           | 250-630           | 1 100    | 12       | 100 |    |
| BCX75    | PNP  | TO-92 (72) | 32      | 60      | 5       | 20       | 32           | 100-630           | 1 100    | 18       | 100 |    |
| BCX75-16 | PNP  | TO-92 (72) | 32      | 60      | 5       | 20       | 32           | 100-250           | 1 100    | 18       | 100 |    |
| BCX75-25 | PNP  | TO-92 (72) | 32      | 60      | 5       | 20       | 32           | 160-400           | 1 100    | 18       | 100 |    |
| BCX75-40 | PNP  | TO-92 (72) | 32      | 60      | 5       | 20       | 32           | 250-630           | 1 100    | 18       | 100 |    |
| BCX76    | PNP  | TO-92 (72) | 45      | 75      | 5       | 20       | 45           | 100-630           | 1 100    | 18       | 100 |    |
| BCX76-16 | PNP  | TO-92 (72) | 45      | 75      | 5       | 20       | 45           | 100-250           | 1 100    | 18       | 100 |    |
| BCX76-25 | PNP  | TO-92 (72) | 45      | 75      | 5       | 20       | 45           | 160-400           | 1 100    | 18       | 100 |    |
| BCX76-40 | PNP  | TO-92 (72) | 45      | 75      | 5       | 20       | 45           | 250-630           | 1 100    | 18       | 100 |    |
| BCX78    | PNP  | TO-92 (72) | 32      | 32      | 5       | 10       | 32           | 120-630           | 5 2 4.5  | 200      | 6   |    |
| BCX78- 7 | PNP  | TO-92 (72) | 32      | 32      | 5       | 10       | 32           | 120-220           | 5 2 4.5  | 200      | 6   |    |
| BCX78- 8 | PNP  | TO-92 (72) | 32      | 32      | 5       | 10       | 32           | 180-310           | 5 2 4.5  | 200      | 6   |    |
| BCX78- 9 | PNP  | TO-92 (72) | 32      | 32      | 5       | 10       | 32           | 250-460           | 5 2 4.5  | 200      | 6   |    |
| BCX78-10 | PNP  | TO-92 (72) | 32      | 32      | 5       | 10       | 32           | 380-630           | 5 2 4.5  | 200      | 6   |    |
| BCX79    | PNP  | TO-92 (72) | 45      | 45      | 5       | 10       | 45           | 120-630           | 5 2 4.5  | 200      | 6   |    |
| BCX79- 7 | PNP  | TO-92 (72) | 45      | 45      | 5       | 10       | 45           | 120-220           | 5 2 4.5  | 200      | 6   |    |
| BCX79- 8 | PNP  | TO-92 (72) | 45      | 45      | 5       | 10       | 45           | 180-310           | 5 2 4.5  | 200      | 6   |    |
| BCX79- 9 | PNP  | TO-92 (72) | 45      | 45      | 5       | 10       | 45           | 250-460           | 5 2 4.5  | 200      | 6   |    |
| BCX79-10 | PNP  | TO-92 (72) | 45      | 45      | 5       | 10       | 45           | 380-630           | 5 2 4.5  | 200      | 6   |    |
| BCY58    | NPN  | TO-18      | 32      | 32      | 7       | 10       | 32           | 120-630           | 5 2 4.5  | 125      | 6   |    |
| BCY58- 7 | NPN  | TO-18      | 32      | 32      | 7       | 10       | 32           | 120-220           | 5 2 4.5  | 125      | 6   |    |
| BCY58- 8 | NPN  | TO-18      | 32      | 32      | 7       | 10       | 32           | 180-310           | 5 2 4.5  | 125      | 6   |    |
| BCY58- 9 | NPN  | TO-18      | 32      | 32      | 7       | 10       | 32           | 250-460           | 5 2 4.5  | 125      | 6   |    |
| BCY58-10 | NPN  | TO-18      | 32      | 32      | 7       | 10       | 32           | 380-630           | 5 2 4.5  | 125      | 6   |    |
| BCY59    | NPN  | TO-18      | 45      | 45      | 7       | 10       | 45           | 120-630           | 5 2 4.5  | 125      | 6   |    |
| BCY59- 7 | NPN  | TO-18      | 45      | 45      | 7       | 10       | 45           | 120-220           | 5 2 4.5  | 125      | 6   |    |
| BCY59- 8 | NPN  | TO-18      | 45      | 45      | 7       | 10       | 45           | 180-310           | 5 2 4.5  | 125      | 6   |    |
| BCY59- 9 | NPN  | TO-18      | 45      | 45      | 7       | 10       | 45           | 250-460           | 5 2 4.5  | 125      | 6   |    |
| BCY59-10 | NPN  | TO-18      | 45      | 45      | 7       | 10       | 45           | 380-630           | 5 2 4.5  | 125      | 6   |    |
| BCY78    | PNP  | TO-18      | 32      | 32      | 5       | 10       | 32           | 120-630           | 5 2 4.5  | 200      | 6   |    |
| BCY78- 7 | PNP  | TO-18      | 32      | 32      | 5       | 10       | 32           | 120-220           | 5 2 4.5  | 200      | 6   |    |
| BCY78- 8 | PNP  | TO-18      | 32      | 32      | 5       | 10       | 32           | 180-310           | 5 2 4.5  | 200      | 6   |    |
| BCY78- 9 | PNP  | TO-18      | 32      | 32      | 5       | 10       | 32           | 250-460           | 5 2 4.5  | 200      | 6   |    |
| BCY78-10 | PNP  | TO-18      | 32      | 32      | 5       | 10       | 32           | 380-630           | 5 2 4.5  | 200      | 6   |    |
| BCY79    | PNP  | TO-18      | 45      | 45      | 5       | 10       | 45           | 120-630           | 5 2 4.5  | 200      | 6   |    |
| BCY79- 7 | PNP  | TO-18      | 45      | 45      | 5       | 10       | 45           | 120-220           | 5 2 4.5  | 200      | 6   |    |
| BCY79- 8 | PNP  | TO-18      | 45      | 45      | 5       | 10       | 45           | 180-310           | 5 2 4.5  | 200      | 6   |    |
| BCY79- 9 | PNP  | TO-18      | 45      | 45      | 5       | 10       | 45           | 250-460           | 5 2 4.5  | 200      | 6   |    |
| BCY79-10 | PNP  | TO-18      | 45      | 45      | 5       | 10       | 45           | 380-630           | 5 2 4.5  | 200      | 6   |    |
| BF198    | NPN  | TO-92 (72) | 30      | 40      | 4       | 100      | 40           | 26-               | 10 4 .4  | 400      |     |    |
| BF199    | NPN  | TO-92 (72) | 25      | 40      | 4       | 100      | 40           | 38-               | 10 7 .4  | 550      |     |    |
| BF240    | NPN  | TO-92 (72) | 40      | 40      | 4       | 100      | 20           | 67-222            | 10 1 .4  | 400      |     |    |
| BF241    | NPN  | TO-92 (72) | 40      | 40      | 4       | 100      | 20           | 36-125            | 10 1 .4  | 400      |     |    |
| BF254    | NPN  | TO-92 (72) | 20      | 30      | 5       | 100      | 20           | 67-220            | 10 1 .85 | 260      |     |    |

2514096 CRIMSON SEMICONDUCTOR INC

99D 00323

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T-29-01

| DEVICE   | TYPE PACKAGE   | BVCEO   | BVCBO   | BVEBO   | ICBO @ VCB | HFE @ VC & IC | COB |      | FT       | NF    |          |
|----------|----------------|---------|---------|---------|------------|---------------|-----|------|----------|-------|----------|
|          |                | (V) MIN | (V) MIN | (V) MIN | (mA) MAX   | (V) MIN -MAX  | (V) | (mA) | (pI) MAX | (MHz) | (db) MAX |
| BF255    | NPN TO-92 (72) | 90      | 30      | 5       | 100        | 20 36-125     | 10  | 1    | .85      | 200   |          |
| BF257    | NPN TO-39      | 160     | 160     | 5       | 50         | 100 25-       | 10  | 30   | 5.5      | 90    |          |
| BF258    | NPN TO-39      | 250     | 250     | 5       | 50         | 200 25-       | 10  | 30   | 5.5      | 90    |          |
| BF259    | NPN TO-39      | 300     | 300     | 5       | 50         | 250 25-       | 10  | 30   | 5.5      | 90    |          |
| BF297    | NPN TO-92 (72) | 160     | 160     | 5       | 50         | 100 30-150    | 10  | 30   | 5.5      | 95    |          |
| BF298    | NPN TO-92 (72) | 250     | 250     | 5       | 50         | 200 30-150    | 10  | 30   | 5.5      | 95    |          |
| BF299    | NPN TO-92 (72) | 300     | 300     | 5       | 50         | 250 30-150    | 10  | 30   | 5.5      | 95    |          |
| BF336    | NPN TO-39      | 180     | 185     | 5       | 50         | 100 20-100    | 10  | 30   | 5.5      | 80    |          |
| BF337    | NPN TO-39      | 200     | 250     | 5       | 50         | 200 20-100    | 10  | 30   | 5.5      | 80    |          |
| BF338    | NPN TO-39      | 225     | 300     | 5       | 50         | 250 20-100    | 10  | 30   | 5.5      | 80    |          |
| BF397    | PNP TO-92 (72) | 90      | 90      | 6       | 100        | 90 40-250     | 10  | 10   |          |       |          |
| BF398    | PNP TO-92 (72) | 150     | 150     | 6       | 100        | 120 30-200    | 10  | 10   |          |       |          |
| BF411    | NPN TO-92 (72) | 90      | 110     | 5       | 100        | 90 30-        | 10  | 10   |          |       |          |
| BF412    | NPN TO-92 (72) | 130     | 150     | 5       | 100        | 120 30-       | 10  | 10   |          |       |          |
| BF413    | NPN TO-92 (72) | 170     | 200     | 5       | 100        | 150 30-       | 10  | 10   |          |       |          |
| BFX37    | PNP TO-18      | 60      | 60      | 6       | 20         | 50 70-300     | 5   | .01  | 6        | 40    | 3        |
| BFX38    | PNP TO-5       | 55      | 55      | 5       | 50         | 40 85-        | 5   | 100  | 20       | 100   |          |
| BFX39    | PNP TO-5       | 55      | 55      | 5       | 50         | 40 40-        | 5   | 100  | 20       | 100   |          |
| BFX40    | PNP TO-5       | 75      | 75      | 5       | 50         | 50 85-        | 5   | 100  | 20       | 100   |          |
| BFX41    | PNP TO-5       | 75      | 75      | 5       | 50         | 50 40-        | 5   | 100  | 20       | 100   |          |
| BFY65    | PNP TO-18      | 45      | 45      | 6       | 10         | 40 120-       | 5   | 1    | 6.5      |       | 3        |
| BFY84    | NPN TO-39      | 60      | 100     | 5       | 500        | 100 30-       | 10  | 150  | 12       | 50    |          |
| BFY87    | PNP TO-39      | 50      | 50      | 4       | 500        | 50 40-        | 10  | 150  | 12       | 100   |          |
| BFY39    | NPN TO-18      | 25      | 45      | 5       | 50         | 30 35-400     | 10  | 10   | 5        | 150   |          |
| BFY39-1  | NPN TO-18      | 25      | 45      | 5       | 50         | 30 35-110     | 10  | 10   | 5        | 150   |          |
| BFY39-2  | NPN TO-18      | 25      | 45      | 5       | 50         | 30 100-200    | 10  | 10   | 5        | 150   |          |
| BFY39-3  | NPN TO-18      | 25      | 45      | 5       | 50         | 30 180-400    | 10  | 10   | 5        | 150   |          |
| BFY50    | NPN TO-39      | 35      | 80      | 6       | 500        | 80 30-        | 10  | 150  | 12       | 60    |          |
| BFY51    | NPN TO-39      | 30      | 60      | 6       | 500        | 60 40-        | 10  | 150  | 12       | 60    |          |
| BFY52    | NPN TO-39      | 20      | 40      | 6       | 500        | 40 60-        | 10  | 150  | 12       | 60    |          |
| BFY72    | NPN TO-39      | 28      | 50      | 5       | 20         | 40 40-150     | 10  | 150  | 8        | 250   |          |
| BFY76    | NPN TO-18      | 45      | 45      | 6       | 20         | 30 30-200     | 5   | .01  | 6        |       |          |
| BSX45    | NPN TO-39      | 40      | 80      | 7       | 30         | 60 40-250     | 1   | 100  | 20       | 60    |          |
| BSX45-6  | NPN TO-39      | 40      | 80      | 7       | 30         | 60 40-100     | 1   | 100  | 20       | 60    |          |
| BSX45-10 | NPN TO-39      | 40      | 80      | 7       | 30         | 60 63-160     | 1   | 100  | 20       | 60    |          |
| BSX45-16 | NPN TO-39      | 40      | 80      | 7       | 30         | 60 100-250    | 1   | 100  | 20       | 60    |          |
| BSX46    | NPN TO-39      | 60      | 100     | 7       | 10         | 60 40-250     | 1   | 100  | 20       | 60    |          |
| BSX46-6  | NPN TO-39      | 60      | 100     | 7       | 10         | 60 40-100     | 1   | 100  | 20       | 60    |          |
| BSX46-10 | NPN TO-39      | 60      | 100     | 7       | 10         | 60 63-160     | 1   | 100  | 20       | 60    |          |
| BSX46-16 | NPN TO-39      | 60      | 100     | 7       | 10         | 60 100-250    | 1   | 100  | 20       | 60    |          |
| BSY51    | NPN TO-5       | 25      | 60      | 5       | 100        | 30 40-120     | 10  | 150  | 9        | 130   |          |
| BSY52    | NPN TO-5       | 25      | 60      | 5       | 100        | 30 100-300    | 10  | 150  | 9        | 130   |          |
| BSY53    | NPN TO-5       | 30      | 75      | 7       | 10         | 60 40-120     | 10  | 150  | 9        | 150   |          |
| BSY54    | NPN TO-5       | 30      | 75      | 7       | 10         | 60 100-300    | 10  | 150  | 9        | 150   |          |
| BSY95A   | NPN TO-18      | 15      | 20      | 5       | 50         | 16 50-200     | .35 | 10   | 6        | 200   |          |

## 2514096 CRIMSON SEMICONDUCTOR INC

99D 00324 D

T-29-01

| DEVICE  | TYPE PACKAGE   | BVCEO   | BVCBO   | BVEBO   | ICBO @ VCB | HFE @ VC & IC | COB   | FT  | NF  |                  |
|---------|----------------|---------|---------|---------|------------|---------------|-------|-----|-----|------------------|
|         |                | (V) MIN | (V) MIN | (V) MIN | (mA) MAX   | (V) MIN - MAX |       |     |     | (V) (mA) (p) MAX |
| CS1402A | NPN TO-92 (72) | 20      | 25      | 4       | 20         | 10 100- 165   | 5 2   | 3.5 | 125 | 4                |
| CS1402B | NPN TO-92 (72) | 20      | 25      | 4       | 20         | 10 150- 225   | 5 2   | 3.5 | 125 | 4                |
| CS1402C | NPN TO-92 (72) | 20      | 25      | 4       | 20         | 10 202- 318   | 5 2   | 3.5 | 125 | 4                |
| CS1402D | NPN TO-92 (72) | 20      | 25      | 4       | 20         | 10 290- 450   | 5 2   | 3.5 | 125 | 4                |
| CS1402E | NPN TO-92 (72) | 20      | 25      | 4       | 20         | 10 410- 810   | 5 2   | 3.5 | 125 | 4                |
| CS1502A | NPN TO-92 (72) | 20      | 20      | 4       | 50         | 18 36- 55     | 10 1  | 1.7 | 600 | 5                |
| CS1502B | NPN TO-92 (72) | 20      | 20      | 4       | 50         | 18 48- 75     | 10 1  | 1.7 | 600 | 5                |
| CS1502C | NPN TO-92 (72) | 20      | 20      | 4       | 50         | 18 66- 100    | 10 1  | 1.7 | 600 | 5                |
| CS1502D | NPN TO-92 (72) | 20      | 20      | 4       | 50         | 18 84- 127    | 10 1  | 1.7 | 600 | 5                |
| CS1502E | NPN TO-92 (72) | 20      | 20      | 4       | 50         | 18 105- 210   | 10 1  | 1.7 | 600 | 5                |
| CS1602A | PNP TO-92 (72) | 20      | 25      | 4       | 20         | 10 70- 105    | 5 2   | 6   | 200 | 4                |
| CS1602B | PNP TO-92 (72) | 20      | 25      | 4       | 20         | 10 90- 135    | 5 2   | 6   | 200 | 4                |
| CS1602C | PNP TO-92 (72) | 20      | 25      | 4       | 20         | 10 125- 190   | 5 2   | 6   | 200 | 4                |
| CS1602D | PNP TO-92 (72) | 20      | 25      | 4       | 20         | 10 170- 260   | 5 2   | 6   | 200 | 4                |
| CS1602E | PNP TO-92 (72) | 20      | 25      | 4       | 20         | 10 223- 475   | 5 2   | 6   | 200 | 4                |
| CS1702K | NPN TO-92 (72) | 25      | 25      | 5       | 500        | 18 106- 150   | 1 100 | 20  | 150 |                  |
| CS1702L | NPN TO-92 (72) | 25      | 25      | 5       | 500        | 18 132- 188   | 1 100 | 20  | 150 |                  |
| CS1702M | NPN TO-92 (72) | 25      | 25      | 5       | 500        | 18 170- 233   | 1 100 | 20  | 150 |                  |
| CS1702N | NPN TO-92 (72) | 25      | 25      | 5       | 500        | 18 213- 300   | 1 100 | 20  | 150 |                  |
| CS1702O | NPN TO-92 (72) | 25      | 25      | 5       | 500        | 18 250-       | 1 100 | 20  | 150 |                  |
| CS1802K | PNP TO-92 (72) | 25      | 25      | 5       | 500        | 18 106- 150   | 1 100 | 35  | 100 |                  |
| CS1802L | PNP TO-92 (72) | 25      | 25      | 5       | 500        | 18 132- 188   | 1 100 | 35  | 100 |                  |
| CS1802M | PNP TO-92 (72) | 25      | 25      | 5       | 500        | 18 170- 233   | 1 100 | 35  | 100 |                  |
| CS1802N | PNP TO-92 (72) | 25      | 25      | 5       | 500        | 18 213- 300   | 1 100 | 35  | 100 |                  |
| CS1802O | PNP TO-92 (72) | 25      | 25      | 5       | 500        | 18 250-       | 1 100 | 35  | 100 |                  |
| CS8050B | NPN TO-92 (72) | 25      | 30      | 5       | 500        | 20 85- 160    | 1 100 | 20  | 150 |                  |
| CS8050C | NPN TO-92 (72) | 25      | 30      | 5       | 500        | 20 120- 200   | 1 100 | 20  | 150 |                  |
| CS8050D | NPN TO-92 (72) | 25      | 30      | 5       | 500        | 20 160- 300   | 1 100 | 20  | 150 |                  |
| CS8550B | PNP TO-92 (72) | 25      | 30      | 5       | 500        | 20 85- 160    | 1 100 | 35  | 100 |                  |
| CS8550C | PNP TO-92 (72) | 25      | 30      | 5       | 500        | 20 120- 200   | 1 100 | 35  | 100 |                  |
| CS8550D | PNP TO-92 (72) | 25      | 30      | 5       | 500        | 20 160- 300   | 1 100 | 35  | 100 |                  |
| CS9011D | NPN TO-92 (72) | 18      | 18      | 3       | 50         | 18 29- 44     | 5 1   | 3.5 | 250 | 4                |
| CS9011E | NPN TO-92 (72) | 18      | 18      | 3       | 50         | 18 40- 59     | 5 1   | 3.5 | 250 | 4                |
| CS9011F | NPN TO-92 (72) | 18      | 18      | 3       | 50         | 18 54- 80     | 5 1   | 3.5 | 250 | 4                |
| CS9011G | NPN TO-92 (72) | 18      | 18      | 3       | 50         | 18 72- 108    | 5 1   | 3.5 | 250 | 4                |
| CS9011H | NPN TO-92 (72) | 18      | 18      | 3       | 50         | 18 97- 146    | 5 1   | 3.5 | 250 | 4                |
| CS9011I | NPN TO-92 (72) | 18      | 18      | 3       | 50         | 18 132- 198   | 5 1   | 3.5 | 250 | 4                |
| CS9011J | NPN TO-92 (72) | 18      | 18      | 3       | 50         | 18 182- 273   | 5 1   | 3.5 | 250 | 4                |
| CS9012D | PNP TO-92 (72) | 25      | 25      | 3       | 500        | 18 64- 91     | 1 50  | 12  | 200 | 6                |
| CS9012E | PNP TO-92 (72) | 25      | 25      | 3       | 500        | 18 78- 112    | 1 50  | 12  | 200 | 6                |
| CS9012F | PNP TO-92 (72) | 25      | 25      | 3       | 500        | 18 96- 135    | 1 50  | 12  | 200 | 6                |
| CS9012G | PNP TO-92 (72) | 25      | 25      | 3       | 500        | 18 118- 166   | 1 50  | 12  | 200 | 6                |
| CS9012H | PNP TO-92 (72) | 25      | 25      | 3       | 500        | 18 144- 202   | 1 50  | 12  | 200 | 6                |
| CS9012I | PNP TO-92 (72) | 25      | 25      | 3       | 500        | 18 182- 305   | 1 50  | 12  | 200 | 6                |
| CS9012J | PNP TO-92 (72) | 25      | 25      | 3       | 500        | 18 278- 465   | 1 50  | 12  | 200 | 6                |



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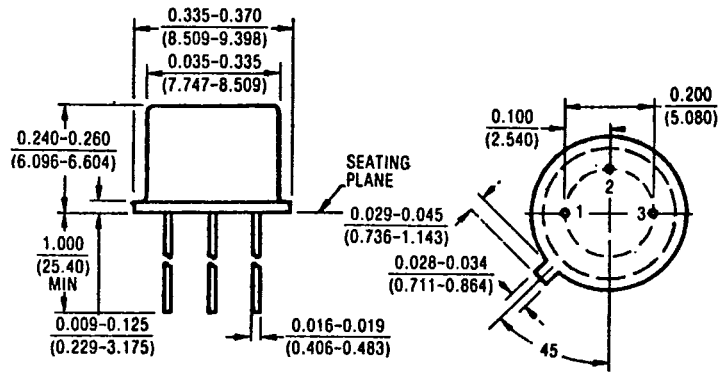
99D 00325 D T-29-01

| DEVICE   | TYPE | PACKAGE    | BVCEO   | BVCBO   | BVEBO   | ICBO @ VCB |         | HFE @ VC & IC |     | COB | FT  | NF  |              |
|----------|------|------------|---------|---------|---------|------------|---------|---------------|-----|-----|-----|-----|--------------|
|          |      |            | (V) MIN | (V) MIN | (V) MIN | (mA) MAX   | (V) MIN | (mA) MAX      | (V) |     |     |     | (mA) (p) MAX |
| CS9013D  | NPN  | TO-92 (72) | 25      | 25      | 3       | 500        | 18      | 64- 91        | 1   | 50  | 10  | 200 | 6            |
| CS9013E  | NPN  | TO-92 (72) | 25      | 25      | 3       | 500        | 18      | 78- 112       | 1   | 50  | 10  | 200 | 6            |
| CS9013F  | NPN  | TO-92 (72) | 25      | 25      | 3       | 500        | 18      | 96- 135       | 1   | 50  | 10  | 200 | 6            |
| CS9013G  | NPN  | TO-92 (72) | 25      | 25      | 3       | 500        | 18      | 118- 166      | 1   | 50  | 10  | 200 | 6            |
| CS9013H  | NPN  | TO-92 (72) | 25      | 25      | 3       | 500        | 18      | 144- 202      | 1   | 50  | 10  | 200 | 6            |
| CS9013I  | NPN  | TO-92 (72) | 25      | 25      | 3       | 500        | 18      | 182- 305      | 1   | 50  | 10  | 200 | 6            |
| CS9013J  | NPN  | TO-92 (72) | 25      | 25      | 3       | 500        | 18      | 278- 465      | 1   | 50  | 10  | 200 | 6            |
| CS9014A  | NPN  | TO-92 (72) | 18      | 18      | 3       | 50         | 18      | 60- 150       | 5   | 1   | 3.5 | 125 | 4            |
| CS9014B  | NPN  | TO-92 (72) | 18      | 18      | 3       | 50         | 18      | 100- 300      | 5   | 1   | 3.5 | 125 | 4            |
| CS9014C  | NPN  | TO-92 (72) | 18      | 18      | 3       | 50         | 18      | 200- 600      | 5   | 1   | 3.5 | 125 | 4            |
| CS9014D  | NPN  | TO-92 (72) | 18      | 18      | 3       | 50         | 18      | 400-1000      | 5   | 1   | 3.5 | 125 | 4            |
| CS9014D1 | NPN  | TO-92 (72) | 18      | 18      | 3       | 50         | 18      | 400- 630      | 5   | 1   | 3.5 | 125 | 4            |
| CS9014D2 | NPN  | TO-92 (72) | 18      | 18      | 3       | 50         | 18      | 570- 840      | 5   | 1   | 3.5 | 125 | 4            |
| CS9014D3 | NPN  | TO-92 (72) | 18      | 18      | 3       | 50         | 18      | 760-1000      | 5   | 1   | 3.5 | 125 | 4            |
| CS9014E  | NPN  | TO-92 (72) | 18      | 18      | 3       | 50         | 18      | 800-          | 5   | 1   | 3.5 | 125 | 4            |
| CS9015A  | PNP  | TO-92 (72) | 18      | 18      | 3       | 50         | 18      | 60- 150       | 5   | 1   | 6   | 200 | 4            |
| CS9015B  | PNP  | TO-92 (72) | 18      | 18      | 3       | 50         | 18      | 100- 300      | 5   | 1   | 6   | 200 | 4            |
| CS9015C  | PNP  | TO-92 (72) | 18      | 18      | 3       | 50         | 18      | 200- 600      | 5   | 1   | 6   | 200 | 4            |
| CS9015D  | PNP  | TO-92 (72) | 18      | 18      | 3       | 50         | 18      | 400-1000      | 5   | 1   | 6   | 200 | 4            |
| CS9015D1 | PNP  | TO-92 (72) | 18      | 18      | 3       | 50         | 18      | 400- 630      | 5   | 1   | 6   | 200 | 4            |
| CS9015D2 | PNP  | TO-92 (72) | 18      | 18      | 3       | 50         | 18      | 570- 840      | 5   | 1   | 6   | 200 | 4            |
| CS9015D3 | PNP  | TO-92 (72) | 18      | 18      | 3       | 50         | 18      | 760-1000      | 5   | 1   | 6   | 200 | 4            |
| CS9015E  | PNP  | TO-92 (72) | 18      | 18      | 3       | 50         | 18      | 800-          | 5   | 1   | 6   | 200 | 4            |
| CS9018D  | NPN  | TO-92 (72) | 12      | 15      | 3       | 50         | 15      | 29- 44        | 5   | 1   | 1.7 | 600 | 5            |
| CS9018E  | NPN  | TO-92 (72) | 12      | 15      | 3       | 50         | 15      | 40- 59        | 5   | 1   | 1.7 | 600 | 5            |
| CS9018F  | NPN  | TO-92 (72) | 12      | 15      | 3       | 50         | 15      | 54- 80        | 5   | 1   | 1.7 | 600 | 5            |
| CS9018G  | NPN  | TO-92 (72) | 12      | 15      | 3       | 50         | 15      | 72- 108       | 5   | 1   | 1.7 | 600 | 5            |
| CS9018H  | NPN  | TO-92 (72) | 12      | 15      | 3       | 50         | 15      | 97- 146       | 5   | 1   | 1.7 | 600 | 5            |
| CS9018I  | NPN  | TO-92 (72) | 12      | 15      | 3       | 50         | 15      | 132- 198      | 5   | 1   | 1.7 | 600 | 5            |
| CS9018J  | NPN  | TO-92 (72) | 12      | 15      | 3       | 50         | 15      | 182- 273      | 5   | 1   | 1.7 | 600 | 5            |
| CSBD135  | NPN  | TO-237     | 25      | 30      | 5       | 100        | 20      | 40- 250       | 2   | 150 | 20  | 150 |              |
| CSBD135A | NPN  | TO-237     | 25      | 30      | 5       | 100        | 20      | 40- 100       | 2   | 150 | 20  | 150 |              |
| CSBD135B | NPN  | TO-237     | 25      | 30      | 5       | 100        | 20      | 63- 160       | 2   | 150 | 20  | 150 |              |
| CSBD135C | NPN  | TO-237     | 25      | 30      | 5       | 100        | 20      | 100- 250      | 2   | 150 | 20  | 150 |              |
| CSBD135D | NPN  | TO-237     | 25      | 30      | 5       | 100        | 20      | 160- 350      | 2   | 150 | 20  | 150 |              |
| CSBD136  | PNP  | TO-237     | 25      | 30      | 5       | 100        | 20      | 40- 250       | 2   | 150 | 35  | 100 |              |
| CSBD136A | PNP  | TO-237     | 25      | 30      | 5       | 100        | 20      | 40- 100       | 2   | 150 | 35  | 100 |              |
| CSBD136B | PNP  | TO-237     | 25      | 30      | 5       | 100        | 20      | 63- 160       | 2   | 150 | 35  | 100 |              |
| CSBD136C | PNP  | TO-237     | 25      | 30      | 5       | 100        | 20      | 100- 250      | 2   | 150 | 35  | 100 |              |
| CSBD136D | PNP  | TO-237     | 25      | 30      | 5       | 100        | 20      | 160- 350      | 2   | 150 | 35  | 100 |              |

2514096 CRIMSON SEMICONDUCTOR INC  
 99D 00326 D T.29.01  
**PACKAGE OUTLINES**

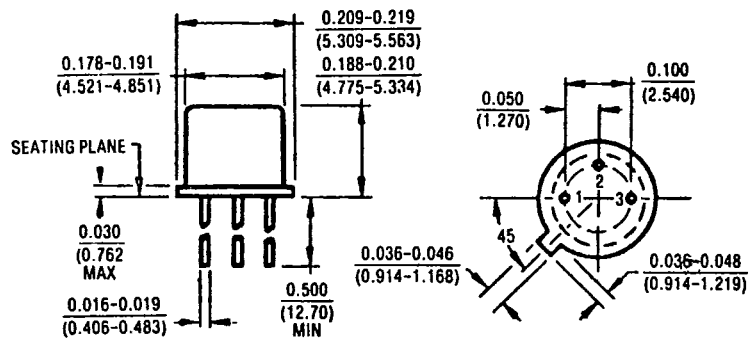
T0-5

| PIN | T |
|-----|---|
| 1   | E |
| 2   | B |
| 3   | C |



T0-18

| PIN | T |
|-----|---|
| 1   | E |
| 2   | B |
| 3   | C |



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99D 00327

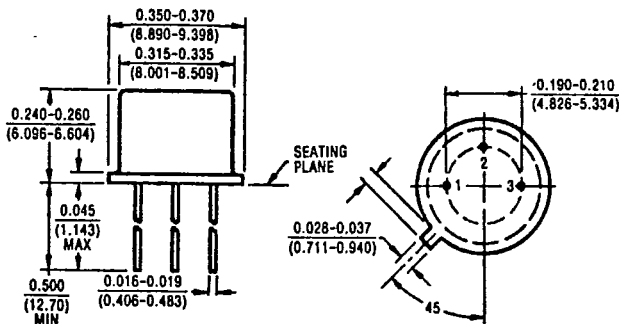
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T-29-01

PACKAGE OUTLINES

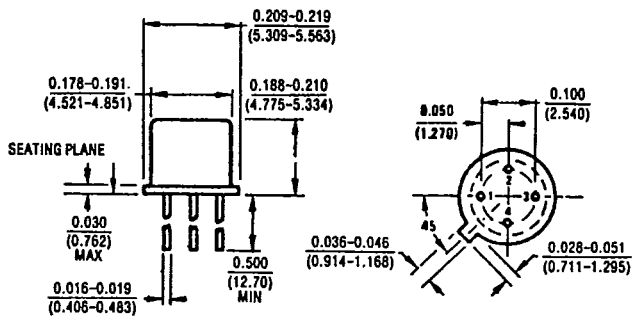
TO-39

| PN | T |
|----|---|
| 1  | E |
| 2  | B |
| 3  | C |



TO-72

| PN | T   |
|----|-----|
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| 2  | B   |
| 3  | C   |
| 4  | GND |



2514096 CRIMSON SEMICONDUCTOR INC

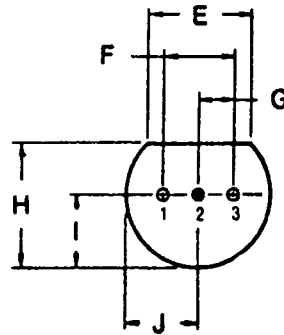
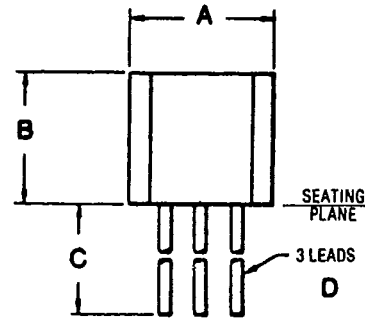
99D 00328 D T-29-01

PACKAGE OUTLINES

TO-92 (72, 74, 75, 76, 77, 78)

| #  | N  | L  | P  | O  | K  | M  |
|----|----|----|----|----|----|----|
| PN | 72 | 74 | 75 | 76 | 77 | 78 |
| 1  | E  | E  | B  | B  | C  | C  |
| 2  | B  | C  | C  | E  | B  | E  |
| 3  | C  | B  | E  | C  | E  | B  |

| DIM. | INCHES |           | MILLIMETRES |      |       |
|------|--------|-----------|-------------|------|-------|
|      | MIN.   | TYP. MAX. | MIN.        | TYP. | MAX.  |
| A    | .175   | .205      | 4.45        |      | 5.20  |
| B    | .170   | .210      | 4.32        |      | 5.33  |
| C    | .500   |           | 12.70       |      |       |
| D    | .016   | .019      | 0.406       |      | 0.483 |
| E    | .135   |           | .343        |      |       |
| F    | .100   |           |             | 2.54 |       |
| G    | .050   |           |             | 1.27 |       |
| H    | .125   | .165      | 3.18        |      | 4.19  |
| I    | .080   | .105      | 2.03        |      | 2.67  |
| J    | .080   | .105      | 2.03        |      | 2.67  |



TO-237 (TO-92 PLUS)

| PN | T |
|----|---|
| 1  | E |
| 2  | B |
| 3  | C |

