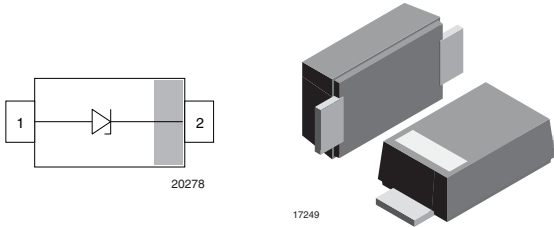
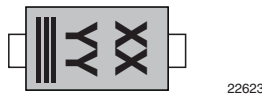


Surface Mount ESD Protection Diodes



MARKING (example only)



Bar = cathode marking
 YY = type code (see table below)
 XX = date code

FEATURES

- For surface mounted applications
- Low-profile package
- Optimized for LAN protection applications
- Ideal for ESD protection of data lines in accordance with IEC 61000-4-2 (IEC 801-2)
- Ideal for EFT protection of data lines in accordance with IEC 61000-4-4 (IEC 801-4)
- ESD-protection acc. IEC 61000-4-2
 ± 30 kV contact discharge
 ± 30 kV air discharge
- Low incremental surge resistance, excellent clamping capability
- 200 W peak pulse power capability with a 10/1000 μ s waveform, repetition rate (duty cycle): 0.01 %
- Very fast response time
- High temperature soldering guaranteed: 260 °C/10 s at terminals
- e3 - Sn
- AEC-Q101 qualified
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21 definition



RoHS
 COMPLIANT
 HALOGEN
FREE

ORDERING INFORMATION

SMF5V0A-M-xx
 08 = 3K per 7" reel (8 mm tape), 30K/box
 18 = 10K per 13" reel (8 mm tape), 50K/box
 Environmental suffix -M- defines halogen-free
 Part number

PACKAGE DATA						
DEVICE NAME	PACKAGE NAME	TYPE CODE	WEIGHT	MOLDING COMPOUND FLAMMABILITY RATING	MOISTURE SENSITIVITY LEVEL	SOLDERING CONDITIONS
SMF5V0A-M	SMF	NE	15 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	260 °C/10 s at terminals
SMF6V5A-M		NK				
SMF7V0A-M		NM				
SMF7V5A-M		NP				
SMF8V0A-M		NR				
SMF8V5A-M		NT				
SMF9V0A-M		NV				
SMF10A-M		NX				
SMF11A-M		NZ				
SMF12A-M		OE				
SMF13A-M		OG				
SMF14A-M		OK				
SMF15A-M		OM				
SMF16A-M		OP				
SMF17A-M		OR				
SMF18A-M		OT				
SMF20A-M		OV				
SMF22A-M		OX				
SMF24A-M		OZ				



PACKAGE DATA						
DEVICE NAME	PACKAGE NAME	TYPE CODE	WEIGHT	MOLDING COMPOUND FLAMMABILITY RATING	MOISTURE SENSITIVITY LEVEL	SOLDERING CONDITIONS
SMF26A-M	SMF	PE	15 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	260 °C/10 s at terminals
SMF28A-M		PG				
SMF30A-M		PK				
SMF33A-M		PM				
SMF36A-M		PP				
SMF40A-M		PR				
SMF43A-M		PT				
SMF45A-M		PV				
SMF48A-M		PX				
SMF51A-M		PZ				

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25\text{ °C}$, unless otherwise specified)				
PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT
Peak pulse current	$t_p = 10/1000\ \mu\text{s}$ waveform acc. IEC 61000-4-5	I_{PPM}	see "Electrical Characteristics"	A
Peak pulse power	$t_p = 8/20\ \mu\text{s}$ waveform acc. IEC 61000-4-5	P_{PP}	1000	W
	$t_p = 10/1000\ \mu\text{s}$ waveform acc. IEC 61000-4-5		200	W
Peak forward surge current	8.3 ms single half sine-wave	I_{FSM}	20	A
ESD immunity	Contact discharge acc. IEC 61000-4-2; 10 pulses	V_{ESD}	± 30	kV
	Air discharge acc. IEC 61000-4-2; 10 pulses		± 30	kV
Thermal resistance	Mounted on epoxy glass PCB with 3 mm x 3 mm, Cu pads ($\geq 40\ \mu\text{m}$ thick)	R_{thJA}	180	K/W
Forward clamping voltage	$I_F = 12\ \text{A}$	V_F	3.5	V
Operating temperature	Junction temperature	T_J	- 55 to + 150	°C
Storage temperature		T_{STG}	- 55 to + 150	°C

ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ °C}$, unless otherwise specified)								
PART NUMBER	REVERSE BREAKDOWN VOLTAGE at I_T , $t_p \leq 5\ \text{ms}$	TEST CURRENT	REVERSE WORKING VOLTAGE	REVERSE CURRENT at V_{RWM}	MAXIMUM PEAK PULSE CURRENT $t_p = 10/1000\ \mu\text{s}$	REVERSE CLAMPING VOLTAGE at I_{PPM}	CAPACITANCE at $V_R = 0\ \text{V}$, $f = 1\ \text{MHz}$	PROTECTION PATHS
	$V_{BR}\ \text{MIN. (V)}$	$I_T\ \text{(mA)}$	$V_{RWM}\ \text{(V)}$	$I_R\ \text{(\mu A)}$	$I_{PPM}\ \text{(A)}$	$V_C\ \text{(V)}$	$C_D\ \text{TYP. (pF)}$	$N_{channel}$
SMF5V0A-M	6.40	10	5	400	21.7	9.2	1030	1
SMF6V0A-M	6.67	10	6	400	19.4	10.3	1010	1
SMF6V5A-M	7.22	10	6.5	250	17.9	11.2	850	1
SMF7V0A-M	7.78	10	7	100	16.7	12	750	1
SMF7V5A-M	8.33	1	7.5	50	15.5	12.9	730	1
SMF8V0A-M	8.89	1	8	25	14.7	13.6	670	1
SMF8V5A-M	9.44	1	8.5	10	13.9	14.4	660	1
SMF9V0A-M	10	1	9	5	13.5	15.4	620	1
SMF10A-M	11.1	1	10	2.5	11.8	17	570	1
SMF11A-M	12.2	1	11	2.5	11	18.2	460	1
SMF12A-M	13.3	1	12	2.5	10.1	19.9	440	1
SMF13A-M	14.4	1	13	1	9.3	21.5	420	1
SMF14A-M	15.6	1	14	1	8.6	23.2	370	1
SMF15A-M	16.7	1	15	1	8.2	24.4	350	1
SMF16A-M	17.8	1	16	1	7.7	26	340	1
SMF17A-M	18.9	1	17	1	7.2	27.6	310	1
SMF18A-M	20	1	18	1	5.8	29.2	305	1



ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)								
PART NUMBER	REVERSE BREAKDOWN VOLTAGE at $I_T, t_p \leq 5\text{ ms}$	TEST CURRENT	REVERSE WORKING VOLTAGE	REVERSE CURRENT at V_{RWM}	MAXIMUM PEAK PULSE CURRENT $t_p = 10/1000\text{ }\mu\text{s}$	REVERSE CLAMPING VOLTAGE at I_{PPM}	CAPACITANCE at $V_R = 0\text{ V}, f = 1\text{ MHz}$	PROTECTION PATHS
	$V_{BR}\text{ MIN. (V)}$	$I_T\text{ (mA)}$	$V_{RWM}\text{ (V)}$	$I_R\text{ (}\mu\text{A)}$	$I_{PPM}\text{ (A)}$	$V_C\text{ (V)}$	$C_D\text{ TYP. (pF)}$	$N_{channel}$
SMF20A-M	22.2	1	20	1	6.2	32.4	207	1
SMF22A-M	24.4	1	22	1	5.6	35.5	265	1
SMF24A-M	26.7	1	24	1	5.1	38.9	240	1
SMF26A-M	28.9	1	26	1	4.8	42.1	225	1
SMF28A-M	31.1	1	28	1	4.4	45.4	210	1
SMF30A-M	33.3	1	30	1	4.1	48.4	205	1
SMF33A-M	36.7	1	33	1	3.8	53.3	190	1
SMF36A-M	40	1	36	1	3.4	58.1	180	1
SMF40A-M	44.4	1	40	1	3.1	64.5	165	1
SMF43A-M	47.8	1	43	1	2.9	69.4	160	1
SMF45A-M	50	1	45	1	2.8	72.7	155	1
SMF48A-M	53.3	1	48	1	2.6	77.4	150	1
SMF51A-M	56.7	1	51	1	2.4	82.4	145	1

TYPICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)

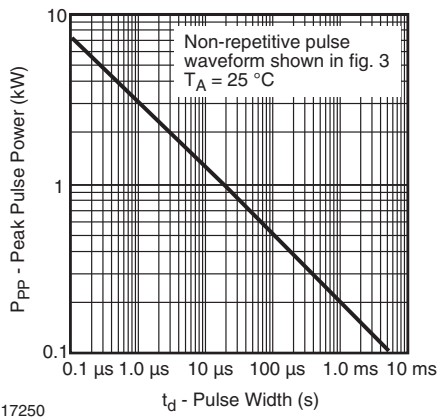


Fig. 1 - Peak Pulse Power Rating

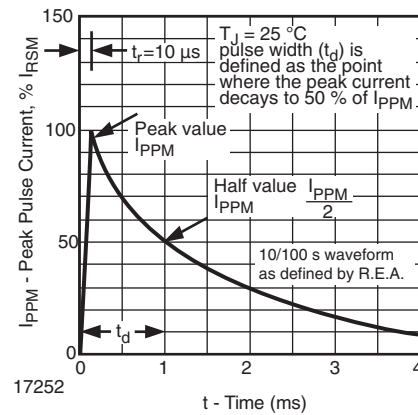


Fig. 3 - Pulse Waveform

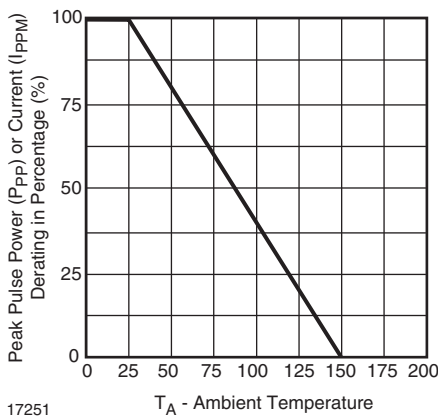
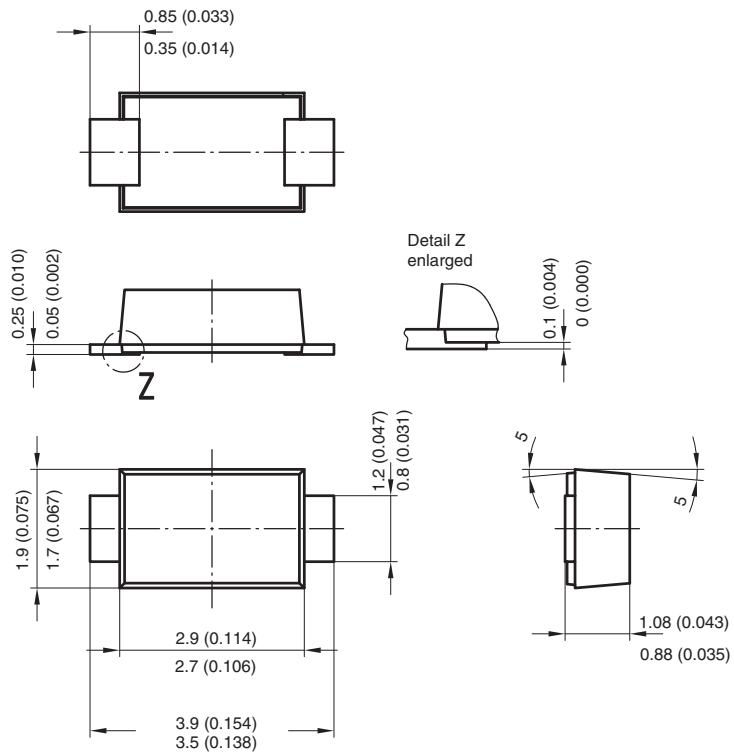


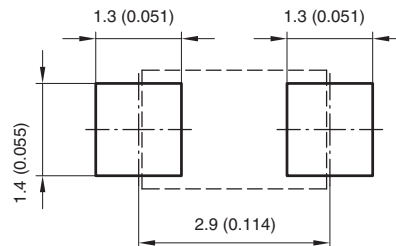
Fig. 2 - Pulse Derating Curve



PACKAGE DIMENSIONS in millimeters (inches): SMF



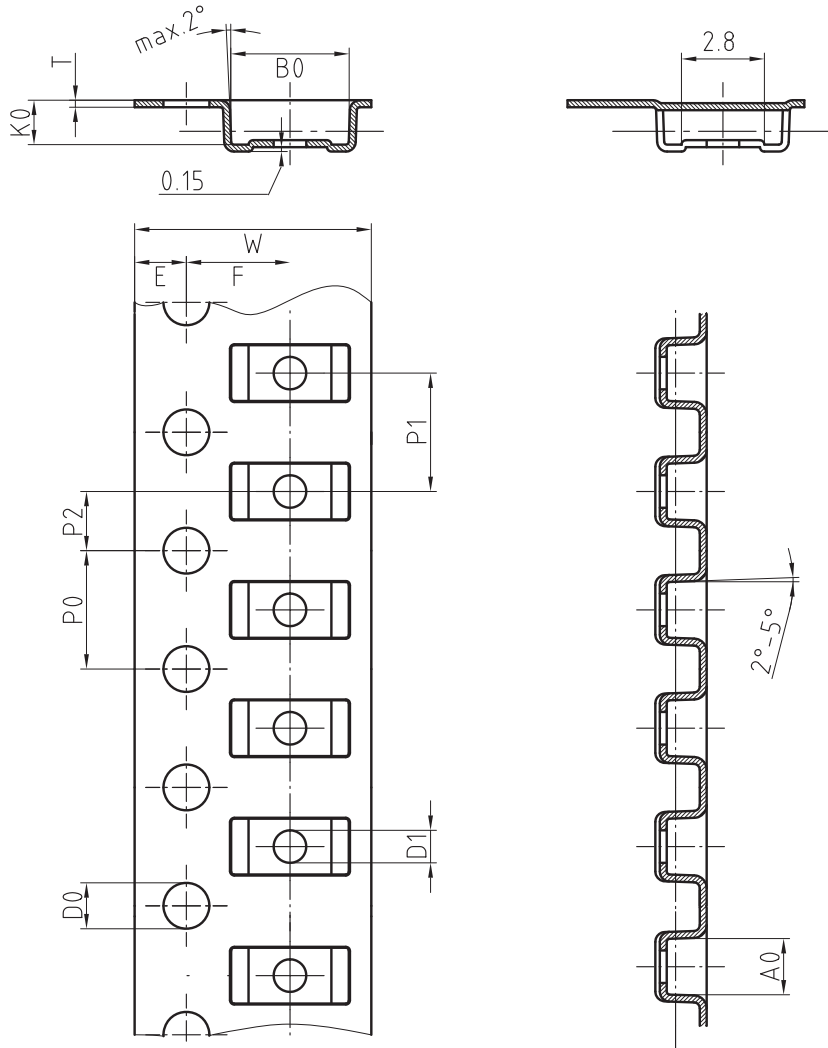
Foot print recommendation:



Created - Date: 15. February 2005
Rev. 3 - Date: 13. March 2007
Document no.:S8-V-3915.01-001 (4)
17247



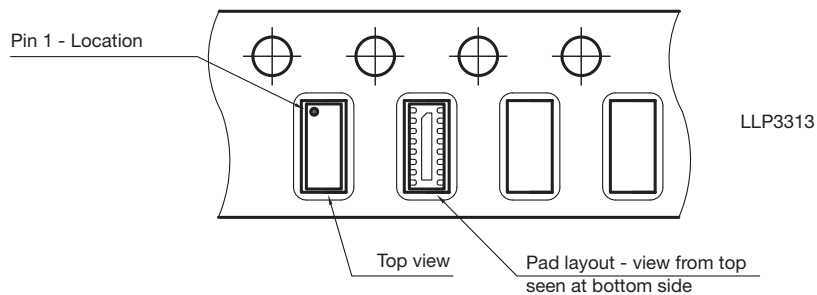
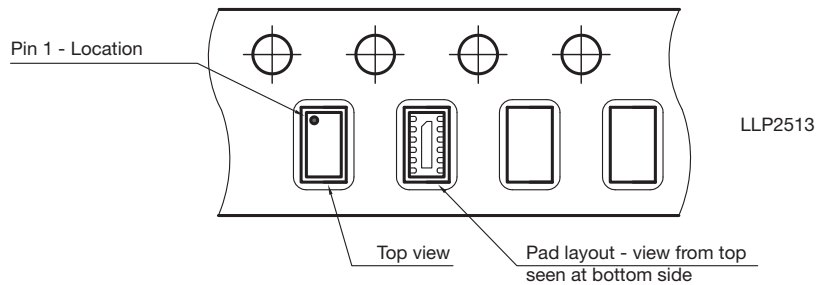
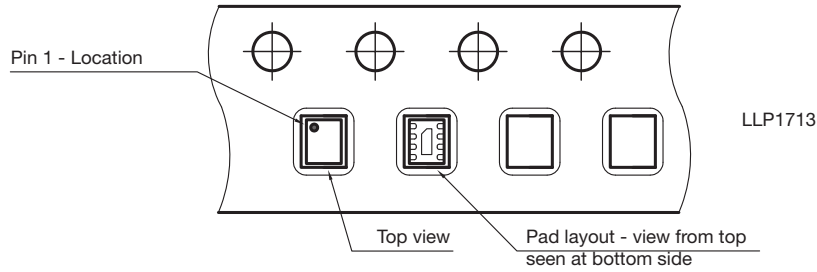
BLISTERTAPE DIMENSIONS in millimeters (inches)



Mat:	A0	B0	K0	W	T	P0	P2	P1	D0	D1	E	F
PS	1.9	4.0	1.5	8.0	0.235	4.0	2.0	4.0	1.5	1	1.75	3.5

Document-No.: S8-V-3717.02-001 (3)

18513





Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk and agree to fully indemnify and hold Vishay and its distributors harmless from and against any and all claims, liabilities, expenses and damages arising or resulting in connection with such use or sale, including attorneys fees, even if such claim alleges that Vishay or its distributor was negligent regarding the design or manufacture of the part. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.