

# Advanced Small Signal MOSFET 2N7000BU/2N7000TA

## FEATURES

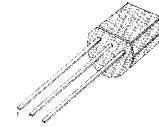
- Fast Switching Times
- Improved Inductive Ruggedness
- Lower Input Capacitance
- Extended Safe Operating Area
- Improved High Temperature Reliability

$$BV_{DSS} = 60 \text{ V}$$

$$R_{DS(on)} = 5.0 \ \Omega$$

$$I_D = 200 \text{ mA}$$

### TO-92



1.Source 2. Gate 3. Drain

## Absolute Maximum Ratings

Symbol	Characteristic	Value	Units
$V_{DSS}$	Drain-to-Source Voltage	60	V
$I_D$	Continuous Drain Current ( $T_C=25^\circ\text{C}$ )	200	mA
	Continuous Drain Current ( $T_C=100^\circ\text{C}$ )	110	
$I_{DM}$	Drain Current-Pulsed <sup>①</sup>	1000	mA
$V_{GS}$	Gate-to-Source Voltage	$\pm 30$	V
$P_D$	Total Power Dissipation ( $T_C=25^\circ\text{C}$ )	400	mW
	Linear Derating Factor	3.2	mW/ $^\circ\text{C}$
$T_J, T_{STG}$	Operating Junction and Storage Temperature Range	- 55 to +150	$^\circ\text{C}$
$T_L$	Maximum Lead Temp. for Soldering Purposes, 1/8" from case for 5-seconds	300	

## Thermal Resistance

Symbol	Characteristic	Typ.	Max.	Units
$R_{\theta JA}$	Junction-to-Ambient	--	312.5	$^\circ\text{C}/\text{W}$

### Electrical Characteristics ( $T_C=25^\circ\text{C}$ unless otherwise specified)

Symbol	Characteristic	Min.	Typ.	Max.	Units	Test Condition
$BV_{DSS}$	Drain-Source Breakdown Voltage	60	--	--	V	$V_{GS}=0V, I_D=250\mu A$
$V_{GS(th)}$	Gate Threshold Voltage	0.3	--	3.9	V	$V_{DS}=V_{GS}, I_D=250\mu A$
		0.4	--	2.2		$V_{DS}=V_{GS}, I_D=1mA$
$I_{GSS}$	Gate-Source Leakage, Forward	--	--	100	nA	$V_{GS}=15V$
	Gate-Source Leakage, Reverse	--	--	-100		$V_{GS}=-15V$
$I_{DSS}$	Drain-to-Source Leakage Current	--	--	250	$\mu A$	$V_{DS}=60V$
		--	--	1000		$V_{DS}=45V, T_C=125^\circ\text{C}$
$R_{DS(on)}$	Static Drain-Source On-State Resistance <sup>②</sup>	--	--	5.0	$\Omega$	$V_{GS}=10V, I_D=0.5A$
$g_{fs}$	Forward Transconductance <sup>②</sup>	0.1	0.3	--	S	$V_{DS}=15V, I_D=0.5A$
$C_{iss}$	Input Capacitance	--	30	--	pF	$V_{GS}=0V, V_{DS}=25V,$ $f=1MHz$
$C_{oss}$	Output Capacitance	--	12	--		
$C_{rss}$	Reverse Transfer Capacitance	--	3.0	--		
$t_{d(on)}$	Turn-On Delay Time	--	--	10	ns	$V_{DD}=30V, I_D=0.5A,$ $R_G=15\Omega$ <sup>② ③</sup>
$t_r$	Rise Time	--	--	10		
$t_{d(off)}$	Turn-Off Delay Time	--	--	10		
$t_f$	Fall Time	--	--	10		

#### Notes ;

- ① Repetitive Rating : Pulse Width Limited by Maximum Junction Temperature
- ② Pulse Test : Pulse Width = 250 $\mu s$ , Duty Cycle  $\leq 2\%$
- ③ Essentially Independent of Operating Temperature