

### Features

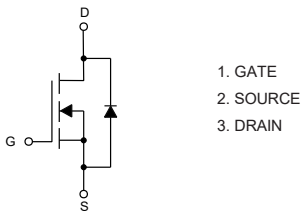
- High Power and Current Handling Capability
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

### Maximum Ratings

- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 100°C/W Junction to Ambient<sup>(Note 1)</sup>

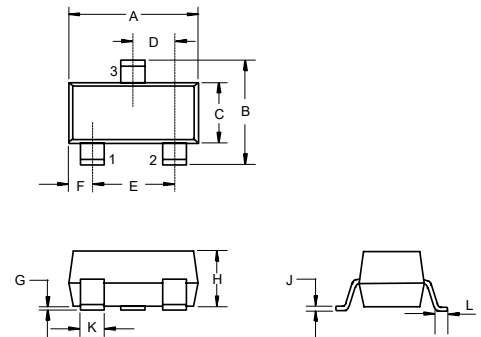
Parameter	Symbol	Rating	Unit	
Drain-Source Voltage	$V_{DS}$	20	V	
Gate-Source Voltage	$V_{GS}$	±10	V	
Drain Current-Continuous	$I_D$	$T_A=25^\circ\text{C}$	6.8	A
		$T_A=70^\circ\text{C}$	5.4	
Drain Current-Pulsed <sup>(Note 2)</sup>	$I_{DM}$	20	A	
Power Dissipation	$P_D$	1.25	W	

### Internal Structure



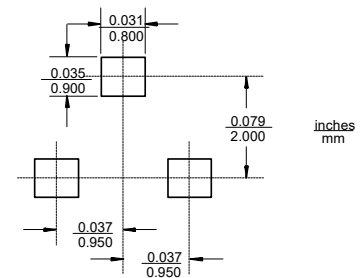
## N-Channel MOSFET

### SOT-23



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.110	0.120	2.80	3.04	
B	0.083	0.104	2.10	2.64	
C	0.047	0.055	1.20	1.40	
D	0.034	0.041	0.85	1.05	
E	0.067	0.083	1.70	2.10	
F	0.018	0.024	0.45	0.60	
G	0.0004	0.006	0.01	0.15	
H	0.035	0.043	0.90	1.10	
J	0.003	0.007	0.08	0.18	
K	0.012	0.020	0.30	0.51	
L	0.007	0.020	0.20	0.50	

#### Suggested Solder Pad Layout



**ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)**

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	20	22		V
Gate-Threshold Voltage <sup>(Note 3)</sup>	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5	0.65	0.9	V
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 10V, V_{DS}=0V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=20V, V_{GS}=0V$			0.3	$\mu A$
Drain-Source On-Resistance <sup>(Note3)</sup>	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=4.5A$		15	21	m $\Omega$
		$V_{GS}=2.5V, I_D=4.0A$		18	30	
Forward Transconductance <sup>(Note3)</sup>	$g_{FS}$	$V_{DS}=10V, I_D=4.0A$		10		S
<b>Dynamic Characteristics<sup>(Note 4)</sup></b>						
Input Capacitance	$C_{iss}$	$V_{DS}=8V, V_{GS}=0V, f=1MHz$		500		pF
Output Capacitance	$C_{oss}$			300		
Reverse Transfer Capacitance	$C_{rss}$			140		
<b>Switching Characteristics<sup>(Note 4)</sup></b>						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=10V, V_{GS}=4.5V, I_D=1A, R_{GEN}=6\Omega$		20	40	ns
Turn-On Rise Time	$t_r$			18	40	
Turn-Off Delay Time	$t_{d(off)}$			60	108	
Turn-Off Fall Time	$t_f$			28	56	
Input Capacitance	$Q_g$	$V_{DS}=10V, V_{GS}=4.5V, I_D=3A$		10	15	nC
Output Capacitance	$Q_{gs}$			2.3		
Reverse Transfer Capacitance	$Q_{gd}$			2.9		

Notes:

- 1.Surface Mounted on FR4 Board,  $t_s \leq 10$  sec.
- 2.Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
- 3.Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycles  $\leq 2\%$ .
- 4.Guaranteed by Design, Not Subject to Production.

Curve Characteristics

Fig. 1 - Output Characteristics

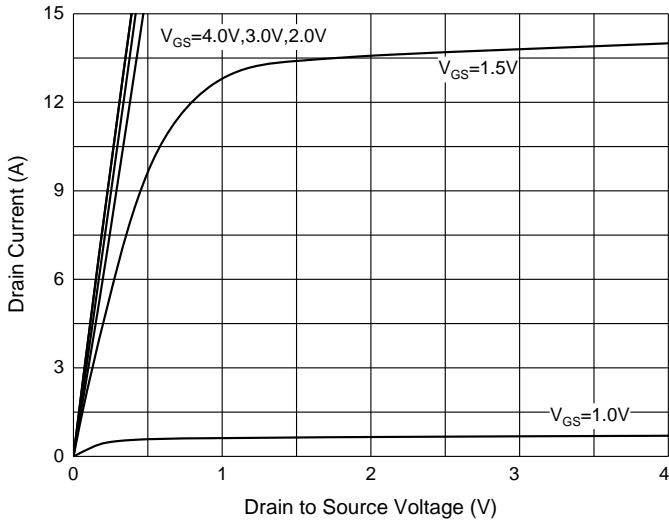


Fig. 2 -  $R_{DS(ON)} - I_D$

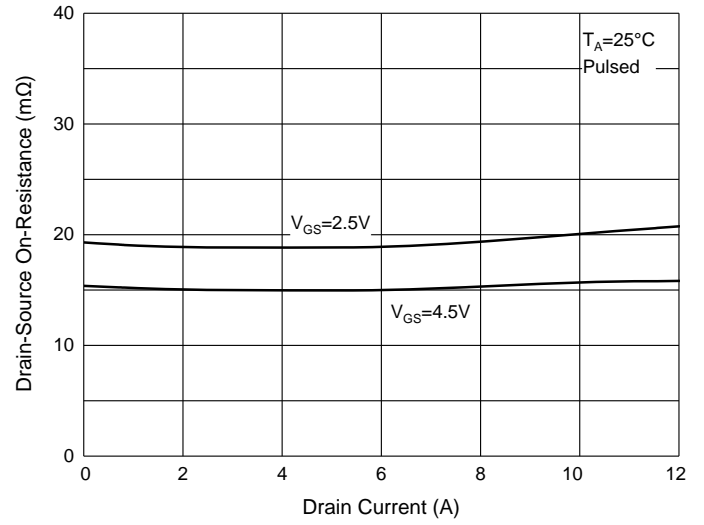


Fig. 3 -  $R_{DS(ON)} - Temperature$

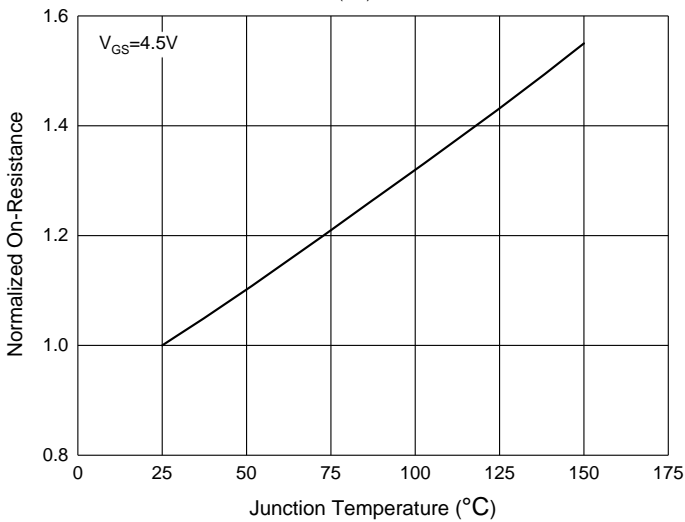


Fig. 4 - Capacitance Characteristics

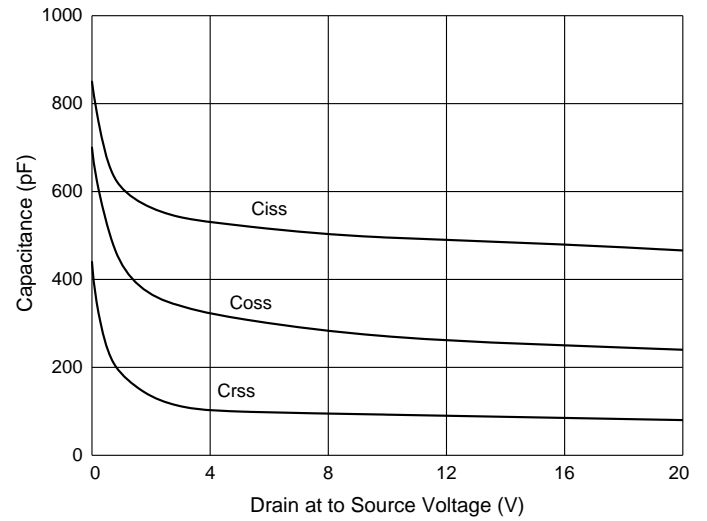


Fig. 5 - Gate Charge

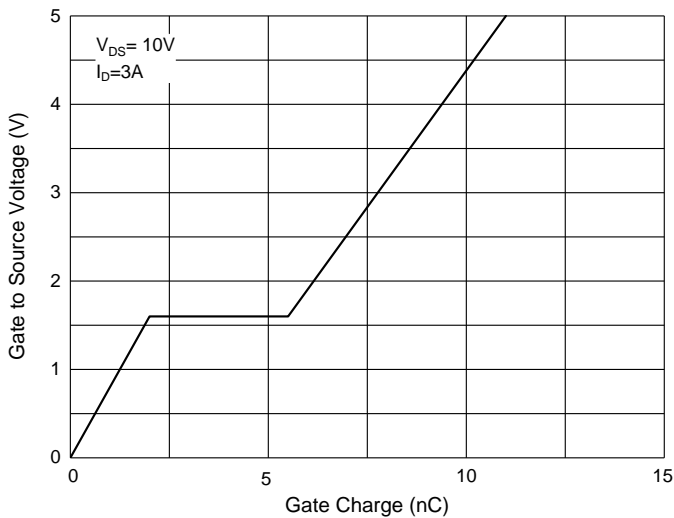
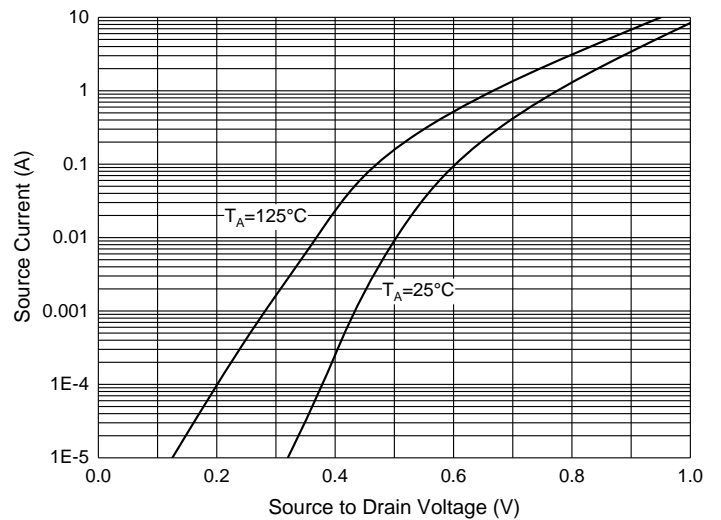


Fig. 6 -  $I_S - V_{SD}$



## Ordering Information

Device	Packing
Part Number-TP	Tape&Reel:3Kpcs/Reel

Note : Adding "-HF" Suffix For Halogen Free, eg. Part Number-TP-HF

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