

### Features

- Advanced Trench Cell Design
- 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

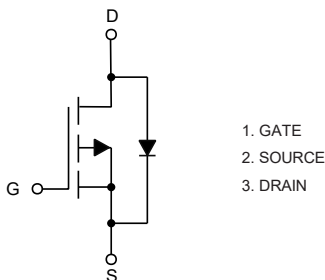
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 150°C/W Junction to Ambient

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	-60	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current <sup>(Note 1)</sup>	$I_D$	$T_A=25^\circ\text{C}$	-1.9 A
		$T_A=100^\circ\text{C}$	-1.2 A
Pulsed Drain Current <sup>(Note 2)</sup>	$I_{DM}$	-7.6	A
Total Power Dissipation	$P_D$	0.83	W

Note:

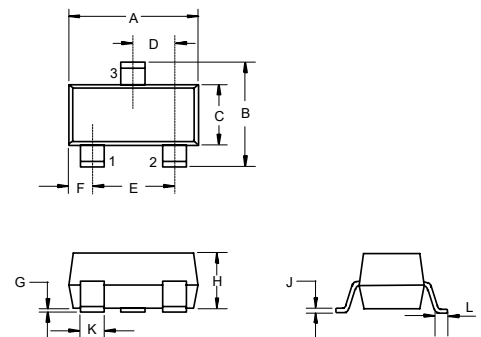
- 1.Surface Mounted on 1 in<sup>2</sup> Pad Area, t $\leq$ 10 sec.
- 2.Pulse Test: Pulse Width $\leq$ 300 $\mu$ s,Duty Cycle $\leq$ 2%.

### Internal Structure



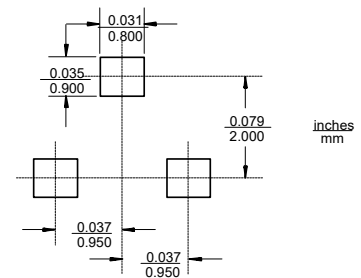
## P-CHANNEL MOSFET

### SOT-23



DIM	INCHES		MM		NOTE
	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 @ 25°C (Unless Otherwise Specified)**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-60			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-48V, V_{GS}=0V$			-1	$\mu A$
Gate-Threshold Voltage <sup>(Note 2)</sup>	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1	-2	-3	V
Drain-Source On-Resistance <sup>(Note 2)</sup>	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-1.5A$		125	150	m $\Omega$
		$V_{GS}=-4.5V, I_D=-1A$		165	200	
Diode Forward Voltage <sup>(Note 2)</sup>	$V_{SD}$	$V_{GS}=0V, I_S=-1A$		-0.8	-1.4	V
Continuous Body Diode Current	$I_S$				-1.9	A
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=-15V, V_{GS}=0V, f=1MHz$		580		pF
Output Capacitance	$C_{oss}$			52		
Reverse Transfer Capacitance	$C_{rss}$			35		
Total Gate Charge	$Q_g$	$V_{DS}=-20V, V_{GS}=-10V, I_D=-1.5A$		9.5		nC
Gate-Source Charge	$Q_{gs}$			1.52		
Gate-Drain Charge	$Q_{gd}$			1.76		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=-15V, V_{GEN}=-10V,$ $R_G=3.3\Omega, R_L=15\Omega,$ $I_{DS}=-1A$		17.4		ns
Turn-On Rise Time	$t_r$			5.4		
Turn-Off Delay Time	$t_{d(off)}$			37.2		
Turn-Off Fall Time	$t_f$			2.4		

Curve Characteristics

Fig. 1 - Output Characteristics

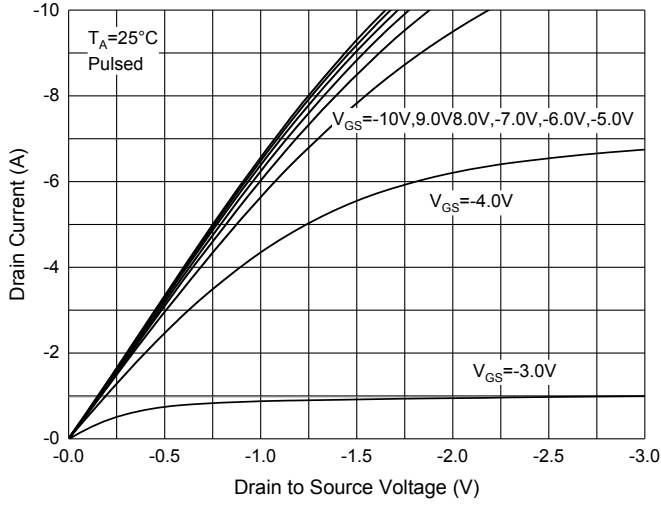


Fig. 2 -  $R_{DS(ON)} - I_D$

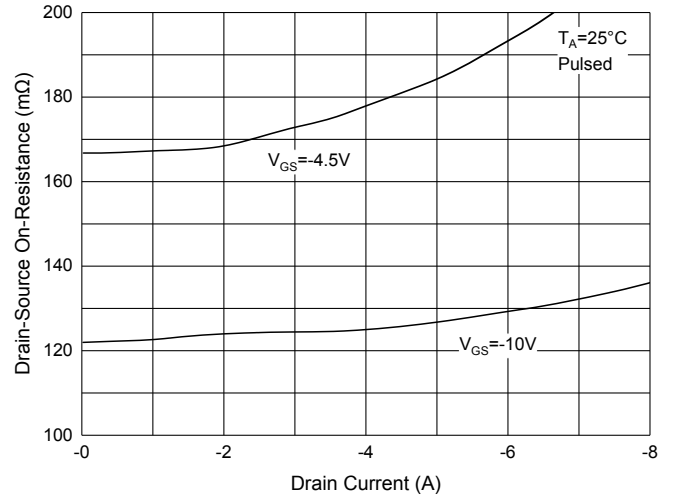


Fig. 3 - Normalized On-Resistance

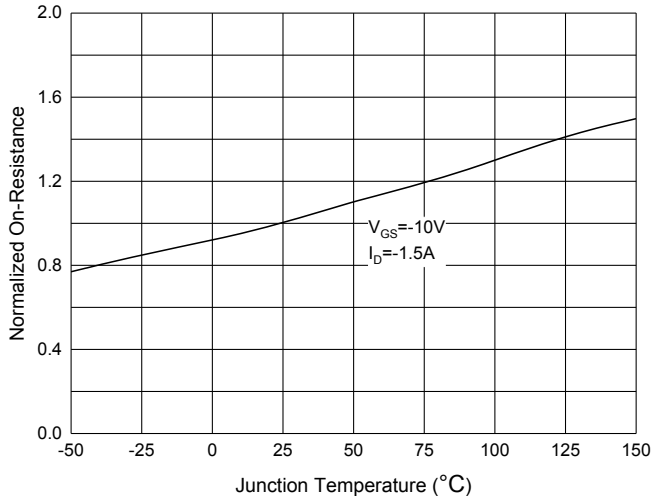


Fig. 4 -  $I_S - V_{SD}$

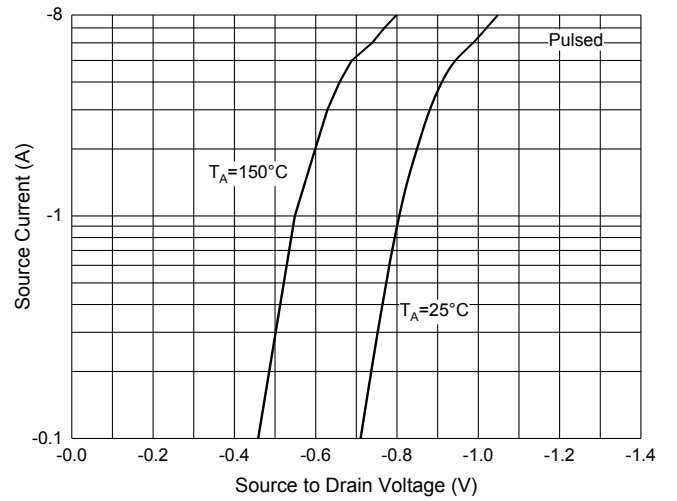


Fig. 5 - Capacitance Characteristics

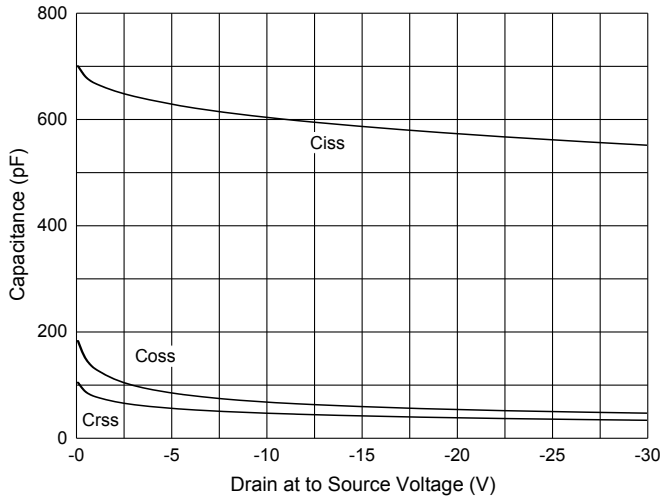
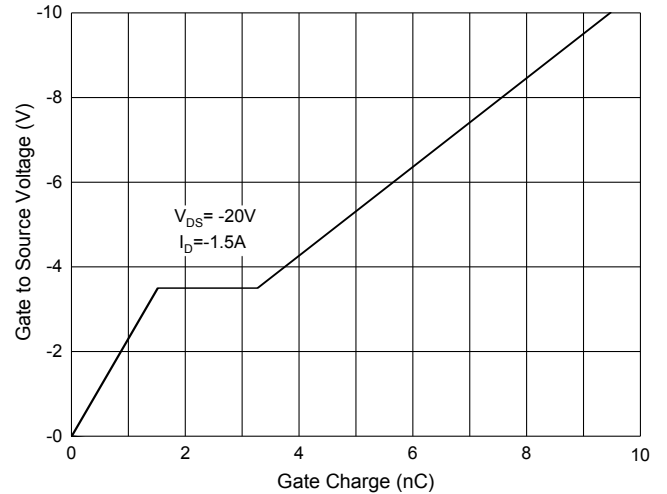


Fig. 6 - Gate Charge



## 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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