

## Features

- High Dense Cell Design For Extremely Low  $R_{DS(ON)}$
- Rugged and reliable
- High Speed Switching
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device (Note 1)
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

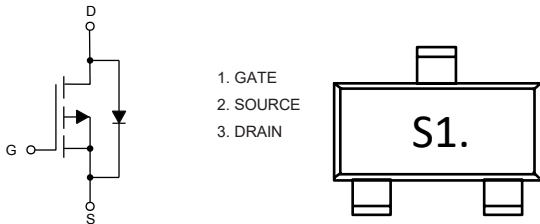
## Maximum Ratings

- Operating Junction Temperature Range :  $-55^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$
- Storage Temperature Range:  $-55^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$
- Maximum Thermal Resistance:  $100^{\circ}\text{C/W}$  Junction to Ambient (Note 2)

Parameter	Symbol	Rating	Unit
Drain -source Voltage	$V_{DS}$	-20V	V
Gate -Source Voltage	$V_{GS}$	$\pm 8$	V
Drain Current-Continuous	$I_D$	-2.8	A
Drain Current-Pulse (Note 3)	$I_{DM}$	-10	A
Power Dissipation	$P_D$	1.25	W

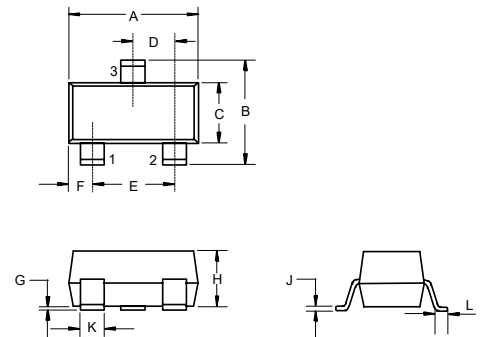
Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

## Internal Structure and Marking Code



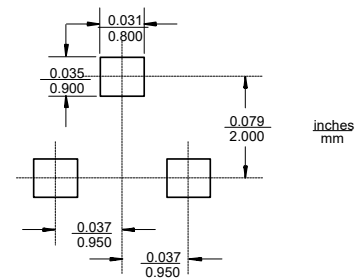
# P-Channel MOSFET

## 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			V
Gate-Threshold Voltage <sup>(Note 4)</sup>	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.45	-0.7	-1.0	V
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 8V, V_{DS}=0V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-20V, V_{GS}=0V$			-1	$\mu A$
Drain-Source On-Resistance <sup>(Note 4)</sup>	$R_{DS(on)}$	$V_{GS}=-4.5V, I_D=-2.8A$		80	120	m $\Omega$
		$V_{GS}=-2.5V, I_D=-2.0A$		110	150	
Forward Transconductance	$g_{FS}$	$V_{DS}=-5V, I_D=-2.8A$		8		S
Diode Forward Current <sup>(Note 2)</sup>	$I_S$				-0.75	S
Diode Forward Voltage <sup>(Note 4)</sup>	$V_{SD}$	$V_{GS}=0V, I_S=-0.75A$			-1.2	V
<b>Dynamic Characteristics<sup>(Note 5)</sup></b>						
Input Capacitance	$C_{iss}$	$V_{DS}=-6V, V_{GS}=0V, f=1MHz$		880		pF
Output Capacitance	$C_{oss}$			270		
Reverse Transfer Capacitance	$C_{rss}$			175		
<b>Switching Characteristics<sup>(Note 5)</sup></b>						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=-6V, V_{GS}=-4.5V, I_D=-1A, R_{GEN}=6\Omega$		11	20	ns
Turn-On Rise Time	$t_r$			5	10	
Turn-Off Delay Time	$t_{d(off)}$			32	65	
Turn-Off Fall Time	$t_f$			23	45	
Total Gate Charge	$Q_g$	$V_{DS}=-6V, V_{GS}=-4.5V, I_D=-2.8A$		11	14.5	nC
Gate-Source Charge	$Q_{gs}$			1.5		
Gate-Drain Charge	$Q_{gd}$			2.1		

Note:

- Surface Mounted on FR4 Board,  $t < 5$  sec.
- Repetitive Rating : Pulse width limited by maximum junction temperature.
- Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .
- Guaranteed by Design, Not Subject to Production Testing.

Curve Characteristics

Fig. 1 - Output Characteristics

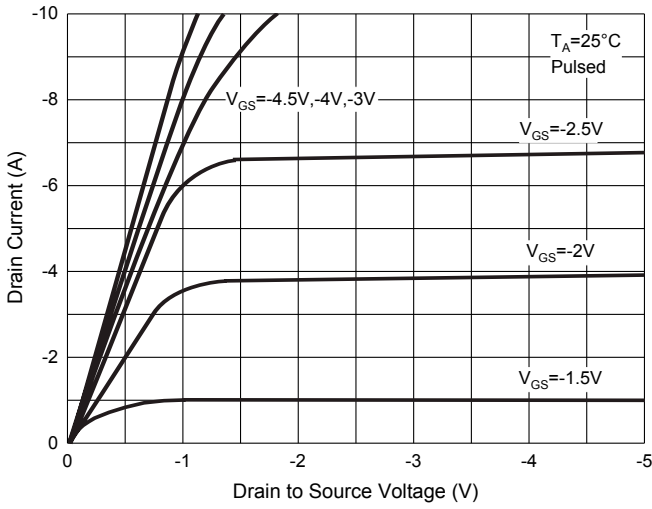


Fig. 2 - Transfer Characteristics

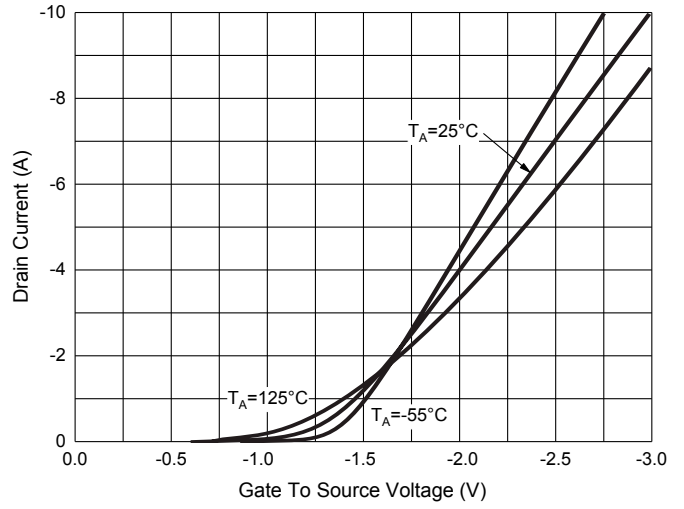


Fig. 3 - Capacitance Characteristics

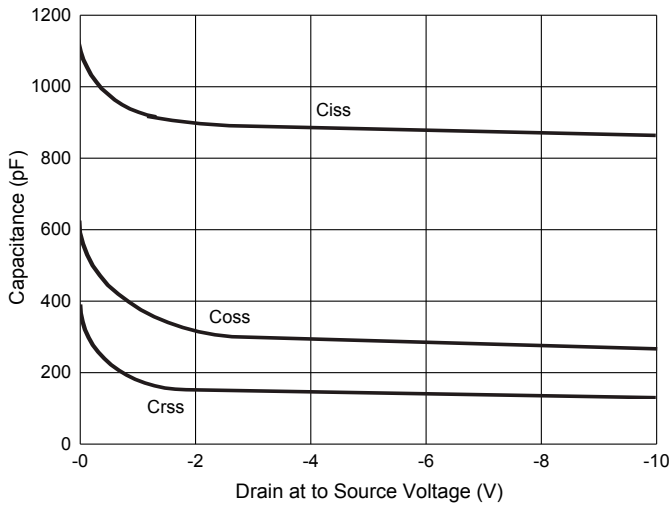


Fig. 4 -  $R_{DS(ON)}$ —Temperature

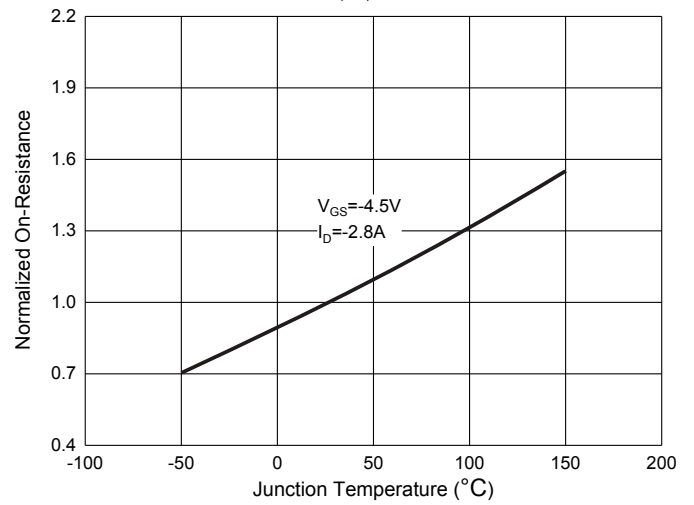


Fig. 5 - Threshold Voltage

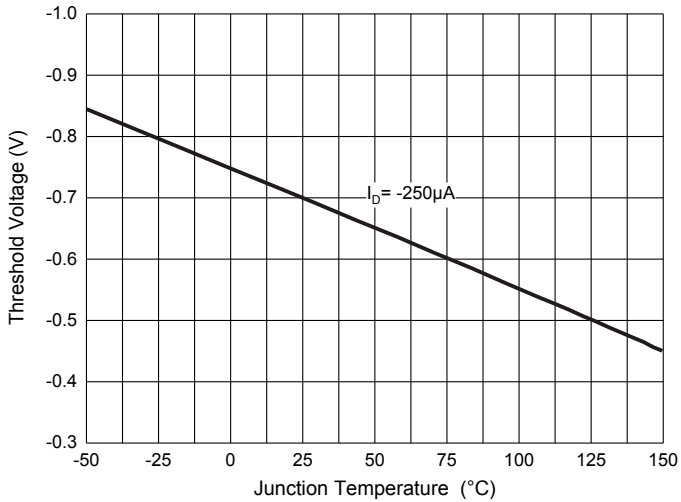
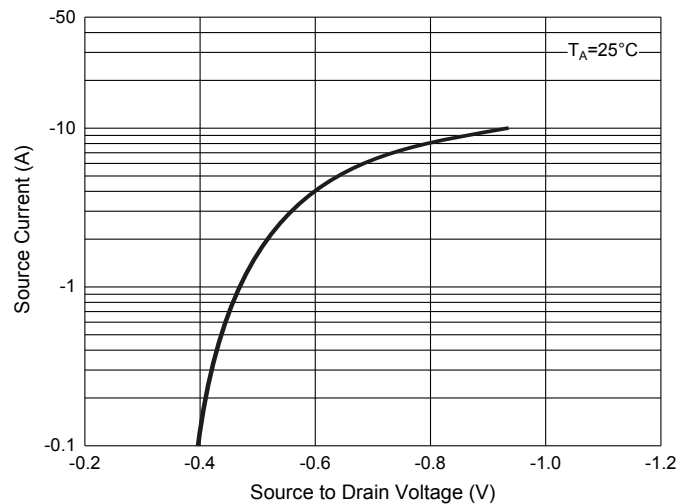


Fig. 6 -  $I_S$ — $V_{SD}$



Curve Characteristics

Fig. 7 -  $R_{DS(ON)} - I_D$

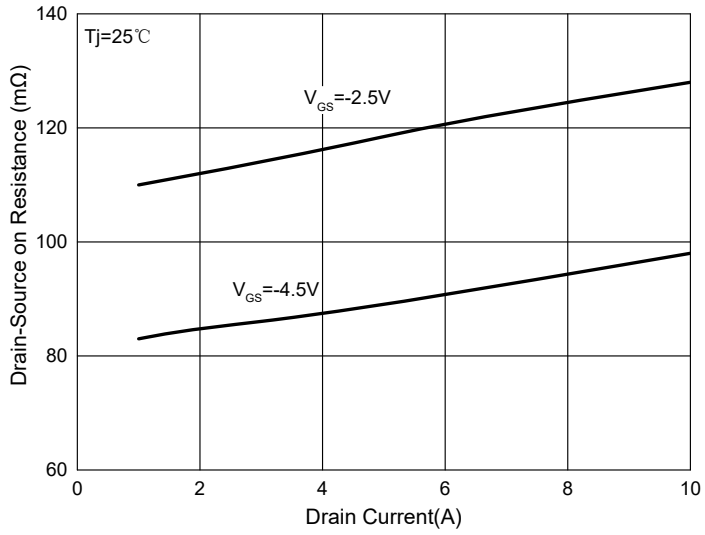
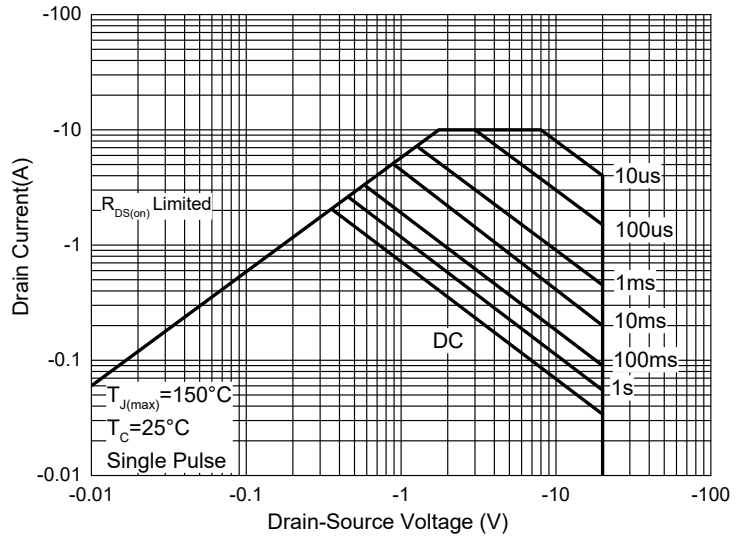


Fig. 8 - Safe Operation Area



## Ordering Information

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

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