

Features

- High Power and Current Handling Capability
- 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)

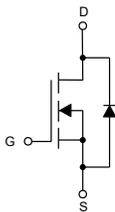
Maximum Ratings

- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 100°C/W Junction to Ambient^(Note 2)

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 ^(Note 3)	I_{DM}	20	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

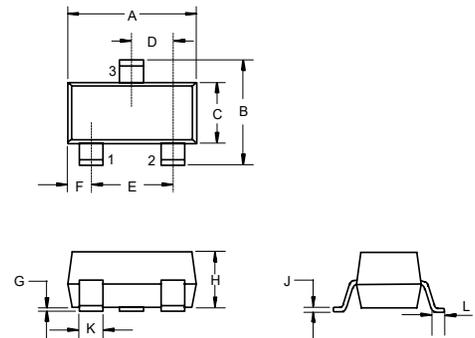


1. GATE
2. SOURCE
3. DRAIN

Marking: S12

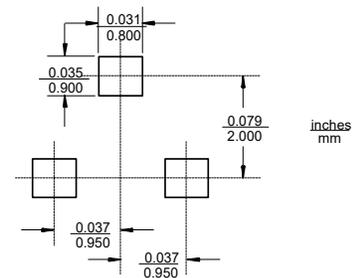
N-Channel MOSFET

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
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	20	22		V
Gate-Threshold Voltage ^(Note 4)	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5	0.65	0.9	V
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 10V, V_{DS}=0V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=20V, V_{GS}=0V$			0.3	μA
Drain-Source On-Resistance ^(Note 4)	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=4.5A$		15	21	m Ω
		$V_{GS}=2.5V, I_D=4.0A$		18	30	
Forward Transconductance ^(Note 4)	g_{FS}	$V_{DS}=10V, I_D=4.0A$		10		S
Dynamic Characteristics^(Note 5)						
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		
Switching Characteristics^(Note 5)						
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:

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

Curve Characteristics

Fig. 1 - Output Characteristics

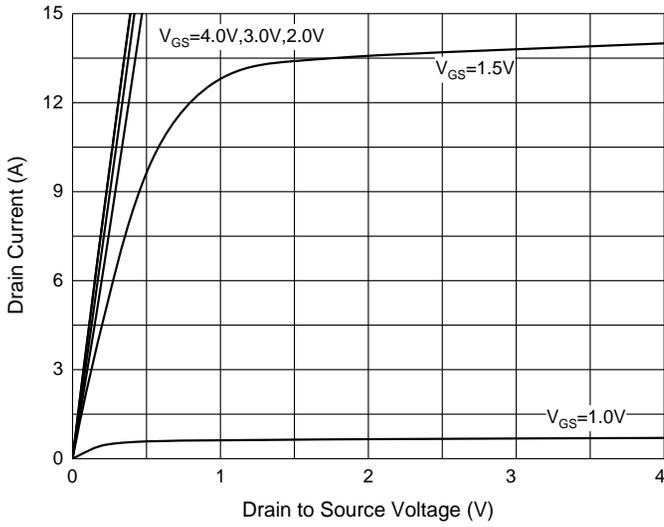


Fig. 2 - $R_{DS(ON)} - I_D$

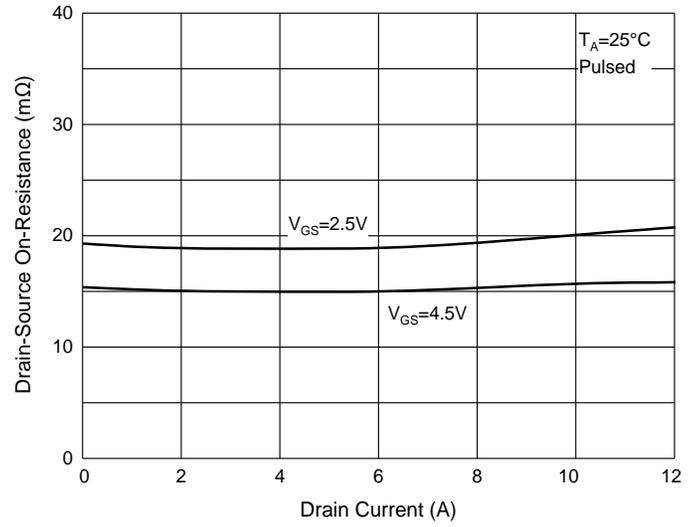


Fig. 3 - $R_{DS(ON)} - \text{Temperature}$

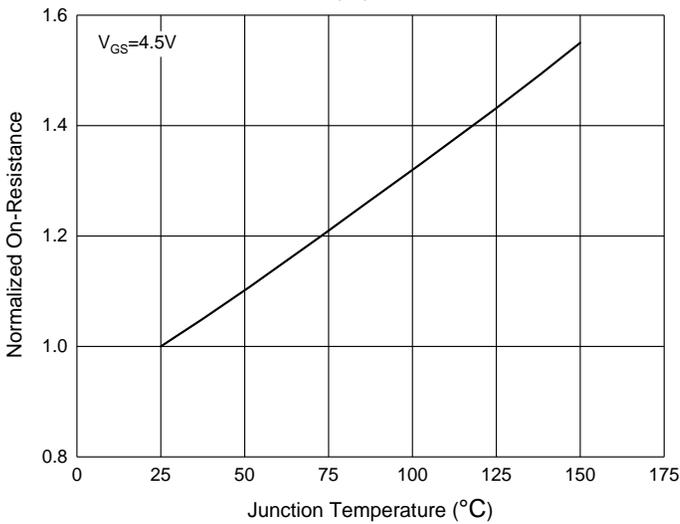


Fig. 4 - Capacitance Characteristics

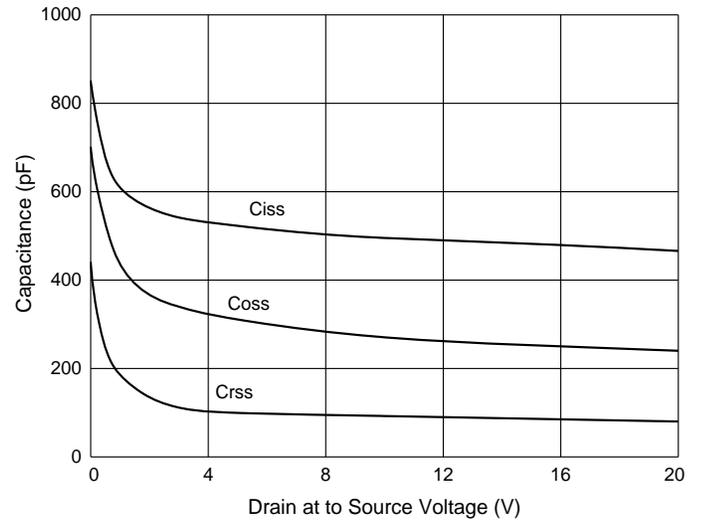


Fig. 5 - Gate Charge

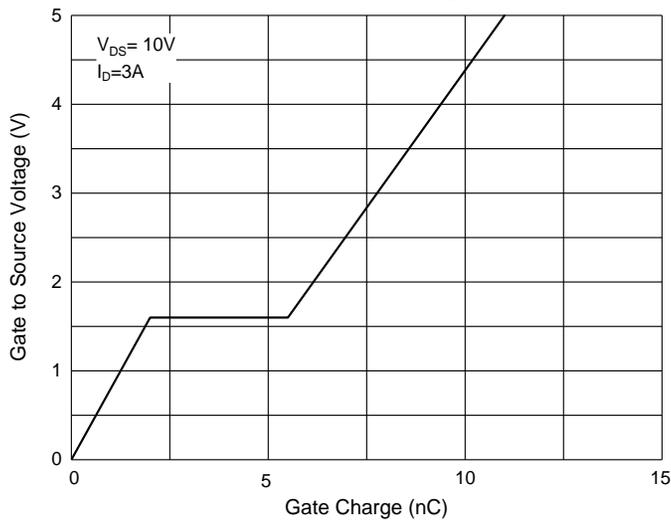
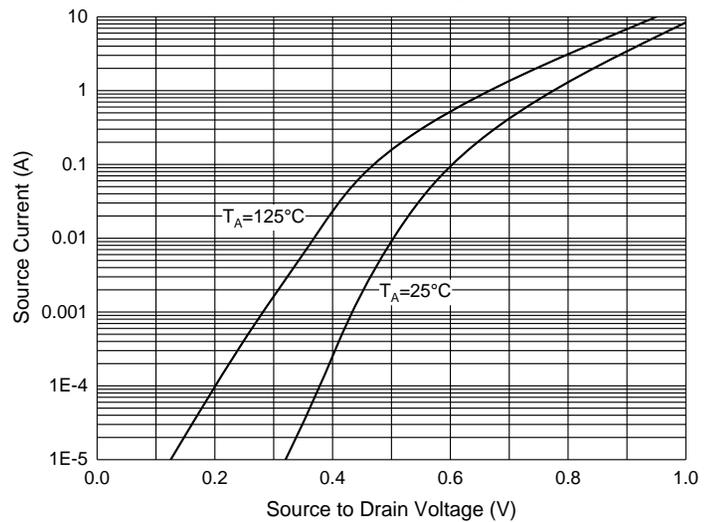


Fig. 6 - $I_S - V_{SD}$



Ordering Information

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

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