Features

- AEC-Q101 Qualified
- High Density Cell Design for Low $R_{DS(ON)}$
- Voltage Controlled Small Signal Switch
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free. “Green” Device (1)
- Moisture Sensitivity Level 1
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

N-Channel MOSFET

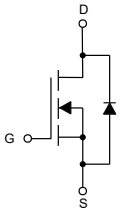
Maximum Ratings

- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature: -55°C to +150°C
- Thermal Resistance: 350°C/W Junction to Ambient

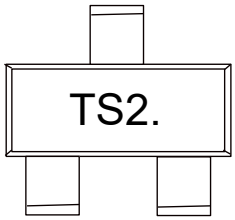
Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Volltage		V_{GS}	±10	V
Continuous Drain Current	T_A=25°C	I_D	2	A
	T_A=70°C		1.7	
Pulsed Drain Current (Note 2)		I_{DM}	16	A
Total Power Dissipation		P_D	350	mW

1. Halogen free "Green” products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. Repetitive rating; pulse width limited by max. junction temperature.

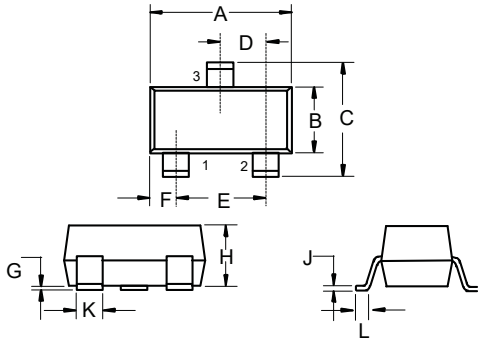
Internal Structure and Marking Code



1. GATE
2. SOURCE
3. DRAIN

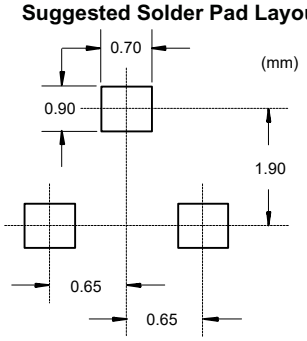


SOT-323



DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.071	0.087	1.80	2.20	
B	0.045	0.053	1.15	1.35	
C	0.083	0.096	2.10	2.45	
D	0.026		0.65		TYP.
E	0.047	0.055	1.20	1.40	
F	0.012	0.016	0.30	0.40	
G	0.000	0.004	0.00	0.10	
H	0.035	0.044	0.90	1.10	
J	0.002	0.010	0.05	0.25	
K	0.006	0.016	0.15	0.40	
L	0.010	0.018	0.26	0.46	

Suggested Solder Pad Layout



ELECTRICAL CHARACTERISTICS (Ta=25℃ 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=250μA	20			V
Gate-Threshold Voltage(3)	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250uA	0.5	0.8	1.1	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V, V_{GS}=0V			1.0	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±10V, V_{DS}=0V			±100	nA
Drain-Source On-Resistance(3)	$R_{DS(on)}$	V_{GS}=4.5V, I_D=2.5A		60	80	mΩ
		V_{GS}=2.5V, I_D=2.0A		75	98	
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=2.5A			1.2	V
Dynamic Characteristics						
Input Capacitance(4)	C_{iss}	V_{DS}=10V,V_{GS}=0V, f=1MHz		210		pF
Output Capacitance(4)	C_{oss}			37		
Reverse Transfer Capacitance(4)	C_{rss}			30		
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS}=4.5V,V_{GS}=10V,I_D=2A		3.2		nC
Gate-Source Charge	Q_{gs}			0.8		
Gate-Drain Charge	Q_{gd}			0.8		
Reverse Recovery Time	t_{rr}	I_{SD}=2A,di/dt=80A/μs		4.9		ns
Reverse Recovery Charge	Q_{rr}			0.95		nC
Turn-On Delay Time(4)	$t_{d(on)}$	V_{DS}=10V,V_{GS}=4.5V,I_D=2A, R_G=3Ω		4.8		ns
Turn-On Rise Time(4)	t_r			28		
Turn-off Delay Time(4)	$t_{d(off)}$			15		
Turn-Off Fall Time(4)	t_f			28		

Note: 3. Pulse Test: Pulse Width ≤300μs, Duty Cycle≤2%.

4. These Parameters Have No Way to Verify.

Curve Characteristics

Fig. 1 - Typical Output Characteristics

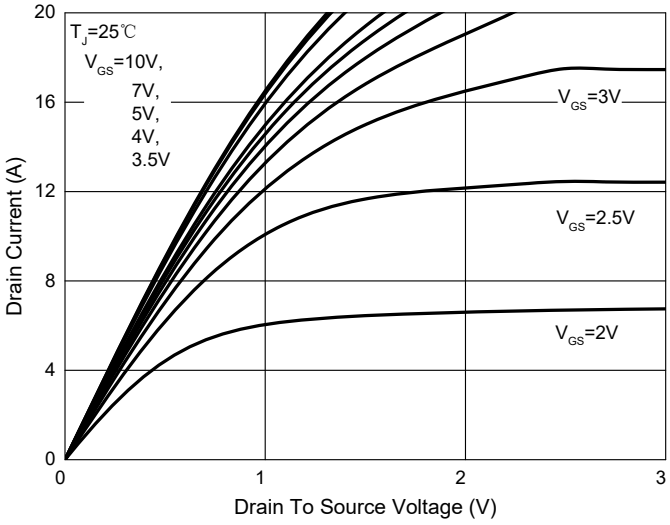


Fig. 2 - Transfer Characteristics

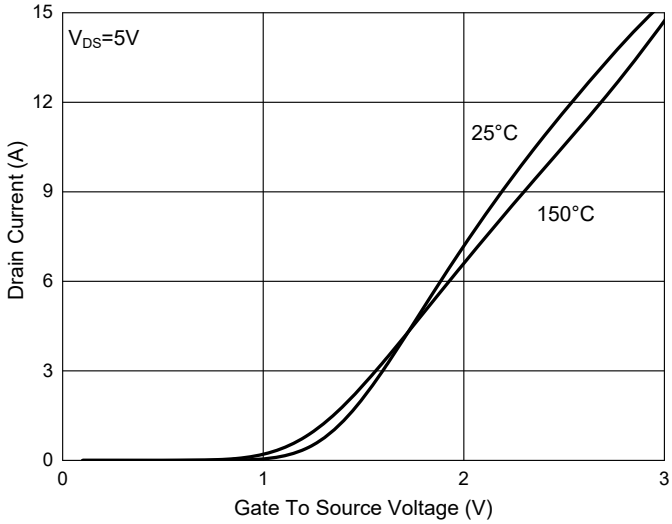


Fig. 3 - $R_{DS(ON)}$—I_D

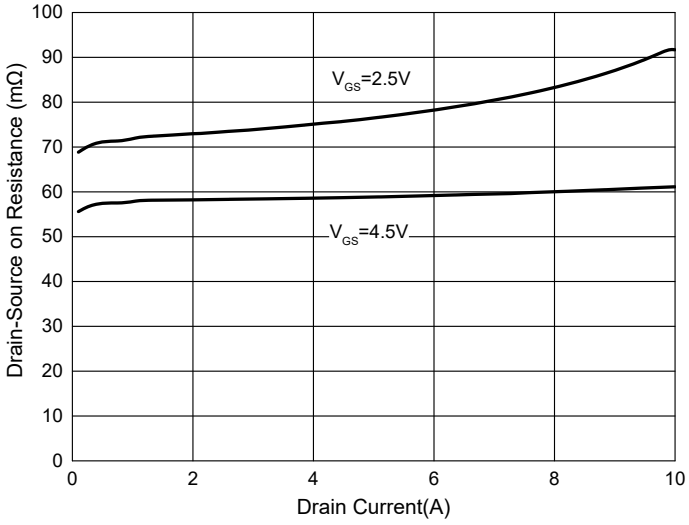


Fig. 4 - $R_{DS(ON)}$—V_{GS}

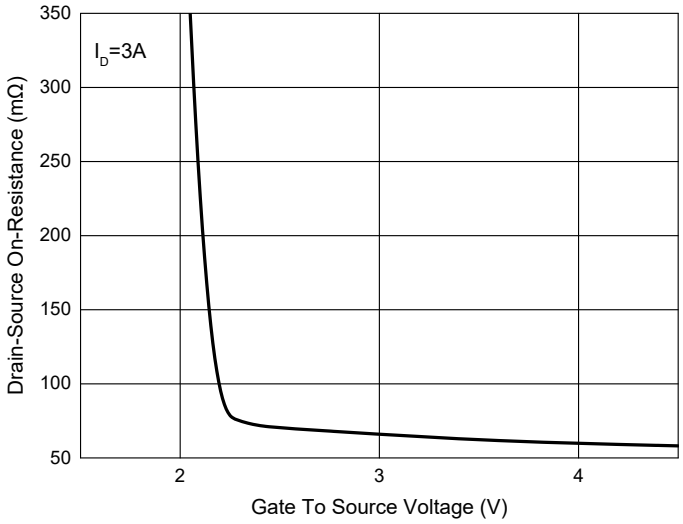


Fig. 5 - I_S—V_{SD}

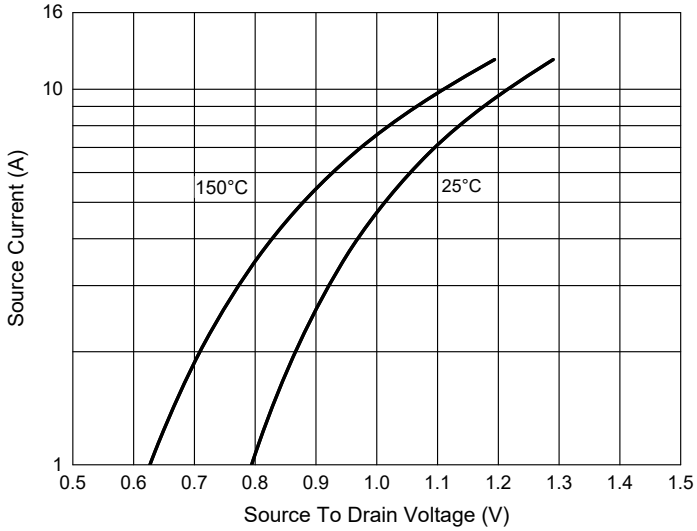
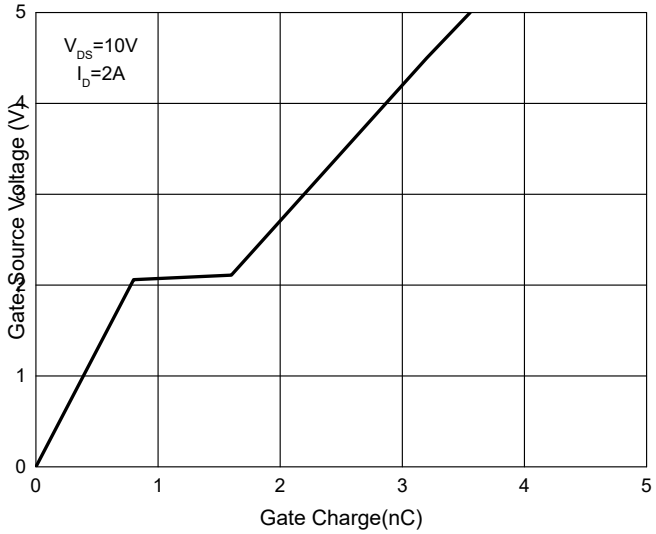


Fig. 6 - Gate Charge



Curve Characteristics

Fig. 7 - Normalized On Resistance Characteristics

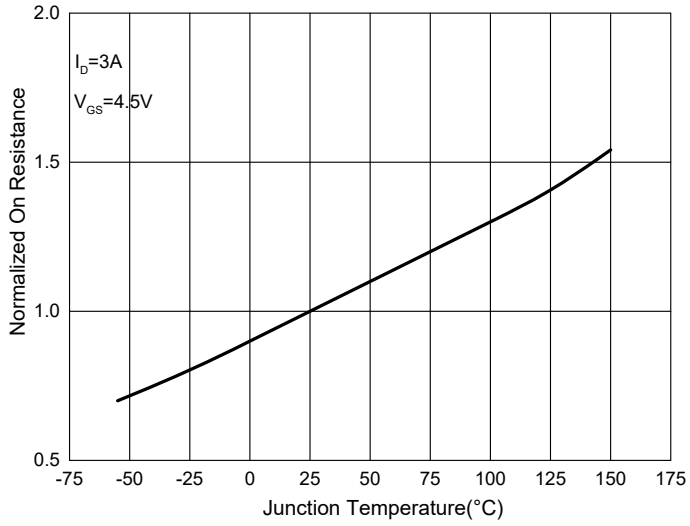


Fig. 8 - Capacitance Characteristics

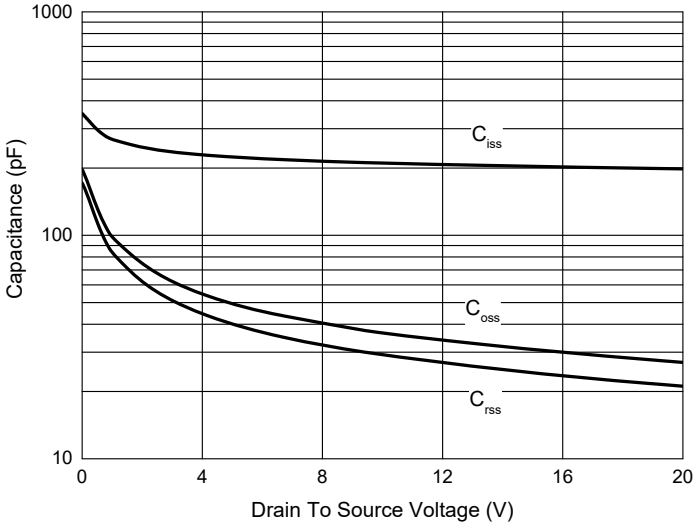


Fig. 9 - Safe Operation Area

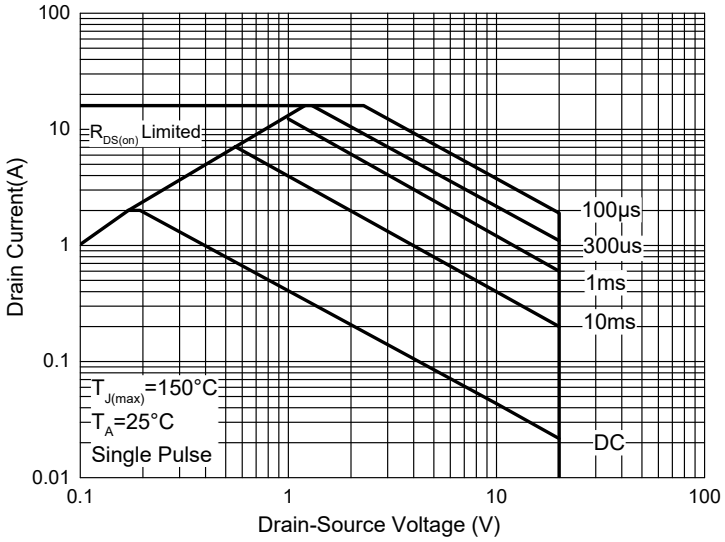
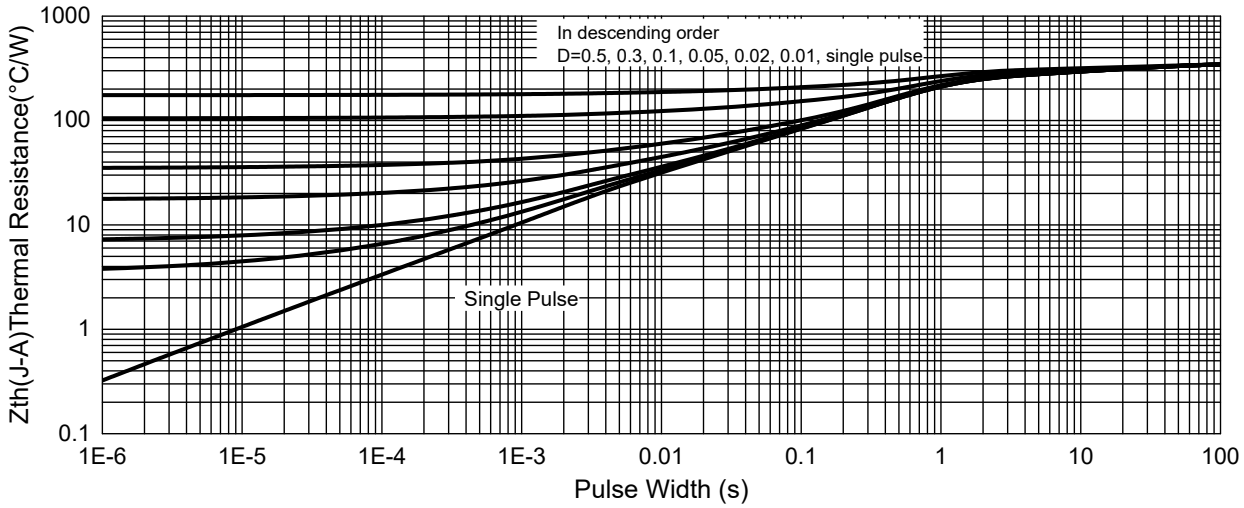


Fig. 10 - Maximum Transient Thermal Impedance



Ordering Information

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