

Features

- Fully Automotive Qualified to AEC-Q101
- Trench MV MOSFET Technology
- ESD HBM Class 2
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device (Note 1)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings

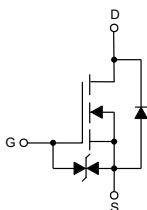
- Operating Junction Temperature Range : -55°C to +175°C
- Storage Temperature Range: -55°C to +175°C
- Thermal Resistance: 394°C/W Junction to Ambient (Note 2)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	$T_A=25^\circ\text{C}$	0.33
		$T_A=100^\circ\text{C}$	0.23
Pulsed Drain Current (Note 3)	I_{DM}	1.32	A
Total Power Dissipation (Note 4)	P_D	0.38	W

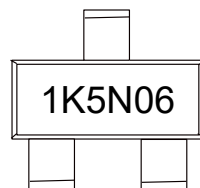
Note:

1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$.
3. Repetitive rating; pulse width limited by max. junction temperature.
4. P_D is based on max. junction temperature, using junction-ambient thermal resistance.

Internal Structure and Marking Code

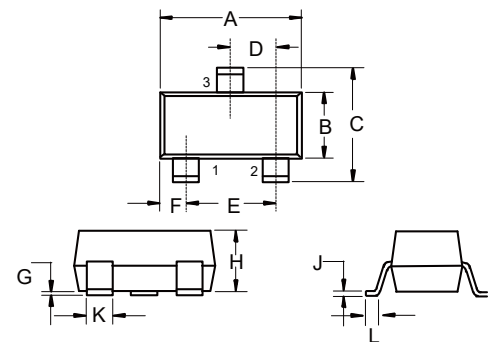


1. GATE
2. SOURCE
3. DRAIN



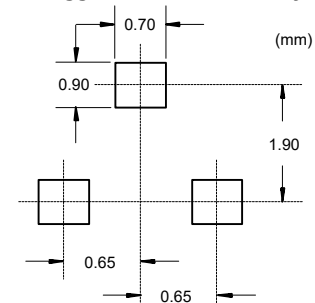
N-Channel MOSFET

SOT-323



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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	60			V
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 10	μA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V$			1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.55	0.85	1.15	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=300mA$		0.97	1.5	Ω
		$V_{GS}=4.5V, I_D=200mA$		1.0	1.6	
		$V_{GS}=2.5V, I_D=100mA$		1.3	2.0	
Gate Resistance	R_g	$f=1MHz$		101		Ω
Diode Characteristics						
Continuous Body Diode Current	I_S				0.33	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=300mA$			1.2	V
Reverse Recovery Time	t_{rr}	$I_S=0.3A, di/dt=100A/\mu s$		34.6		ns
Reverse Recovery Charge	Q_{rr}			10		nC
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=30V, V_{GS}=0V, f=1MHz$		22.8		pF
Output Capacitance	C_{oss}			4.4		
Reverse Transfer Capacitance	C_{rss}			1.7		
Total Gate Charge	Q_g	$V_{DS}=30V, V_{GS}=10V, I_D=0.3A$		1.08		nC
Gate-Source Charge	Q_{gs}			0.08		
Gate-Drain Charge	Q_{gd}			0.15		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=30V,$ $V_{GS}=10V,$ $R_{GEN}=3\Omega, I_D=0.3A$		2.9		ns
Turn-On Rise Time	t_r			2.9		
Turn-Off Delay Time	$t_{d(off)}$			15.8		
Turn-Off Fall Time	t_f			44.2		

Curve Characteristics

Fig. 1 - Typical Output Characteristics

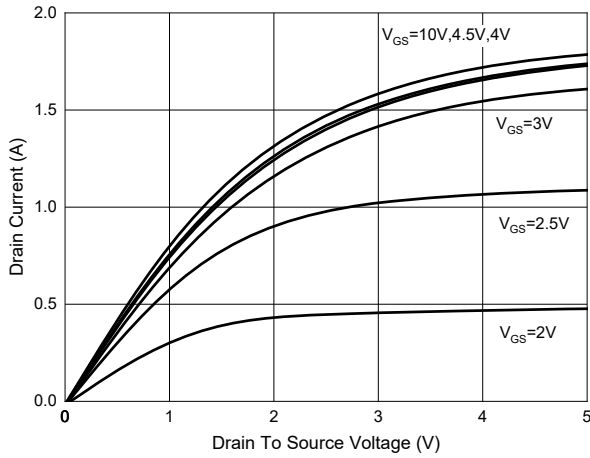


Fig. 2 - Transfer Characteristics

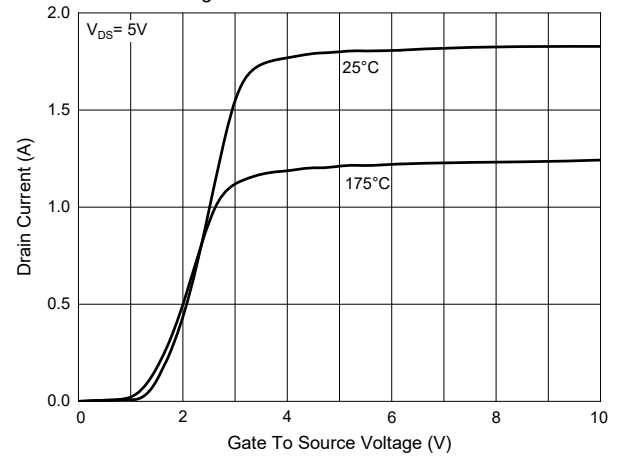


Fig.3- $R_{DS(ON)}$ - V_{GS}

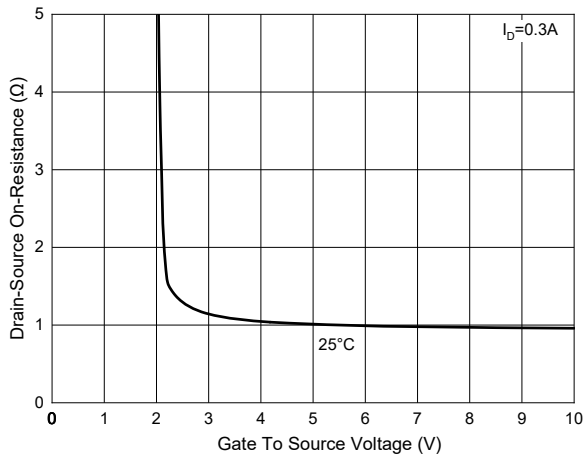


Fig.4- $R_{DS(ON)}$ - I_D

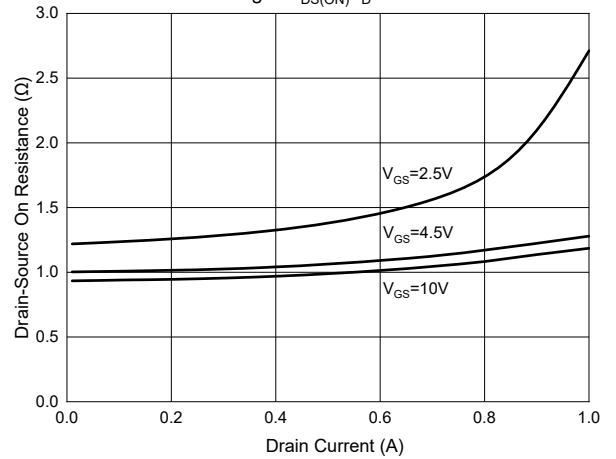


Fig. 5 - Capacitance Characteristics

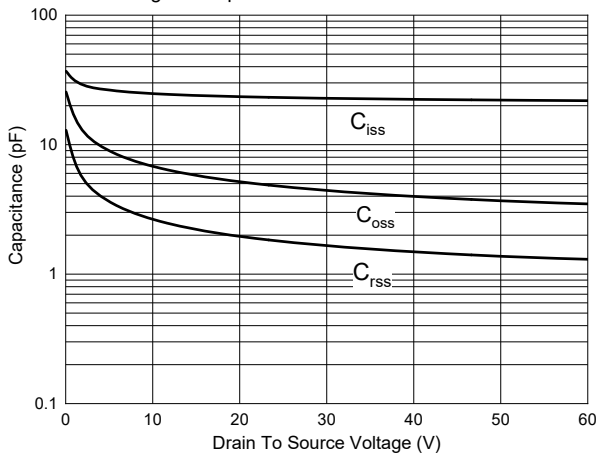
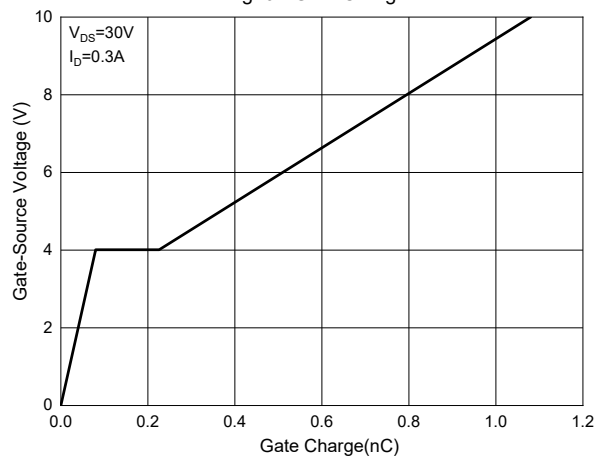
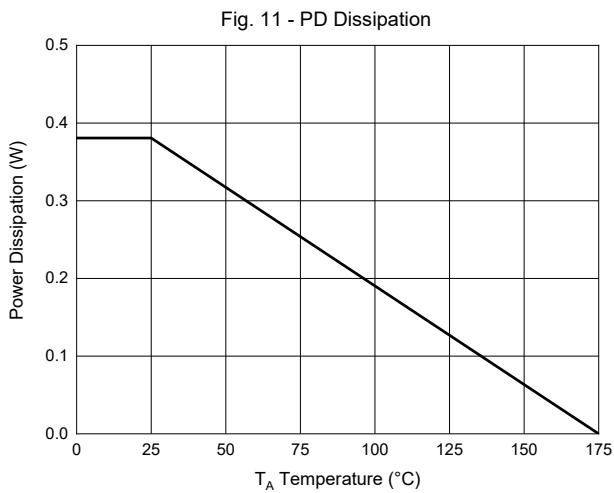
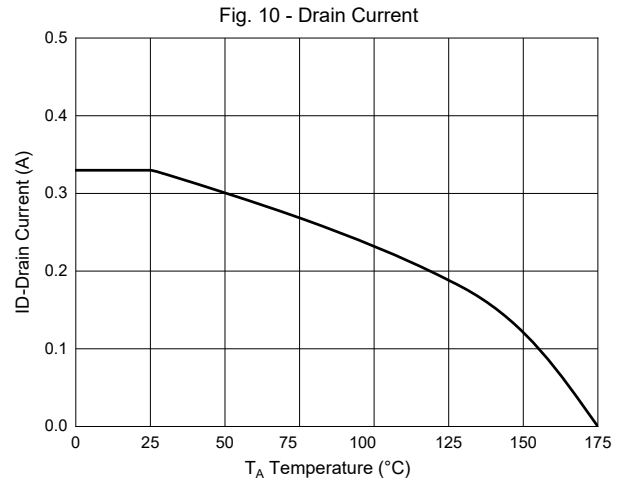
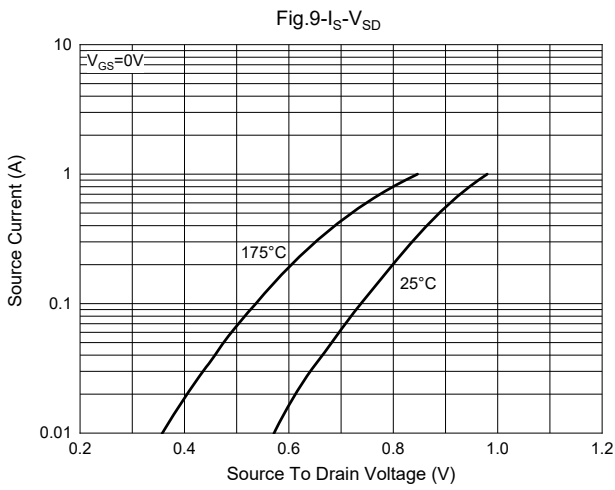
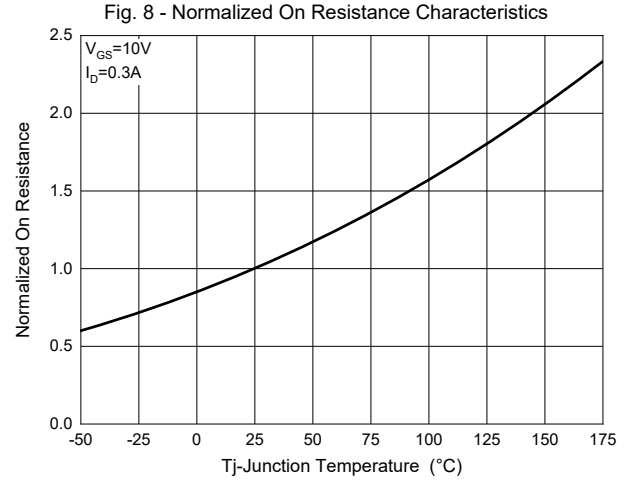
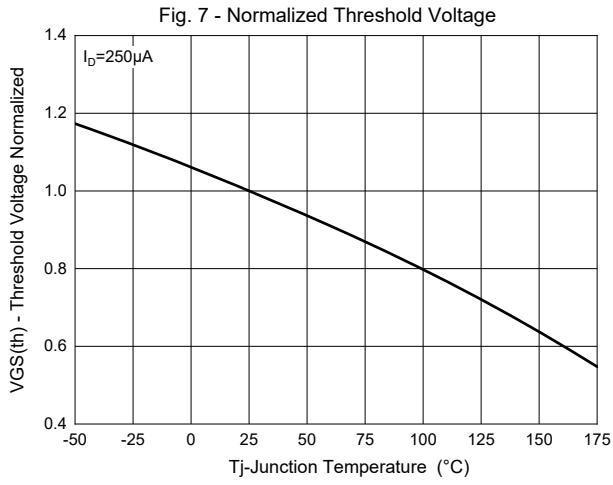


Fig. 6 - Gate Charge



Curve Characteristics



Curve Characteristics

Fig. 12 - Safe Operation Area

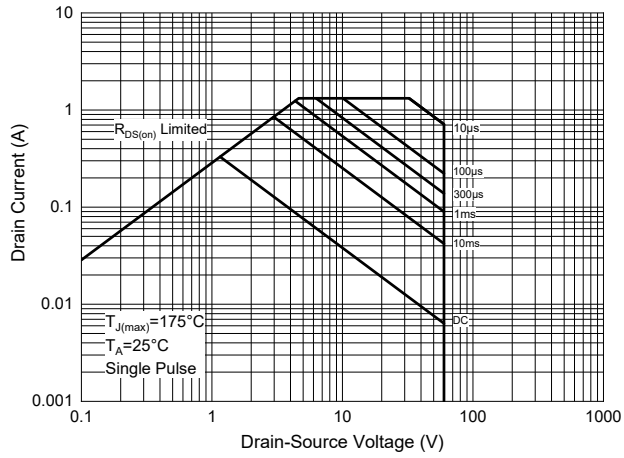
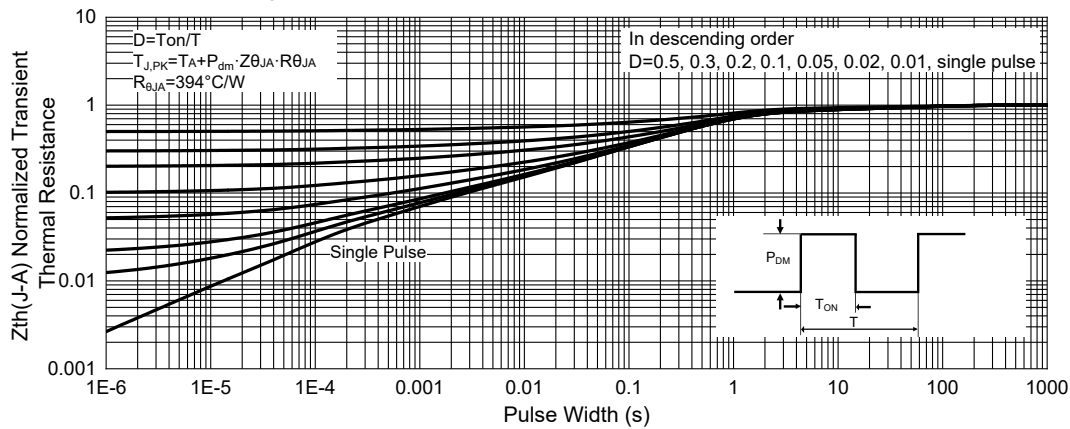


Fig. 13 - Normalized Transient Thermal Impedance



Ordering Information

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

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