

**Features**

- Advanced Trench Cell Design
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free. "Green" Device <sup>(1)</sup>
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

**Maximum Ratings**

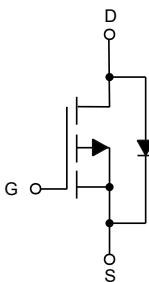
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 103.1°C/W Junction to Ambient(Steady-State)<sup>(2)</sup>

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V <sub>DS</sub>	-60	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current	I <sub>D</sub>	T <sub>A</sub> =25°C	-1.6
		T <sub>A</sub> =100°C	-1.0
Pulsed Drain Current <sup>(3)</sup>	I <sub>DM</sub>	-8.0	A
Total Power Dissipation <sup>(4)</sup>	P <sub>D</sub>	1.2	W

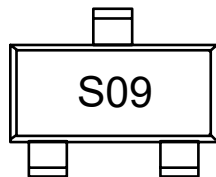
Note:

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<sub>θJA</sub> is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with T<sub>A</sub> =25°C. The Power dissipation P<sub>DSM</sub> is based on R<sub>θJA</sub> t<sub>s</sub> ≤ 10s and the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.
3. Repetitive rating; pulse width limited by max. junction temperature.
4. P<sub>D</sub> is based on max. junction temperature, using junction to ambient thermal resistance.

**Internal Structure and Marking Code**

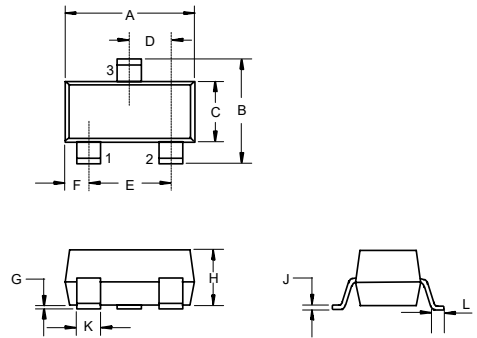


1. GATE
2. SOURCE
3. DRAIN



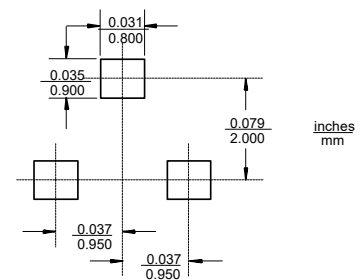
**P-CHANNEL MOSFET**

**SOT-23**



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.110	0.120	2.80	3.04	
B	0.090	0.104	2.30	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	0.004	0.01	0.10	
H	0.035	0.040	0.90	1.02	
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	$I_{DSS}$	$V_{DS}=-60V, V_{GS}=0V$			-1	$\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1		-2.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-1.5A$		120	160	m $\Omega$
		$V_{GS}=-4.5V, I_D=-1A$		160	240	
Gate Resistance	$R_g$	F=1MHz, Open drain		5		$\Omega$
<b>Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$				-1.6	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=-1.5A$			-1.2	V
Reverse Recovery Time	$t_{rr}$	$I_F=-1.5A, dI_F/dt=100A/\mu s$		18.1		ns
Reverse Recovery Charge	$Q_{rr}$			13		nC
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=-30V, V_{GS}=0V, f=1MHz$		429		pF
Output Capacitance	$C_{oss}$			34		
Reverse Transfer Capacitance	$C_{rss}$			27.5		
Total Gate Charge	$Q_g$	$V_{DS}=-30V, V_{GS}=-10V, I_D=-1.5A$		10.4		nC
Gate-Source Charge	$Q_{gs}$			1.4		
Gate-Drain Charge	$Q_{gd}$			2.6		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=-30V, V_{GS}=-10V, R_{GEN}=3\Omega, I_{DS}=-1.5A$		7		ns
Turn-On Rise Time	$t_r$			4		
Turn-Off Delay Time	$t_{d(off)}$			17		
Turn-Off Fall Time	$t_f$			5.9		

Curve Characteristics

Fig. 1 - Typical Output Characteristics

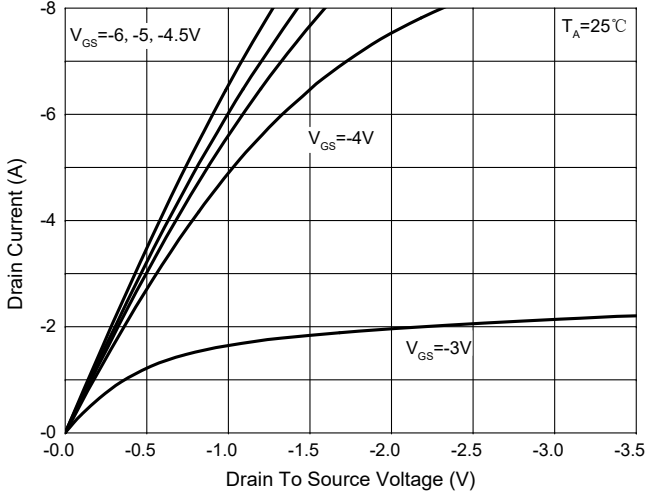


Fig. 2 - Transfer Characteristics

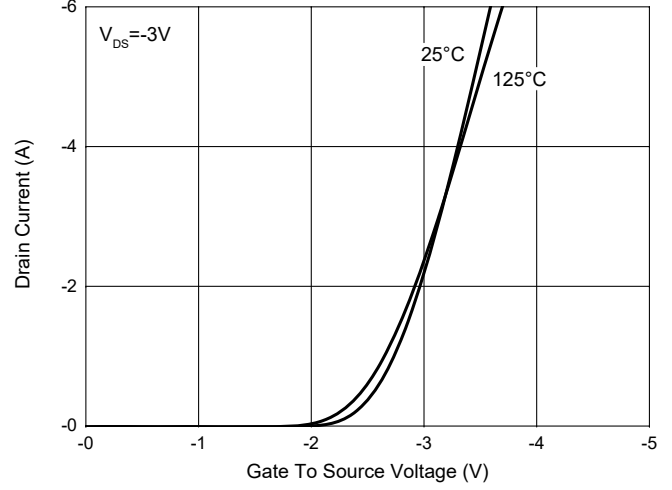


Fig. 3 -  $R_{DS(ON)} - I_D$

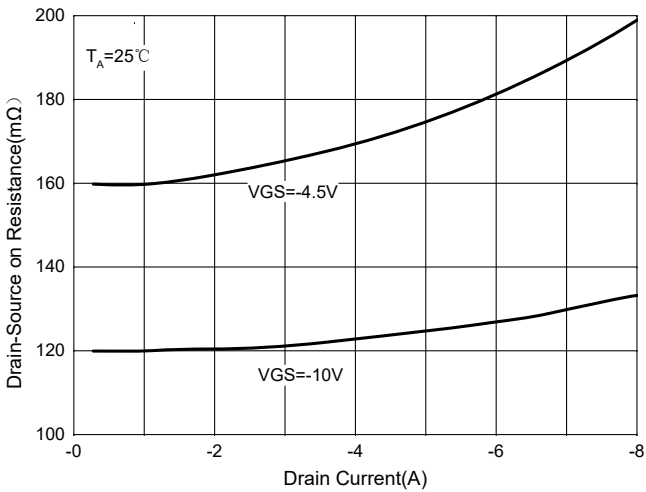


Fig. 4 -  $R_{DS(ON)} - V_{GS}$

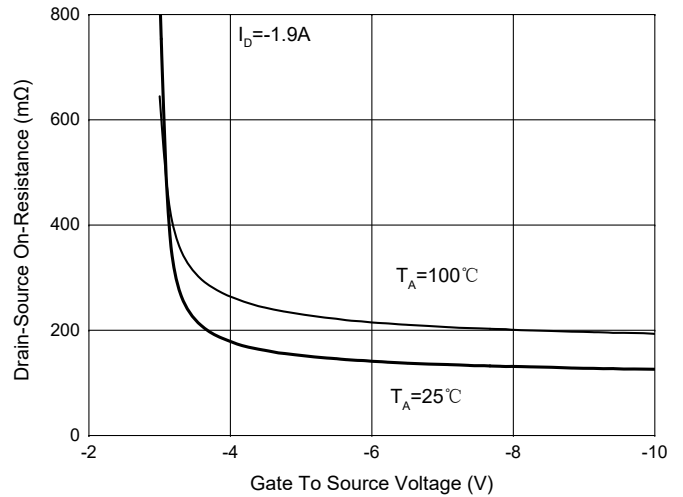


Fig. 5 -  $I_S - V_{SD}$

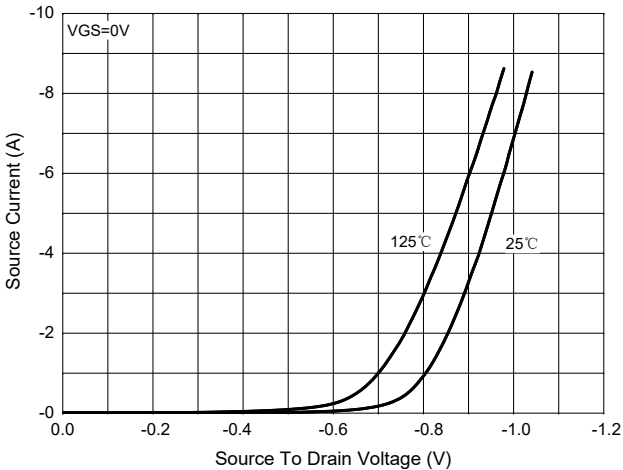
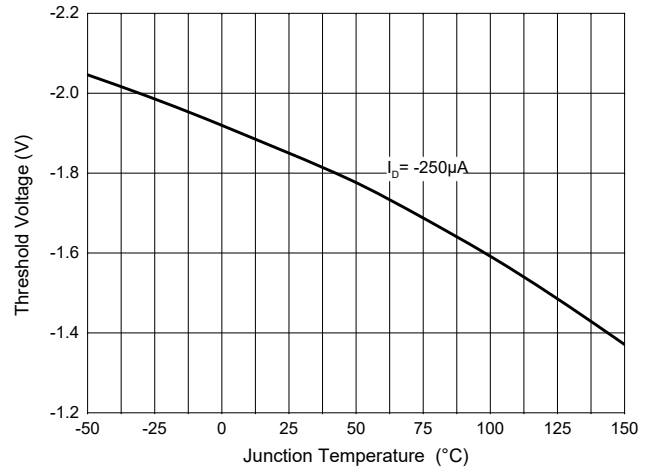


Fig. 6 - Threshold Voltage



Curve Characteristics

Fig. 7 - GateCharge

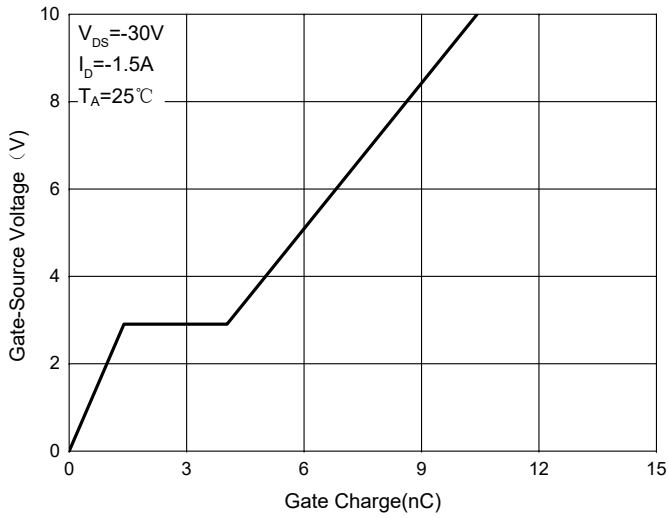


Fig.8-NormalizedOnResistanceCharacteristics

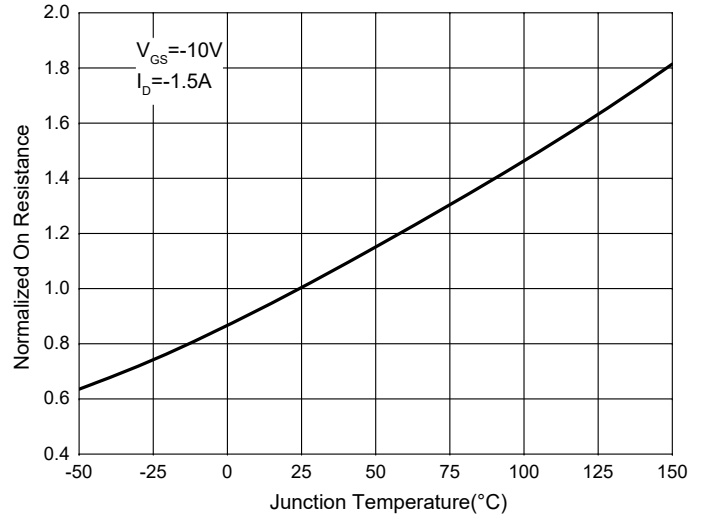


Fig. 9 - Capacitance Characteristics

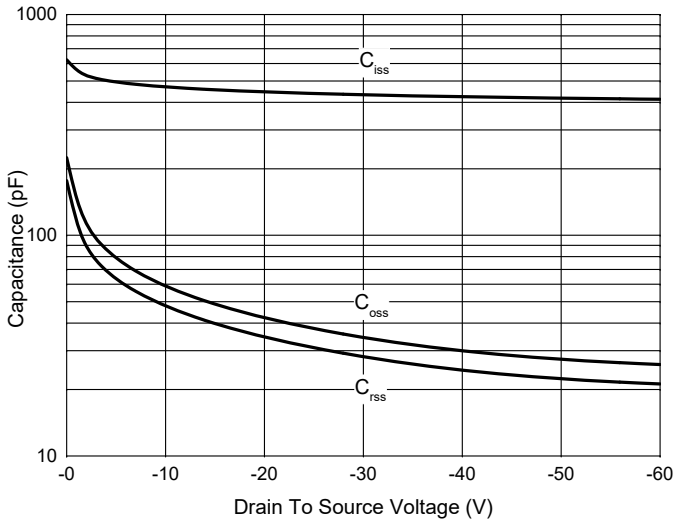


Fig. 10 - Current dissipation

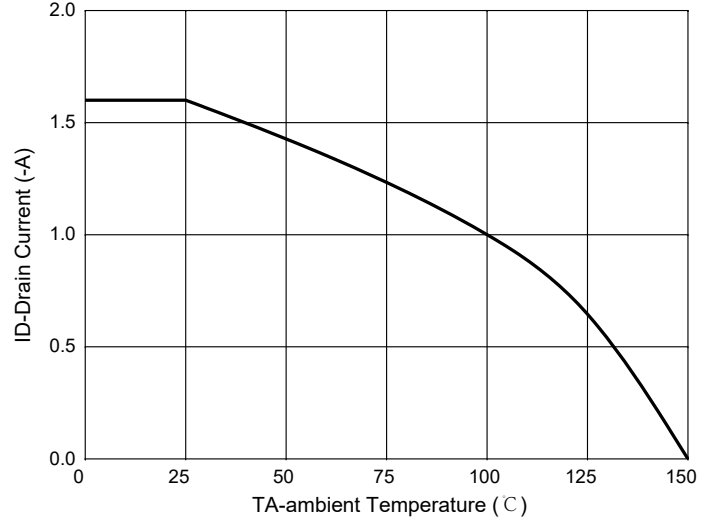
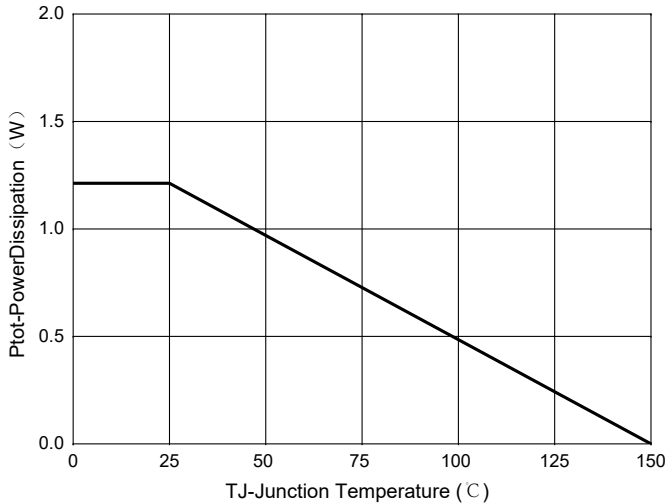


Fig.11-PowerDissipation



## Curve Characteristics

Fig. 12 - Safe Operation Area

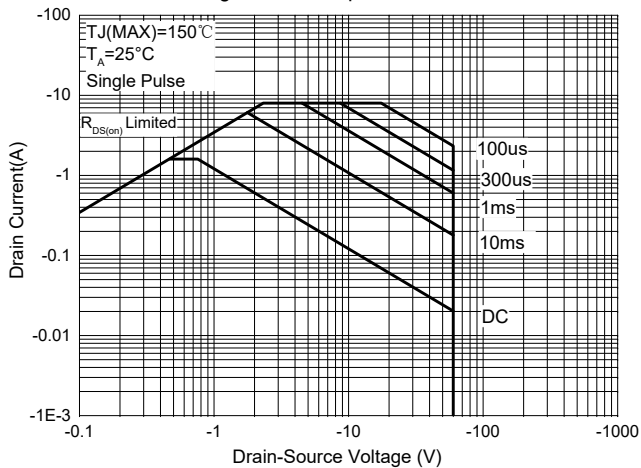
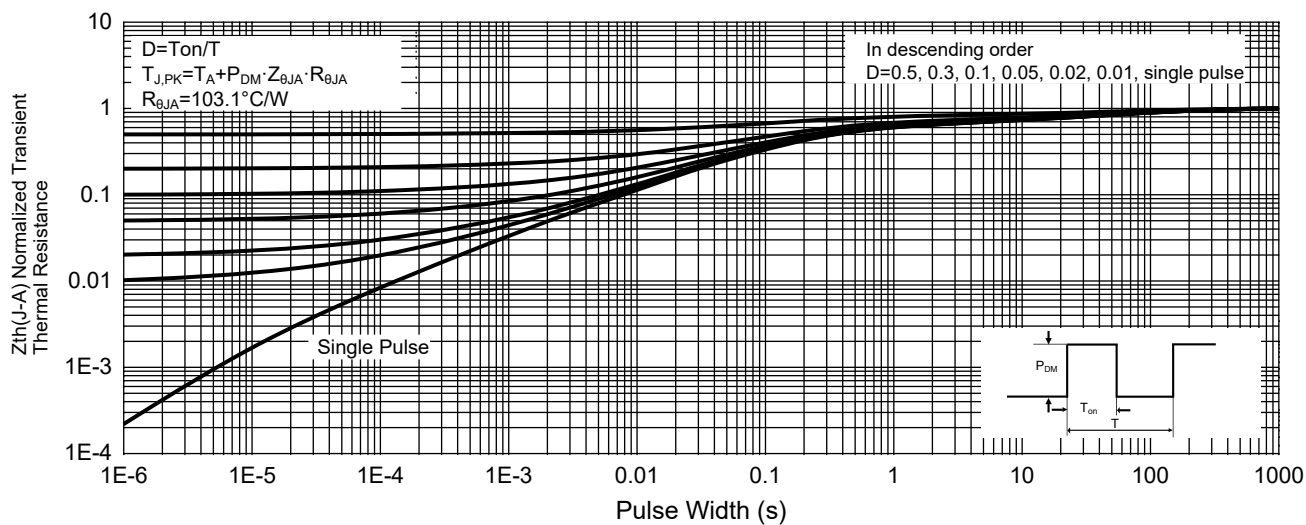


Fig. 13 - Normalized Transient Thermal Impedance



## Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 3Kpcs/Reel
Part Number-13P	Tape&Reel: 10Kpcs/Reel

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