

Features

- ESD protected:1500V
- AEC-Q101 Qualified
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device^(Note1)
- 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: -55°C to +150°C
- Thermal Resistance: 202°C/W Junction to Ambient^(Note2)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V _{DS}	50	V
Gate-Source Voltlage		V _{GS}	±20	V
Continuous Drain Current	T _A =25°C	I _D	0.22	A
	T _A =100°C		0.14	
Pulsed Drain Current ^(Note3)		I _{DM}	1	A
Total Power Dissipation ^(Note4)		P _D	0.62	W

Note:

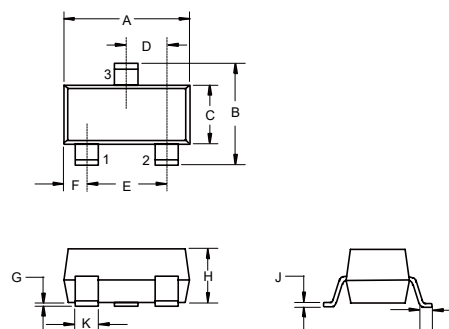
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$. The Power dissipation P_{DSM} is based on $R_{\theta JA} t \leq 10s$ 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_D is based on max. junction temperature, using junction to ambient thermal resistance.

Internal Structure and Marking code



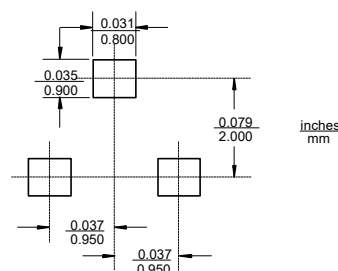
N-Channel MOSFET

SOT-23



DIM	INCHES		MM		NOTE
	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 @ 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 =250μA	50			V
Gate-Source Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±5	μA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =48V, V _{GS} =0V			1	μA
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.8	1	1.45	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =0.5A		1.2	1.6	Ω
		V _{GS} =4.5V, I _D =0.1A		1.2	2.5	
		V _{GS} =2.5V, I _D =0.1A		1.8	3.8	
Forward Transconductance	g _{FS}	V _{DS} =10V, I _D =0.2A		333		mS
Diode Forward Voltage	R _G	F=1 MHz, Open drain		75		Ω
Diode Characteristics						
Continuous Body Diode Current	I _S				0.5	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =0.5A			1.3	v
Reverse Recovery Time	t _{rr}	I _F =0.5A, dI _F /dt=100A/μs		9.2		ns
Reverse Recovery Charge	Q _{rr}			2.1		nC
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1MHz		29		pF
Output Capacitance	C _{oss}			4.3		
Reverse Transfer Capacitance	C _{rss}			3		
Total Gate Charge	Q _g	V _{DS} =25V, V _{GS} =10V, I _D =0.5A		1.2		nC
Gate-Source Charge	Q _{gs}			0.15		
Gate-Drain Charge	Q _{gd}			0.31		
Turn-On Delay Time	t _{d(on)}	V _{DS} =25V, V _{GEN} =10V, R _G =25Ω, I _D =0.5A		3		ns
Turn-On Rise Time	t _r			2.7		
Turn-Off Delay Time	t _{d(off)}			11		
Turn-Off Fall Time	t _f			8.1		

Curve Characteristics

Fig. 1 - Typical Output Characteristics

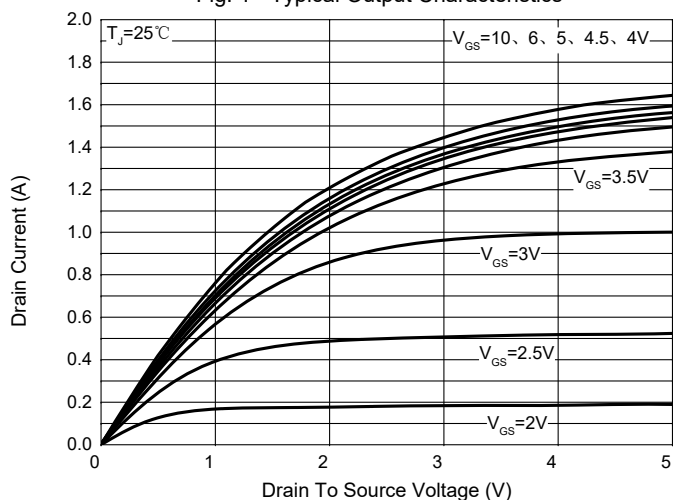


Fig. 2 - Transfer Characteristics

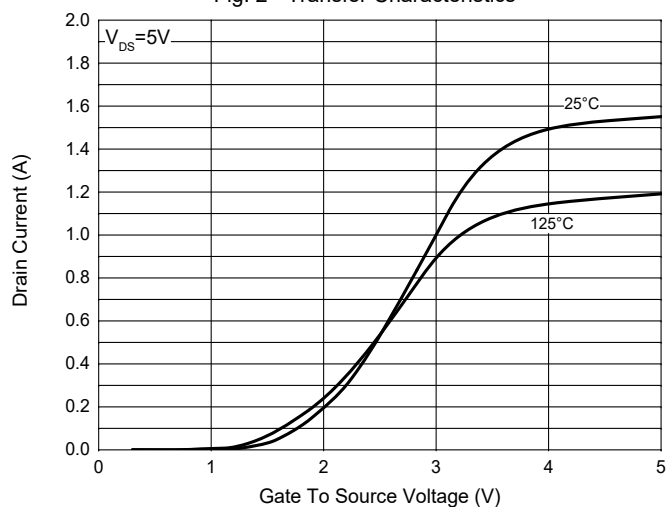


Fig. 3 - $R_{DS(ON)} - V_{GS}$

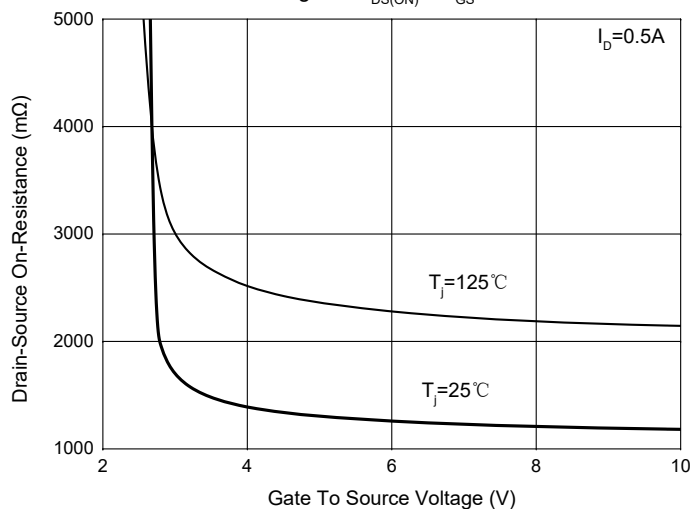


Fig. 3 - $R_{DS(ON)} - I_D$

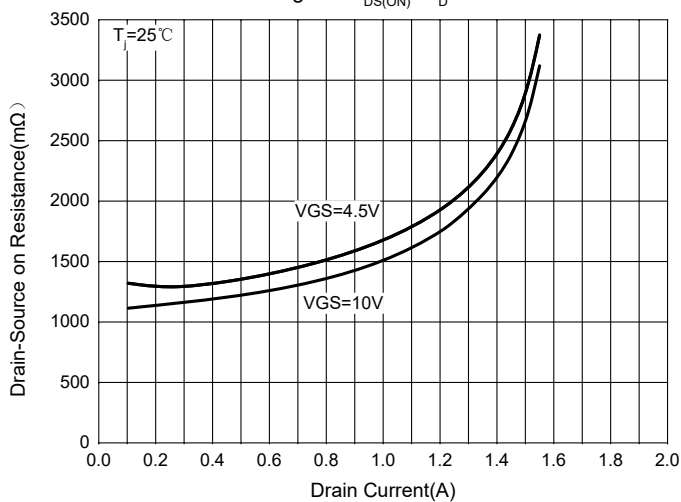


Fig. 5 - Capacitance Characteristics

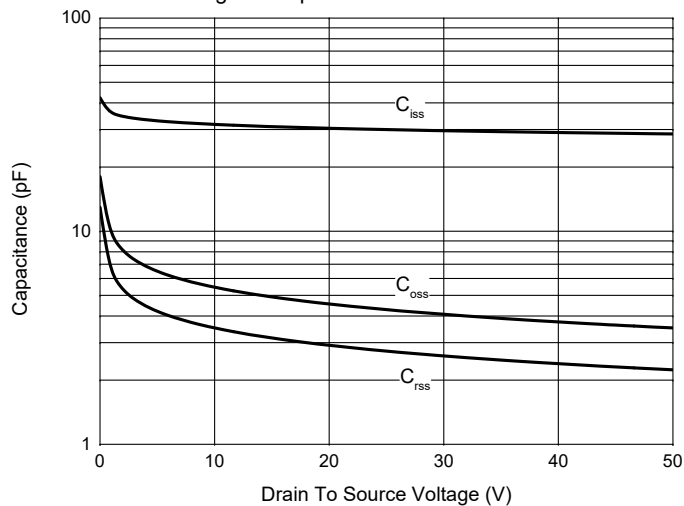
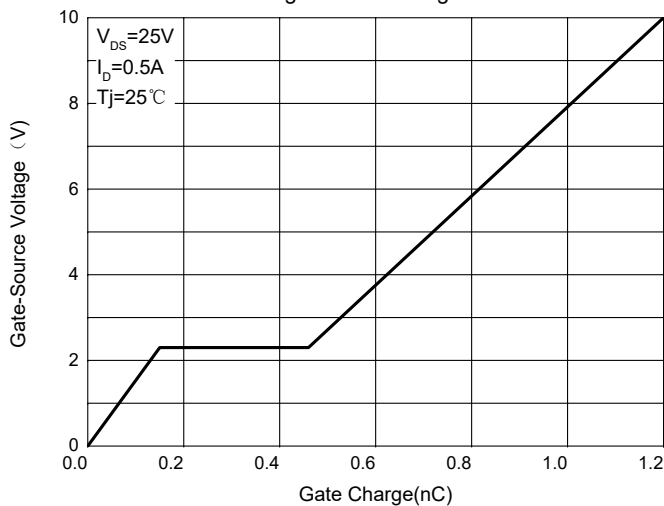


Fig. 6 - GateCharge



Curve Characteristics

Fig. 8 - Normalized Threshold voltage

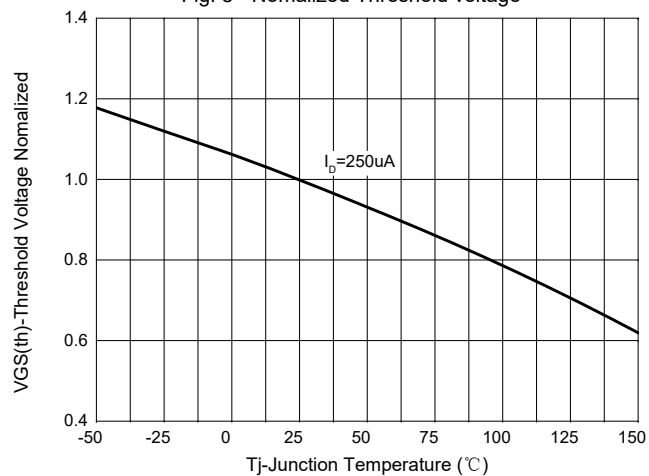


Fig.8-Normalized OnResistanceCharacteristics

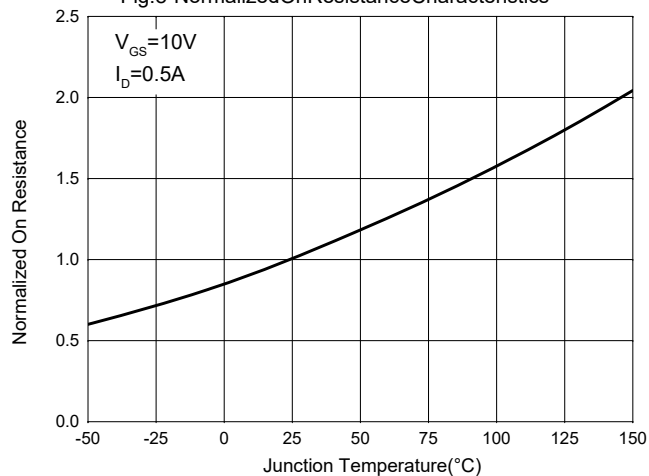


Fig.9 - $I_S - V_{SD}$

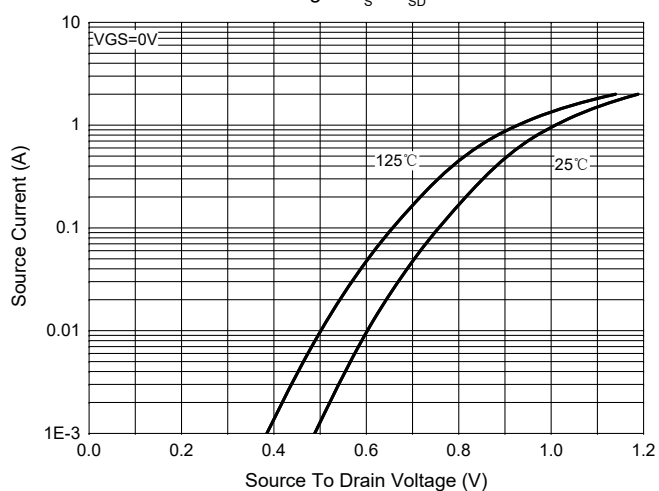


Fig. 10 - Current dissipation

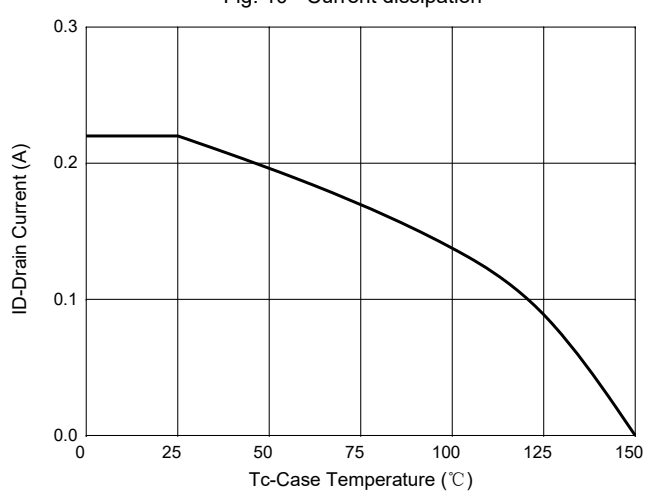
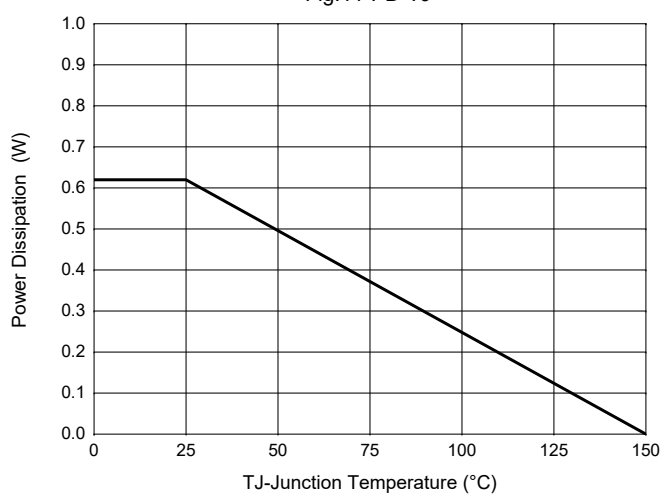


Fig.11-PD-TJ



Curve Characteristics

Fig. 12 - Safe Operation Area

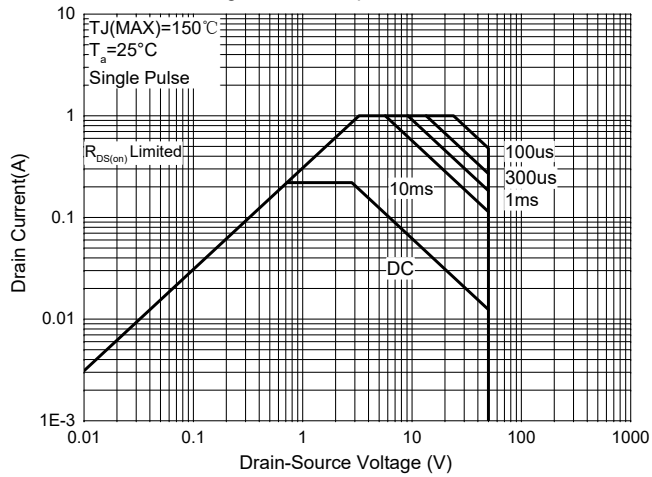
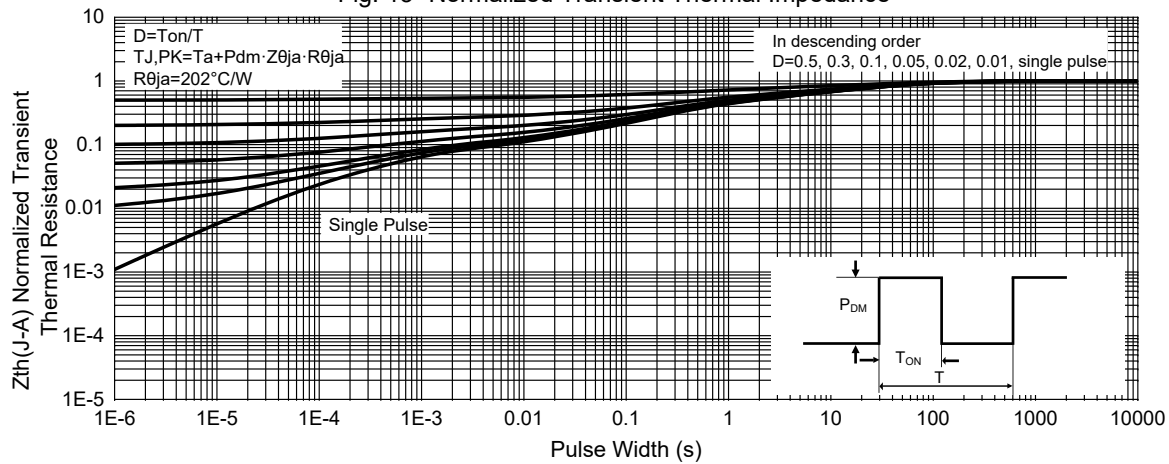


Fig. 13 - Normalized Transient Thermal Impedance



Ordering Information

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

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