

Features

- ESD Protected Up To 2KV (HBM)
- 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

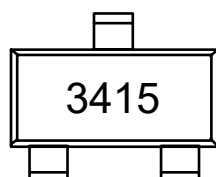
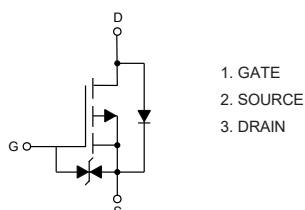
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 135°C/W Junction to Ambient (Note 2)

Parameter		Symbol	Rating	Unit
Drain -source Voltage		V _{DS}	-20	V
Gate -Source Voltage		V _{GS}	±10	V
Drain Current-Continuous	T _A =25°C	I _D	-4.0	A
	T _A =100°C		-2.5	
Drain Current-Pulse ^(Note 3)		I _{DM}	-16	A
Power Dissipation ^(Note 4)		P _D	0.93	W

Note:

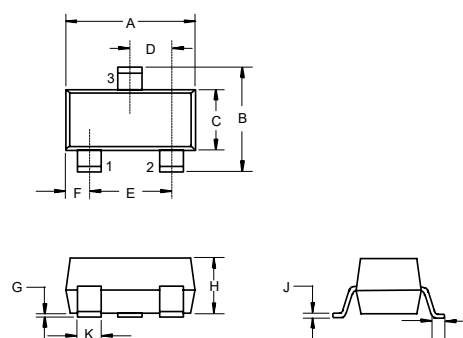
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$.
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



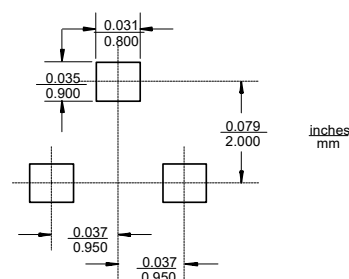
P-Channel MOSFET

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 (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 =-250μA	-20			V
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-0.35	-0.7	-0.9	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-20V, V _{GS} =0V			-1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =± 10V, V _{DS} =0V			±10	μA
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =-4.5V, I _D =-4A		29	45	mΩ
		V _{GS} =-2.5V, I _D =-4A		37	60	
Forward Transconductance	g _{FS}	V _{DS} =-5V, I _D =-0.8A		8		S
Gate resistance	R _g	f=1 MHz, Open drain		15.7		Ω
Diode Characteristics						
Continuous Body Diode Current	I _S				-4	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =-4A			-1.2	V
Reverse Recovery Time	t _{rr}	I _F =-2A, dI _F /dt=100A/μs		46		ns
Reverse Recovery Charge	Q _{rr}			37		nC
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =-10V,V _{GS} =0V, f=1MHz		1204		pF
Output Capacitance	C _{oss}			133		
Reverse Transfer Capacitance	C _{rss}			121		
Total Gate Charge	Q _g	V _{DS} =-10V,V _{GS} =-4.5V,I _D =-4A		12.5		nC
Gate-Source Charge	Q _{gs}			1.8		
Gate-Drain Charge	Q _{gd}			3		
Turn-On Delay Time	t _{d(on)}	V _{DD} =-10V,V _{GS} =-4.5V, R _G =30Ω, I _D =-4A		7.3		ns
Turn-On Rise Time	t _r			7		
Turn-Off Delay Time	t _{d(off)}			87		
Turn-Off Fall Time	t _f			45		

Curve Characteristics

Fig.1 - Typical Output Characteristics

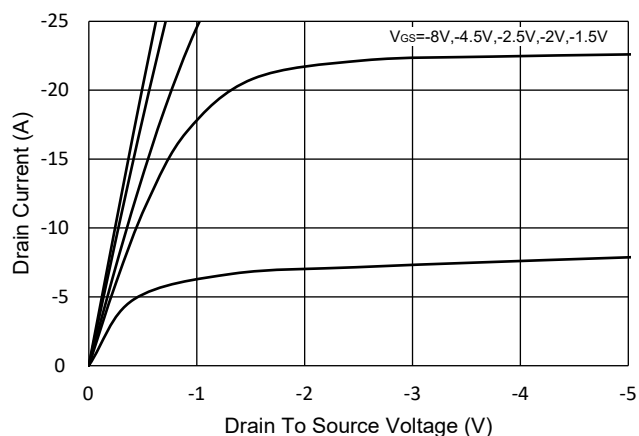


Fig.2 - Transfer Characteristic

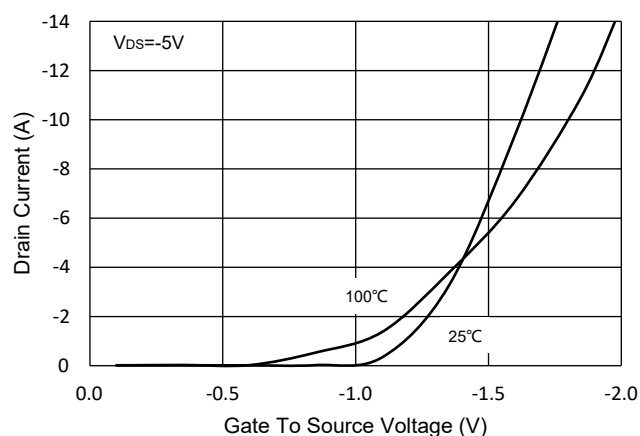


Fig.3 - $R_{DS(ON)}$ - V_{GS}

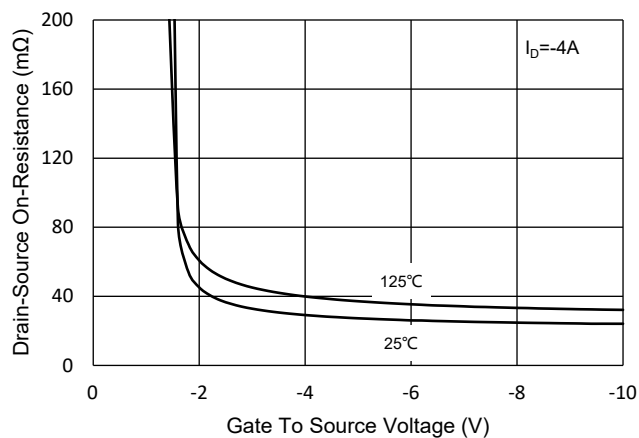


Fig.4 - $R_{DS(ON)}$ - I_D

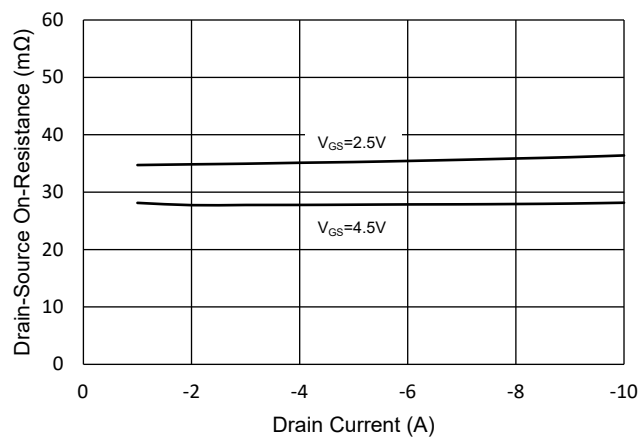


Fig.5 - Capacitance Characteristics

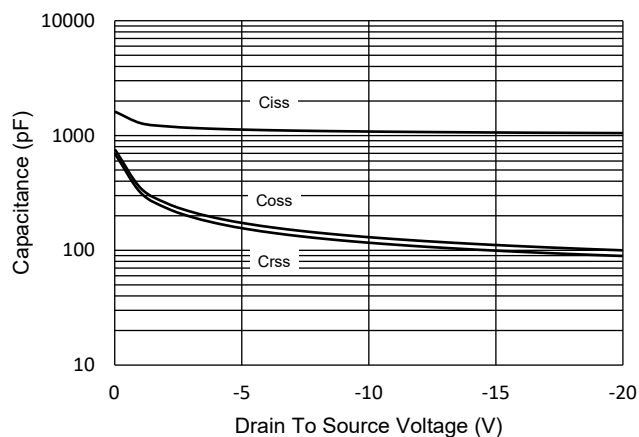
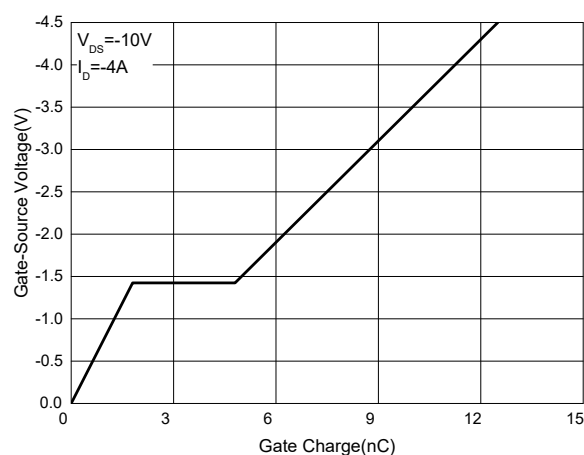


Fig.6 - Gate Charge



Curve Characteristics

Fig.7 - Normalized Threshold Voltage

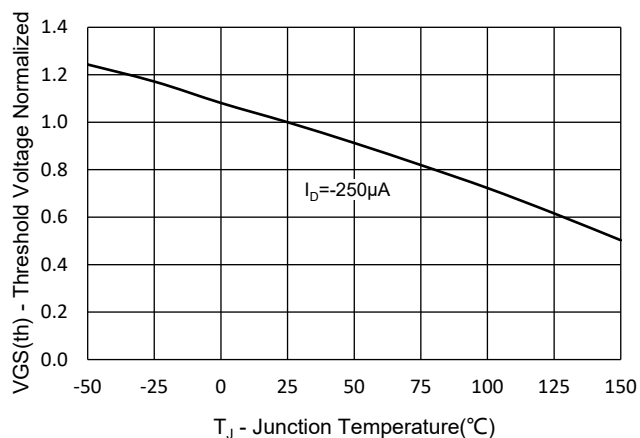


Fig.8 - Normalized On Resistance Characteristics

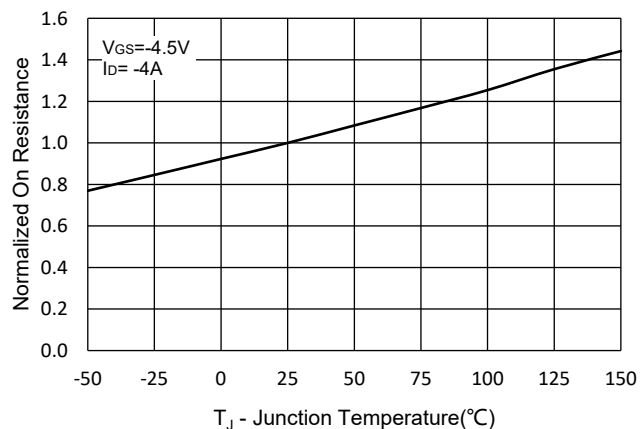


Fig.9 - I_S - V_{SD}

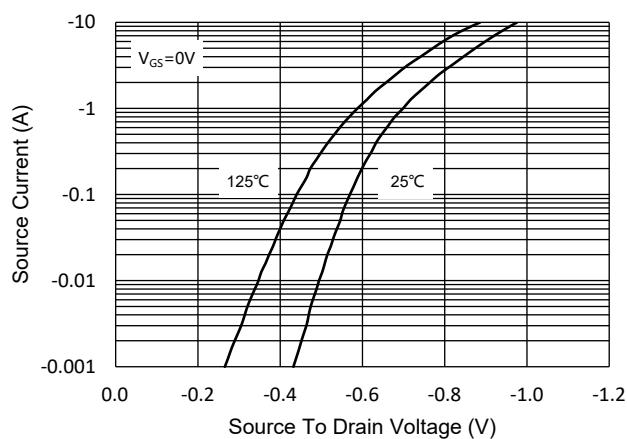


Fig.10 - Drain Current

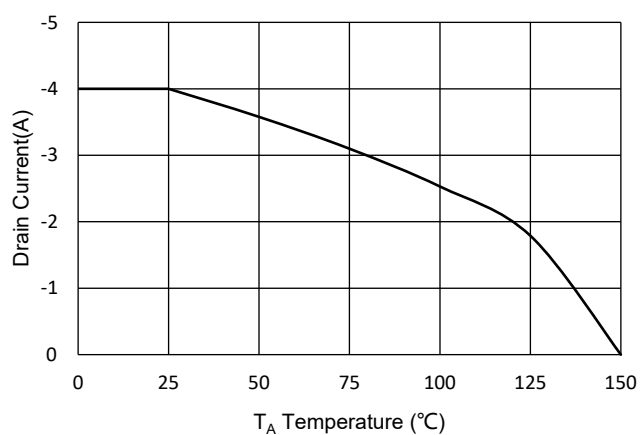
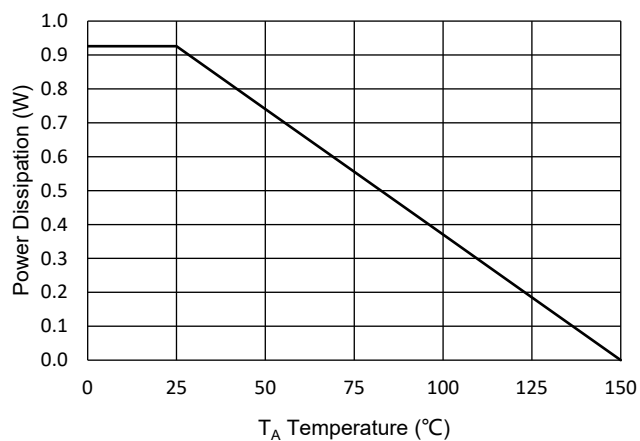


Fig.11 - PD Dissipation



Curve Characteristics

Fig.12 - Safe Operation Area

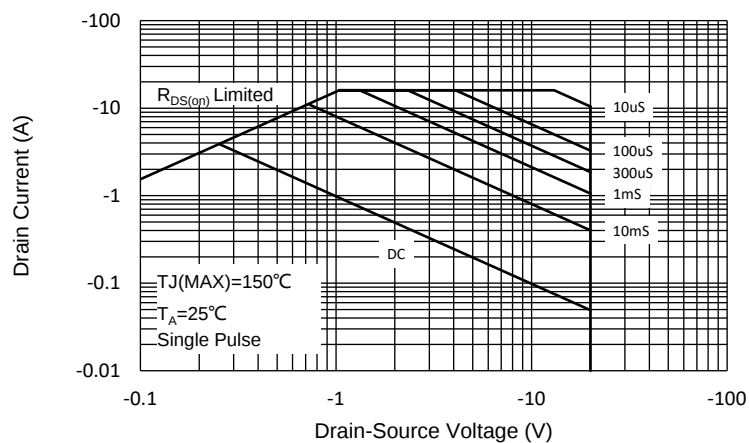
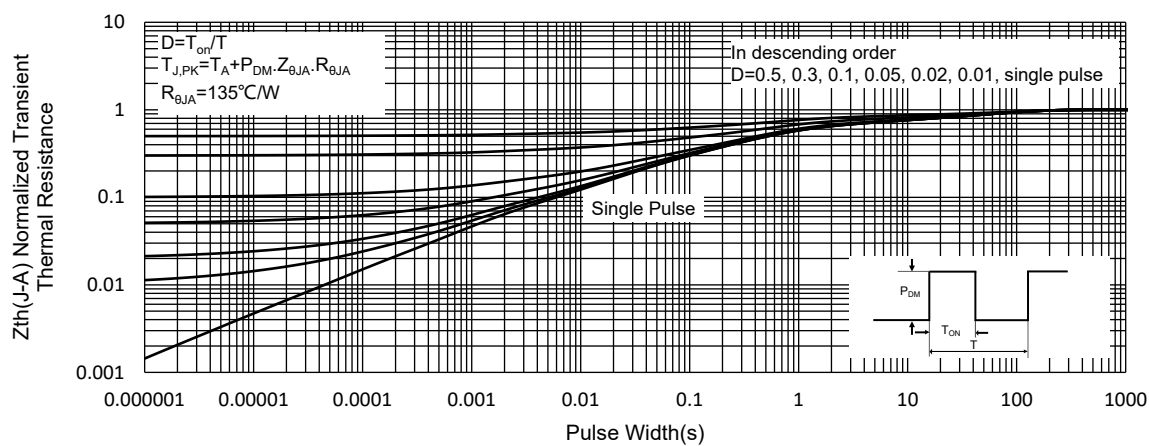


Fig.13 - Normalized Transient Thermal Impedance



Ordering Information

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

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