Features

- High Density Cell Design For Ultra Low $R_{DS(on)}$
- High Speed Switching
- ESD Protected Up to 3.5KV (HBM)
- Trench Power LV MOSFET Technology
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free. “Green” Device (Note 1)
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

P-Channel Enhancement Mode Field Effect Transistor

Maximum Ratings

- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 100°C/W Junction to Ambient(Note 2)

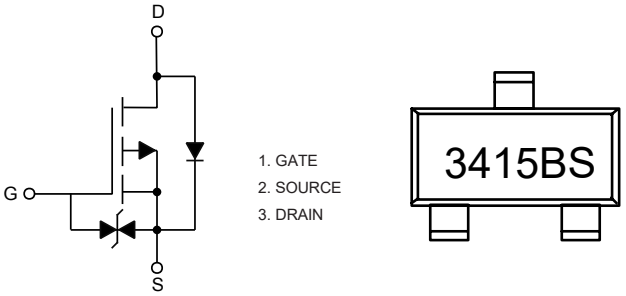
Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Volltage	V_{GS}	±10	V
Drain Current T_A=25°C Steady State	I_D	-5.6	A
Drain Current T_A=70°C Steady State	I_D	-4.5	A
Pulsed Drain Current(Note 3)	I_{DM}	-30	A
Total Power Dissipation	P_D	1.3	W

Note: 1. Halogen free "Green” products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

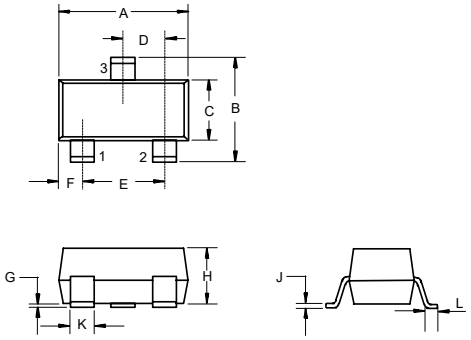
2. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

3. Pulse Test: Pulse Width≤300us,Duty cycle ≤2%.

Internal Structure and Marking Code

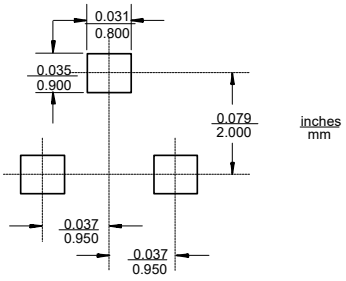


SOT-23



DIM	INCHES MIN	INCHES MAX	MM MIN	MM MAX	NOTE
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	-20			V
Gate-Source Leakage Current	I_{GSS}	V_{DS} =0V, V_{GS} =±10V			±10	μA
		V_{DS} =0V, V_{GS} =±8V			±2	μA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =-20V, V_{GS} =0V			-1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250μA	-0.5	-0.61	-0.9	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=-4.5V, I_D=-5.6A		30	42	mΩ
		V_{GS}=-2.5V, I_D=-4.3A		39	55	
		V_{GS}=-1.8V, I_D=-2A		51	100	
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=-5.6A		-0.9	-1.2	V
Maximum Body-Diode Continuous Current	I_S				-5.6	A
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=-10V,V_{GS}=0V,f =1MHz		1180		pF
Output Capacitance	C_{oss}			122		
Reverse Transfer Capacitance	C_{rss}			105		
Total Gate Charge	Q_g	V_{DS}=-10V,V_{GS}=-4.5V,I_D=-5.6A		12.7		nC
Gate-Source Charge	Q_{gs}			3		
Gate-Drain Charge	Q_{gd}			2.5		
Reverse Recovery Charge	Q_{rr}	V_{GS} = 0V, I_S=-5.6A, di/dt=100A/μs		12		
Reverse Recovery Time	t_{rr}			36		ns
Turn-On Delay Time	$t_{d(on)}$	V_{GS}=-4.5V,V_{DS}=-10V,I_D=-5.6A, R_{GEN}=3Ω		7.4		
Turn-On Rise Time	t_r			25		
Turn-Off Delay Time	$t_{d(off)}$			103		
Turn-Off Fall Time	t_f			72		

Curve Characteristics

Fig. 1 - Typical Output Characteristics

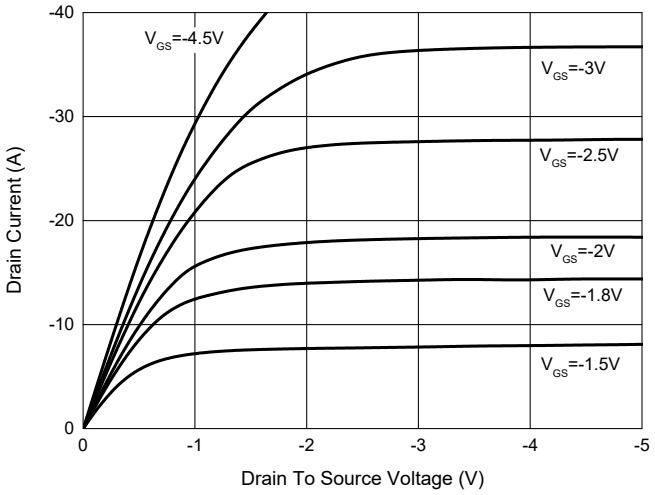


Fig. 2 - Transfer Characteristics

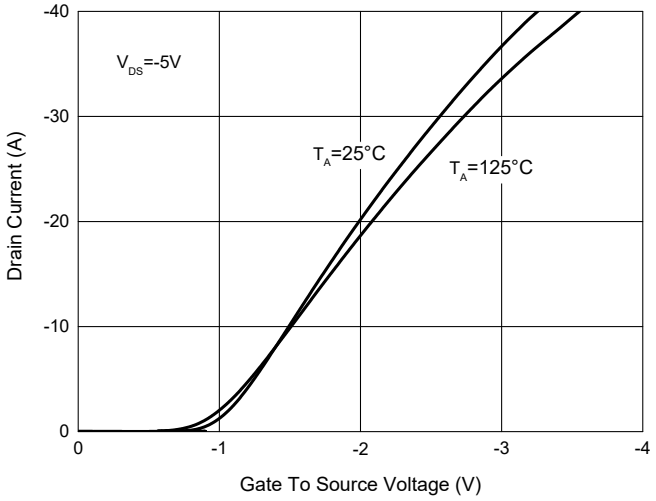


Fig. 3 - $R_{DS(ON)}$—I_D

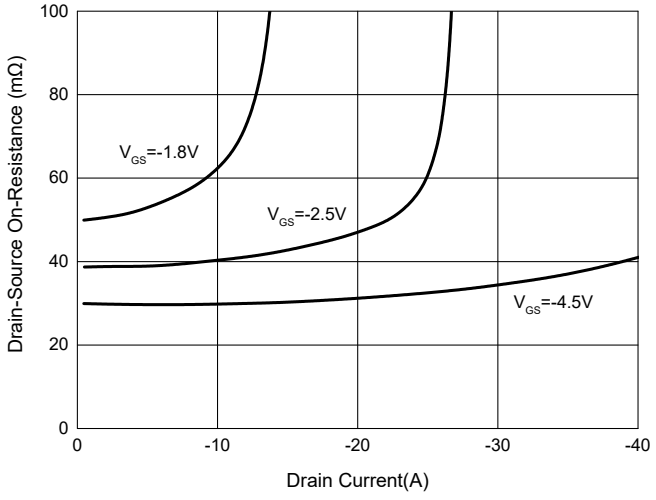


Fig. 4 - Drain-Source on Resistance

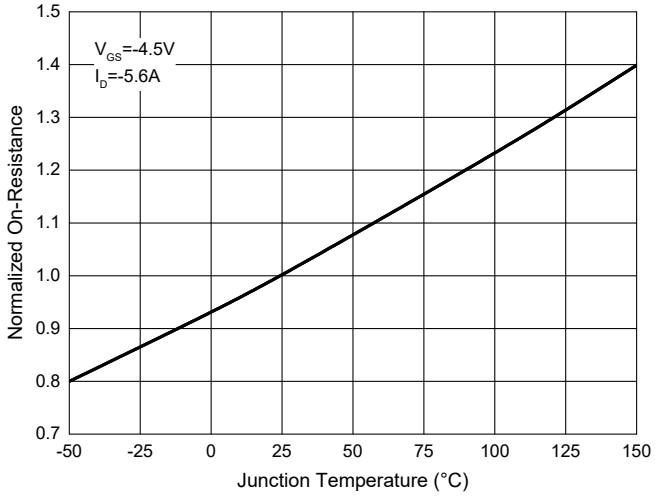


Fig. 5 - $R_{DS(ON)}$—V_{GS}

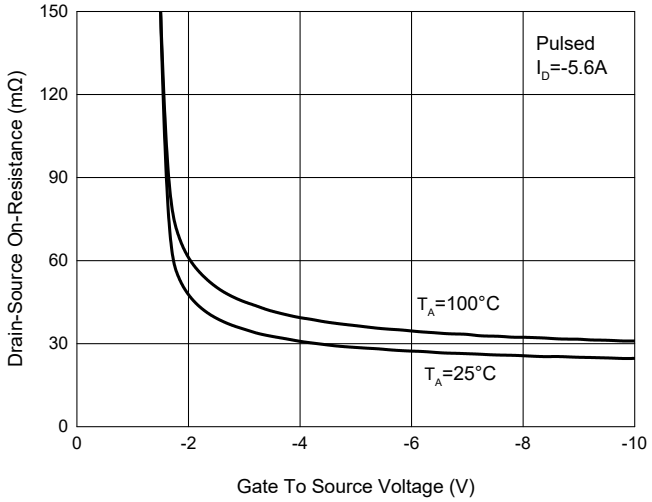
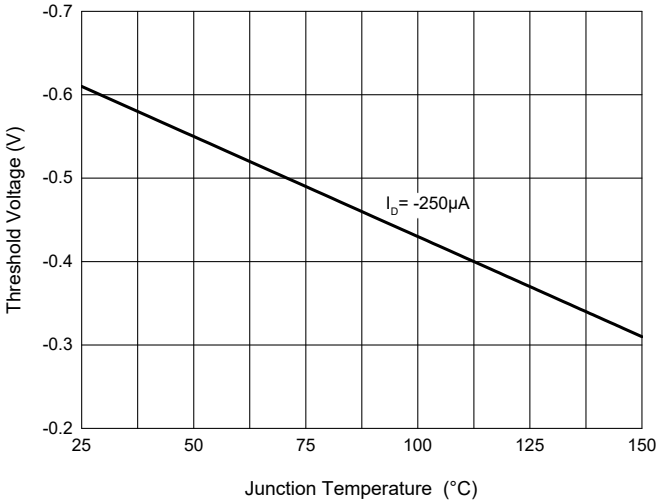


Fig. 6 - Threshold Voltage



Curve Characteristics

Fig. 7 - I_S—V_{SD}

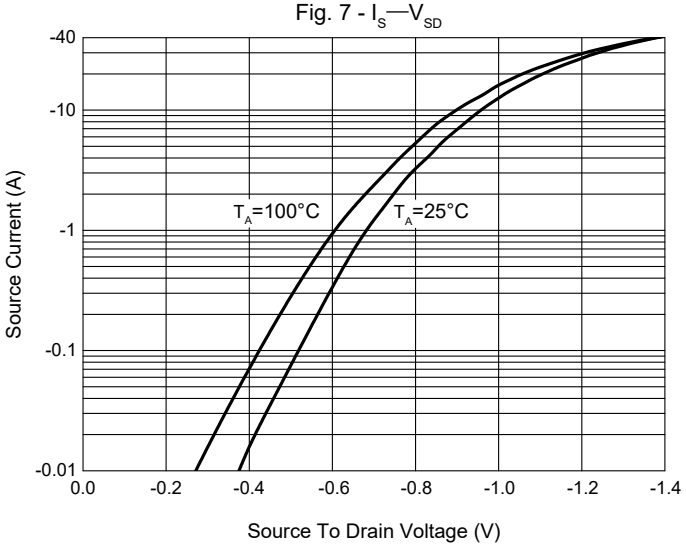


Fig. 8 - Capacitance Characteristics

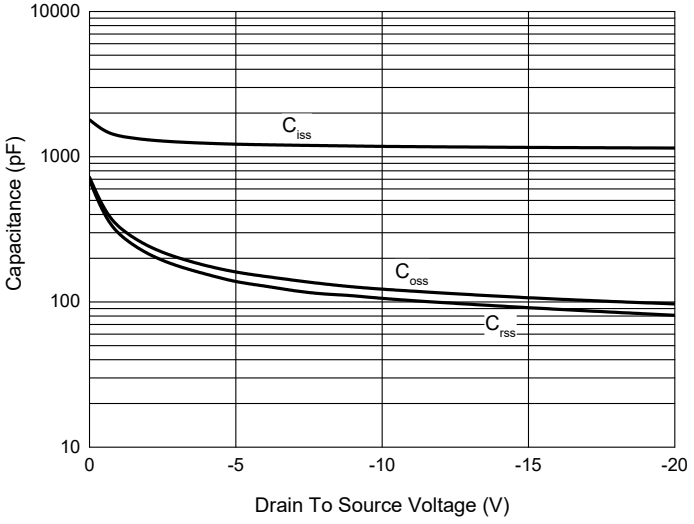


Fig. 9 - Gate Charge

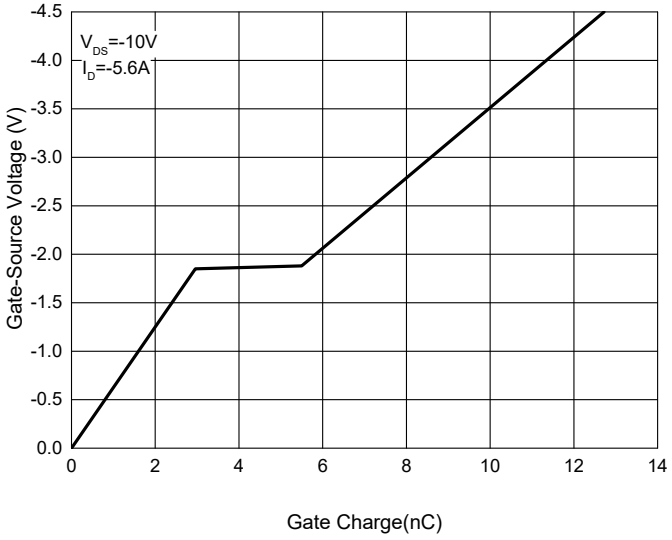


Fig. 10 - Safe Operation Area

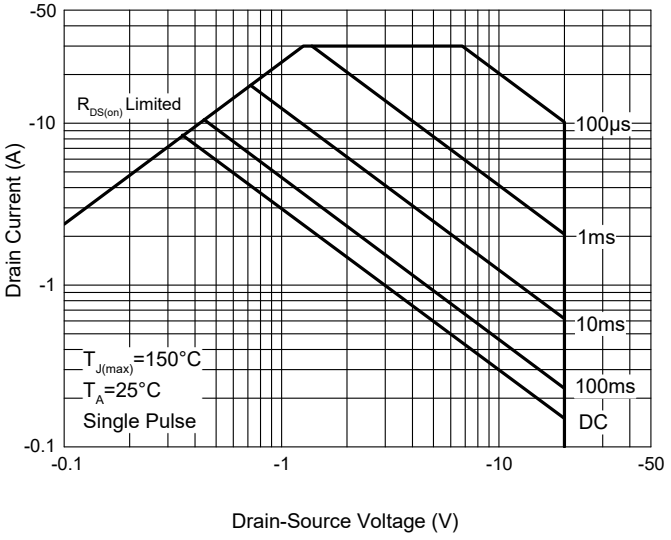
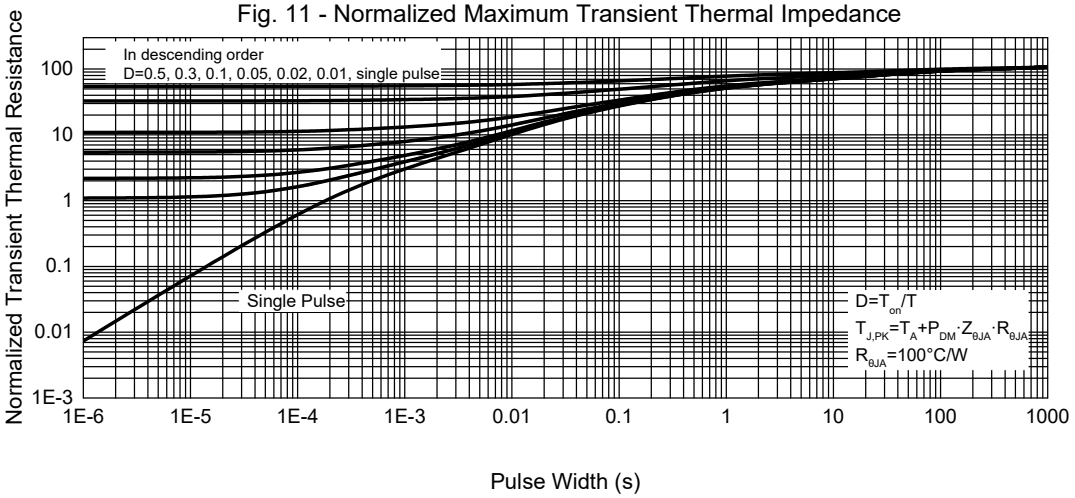


Fig. 11 - Normalized Maximum Transient Thermal Impedance



Ordering Information

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