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)

N-Channel MOSFET

Maximum Ratings

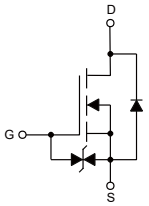
- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature: -55°C to +150°C
- Thermal Resistance: 202°C/W Junction to Ambient(Note2)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	50	V
Gate-Source Volltage		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

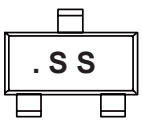
Note:

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 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C. The Power dissipation P_{DSM} is based on $R_{\theta JA}$ t≤ 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.

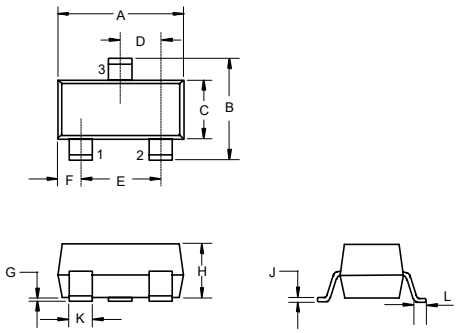
Internal Structure and Marking code



1. GATE
2. SOURCE
3. DRAIN

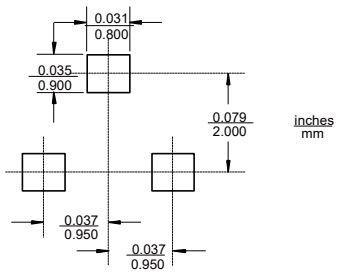


SOT-23



DIMENSIONS					
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

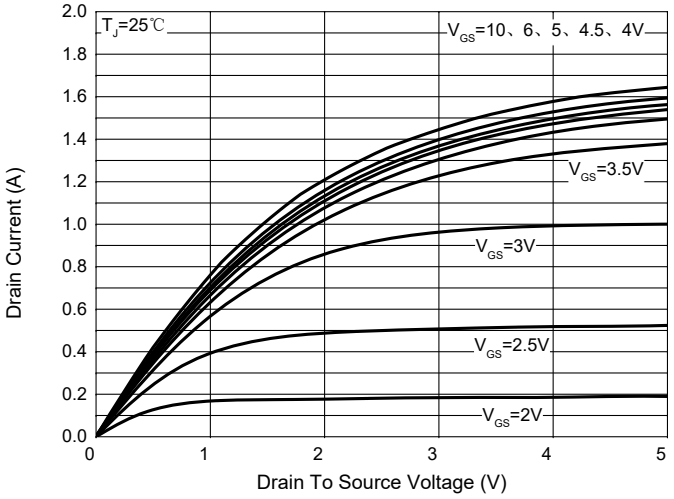


Fig. 2 - Transfer Characteristics

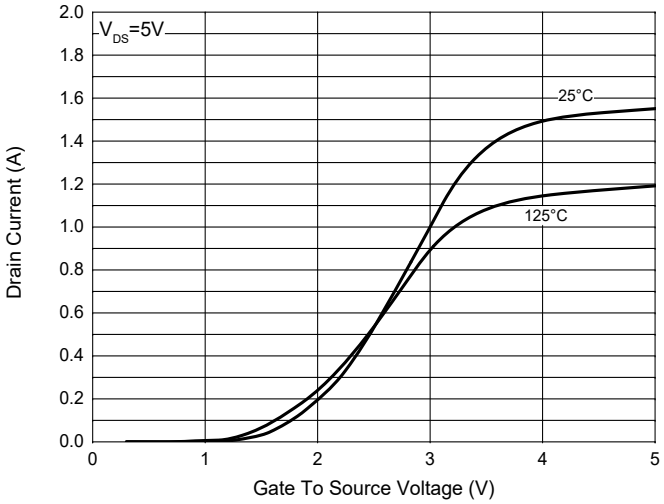


Fig. 3 - $R_{DS(ON)}$—V_{GS}

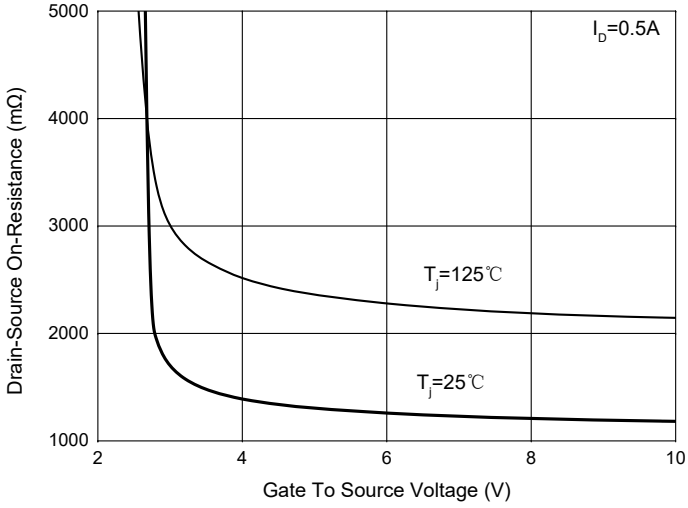


Fig. 3 - $R_{DS(ON)}$—I_D

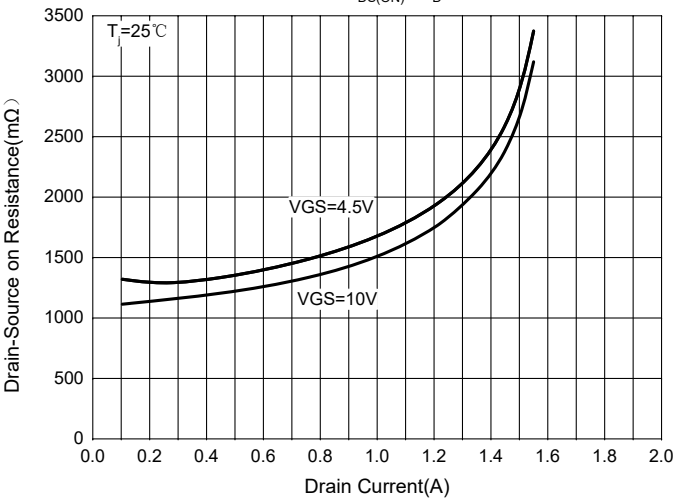


Fig. 5 - Capacitance Characteristics

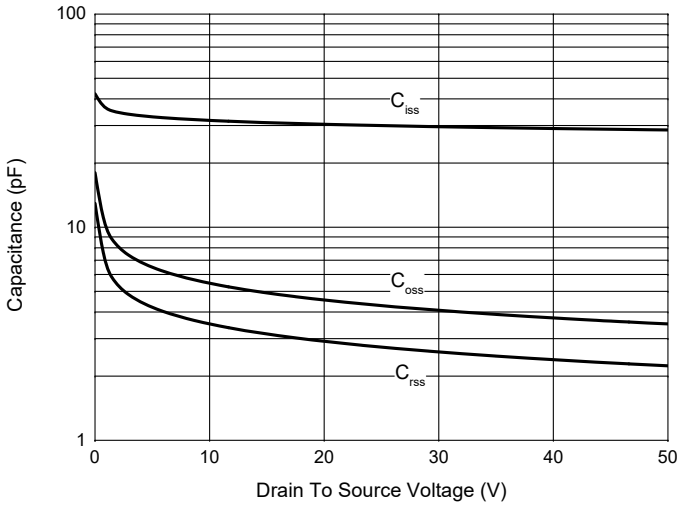
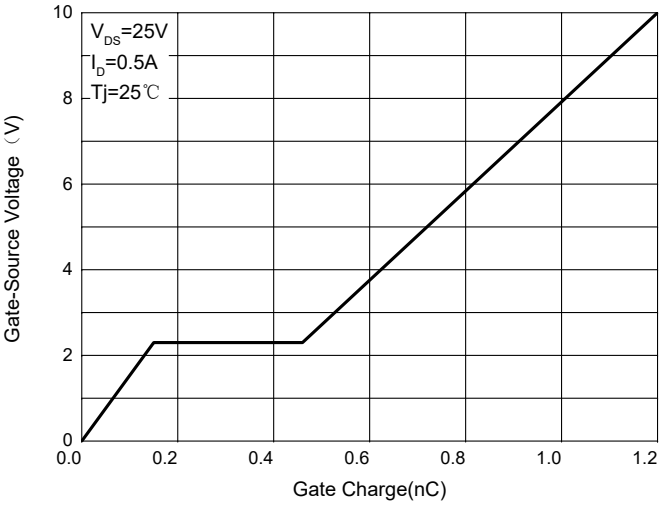


Fig. 6 - GateCharge



Curve Characteristics

Fig. 8 - Nomalized Threshold voltage

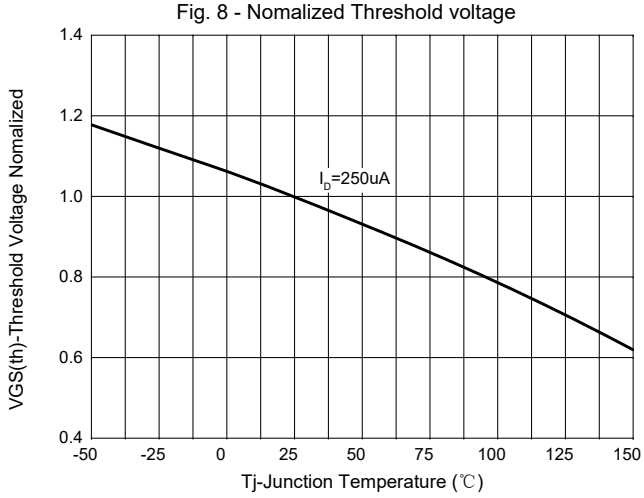


Fig.8-NormalizedOnResistanceCharacteristics

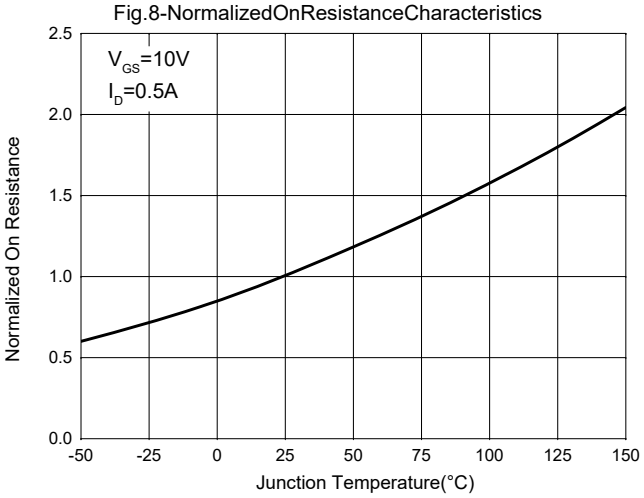


Fig.9 - I_S—V_{SD}

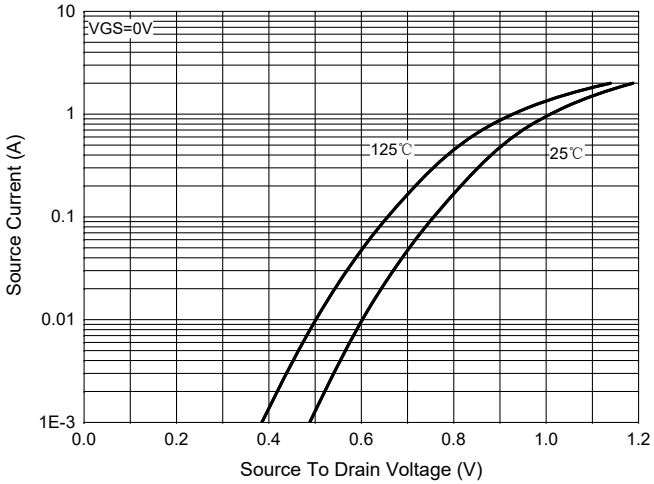


Fig. 10 - Current dissipation

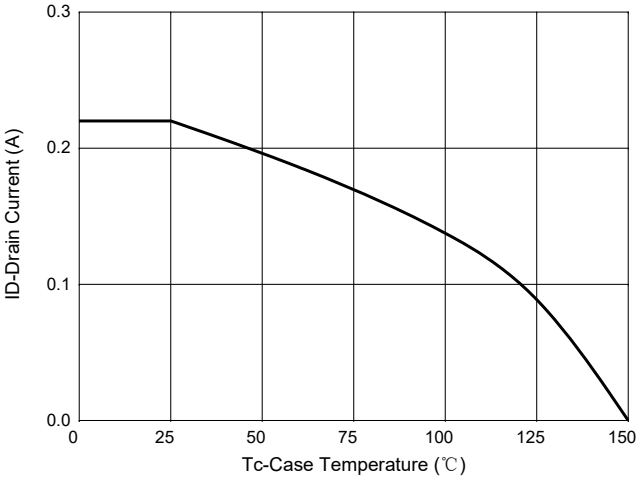
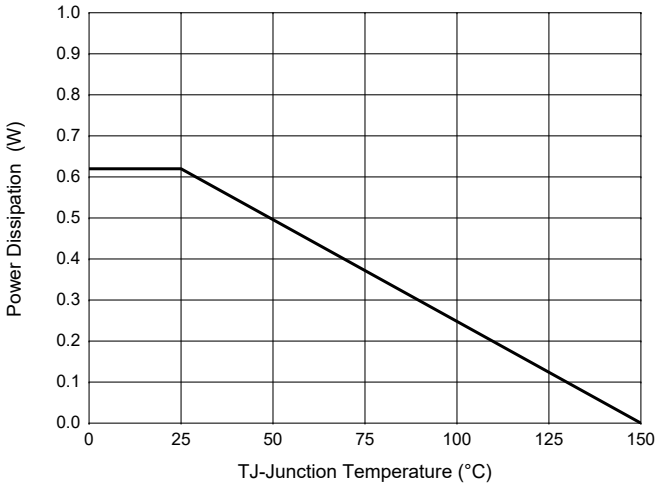


Fig.11-PD-TJ



Curve Characteristics

Fig. 12 - Safe Operation Area

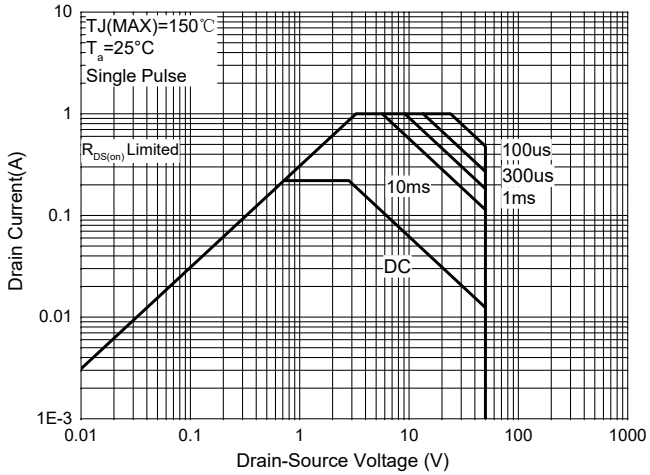
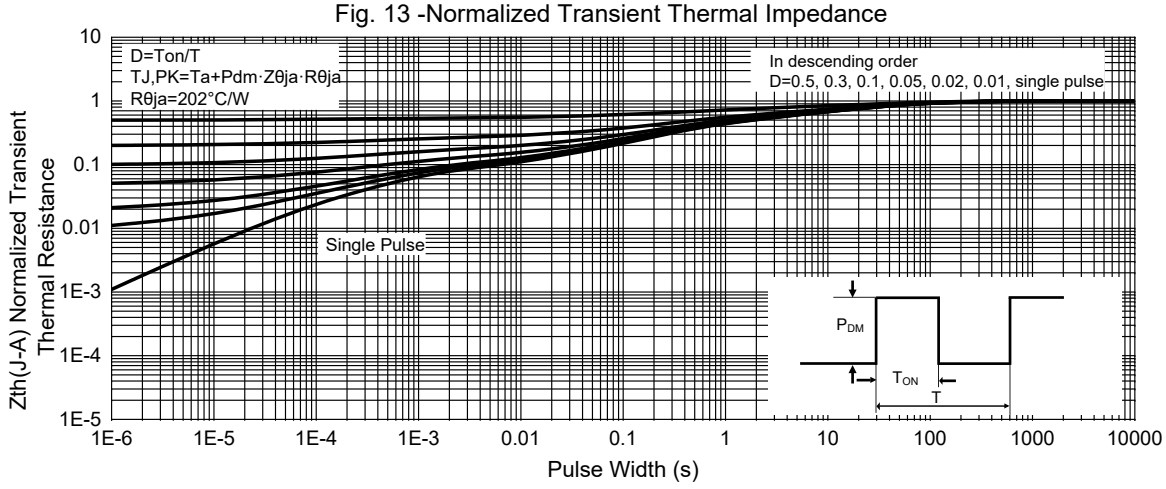


Fig. 13 -Normalized Transient Thermal Impedance



Ordering Information

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

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Micro Commercial Components (MCC):

BSS138AHE3-TP