

Features

- Split Gate Trench Mosfet Technology
- Excellent Stability and Uniformity
- 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

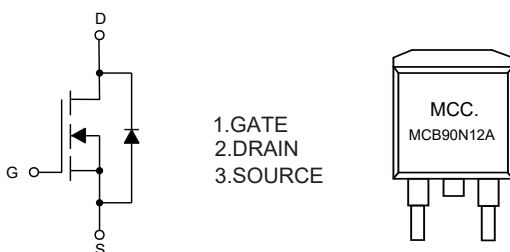
- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 40°C/W Junction to Ambient (Note 2)
- Thermal Resistance: 0.9°C/W Junction to Case

Parameter	Symbol	Rating	Unit
Drain -Source Voltage	V_{DS}	120	V
Gate -Source Voltage	V_{GS}	±20	V
Drain Current-Continuous	I_D	$T_C=25^\circ C$	90
		$T_C=100^\circ C$	56
Drain Current-Pulse (Note 3)	I_{DM}	360	A
Power Dissipation (Note 4)	P_D	139	W
Single Pulsed Avalanche Energy (Note 5)	E_{AS}	400	mJ

Note:

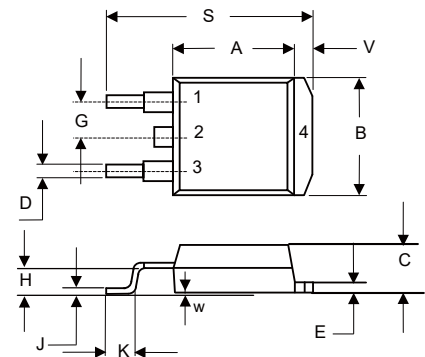
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of RθJA is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with TA =25°C.
3. Repetitive rating; pulse width limited by max. junction temperature.
4. P_D is based on max. junction temperature, using junction-Case thermal resistance.
5. T_J=25 C, V_{DD}=50V, R_G=25Ω, V_{GS}=10V, L=2mH.

Internal Structure and Marking Code



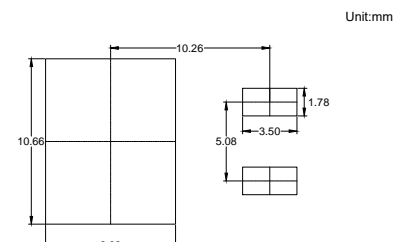
N-CHANNEL MOSFET

D²-PAK



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.331	0.370	8.40	9.40	
B	0.378	0.417	9.60	10.60	
C	0.165	0.189	4.20	4.80	
D	0.027	0.037	0.68	0.94	
E	0.045	0.055	1.14	1.40	
G	0.10		2.54		TYP.
H	0.096	0.134	2.43	3.40	
J	0.011	0.025	0.28	0.64	
K	0.071	0.131	1.80	3.32	
S	0.575	0.625	14.60	15.87	
V	0.042	0.058	1.07	1.47	
W	0.000	0.010	0.00	0.25	

Suggested Solder Pad Layout



Electrical Characteristics @ 25°C (Unless Otherwise Noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	120			V
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=120V, V_{GS}=0V$			1	μA
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	2.0	3.0	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=45A$		7	9	m Ω
		$V_{GS}=4.5V, I_D=20A$		8.5	11	
Gate resistance	R_G	$V_{GS}=0V, f=1MHz$		0.8		Ω
Diode Characteristics						
Continuous Body Diode Current	I_S				90	A
Body Diode Voltage	V_{SD}	$I_{SD}=20A, V_{GS}=0V$			1.2	V
Reverse Recovery Charge	Q_{rr}	$I_F=20A, di/dt=100A/\mu s$		176		nC
Reverse Recovery Time	t_{rr}			85		ns
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=60V, V_{GS}=0V, f=1MHz$		4604		pF
Output Capacitance	C_{oss}			430		
Reverse Transfer Capacitance	C_{riss}			7.4		
Total Gate Charge	Q_g	$V_{DS}=60V, V_{GS}=10V, I_D=20A$		67.5		nC
Gate-Source Charge	Q_{gs}			13.5		
Gate-Drain Charge	Q_{gd}			10		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=60V, I_D=20A, V_{GS}=10V, R_G=2.2\Omega$		16		ns
Turn-On Rise Time	t_r			8.7		
Turn-Off Delay Time	$t_{d(off)}$			43		
Turn-Off Fall Time	t_f			11		

Curve Characteristics

Fig.1 - Typical Output Characteristics

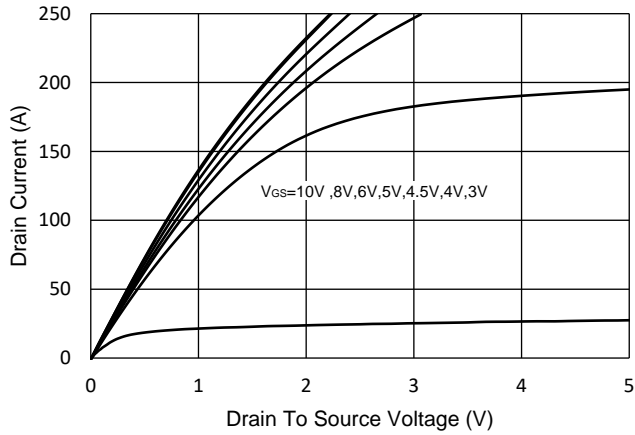


Fig.2 - Transfer Characteristic

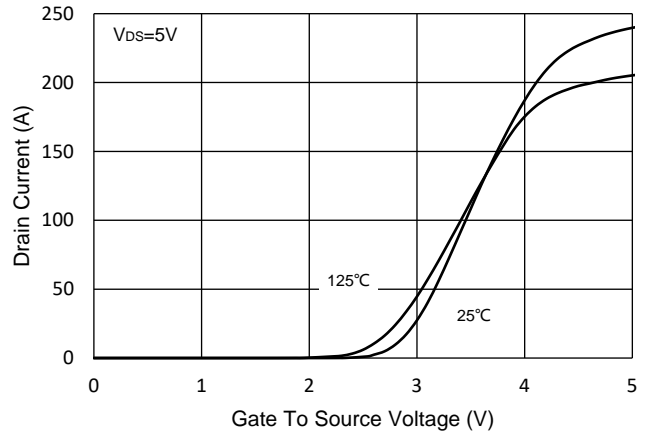


Fig.3 - $R_{DS(ON)}$ - V_{GS}

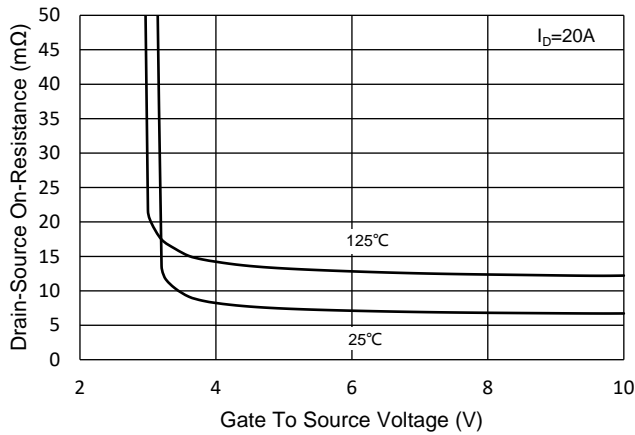


Fig.4 - $R_{DS(ON)}$ - I_D

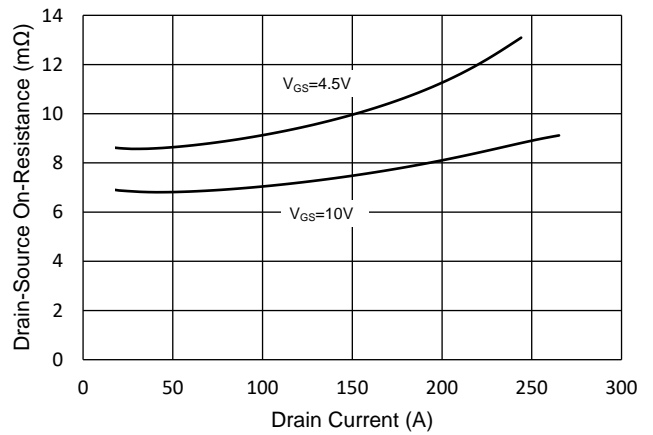


Fig.5 - Capacitance Characteristics

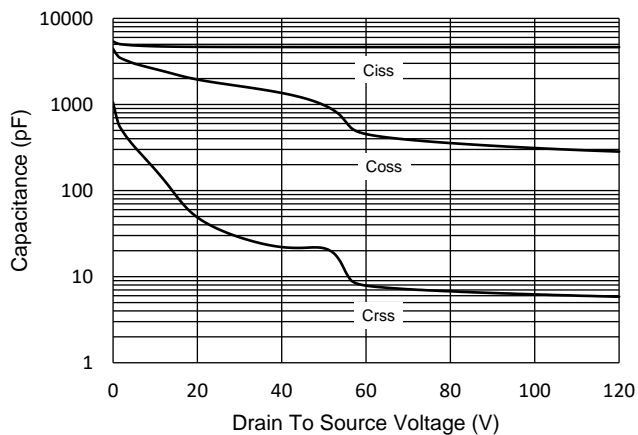
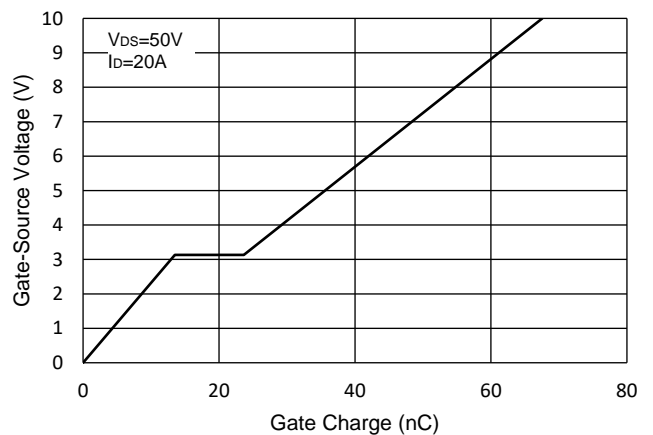


Fig.6 - Gate Charge



Curve Characteristics

Fig.7 - Normalized Threshold Voltage

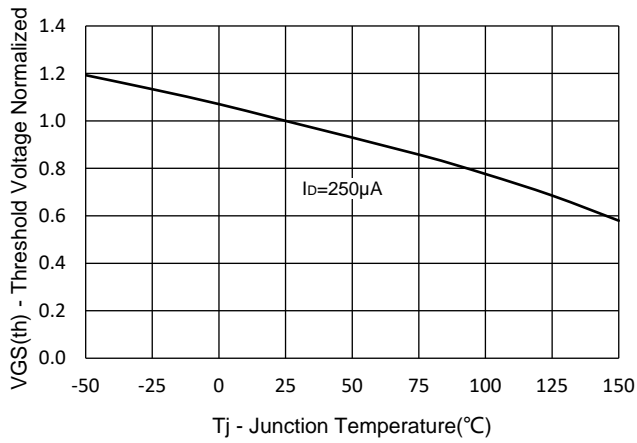


Fig.8 - Normalized On Resistance Characteristics

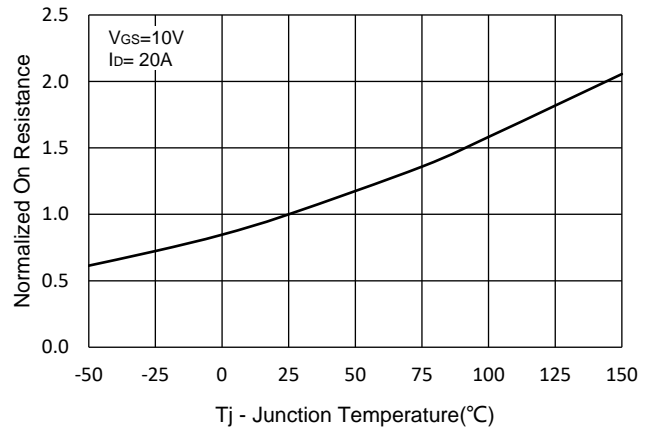


Fig.9 - $I_S - V_{SD}$

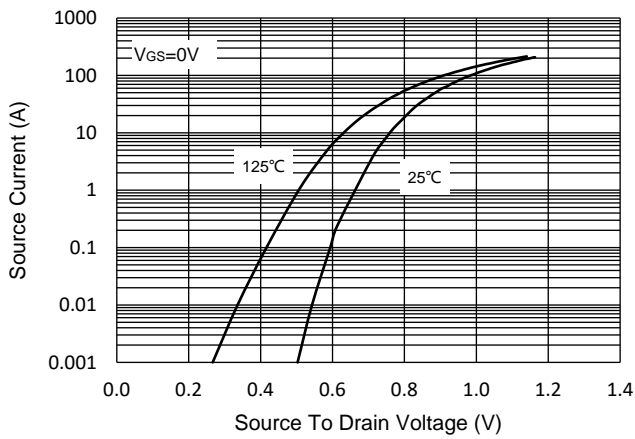


Fig.10 - Drain Current

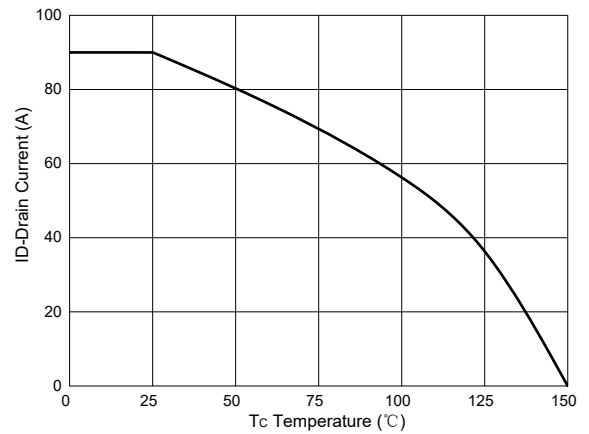
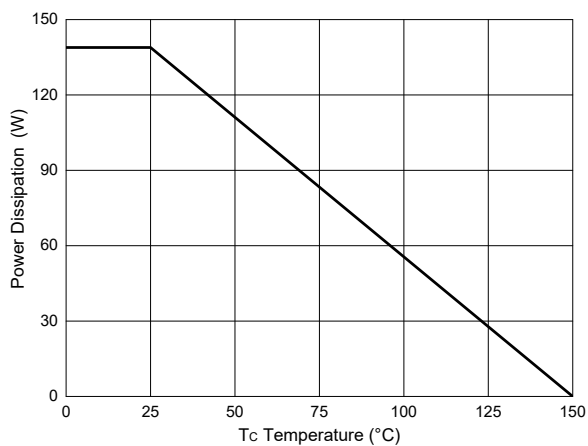


Fig.11 - PD Dissipation



Curve Characteristics

Fig.12 - Safe Operation Area

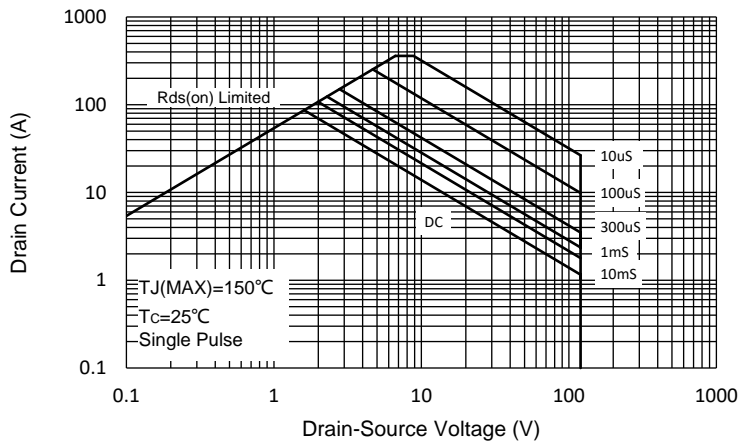
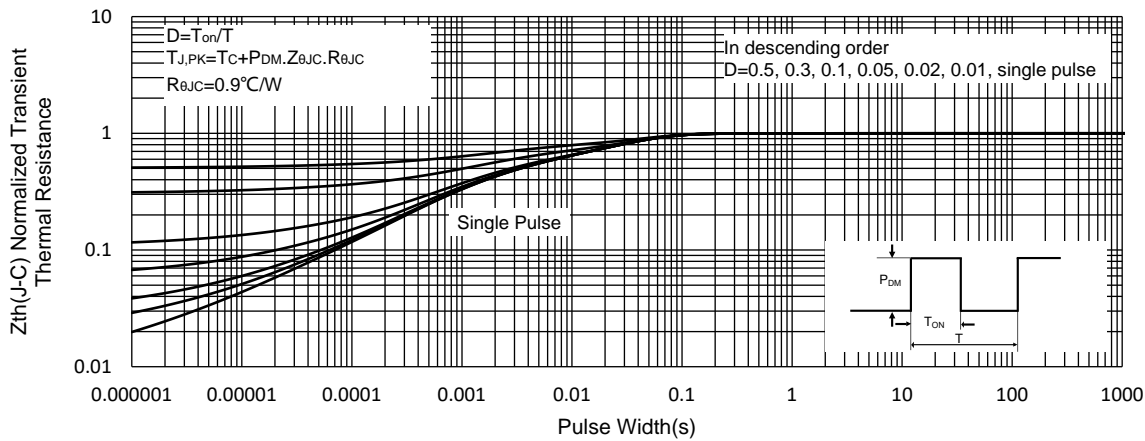


Fig.13 - Normalized Transient Thermal Impedance



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 800pcs/Reel

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