

Features

- Split Gate Trench MOSFET Technology
- Excellent Package for Heat Dissipation
- High Density Cell Design for Low $R_{DS(on)}$
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device ⁽¹⁾
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings

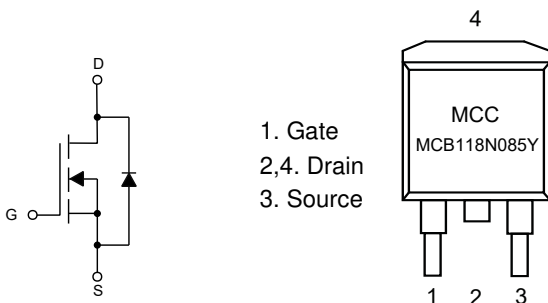
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 0.8°C/W Junction to Case

Parameter	Symbol	Rating	Unit	
Drain-Source Voltage	V_{DS}	85	V	
Gate-Source Voltage	V_{GS}	±20	V	
Continuous Drain Current	I_D	$T_C=25^\circ\text{C}$	118	A
		$T_C=100^\circ\text{C}$	74.6	A
Pulsed Drain Current ⁽²⁾	I_{DM}	472	A	
Avalanche Energy ⁽³⁾	E_{AS}	380	mJ	
Total Power Dissipation	P_D	156	W	

Note:

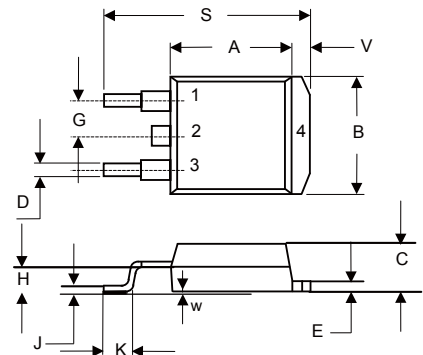
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. Test: Pulse Width ≤ 300µs, Duty Cycle ≤ 2%.
3. EAS Condition: $T_J=25^\circ\text{C}$, $V_{DD}=50\text{V}$, $V_G=10\text{V}$, $R_g=25\Omega$, $L=0.5\text{mH}$, $I_{AS}=39\text{A}$.

Internal Structure and Marking Code



N-CHANNEL MOSFET

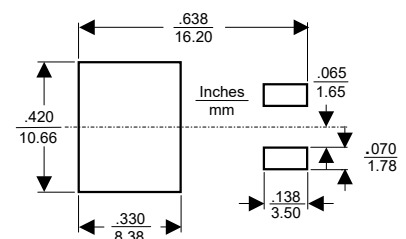
D2-PAK



DIMENSIONS

DIM	INCHES		MM		NOTE
	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	0.010		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 Specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	85			V
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=85V, V_{GS}=0V$			1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2	3	4	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=59A$		4.5	6	m Ω
		$V_{GS}=6V, I_D=20A$		7	9	m Ω
Diode Characteristics						
Continuous Body Diode Current	I_S				118	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=59A$		0.9	1.2	V
Reverse Recovery Time	t_{rr}	$I_S=59A, di/dt=300A/\mu s$		33		ns
Reverse Recovery Charge	Q_{rr}			85		nC
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V, f=1MHz$		4400		pF
Output Capacitance	C_{oss}			1650		
Reverse Transfer Capacitance	C_{riss}			150		
Total Gate Charge	Q_g	$V_{DS}=40V, V_{GS}=10V, I_D=59A$		63		nC
Gate-Source Charge	Q_{gs}			20		
Gate-Drain Charge	Q_{gd}			22		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=40V, V_{GS}=10V, R_G=2.2\Omega, I_D=59A$		20		ns
Turn-On Rise Time	t_r			100		
Turn-Off Delay Time	$t_{d(off)}$			24		
Turn-Off Fall Time	t_f			7		

Curve Characteristics

Fig. 1 - Typical Output Characteristics

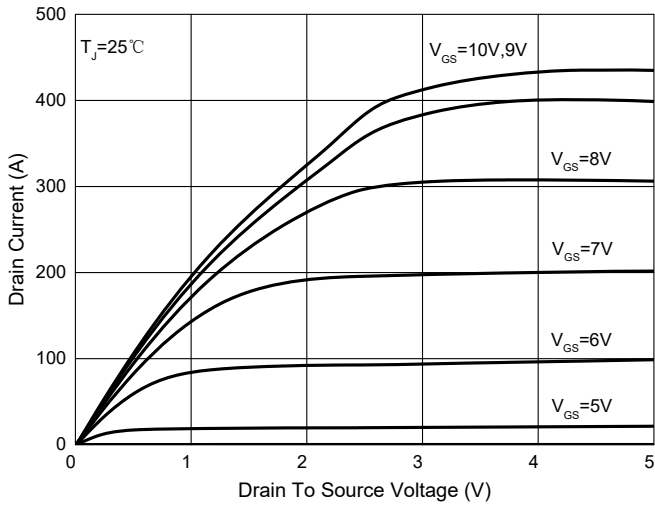


Fig. 2 - $I_s - V_{SD}$

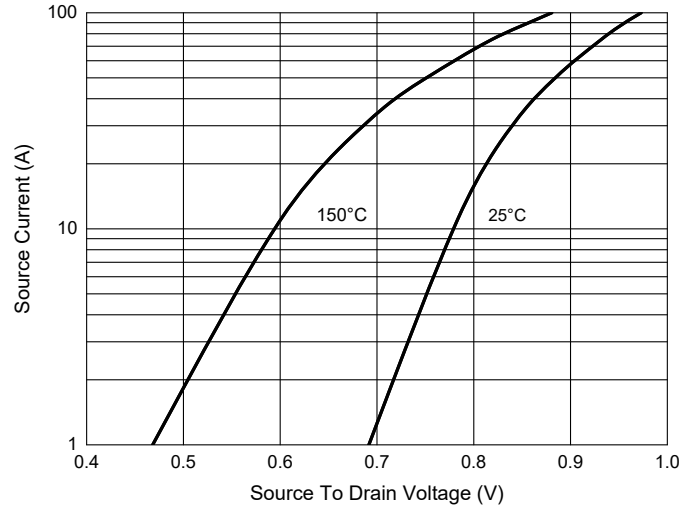


Fig. 3 - $R_{DS(ON)} - I_D$

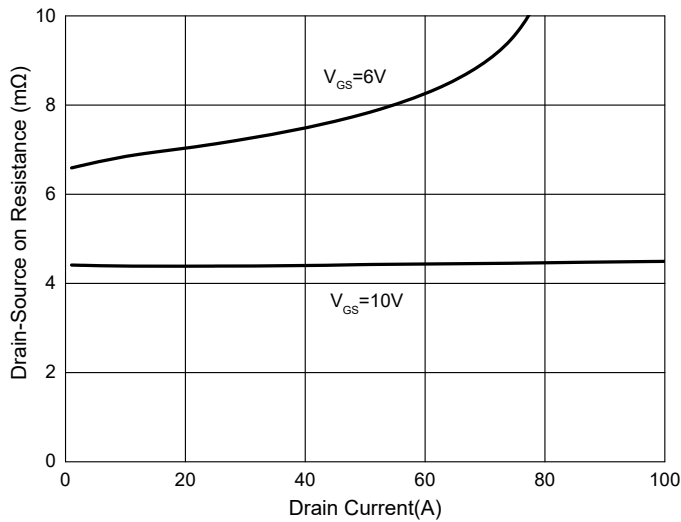


Fig. 4 - Normalized On Resistance Characteristics

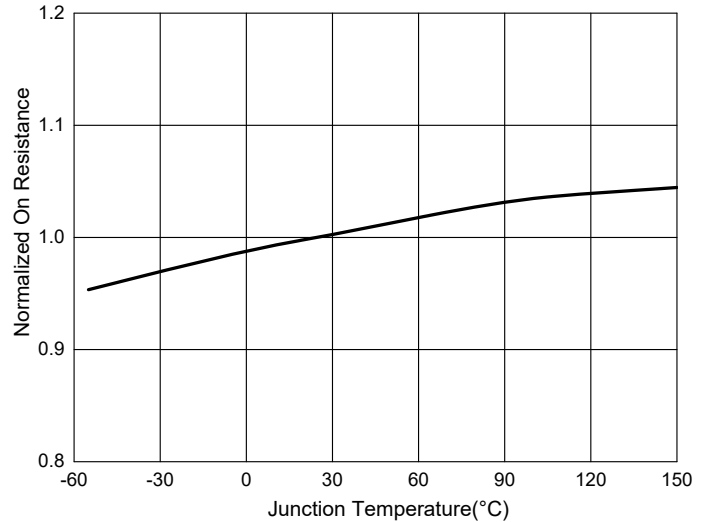


Fig. 5- Transfer Characteristics

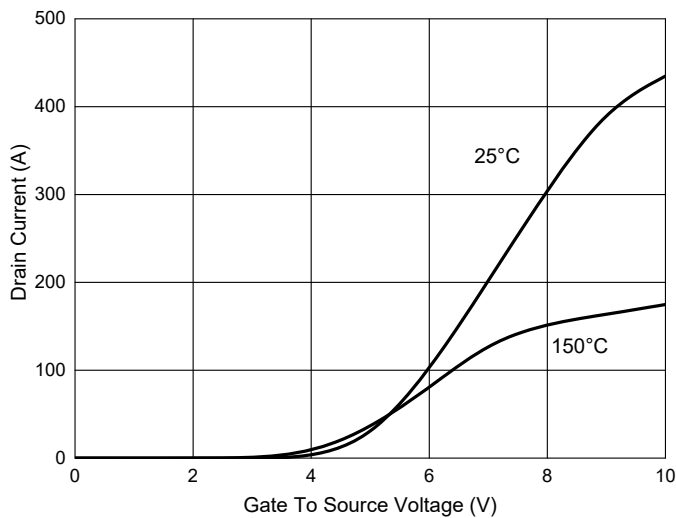
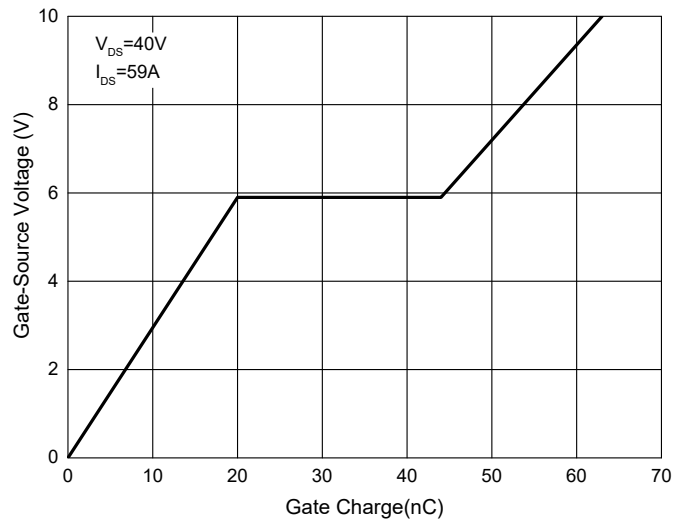


Fig. 6 - Gate Charge



Curve Characteristics

Fig. 7 - $R_{DS(ON)} - V_{GS}$

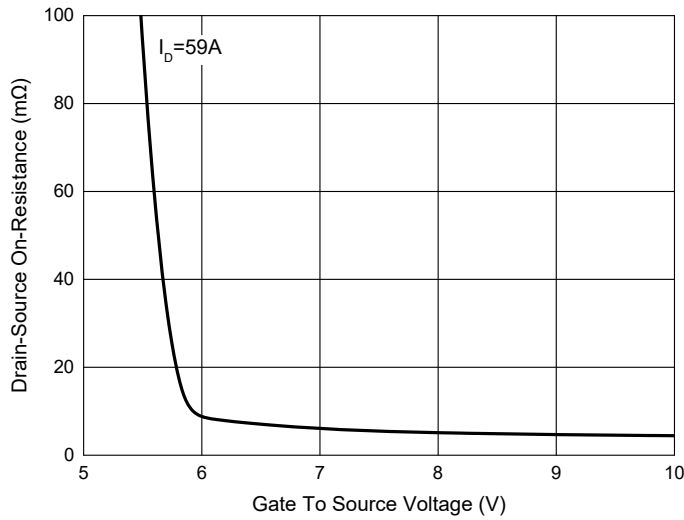


Fig. 8- Capacitance Characteristics

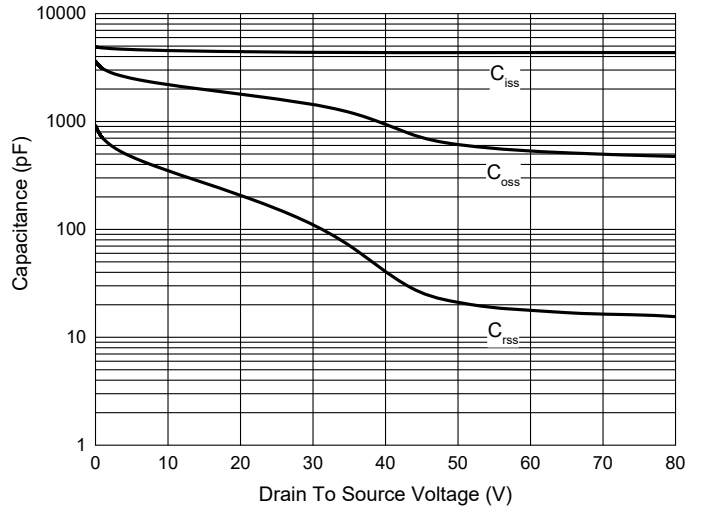


Fig. 9 - Power Dissipation

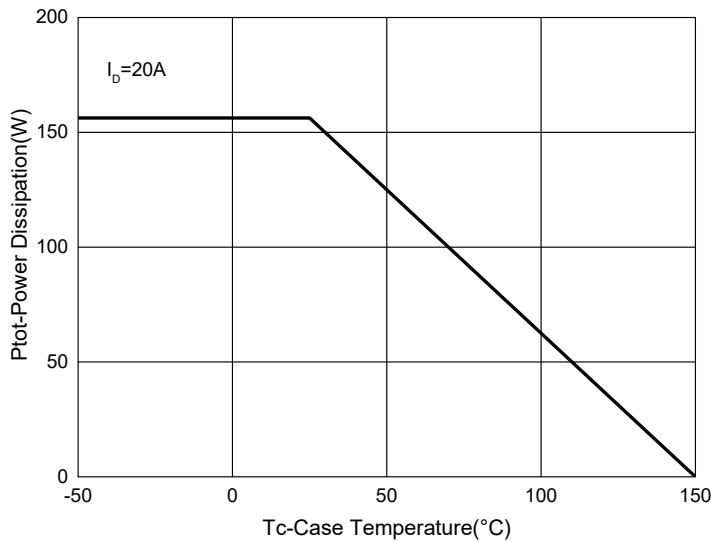


Fig. 10 - Safe Operation Area

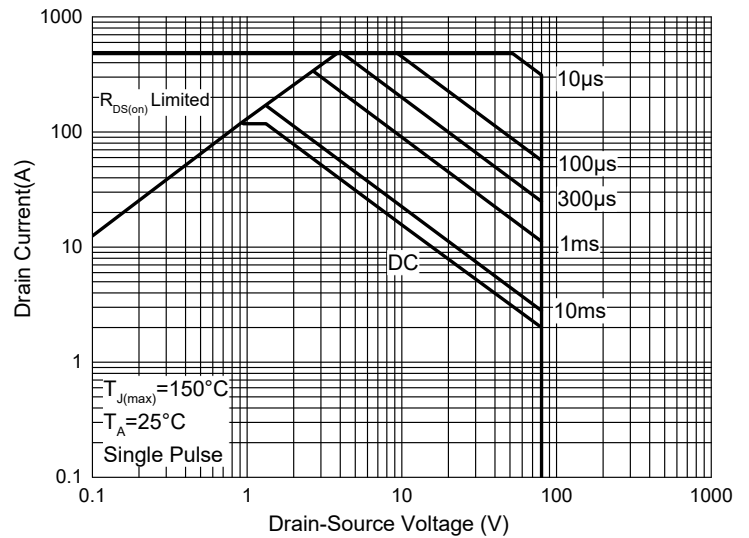
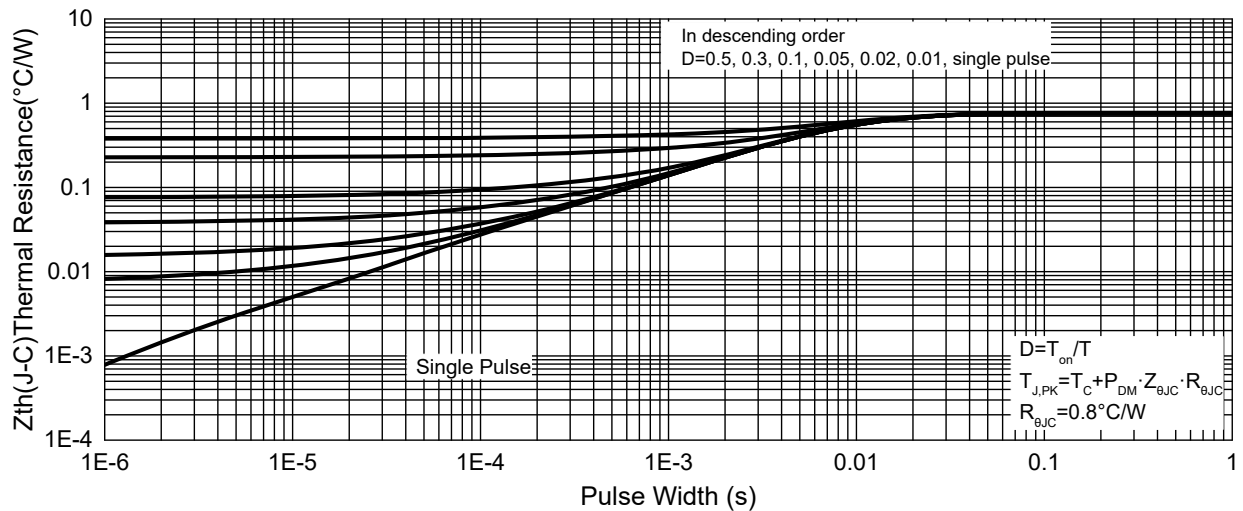


Fig. 11 - Maximum Transient Thermal Impedance



Ordering Information

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

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