

Features

- Split Gate Trench MOSFET Technology
- Excellent Package for Heat Dissipation
- High Density Cell Design for Low $R_{DS(on)}$
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free . “Green” Device (Note1)
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings

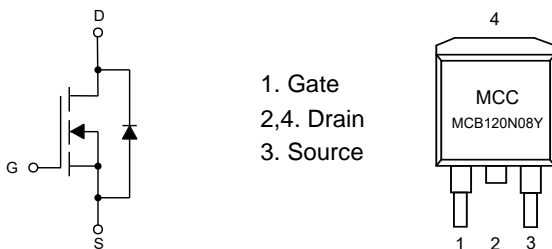
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 40°C/W Junction to Ambient (Note2)
- Thermal Resistance: 0.6°C/W Junction to Case

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	80	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	$T_C=25^\circ C$	120
		$T_C=100^\circ C$	76
Pulsed Drain Current (Note3)	I_{DM}	480	A
Total Power Dissipation (Note5)	P_D	208	W
Avalanche Energy (Note4)	E_{AS}	506	mJ

Note:

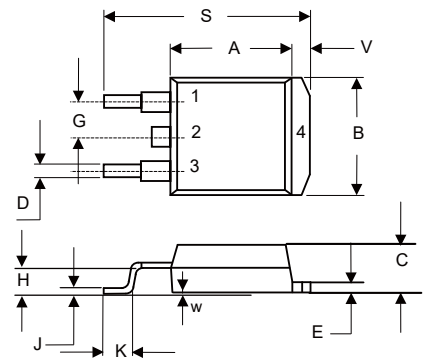
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of R_{thJA} is measured with the device mounted on 1 in2 FR-4 board with 2oz. copper, in a still air environment with $T_A=25^\circ C$
3. Pulse Test: Pulse Width ≤ 300us, Duty cycle ≤ 2%.
4. P_D is based on max. junction temperature, using junction-case thermal resistance.
5. $T_J=25^\circ C$, $V_{DD}=50V$, $V_{GS}=10V$, $L=0.5mH$

Internal Structure and Marking Code



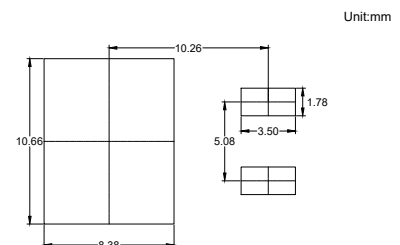
N-CHANNEL MOSFET

D²-PAK



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	0.10		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 Specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	80			V
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=80V, V_{GS}=0V$			1.0	μA
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	3.0	4.0	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$		3.6	4.5	m Ω
Gate resistance	R_G	f=1MHz, Open drain		2.0		Ω
Diode Characteristics						
Continuous Body Diode Current	I_S				120	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=20A$		0.8	1.2	V
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=40V, V_{GS}=0V, f=1MHz$		5112		pF
Output Capacitance	C_{oss}			847		
Reverse Transfer Capacitance	C_{rss}			7.5		
Total Gate Charge	Q_g	$V_{DS}=40V, V_{GS}=10V, I_D=50A$		66		nC
Gate-Source Charge	Q_{gs}			20		
Gate-Drain Charge	Q_{gd}			16		
Reverse Recovery Charge	Q_{rr}	$I_F=50A, di/dt=100A/\mu s$		75		
Reverse Recovery Time	t_{rr}			54		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=40V, V_{GS}=10V, R_G=3\Omega, I_D=50A$		18		ns
Turn-On Rise Time	t_r			60		
Turn-Off Delay Time	$t_{d(off)}$			36		
Turn-Off Fall Time	t_f			17		

Curve Characteristics

Fig. 1 Typical Output Characteristics

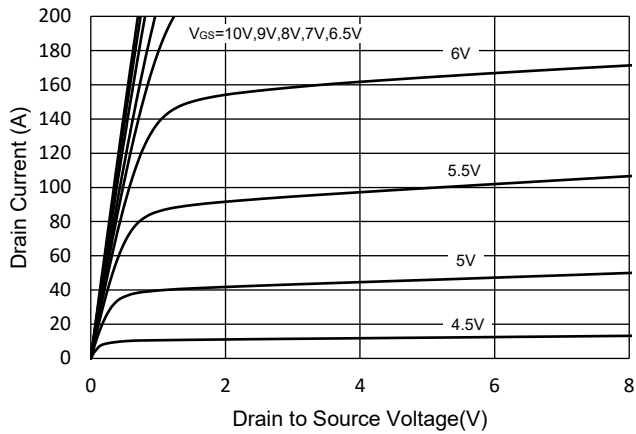


Fig.2 Transfer Characteristic

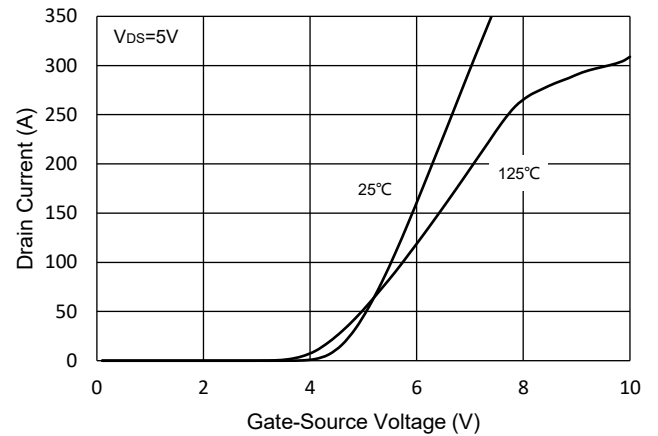


Fig.3 Rds(on)-Vgs

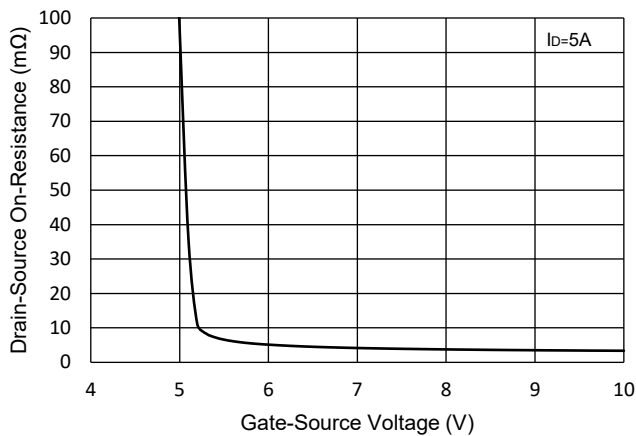


Fig.4 RDS(ON)-ID

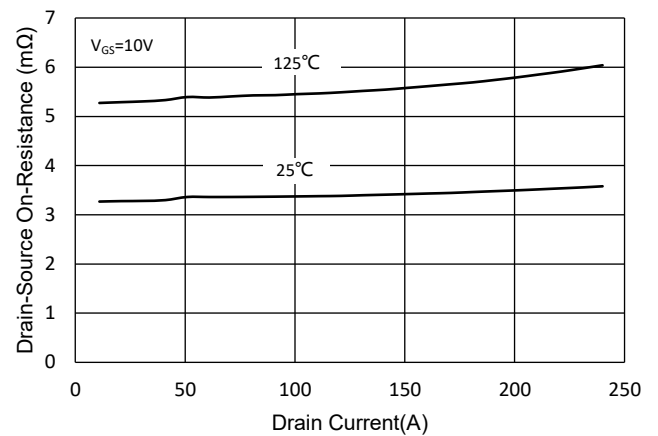


Fig.5 Capacitance Characteristics

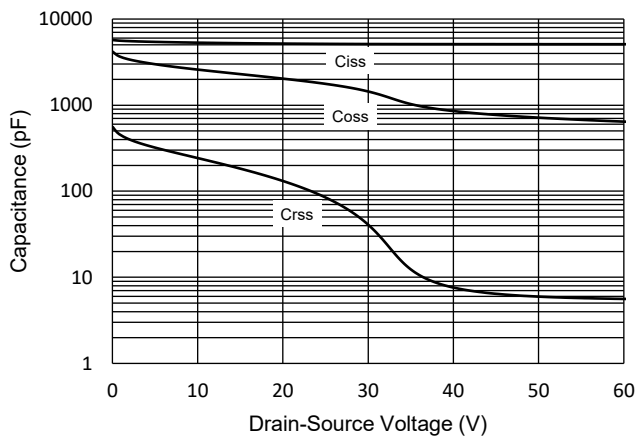
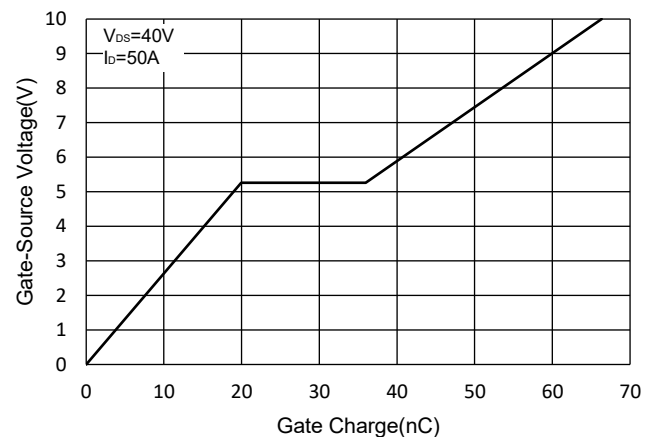


Fig.6 Gate Charge



Curve Characteristics

Fig.7 Normalized Threshold Voltage

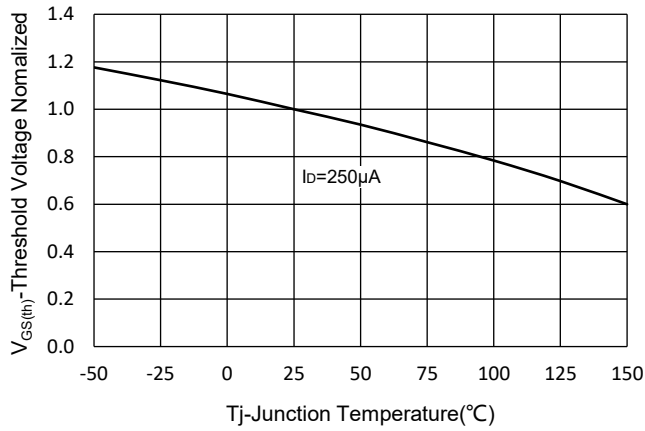


Fig.8 Normalized On Resistance Characteristics

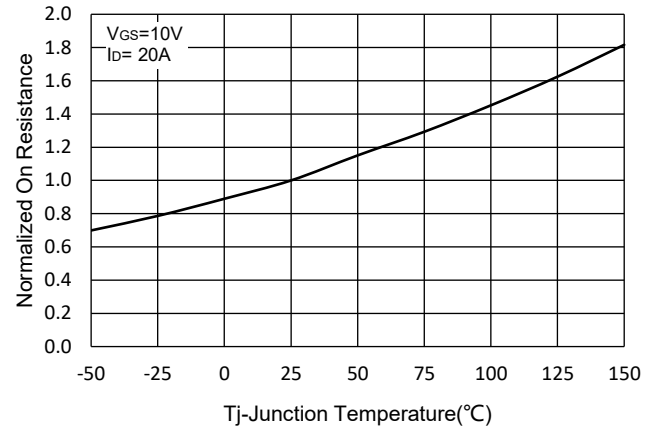


Fig.9 IS-VSD

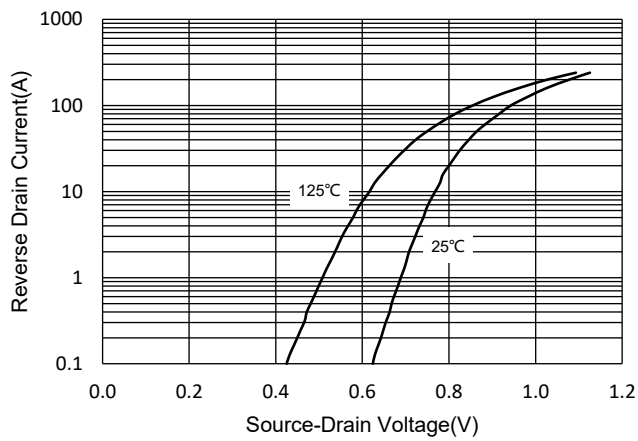


Fig.10 Drain Current

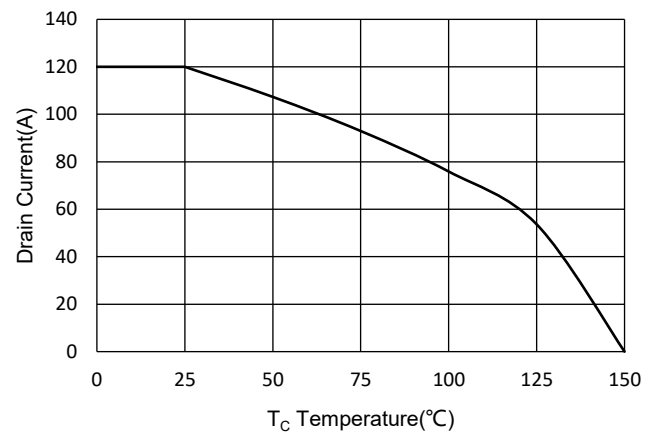
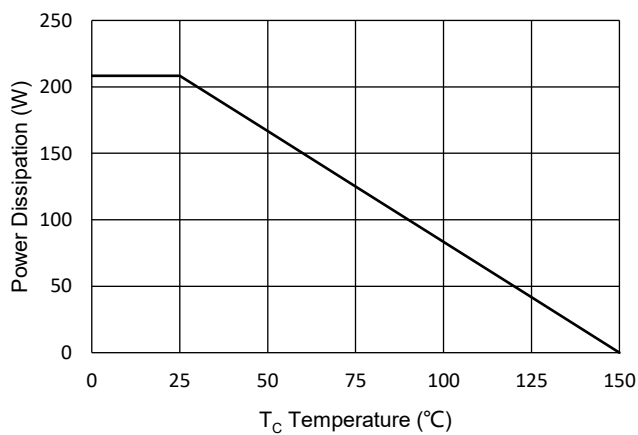


Fig.11 Power Dissipation



Curve Characteristics

Fig.12 Safe Operation Area

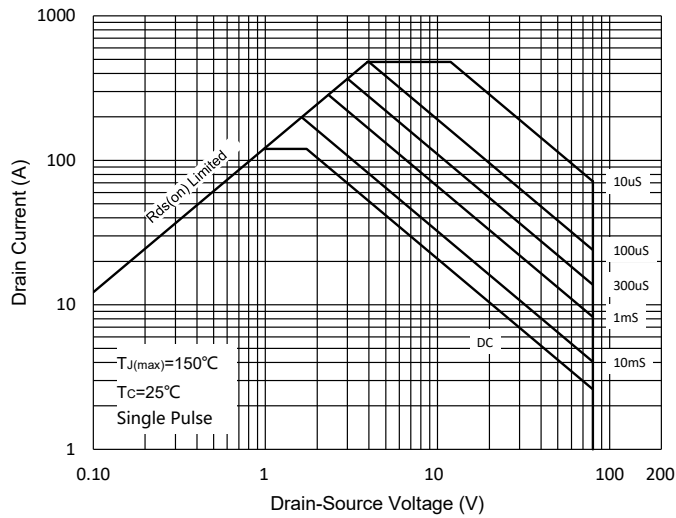
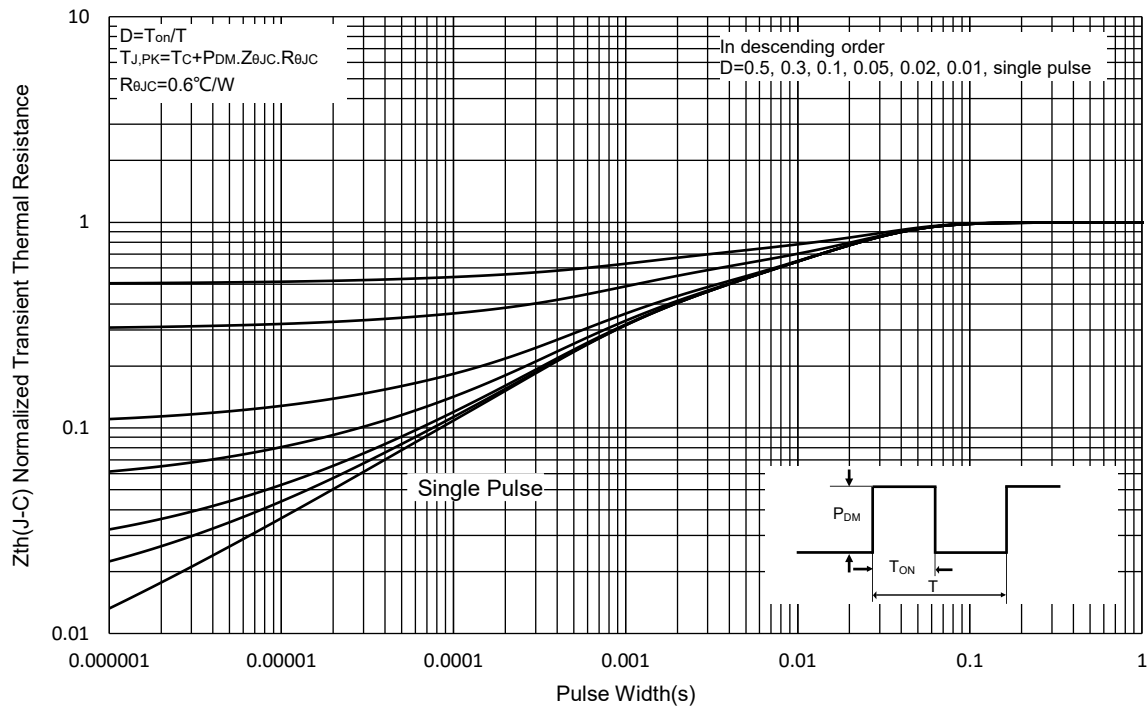


Fig.13 Normalized Transient Thermal Impedance



Ordering Information

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

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