

### Features

- Split Gate Trench MOSFET Technology
- Low Thermal Resistance
- 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

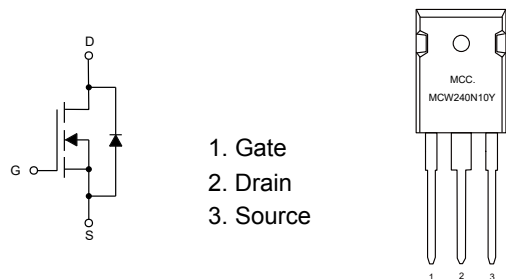
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 40°C/W Junction to Ambient (Note 2)
- Thermal Resistance: 0.4°C/W Junction to Case

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	100	V
Gate-Source Voltage	$V_{GS}$	±20	V
Continuous Drain Current	$I_D$	$T_C=25^\circ\text{C}$	240
		$T_C=100^\circ\text{C}$	151
Pulsed Drain Current (Note 3)	$I_{DM}$	960	A
Total Power Dissipation (Note 4)	$P_D$	312.5	W
Single Pulsed Avalanche Energy (Note 5)	$E_{AS}$	722	mJ

Note:

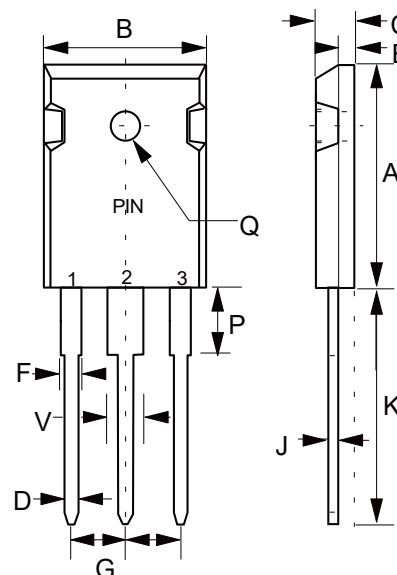
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of  $R_{\theta JA}$  is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with  $T_A=25^\circ\text{C}$ .
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.  $T_J=25^\circ\text{C}$ ,  $V_{DD}=50\text{V}$ ,  $V_{GS}=10\text{V}$ ,  $L=5\text{mH}$ .

### Internal Structure and Marking Code



## N-CHANNEL MOSFET

### TO-247



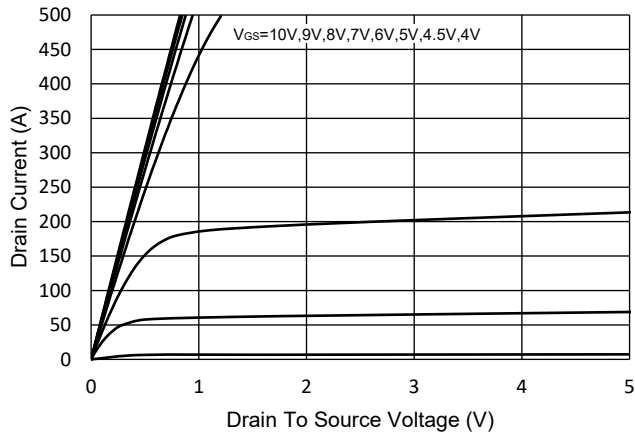
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.787	0.866	20.00	22.00	
B	0.598	0.638	15.20	16.20	
C	0.185	0.208	4.70	5.30	
D	0.035	0.059	0.90	1.50	
E	0.059	0.094	1.50	2.40	
F	0.067	0.091	1.70	2.30	
J	0.019	0.031	0.48	0.80	
K	0.748	0.833	19.00	21.15	
P	0.122	0.189	3.10	4.80	
Q	0.118	0.150	3.00	3.80	Φ
V	0.106	0.134	2.70	3.40	
G	0.197	0.224	5.00	5.70	

**Electrical Characteristics @ 25°C (Unless Otherwise Specified)**

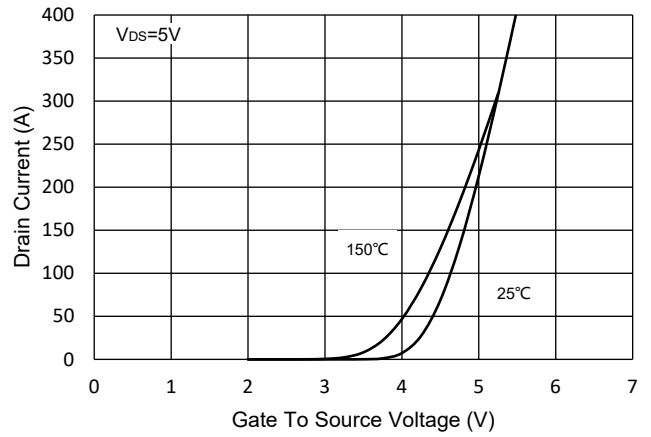
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	100			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=80V, V_{GS}=0V$			1	$\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2	3	4	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=50A$		1.6	1.85	m $\Omega$
Gate Resistance	$R_g$	F=1 MHz, Open drain		0.7		$\Omega$
<b>Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$				240	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=40A$			1.2	V
Reverse Recovery Time	$t_{rr}$	$I_F=100A, di_F/dt=450A/\mu s$		59		ns
Reverse Recovery Charge	$Q_{rr}$			663		nC
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=50V, V_{GS}=0V, f=1MHz$		16232		pF
Output Capacitance	$C_{oss}$			2453		
Reverse Transfer Capacitance	$C_{riss}$			44		
Total Gate Charge	$Q_g$	$V_{DS}=50V, V_{GS}=10V, I_D=120A$		256		nC
Gate-Source Charge	$Q_{gs}$			65		
Gate-Drain Charge	$Q_{gd}$			81		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=50V, V_{GS}=10V, R_G=2.2\Omega, I_{DS}=120A$		47		ns
Turn-On Rise Time	$t_r$			115		
Turn-Off Delay Time	$t_{d(off)}$			72		
Turn-Off Fall Time	$t_f$			21		

**Curve Characteristics**

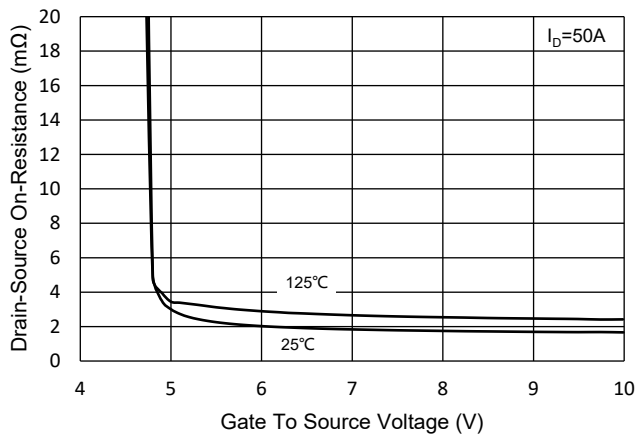
**Fig.1 - Typical Output Characteristics**



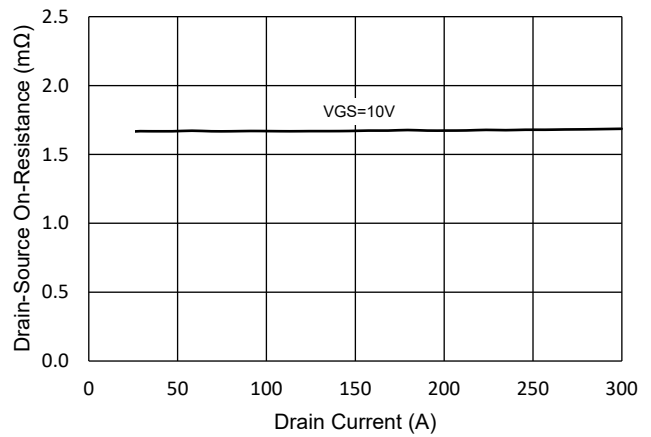
**Fig.2 - Transfer Characteristic**



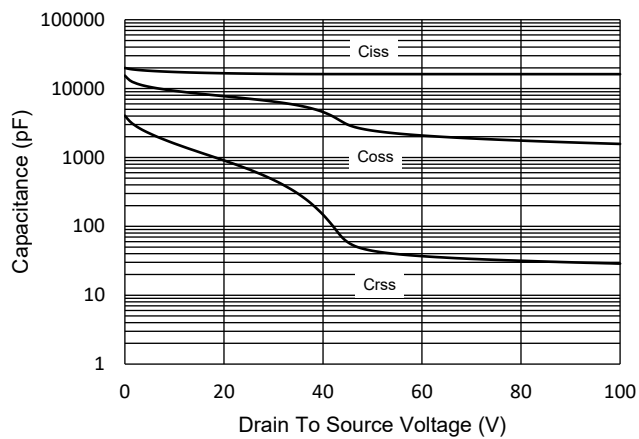
**Fig.3 -  $R_{DS(ON)}$  -  $V_{GS}$**



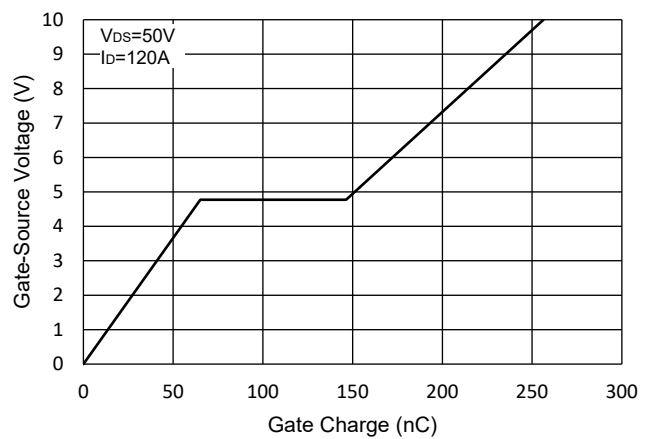
**Fig.4 -  $R_{DS(ON)}$  -  $I_D$**



**Fig.5 - Capacitance Characteristics**

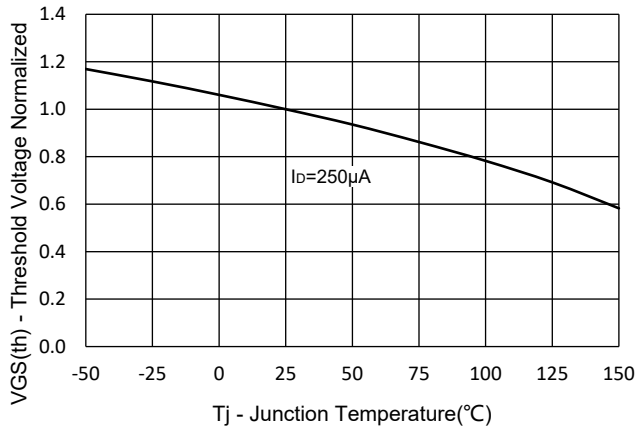


**Fig.6 - Gate Charge**

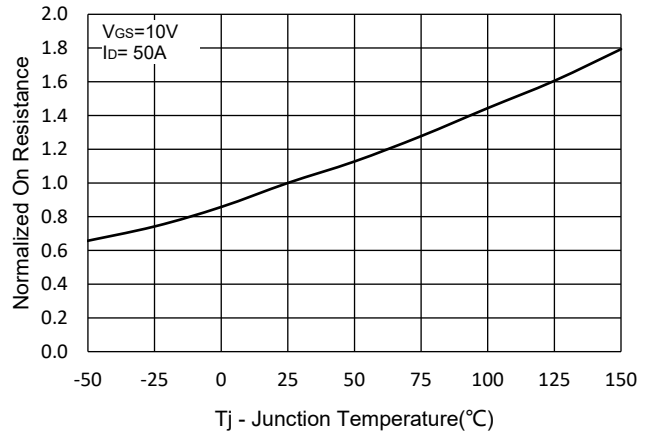


**Curve Characteristics**

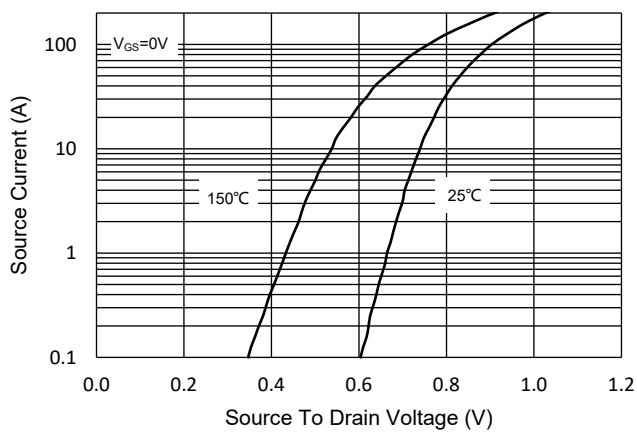
**Fig.7 - Normalized Threshold Voltage**



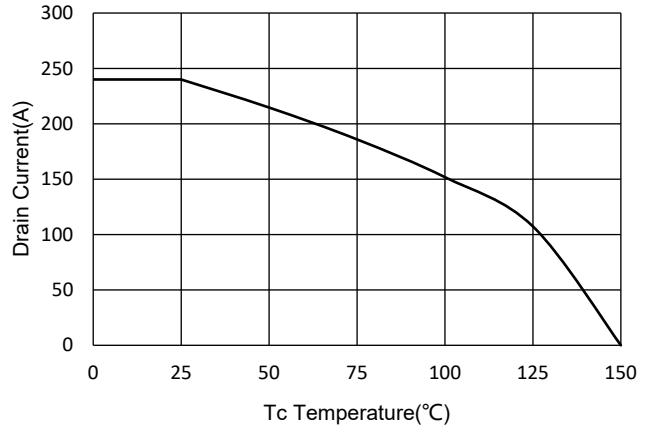
**Fig.8 - Normalized On Resistance Characteristics**



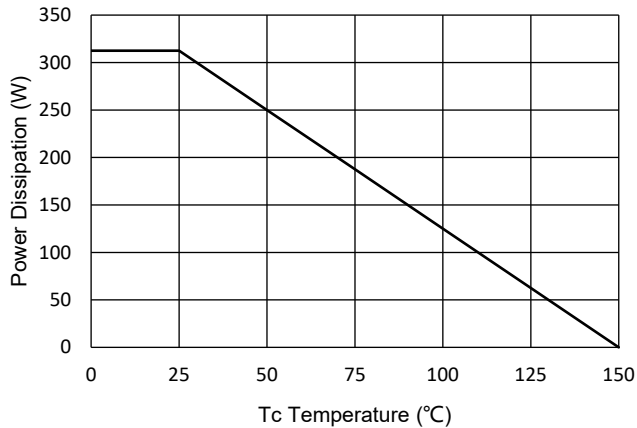
**Fig.9 -  $I_S - V_{SD}$**



**Fig.10 - Drain Current**

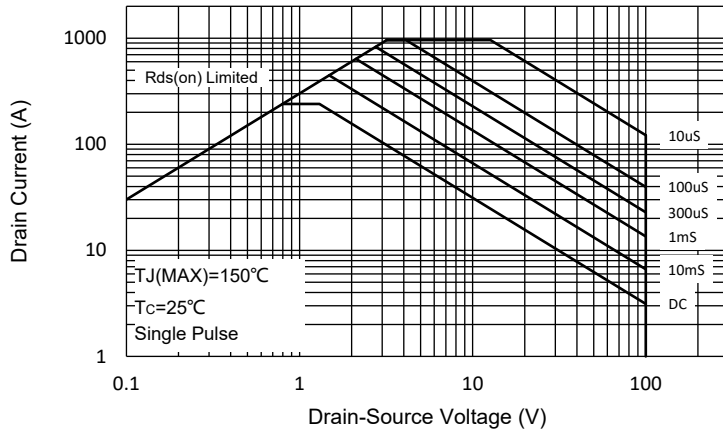


**Fig.11 - PD Dissipation**

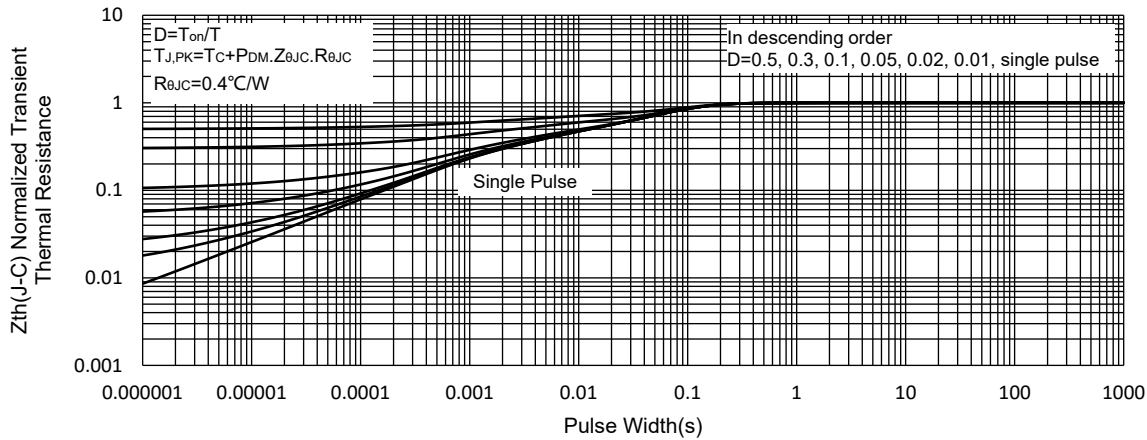


**Curve Characteristics**

**Fig.12 - Safe Operation Area**



**Fig.13 - Normalized Transient Thermal Impedance**



## Ordering Information

Device	Packing
Part Number-BP	Tube:30pcs/Tube, 360pcs/Box,1.8K/Ctn;

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