

Features

- Low On-resistance and Low gate charge
- Super Junction technology for High Voltage Application
- Fast Switching performance with ease of usage and robustness
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free."Green "Device^(Note 1)
- Lead Free Finish/RoHS Compliant^(Note2). "P" Suffix Designates RoHS Compliant. See Ordering Information

Maximum Ratings

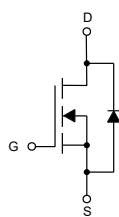
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 40°C/W Junction to Ambient ^(Note 3)
- Thermal Resistance: 0.48°C/W Junction to Case

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V _{DS}	600	V
Gate-Source Voltage		V _{GS}	±30	V
Continuous Drain Current	T _C =25°C	I _D	38	A
	T _C =100°C		24	
Pulsed Drain Current ^(Note 4)		I _{DM}	152	A
Total Power Dissipation ^(Note 5)		P _D	260	W
Single Pulsed Avalanche Energy ^(Note 6)		E _{AS}	56	mJ

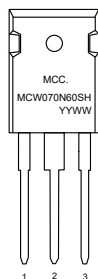
Note:

1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
- 2.High temperature solder exemption applied, see EU directive annex 7a.
3. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$.
4. Repetitive rating; pulse width limited by max. junction temperature.
5. P_D is based on max. junction temperature, using junction-case thermal resistance.
6. $T_J=25^\circ\text{C}$, $V_{DD}=50\text{V}$, $V_{GS}=10\text{V}$, $I_{AS}=15\text{A}$.

Internal Structure and Marking Code



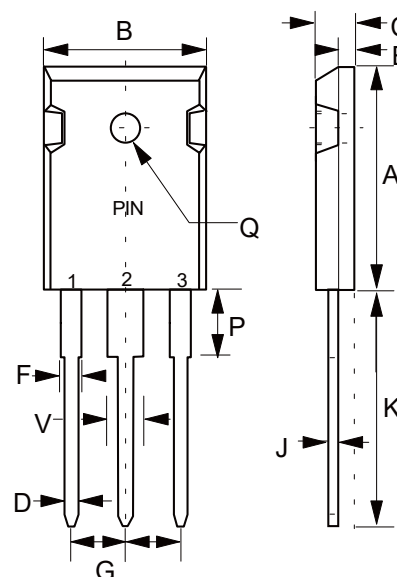
1. Gate
2. Drain
3. Source



YYWW: 4 codes in total
YY is the year
WW is the week

N-CHANNEL Super-Junction Power MOSFET

TO-247



DIMENSIONS					
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
Static Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =1mA	600			V
Gate-Source Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±30V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =600V, V _{GS} =0V			1.0	μA
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =2.9mA	2.5	3.5	4.5	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A		58	70	mΩ
Gate Resistance	R _g	f=1MHz, open drain		1.1		Ω
Diode Characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =20A			1.2	V
Reverse Recovery Time	t _{rr}	V _R =300V, I _F =20A dI _F /dt=100A/μs		344		ns
Reverse Recovery Charge	Q _{rr}			6.7		uC
Peak Reverse Recovery Current	I _{rrm}			39.5		A
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =100V, V _{GS} =0V, f=1MHz		3146		pF
Output Capacitance	C _{oss}			168		
Reverse Transfer Capacitance	C _{rss}			18.2		
Total Gate Charge	Q _g	V _{DS} =300V, V _{GS} =10V, I _D =20A		80		nC
Gate-Source Charge	Q _{gs}			17		
Gate-Drain Charge	Q _{gd}			39		
Turn-On Delay Time	t _{d(on)}	V _{DD} =300V, V _{GS} =10V R _G =3Ω, I _D =20A		32		ns
Turn-On Rise Time	t _r			21.6		
Turn-Off Delay Time	t _{d(off)}			47		
Turn-Off Fall Time	t _f			6.7		

Curve Characteristics

Fig. 1 - Typical Output Characteristics

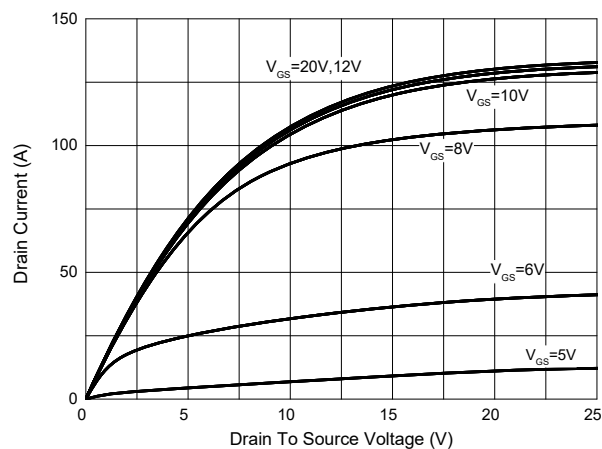


Fig. 2 - Typical Transfer Characteristics

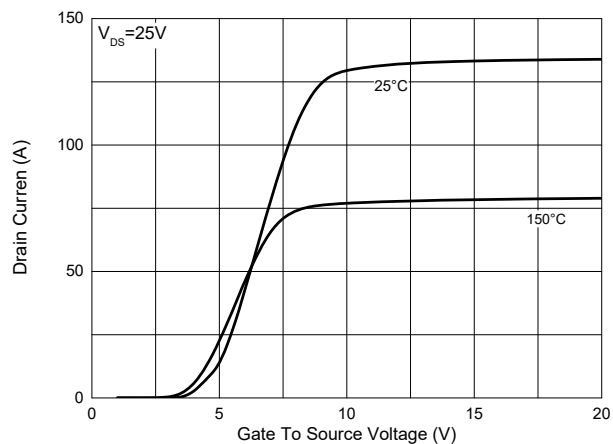


Fig. 3 - $R_{DS(ON)} - V_{GS}$

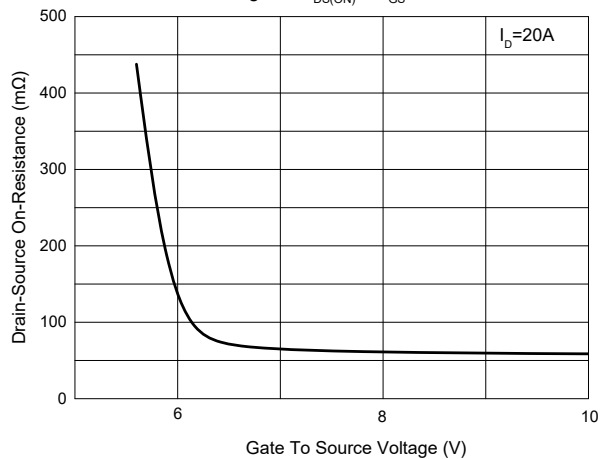


Fig. 4 - $R_{DS(ON)} - I_D$

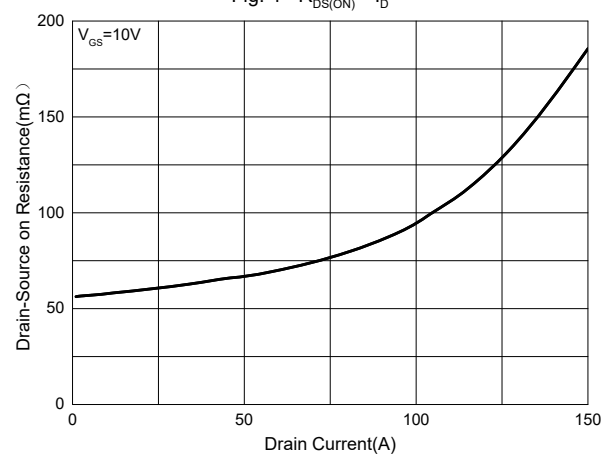


Fig. 5 - Capacitance Characteristics

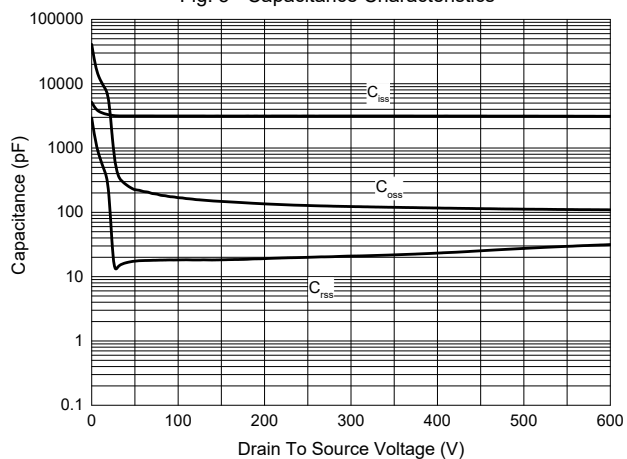
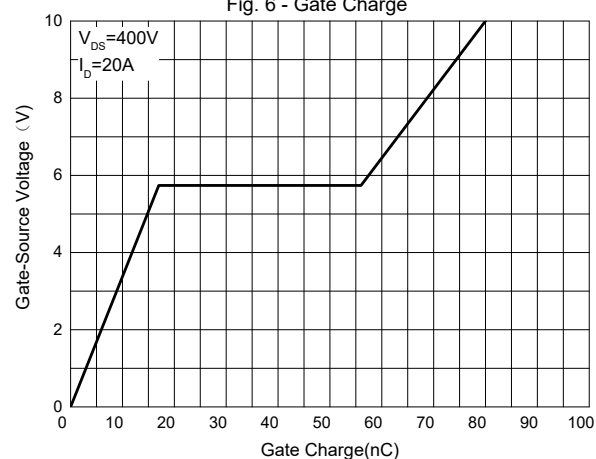


Fig. 6 - Gate Charge



Curve Characteristics

Fig. 7 - Normalized Threshold Voltage

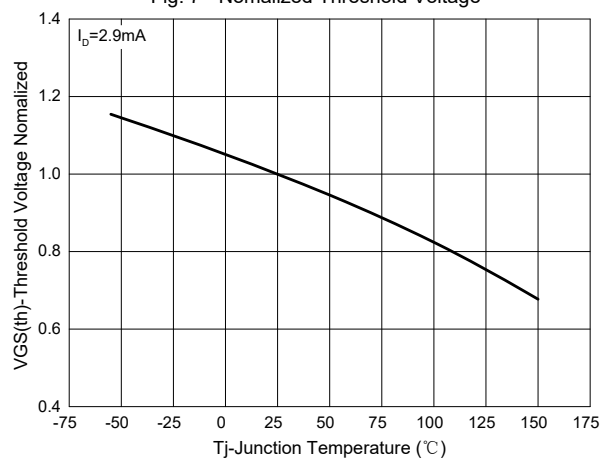


Fig.8-Normalized On Resistance Characteristics

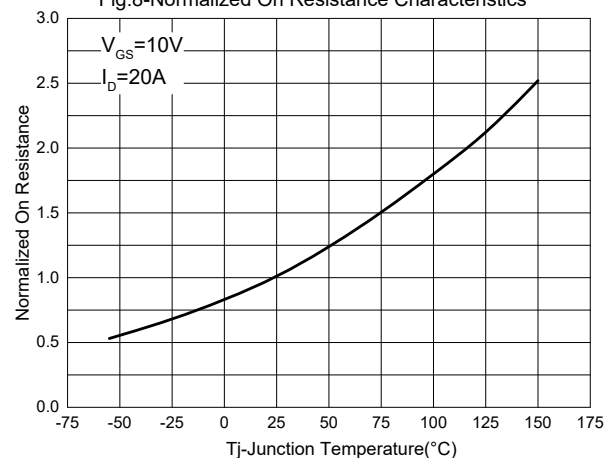


Fig.9 - $I_S - V_{SD}$

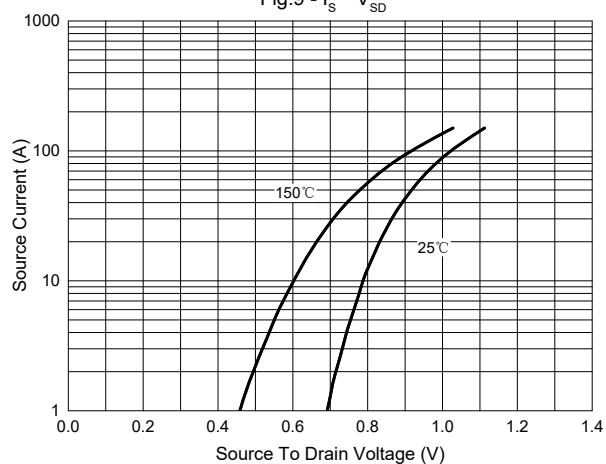


Fig. 10 - Drain Current

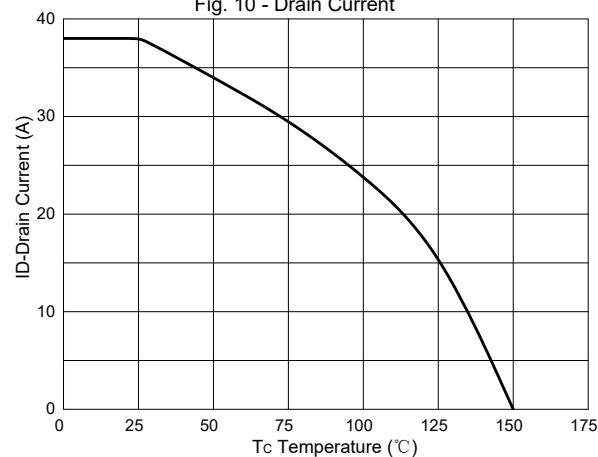
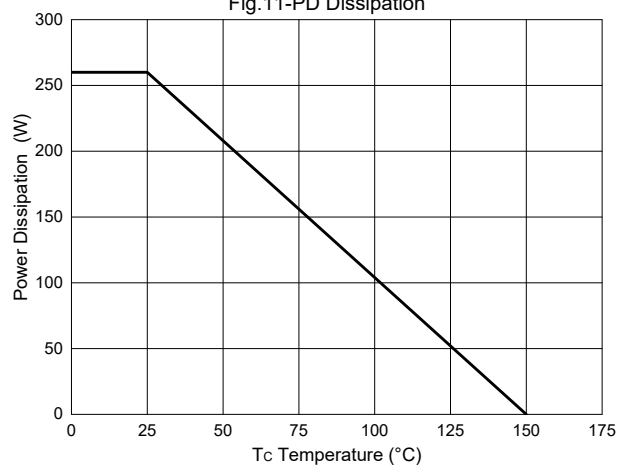


Fig.11-PD Dissipation



Curve Characteristics

Fig. 12 - Safe Operation Area

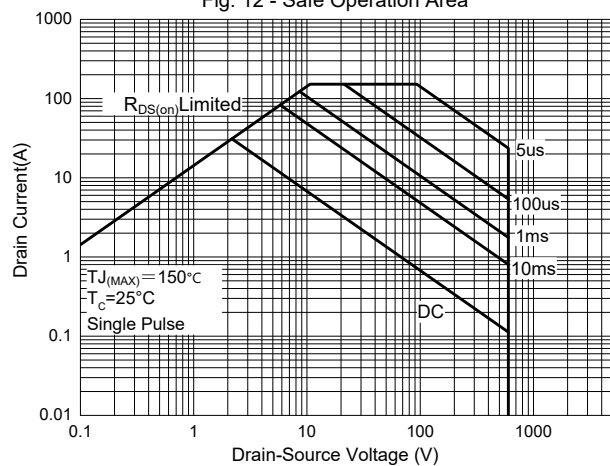
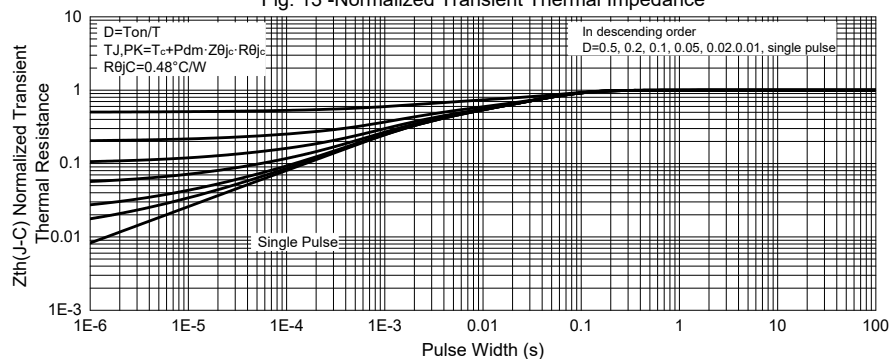


Fig. 13 - Normalized Transient Thermal Impedance



Ordering Information

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

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