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

N-CHANNEL Super-Junction Power MOSFET

Maximum Ratings

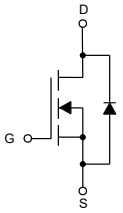
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 40°C/W Junction to Ambient (Note 3)
- Thermal Resistance: 0.48°C/W Junction to Case

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	600	V
Gate-Source Volltage		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

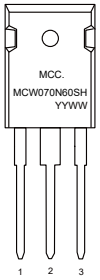
Note:

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 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°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°C, V_{DD}=50V, V_{GS}=10V, I_{AS}=15A.

Internal Structure and Marking Code



1. Gate
2. Drain
3. Source



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

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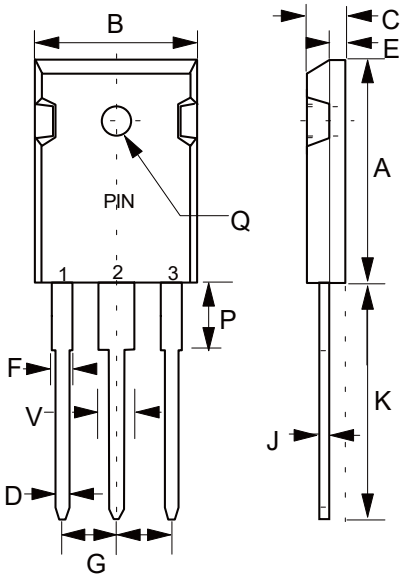


DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.787	0.866	20.00	22.00	
B	0.598	0.638	15.20	16.20	
C	0.185	0.208	4.70	5.30	
D	0.035	0.059	0.90	1.50	
E	0.059	0.094	1.50	2.40	
F	0.067	0.091	1.70	2.30	
J	0.019	0.031	0.48	0.80	
K	0.748	0.833	19.00	21.15	
P	0.122	0.189	3.10	4.80	
Q	0.118	0.150	3.00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

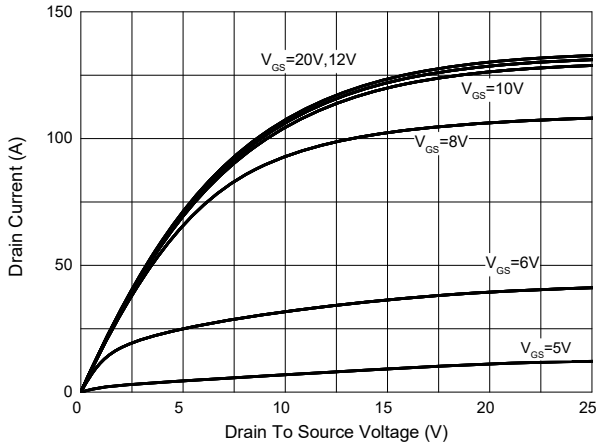


Fig. 2 - Typical Transfer Characteristics

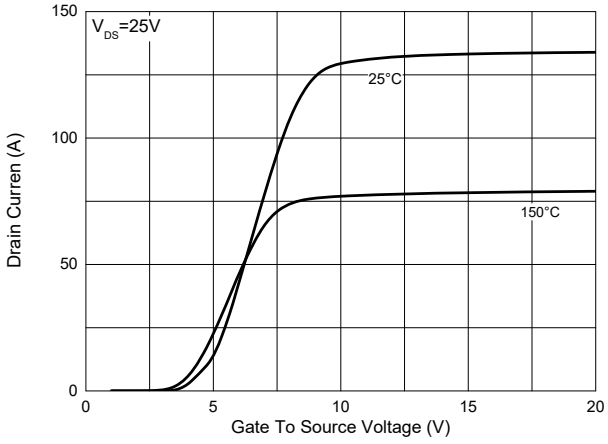


Fig. 3 - $R_{DS(ON)}$—V_{GS}

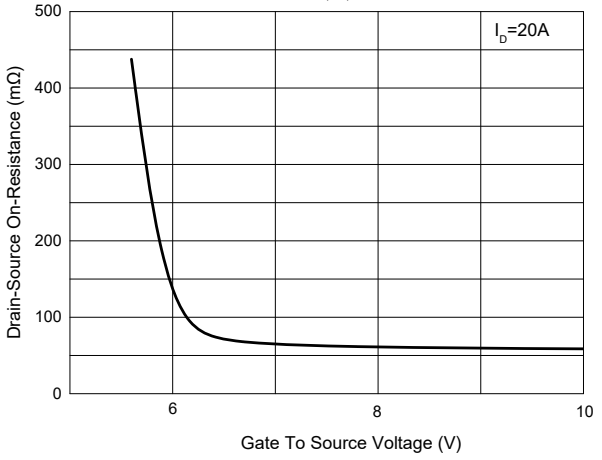


Fig. 4 - $R_{DS(ON)}$—I_D

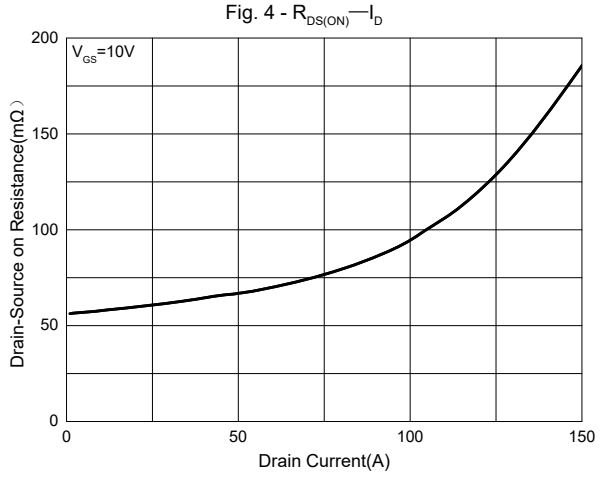


Fig. 5 - Capacitance Characteristics

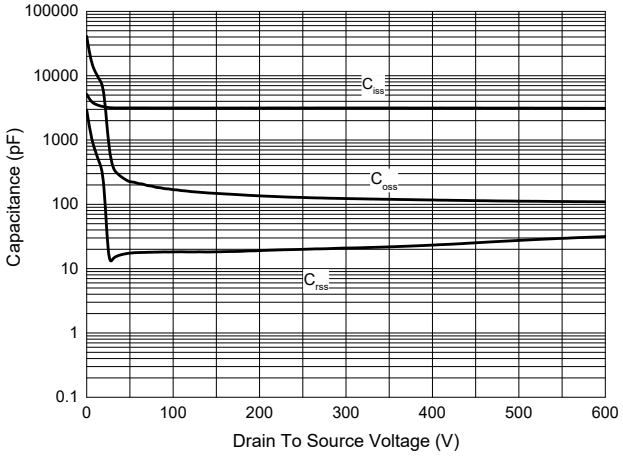
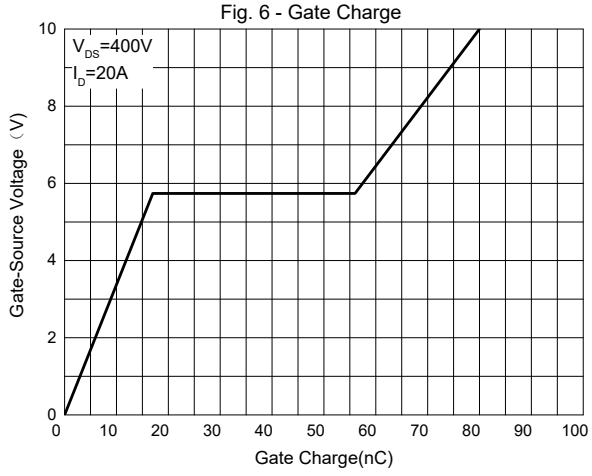


Fig. 6 - Gate Charge



Curve Characteristics

Fig. 7 - Nomalized Threshold Voltage

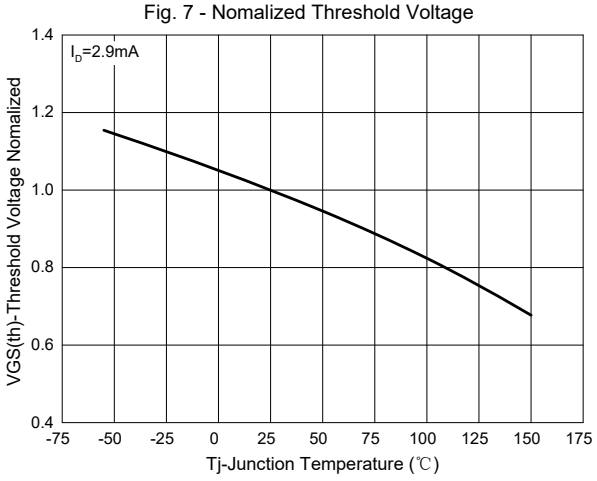


Fig.8-Normalized On Resistance Characteristics

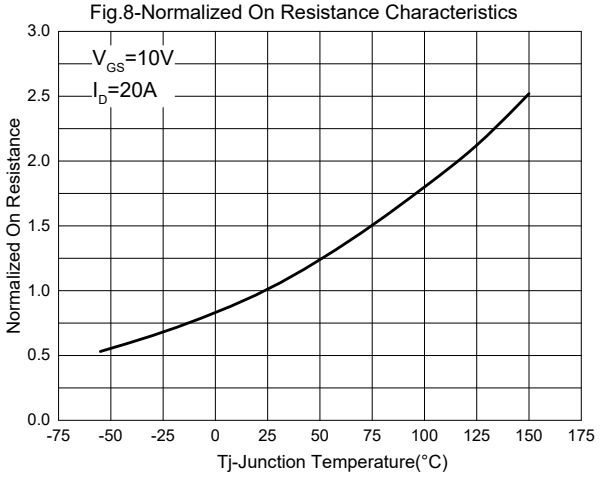


Fig.9 - I_S—V_{SD}

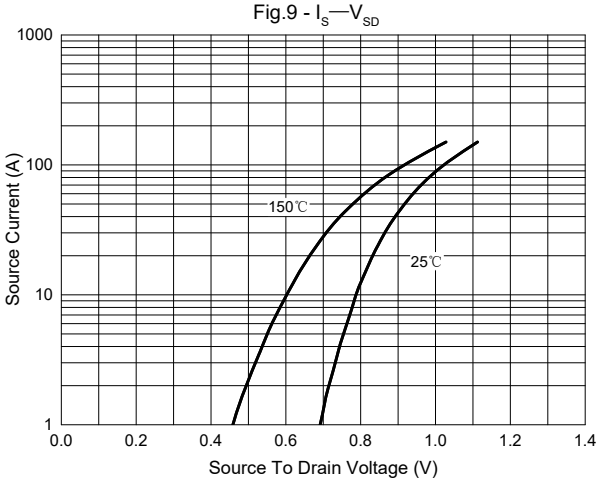


Fig. 10 - Drain Current

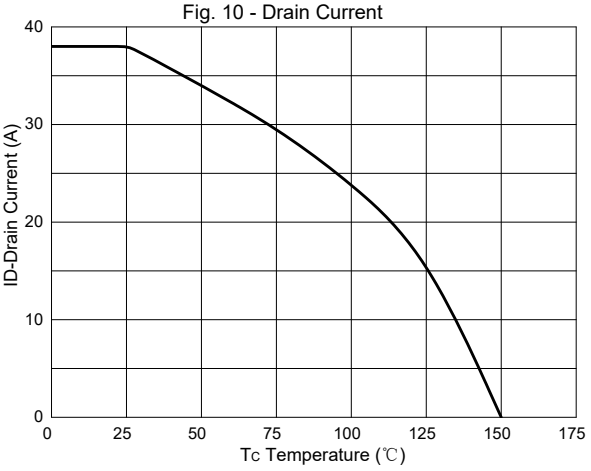
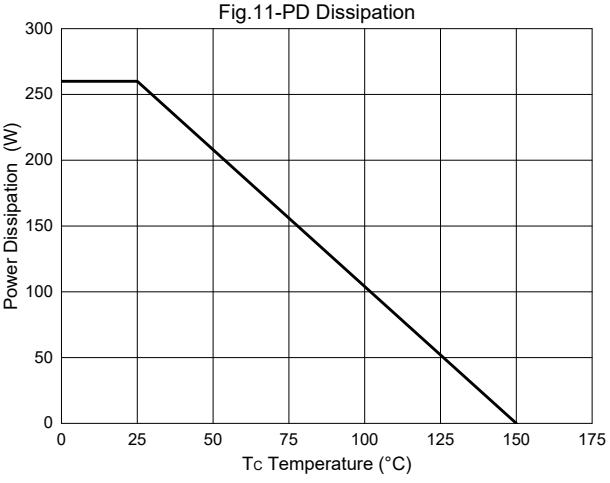


Fig.11-PD Dissipation



Curve Characteristics

Fig. 12 - Safe Operation Area

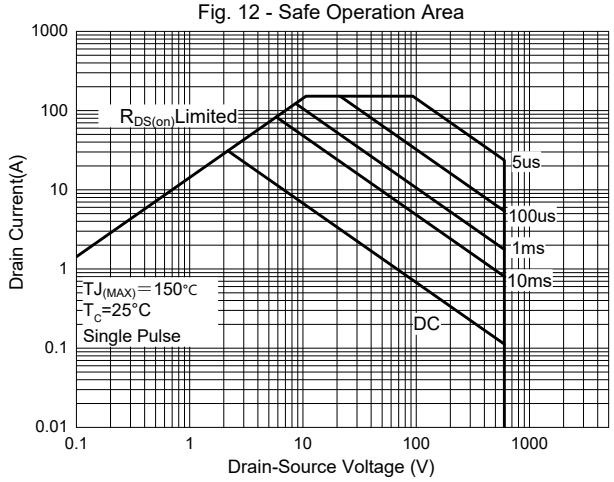
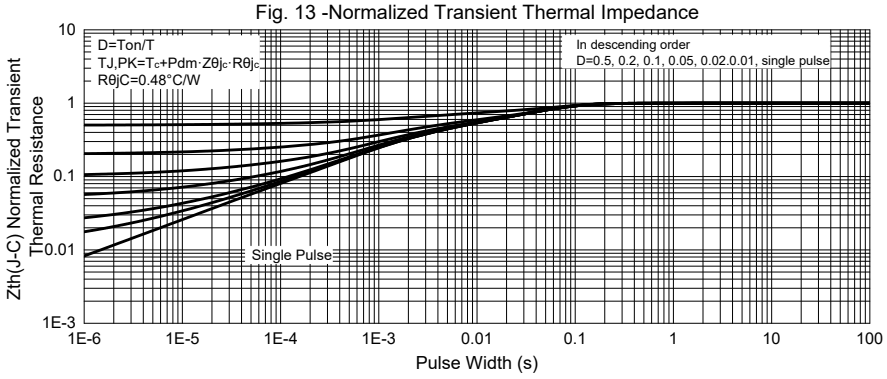


Fig. 13 -Normalized Transient Thermal Impedance



Ordering Information

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