

Features

- Low On-resistance and Low Conduction Loss
- Super Junction technology for High Voltage Application
- Soft Switching with Fast Reverse Recovery Diode
- Ultra Low Gate Charge Cause Lower Driving Requirement
- 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

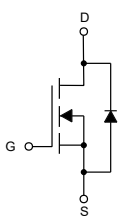
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 40°C/W Junction to Ambient ^(Note 3)
- Thermal Resistance: 0.4°C/W Junction to Case

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	600	V
Gate-Source Voltage	V_{GS}	±30	V
Continuous Drain Current	I_D	$T_C=25^\circ\text{C}$	41
		$T_C=100^\circ\text{C}$	26
Pulsed Drain Current ^(Note 4)	I_{DM}	164	A
Total Power Dissipation ^(Note 5)	P_D	312.5	W
Single Pulsed Avalanche Energy ^(Note 6)	E_{AS}	132	mJ

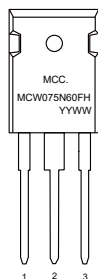
Note:

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. $T_J=25^\circ\text{C}$, $V_{DD}=50\text{V}$, $V_{GS}=10\text{V}$, $I_{AS}=23\text{A}$.

Internal Structure and Marking Code



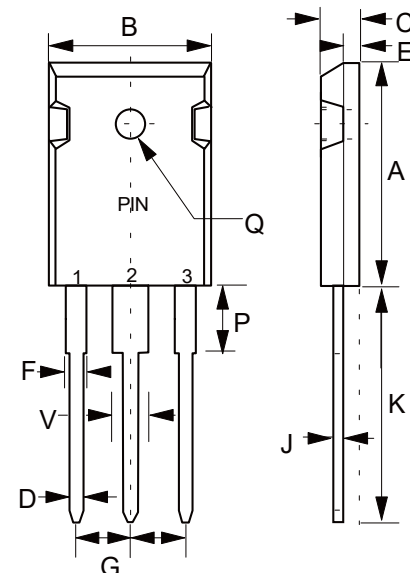
1. Gate
2. Drain
3. Source



Device Code: MCW075N60FH
Date Code: YYWW (Year & Week)

N-CHANNEL Super-Junction Power 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
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=1mA$	600			V
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 30V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=600V, V_{GS}=0V$			10	μA
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=2.8mA$	3	4	5	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$		65	75	m Ω
Gate Resistance	R_g	f=1MHz, open drain		1		Ω
Diode Characteristics						
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=20A$		0.9	1.2	V
Reverse Recovery Time	t_{rr}	$V_R=400V, I_F=20A$ $di_F/dt=100A/\mu s$		115		ns
Reverse Recovery Charge	Q_{rr}			723		nC
Peak Reverse Recovery Current	I_{rrm}			11		A
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=100V, V_{GS}=0V, f=1MHz$		3202		pF
Output Capacitance	C_{oss}			135		
Reverse Transfer Capacitance	C_{rss}			5.5		
Total Gate Charge	Q_g	$V_{DS}=400V, V_{GS}=10V, I_D=20A$		81		nC
Gate-Source Charge	Q_{gs}			21		
Gate-Drain Charge	Q_{gd}			41		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=400V, V_{GS}=10V$ $R_G=5.6\Omega, I_D=20A$		113		ns
Turn-On Rise Time	t_r			34		
Turn-Off Delay Time	$t_{d(off)}$			57		
Turn-Off Fall Time	t_f			15		

Curve Characteristics

Fig. 1 - Typical Output Characteristics ($T_J=25^\circ\text{C}$)

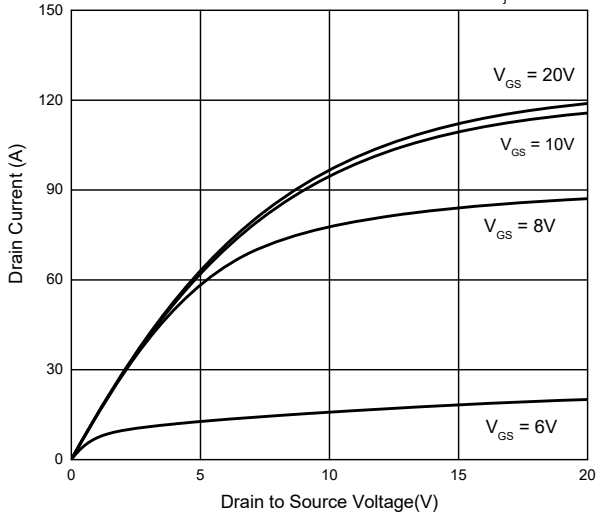


Fig. 2 - Typical Transfer Characteristics

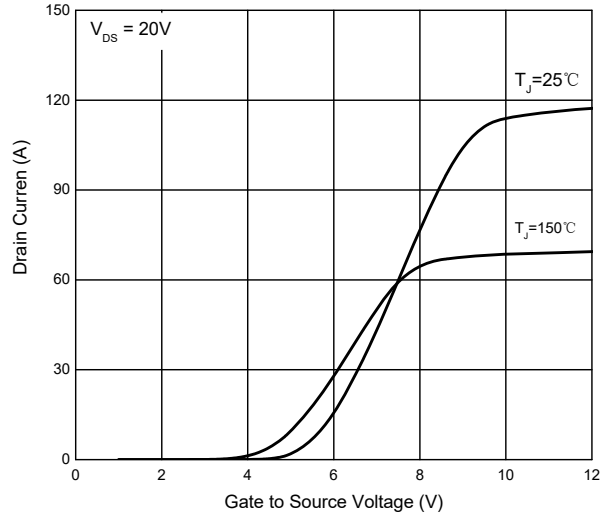


Fig. 3 - On-Resistance vs Gate Bias

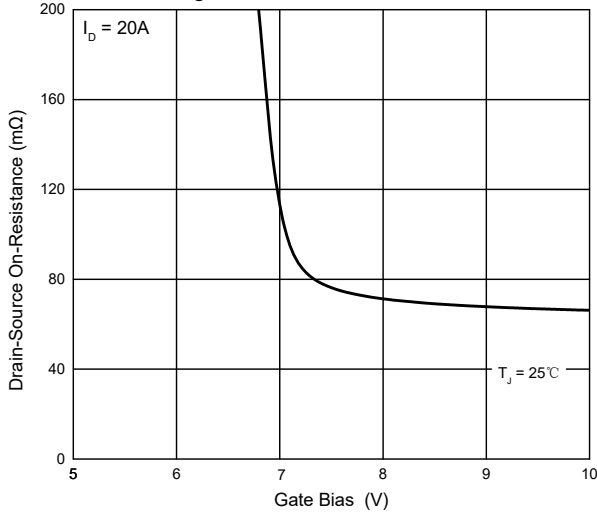


Fig. 4 - On-Resistance vs Drain Current

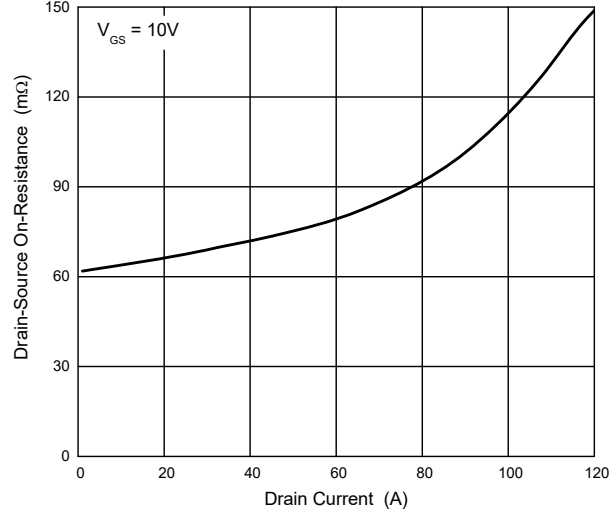


Fig. 5 - Capacitance Characteristic

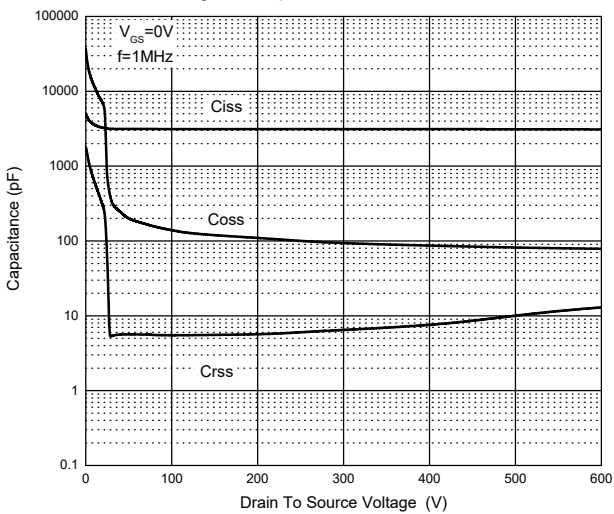
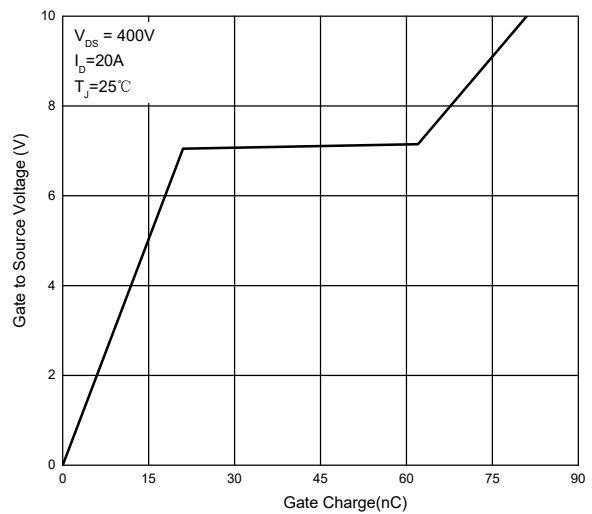


Fig. 6 - Typical Gate Charge



Curve Characteristics

Fig. 7 - Gate-Threshold Voltage vs Junction Temperature

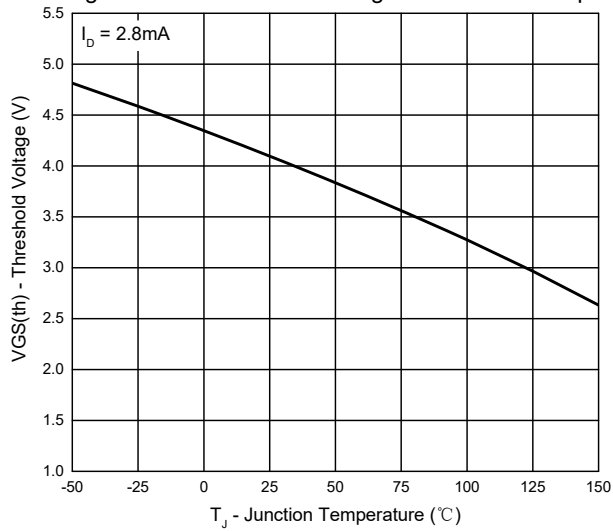


Fig. 8 - Normalized On-Resistance

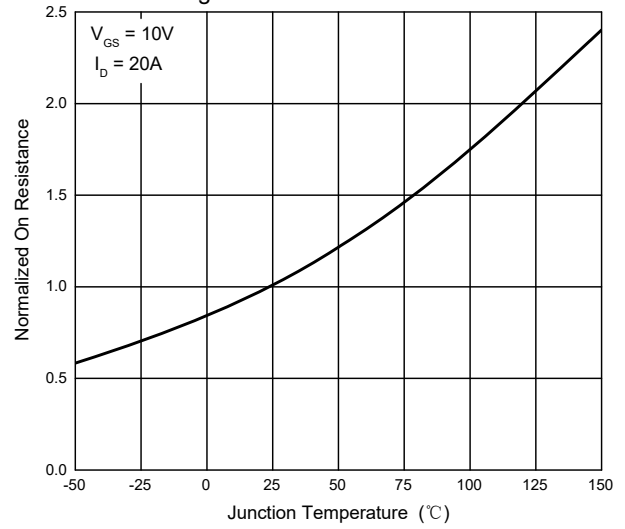


Fig. 9 - Forward Characteristics

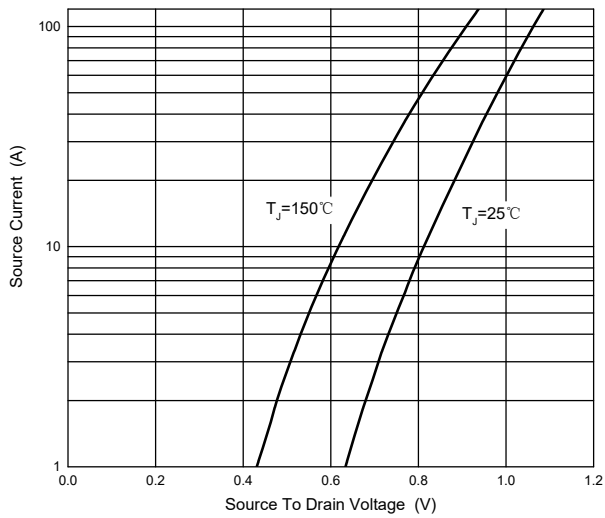


Fig. 10 - Drain Current

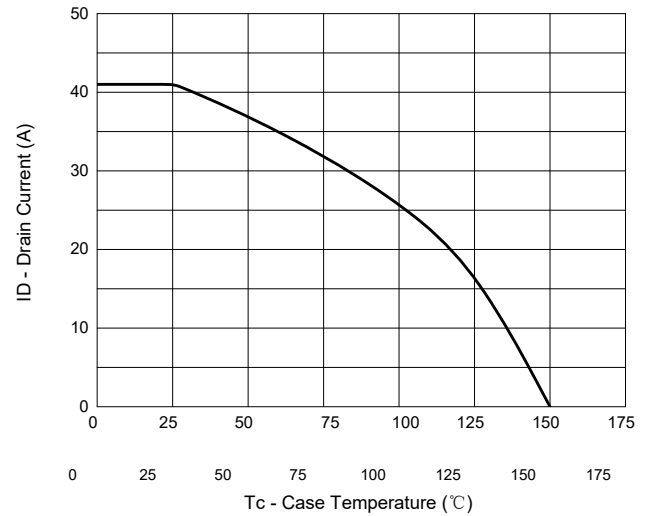


Fig. 11 - Power Dissipation

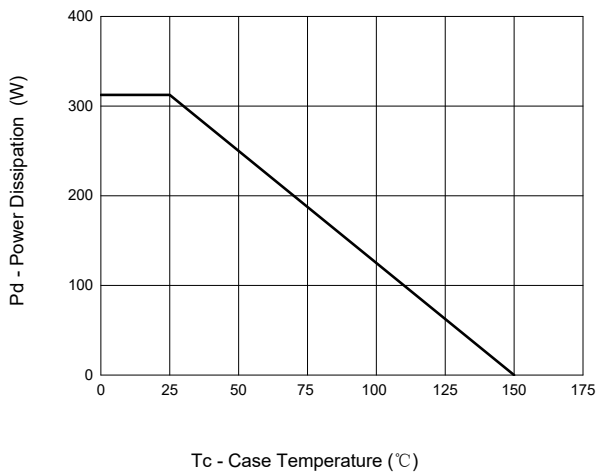
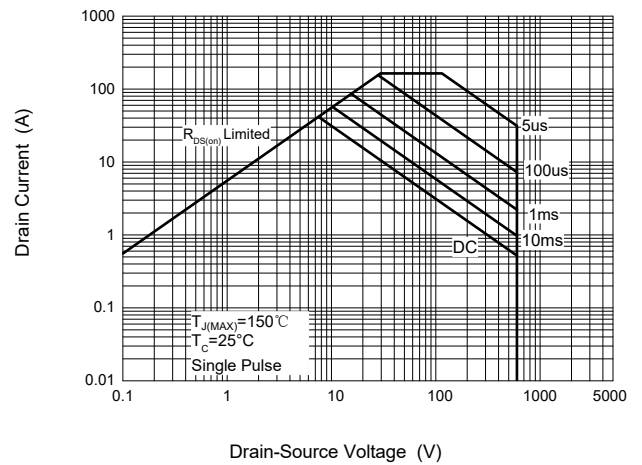
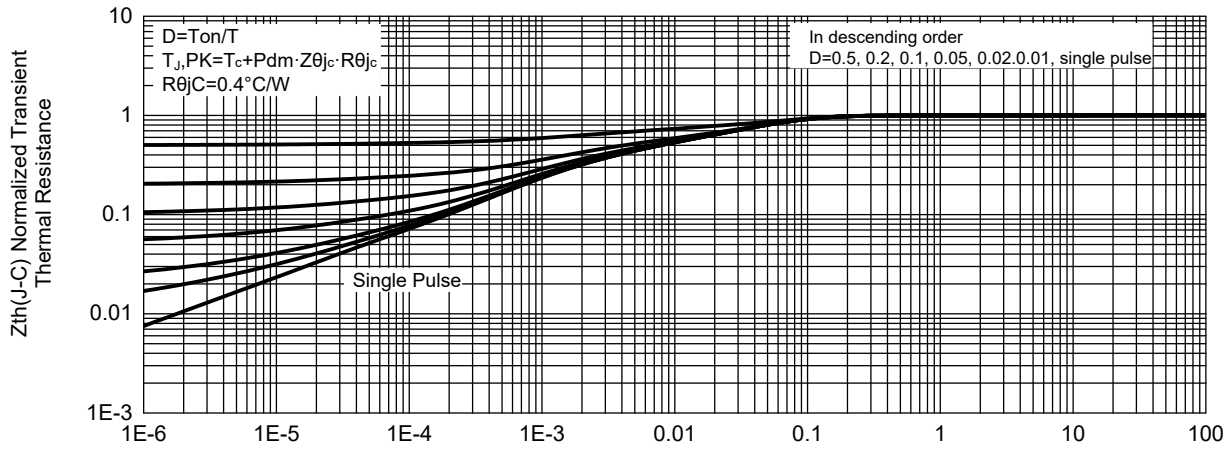


Fig. 12- Safe Operating Area



Curve Characteristics

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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