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
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free."Green "Device(Note 1)
- Lead Free Finish/RoHS Compliant. "P" Suffix Designates RoHS Compliant. See Ordering Information

N-CHANNEL Super-Junction Power MOSFET

Maximum Ratings

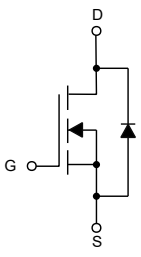
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance Junction to Ambient,Max(Note 2): 60°C/W
- Thermal Resistance Junction to Case,Max : 1.18°C/W

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	600	V
Gate-Source Volltage		V_{GS}	±30	V
Continuous Drain Current	T_C=25°C	I_D	23	A
	T_C=100°C		14.5	
Pulsed Drain Current(Note 3)		I_{DM}	92	A
Total Power Dissipation, T_C=25°C		P_D	106	W
Single Avalanche Energy(Note 4)		E_{AS}	132	mJ

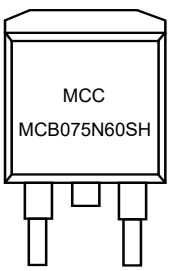
Note:

1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. Device mounted on 1 in2 FR-4 board with 2oz. single-sided Copper, in a still air environment with TA=25 C.
3. Repetitive rating; pulse width limited by max. junction temperature.
4. Starting T_J=25°C, V_{DD}=50V,I_{AS}=23A.

Internal Structure and Marking Code

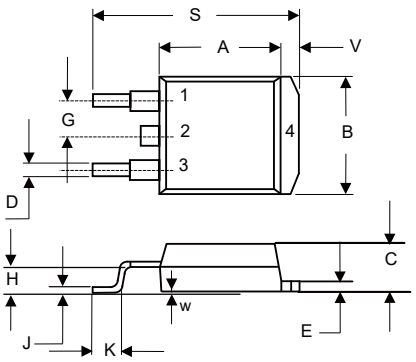


1. Gate
2,4. Drain
3. Source



Device Code: MCB075N60SH

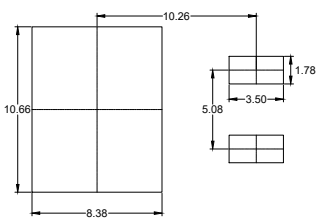
D²-PAK



DIMENSIONS					
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

Unit:mm



Electrical Characteristics (T_J = 25℃ 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			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	78	mΩ
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/μs		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		
Output capacitance - energy related	$C_{o(er)}$	V_{DS}=0 to 400V, V_{GS}=0V		132		
Output capacitance - time related	$C_{o(tr)}$			857		
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=5.6Ω, I_D=20A		66		ns
Turn-On Rise Time	t_r			20		
Turn-Off Delay Time	$t_{d(off)}$			57		
Turn-Off Fall Time	t_f			15		

Typical Characteristics (T_J=25℃ unless otherwise specified)

Fig. 1 - Typical Output Characteristics(T_j=25°C)

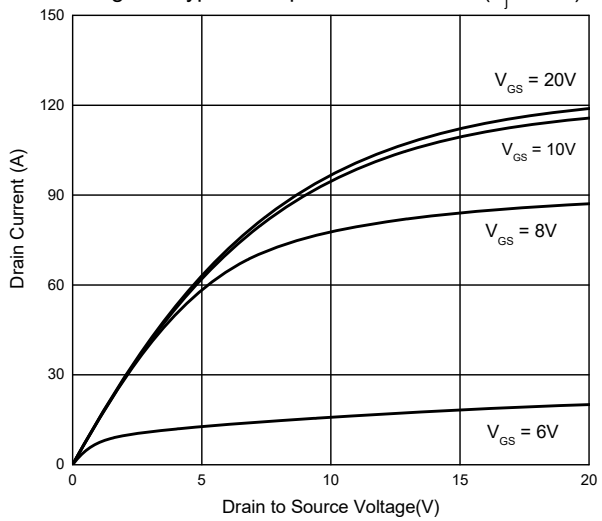


Fig. 2 - Typical Transfer Characteristics

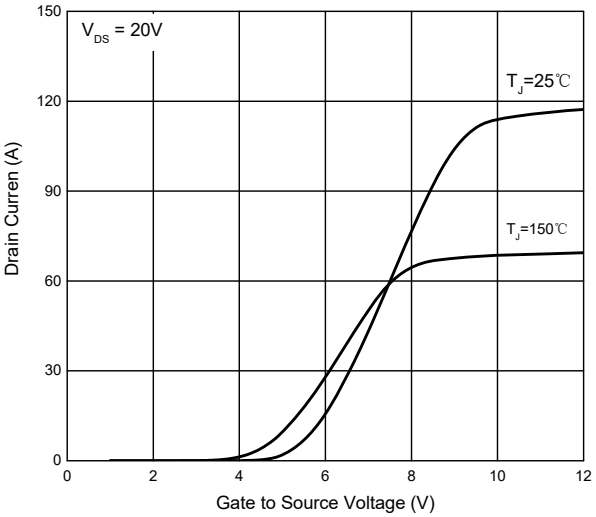


Fig. 3 - On-Resistance vs Gate Bias

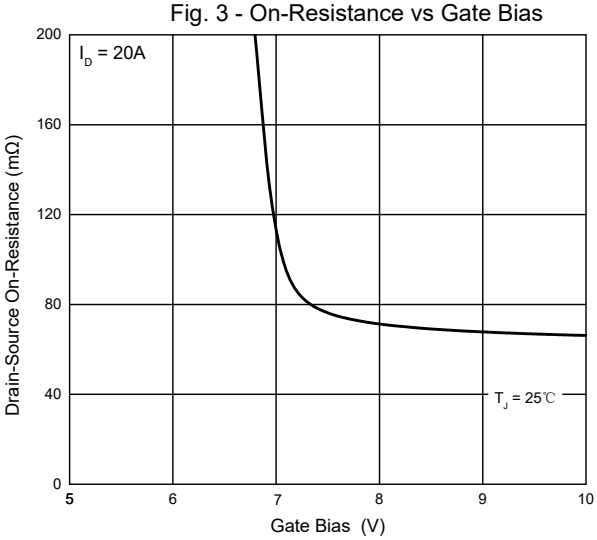


Fig. 4 - On-Resistance vs Drain Current

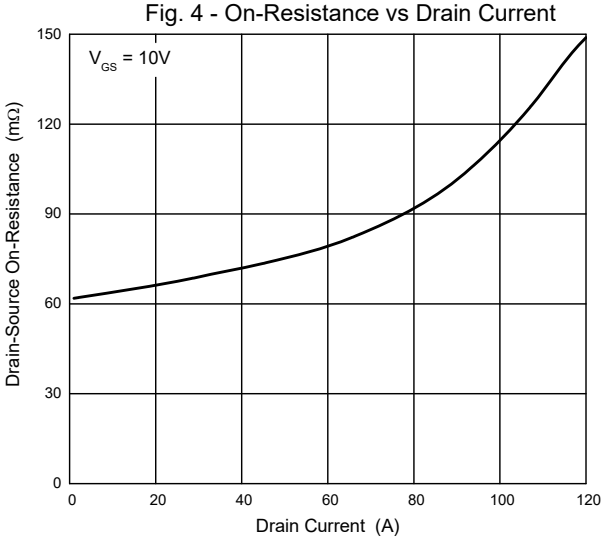


Fig. 5 - Capacitance Characteristice

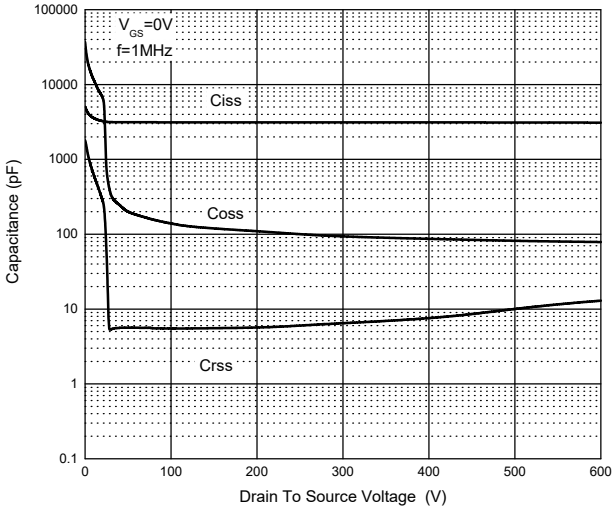
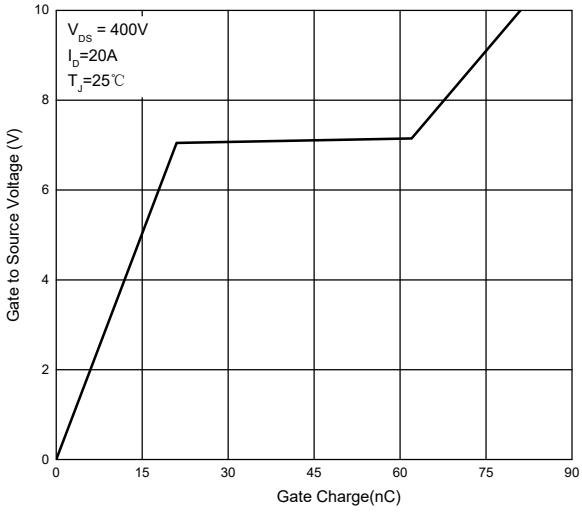


Fig. 6 - Typical Gate Charge



Typical Characteristics (T_J=25℃ unless otherwise specified)

Fig. 7 - Gate-Threshold Voltage vs Junction Temperature

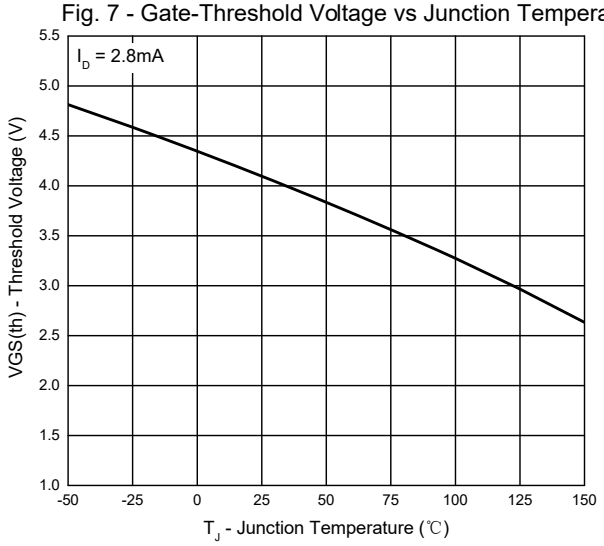


Fig. 8 - Normalized On-Resistance

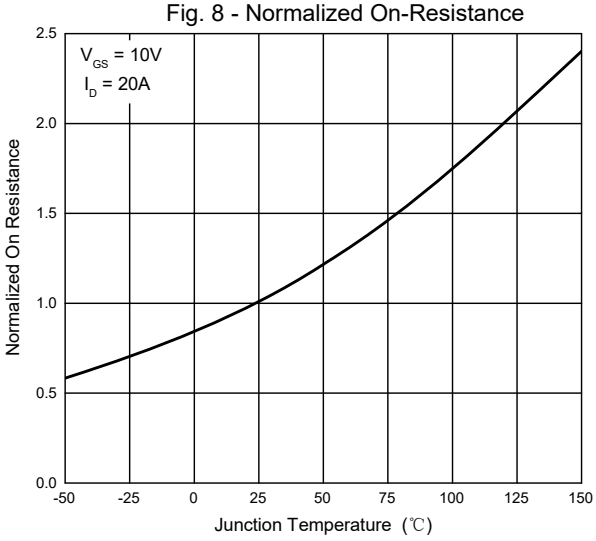


Fig. 9 - Forward Characteristics

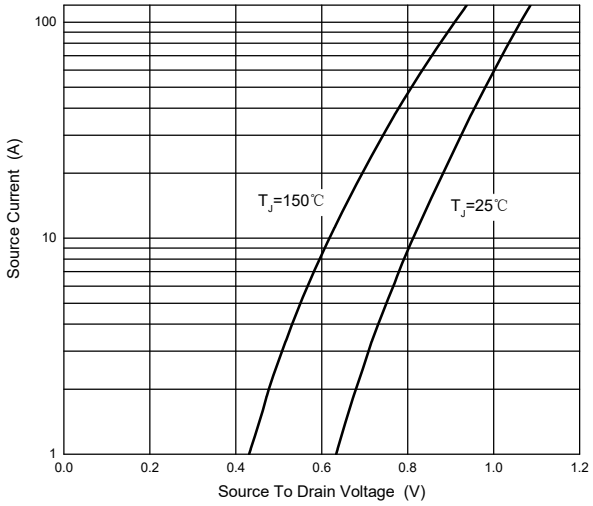


Fig. 10 - Drain Current

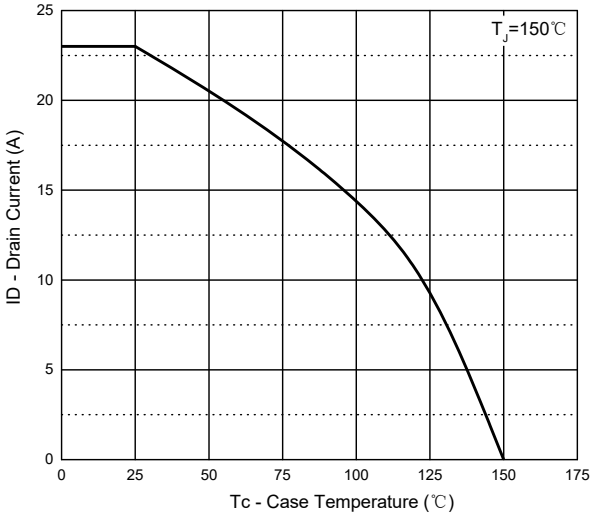


Fig. 11 - Power Dissipation

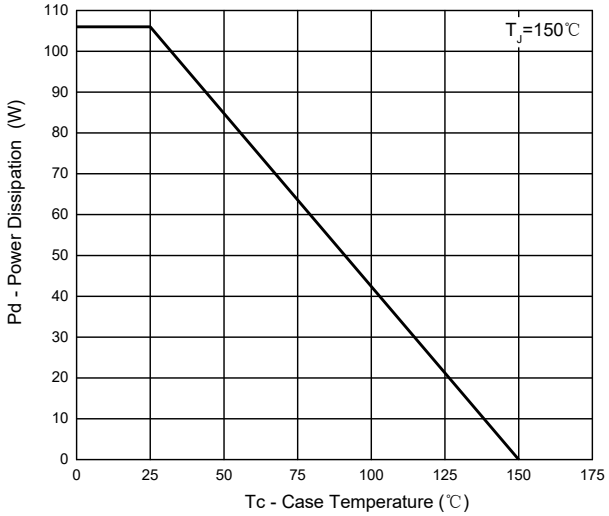
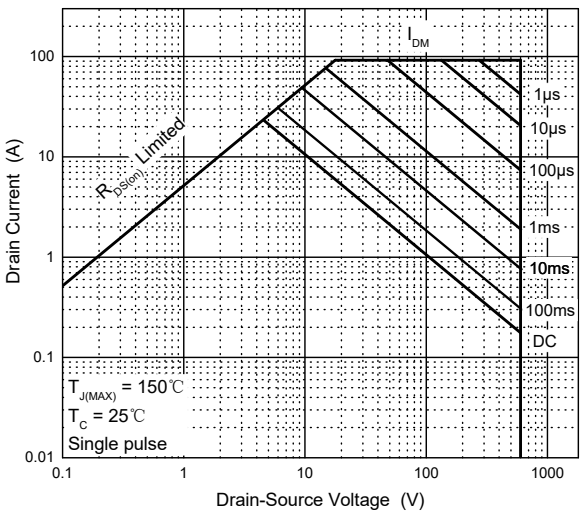
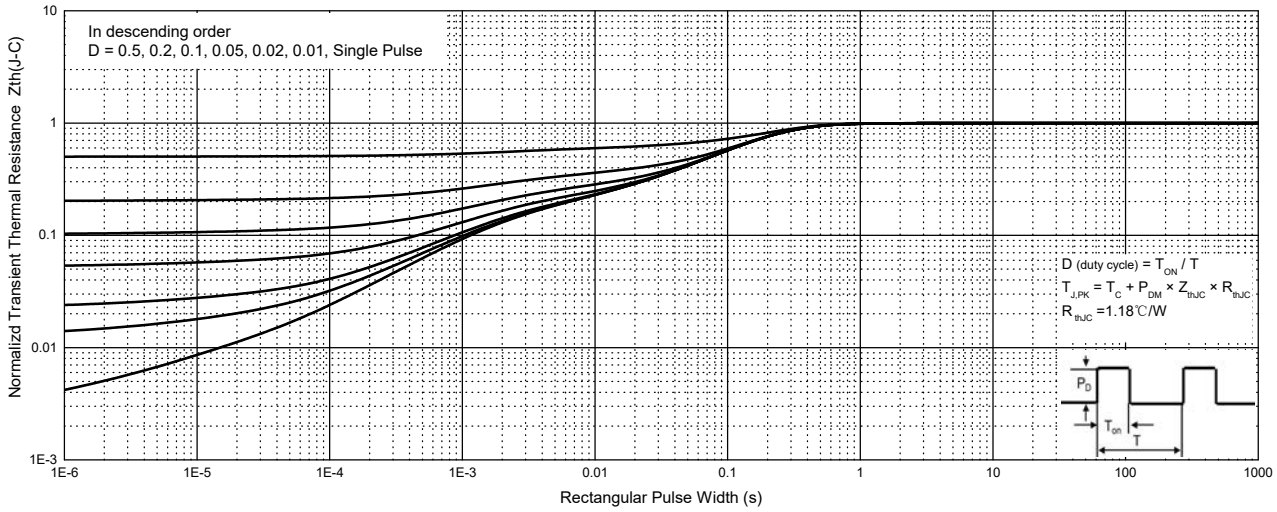


Fig. 12- Safe Operating Area



Typical Characteristics (T_J=25℃ unless otherwise specified)

Fig.13 - Normalized Transient Thermal Impedance, Junction-Case



Ordering Information

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