Features

- Low On-resistance and Low Conduction Loss
- Super Junction technology for High Voltage Application
- 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

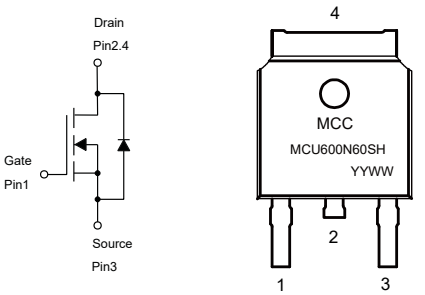
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance Junction to Ambient,Max(Note 2): 50°C/W
- Thermal Resistance Junction to Case,Max : 2.4°C/W

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	6.3	A
	T_C=100°C		4.0	
Pulsed Drain Current(Note 3)		I_{DM}	25.2	A
Total Power Dissipation, T_C=25°C		P_D	52	W
Single Avalanche Energy(Note 4)		E_{AS}	54	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 ℃.
3. Repetitive rating; pulse width limited by max. junction temperature.
4. Starting T_J=25°C, V_{DD}=50V,I_{AS}=3A.

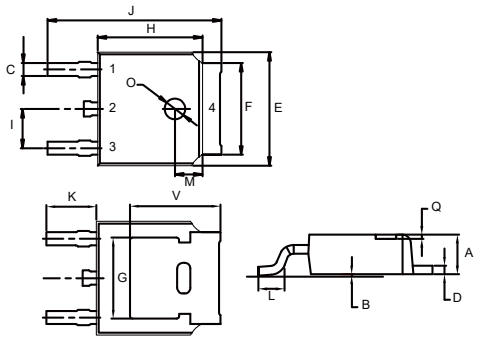
Internal Structure and Marking Code



Device Code: MCU600N60SH

Date Code: YYWW (Year & Week)

DPAK(TO-252)



DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.087	0.094	2.20	2.40	
B	0.000	0.005	0.00	0.13	
C	0.026	0.034	0.66	0.86	
D	0.018	0.023	0.46	0.58	
E	0.256	0.264	6.50	6.70	
F	0.201	0.215	5.10	5.46	
G	0.190		4.83		TYP.
H	0.236	0.244	6.00	6.20	
I	0.086	0.094	2.18	2.39	
J	0.386	0.409	9.80	10.40	
K	0.114		2.90		TYP.
L	0.055	0.067	1.40	1.70	
M	0.063		1.60		TYP.
O	0.043	0.051	1.10	1.30	
Q	0.000	0.012	0.00	0.30	
V	0.211		5.35		TYP.

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			1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=0.5mA	2.5	3.7	4.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=2.5A		511	613	mΩ
Gate Resistance	R_g	f=1MHz, open drain		1		Ω
Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=2.5A		0.82	1.2	V
Reverse Recovery Time	t_{rr}	V_R=300V, I_F=2.5A dI_F/dt=100A/μs		150		ns
Reverse Recovery Charge	Q_{rr}			1200		nC
Peak Reverse Recovery Current	I_{rrm}			16		A
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=100V, V_{GS}=0V, f=1MHz		392		pF
Output Capacitance	C_{oss}			22		
Output capacitance - energy related	$C_{o(er)}$	V_{DS}=0 to 400V, V_{GS}=0V		19		
Output capacitance - time related	$C_{o(tr)}$			134		
Total Gate Charge	Q_g	V_{DS}=300V, V_{GS}=10V, I_D=2.5A		11.5		nC
Gate-Source Charge	Q_{gs}			2.4		
Gate-Drain Charge	Q_{gd}			6.1		
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=300V, V_{GS}=10V R_G=3Ω, I_D=2.5A		17		ns
Turn-On Rise Time	t_r			17		
Turn-Off Delay Time	$t_{d(off)}$			24		
Turn-Off Fall Time	t_f			50		

Typical Characteristics (T_J=25℃ unless otherwise specified)

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

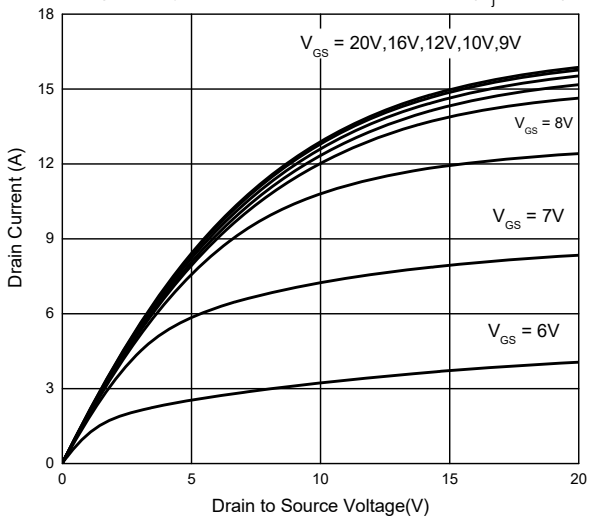


Fig. 2 - Typical Transfer Characteristics

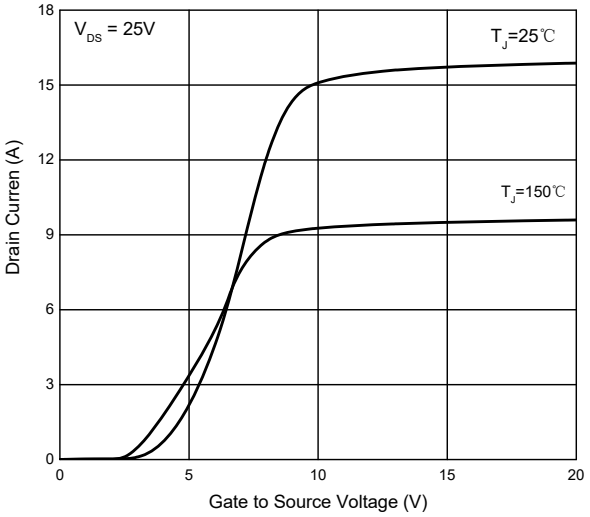


Fig. 3 - On-Resistance vs Gate Bias

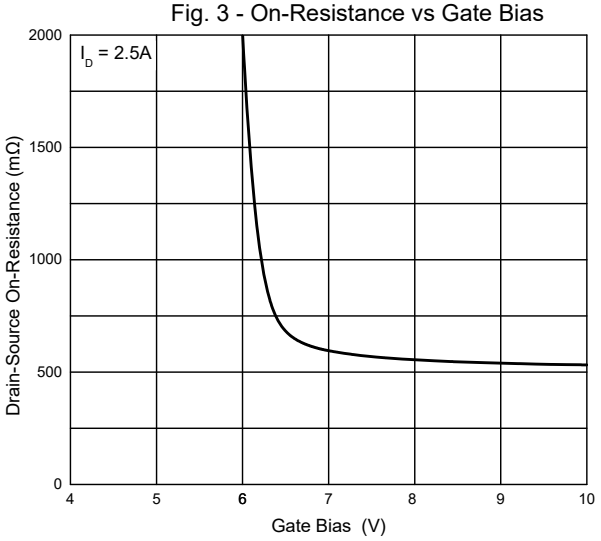


Fig. 4 - On-Resistance vs Drain Current

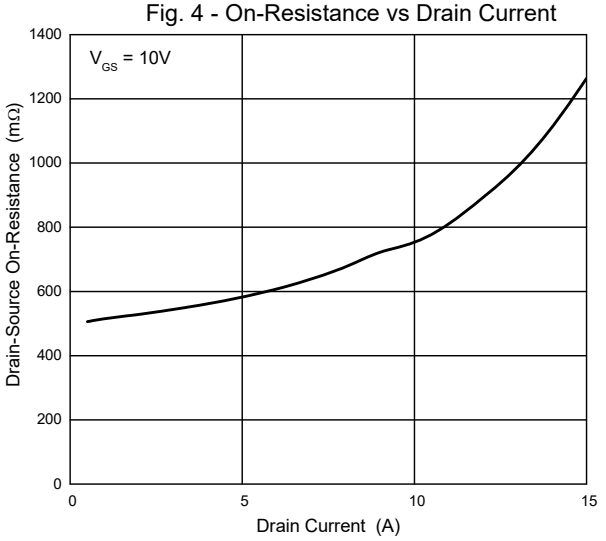


Fig. 5 - Capacitance Characteristice

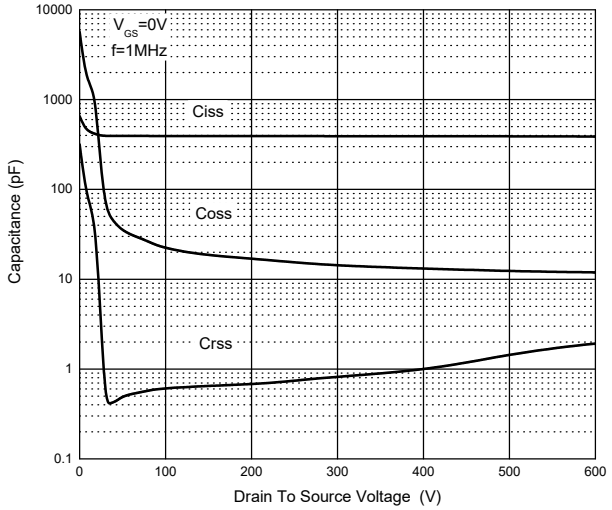
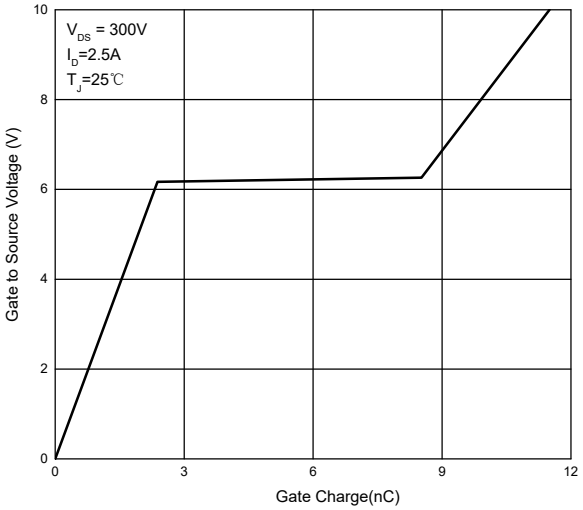


Fig. 6 - Typical Gate Charge



Typical Characteristics (T_J=25℃ unless otherwise specified)

Fig. 7 - Gate-Threshold Voltage vs Junction Temperature

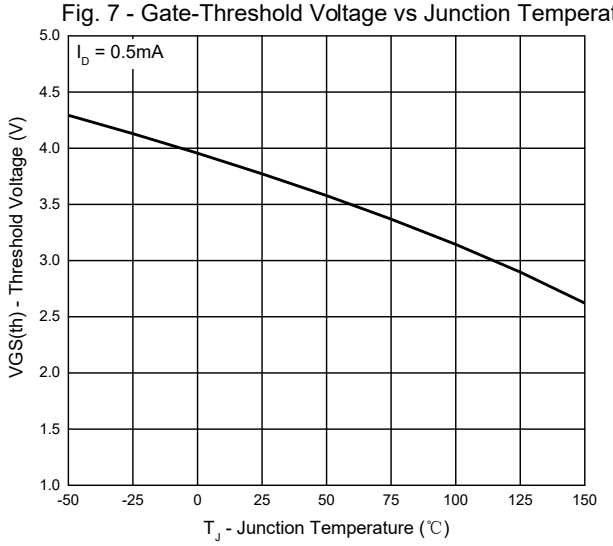


Fig. 8 - Normalized On-Resistance

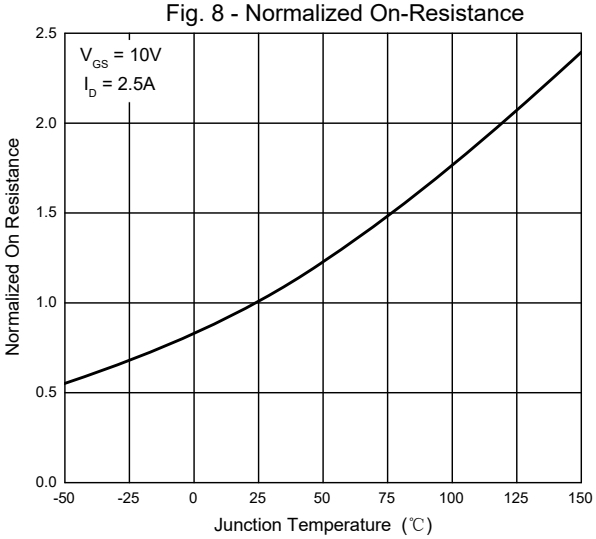


Fig. 9 - Forward Characteristics

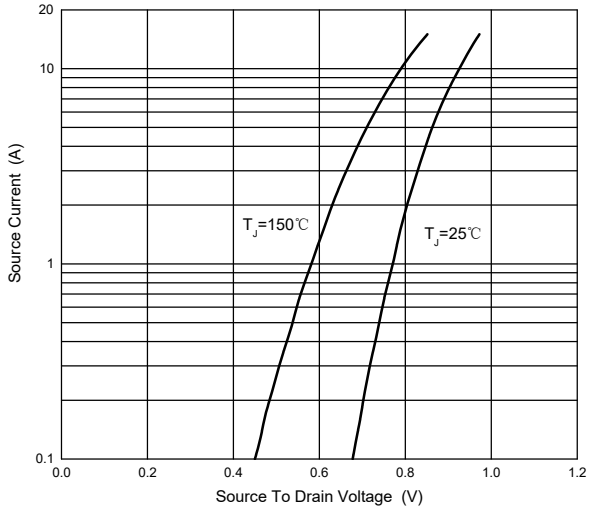


Fig. 10 - Drain Current

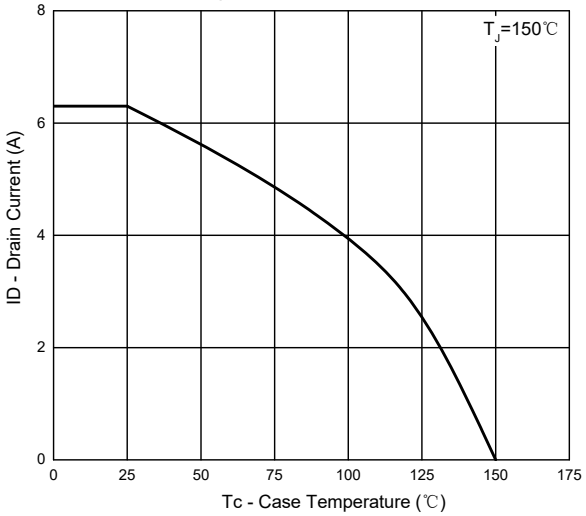


Fig. 11 - Power Dissipation

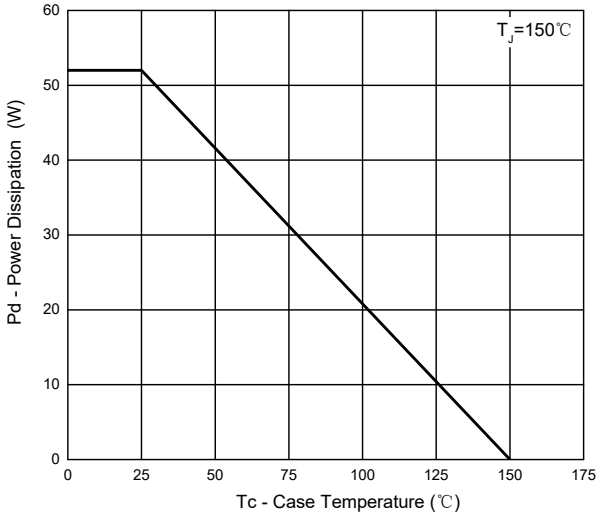
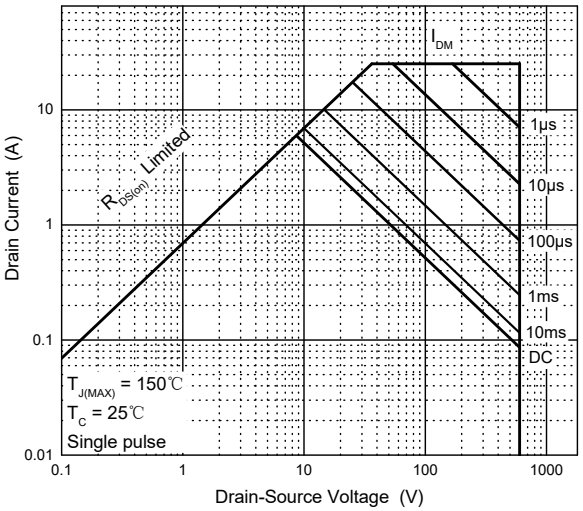
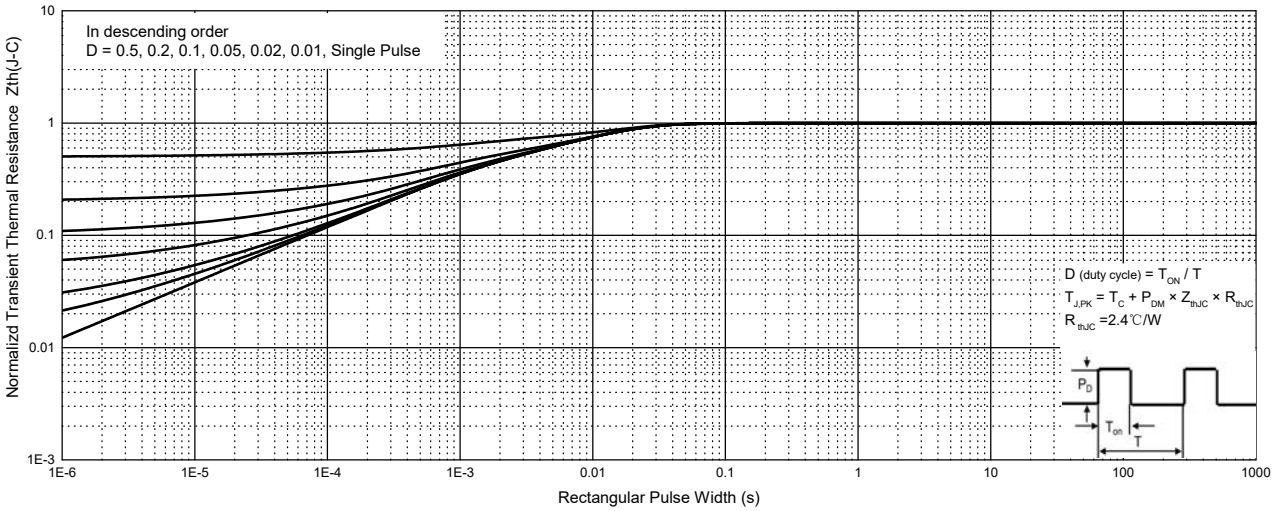


Fig. 12 - Safe Operating Area



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: 2.5Kpcs/Reel