Features

- Moisture Sensitivity Level 1
- Halogen Free."Green"Device(Note1)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant(Note2) ("P" Suffix Designates RoHS Compliant. See Ordering Information)
- Super Junction technology for High Voltage Application
- ESD Procted UP to 2KV(HBM)

N-CHANNEL Super-Junction Power MOSFET

Maximum Ratings

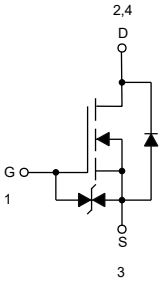
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 50°C/W Junction to Ambient(Note3)
- Thermal Resistance: 0.75°C/W Junction to Case

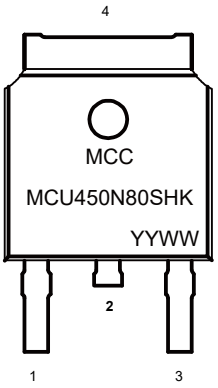
Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	800	V
Gate-Source Volltage		V_{GS}	±20	V
Continuous Drain Current	T_C=25°C	I_D	12	A
	T_C=100°C		7.5	
Pulsed Drain Current (Note4)		I_{DM}	48	A
Total Power Dissipation(Note5)		P_D	166	W
Single Pulse Avalanche Energy (Note 6)		E_{AS}	2.7	mJ

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 $R_{\theta JC}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_C=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,I_{AS}=2.35A

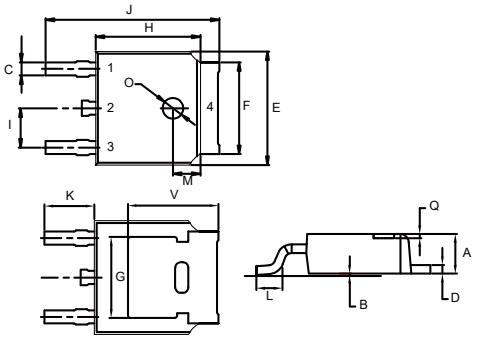
Internal Structure and Marking Code





Device Code: MCU450N80SHK
Date Code: YYWW (Year & Week)

DPAK(TO-252)



1. Gate
2,4. Drain
3. Source

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 @ 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=250μA	800			V
Gate-Source Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS} =±20V			±10	uA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=800V, V_{GS}=0V			1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	2.5	3.5	4.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=7.1A		390	468	mΩ
Gate Resistance	R_g	f=1 MHz, Open drain		24		Ω
Diode Characteristics						
Continuous Body Diode Current	I_S				12	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=7.1A			1.4	V
Reverse Recovery Time	t_{rr}	I_F=7.1A, dI/dt=100A/μs,V_R=400V		283		ns
Reverse Recovery Charge	Q_{rr}			3.7		uC
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=100V,V_{GS}=0V,f=1MHz		924		pF
Output Capacitance	C_{oss}			29		
Reverse Transfer Capacitance	C_{rss}			0.65		
Total Gate Charge	Q_g	V_{DS}=400V,V_{GS}=10V,I_D=7.1A		25.5		nC
Gate-Source Charge	Q_{gs}			5.0		
Gate-Drain Charge	Q_{gd}			12		
Turn-On Delay Time	$t_{d(on)}$	V_{Ds}=400V, V_{GS}=10V, R_G=3Ω,I_D=7.1A		33		ns
Turn-On Rise Time	t_r			25.5		
Turn-Off Delay Time	$t_{d(off)}$			93.5		
Turn-Off Fall Time	t_f			23.5		

Curve Characteristics (T_J=25℃ unless otherwise specified)

Fig.1 - Typical Output Characteristics

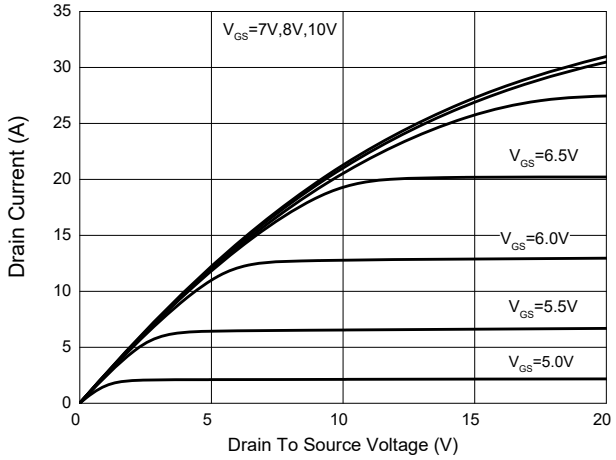


Fig. 2 - Transfer Characteristics

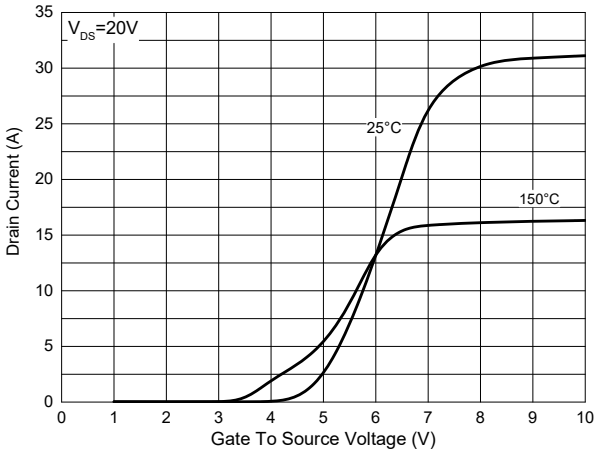


Fig.3 - $R_{DS(ON)}$ - V_{GS}

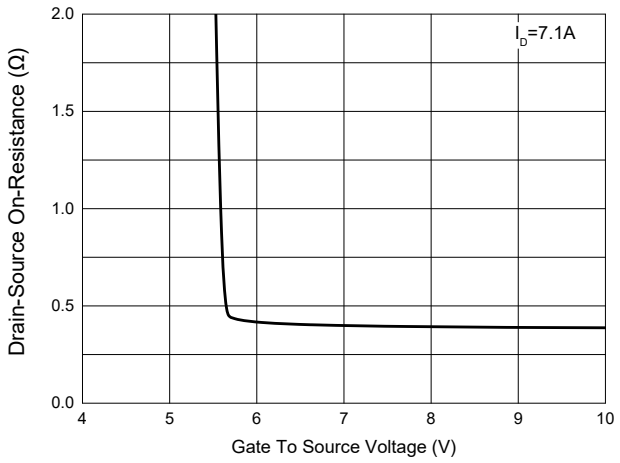


Fig.4 - $R_{DS(ON)}$ - I_D

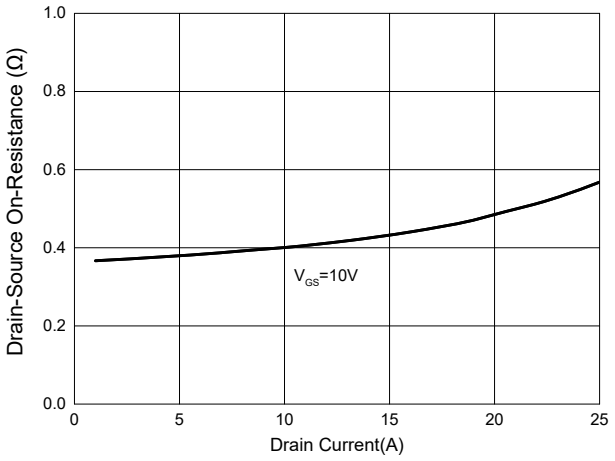


Fig.5 - Capacitance Characteristics

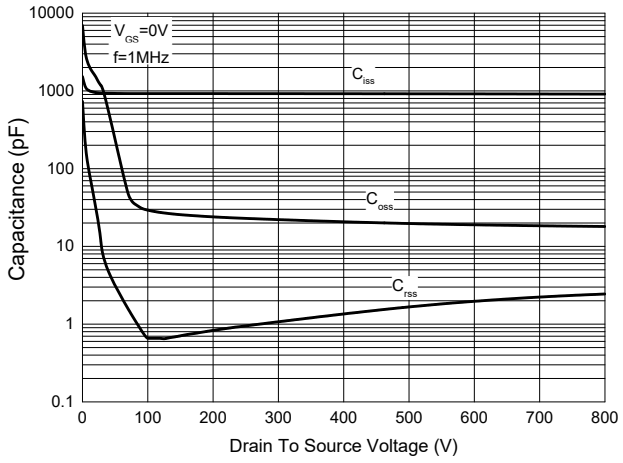
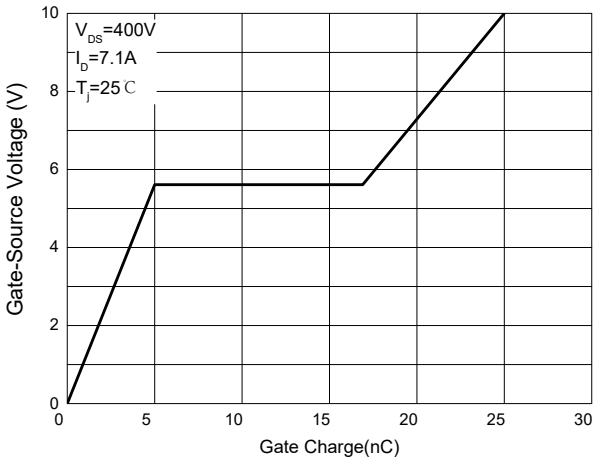


Fig.6 - Gate Charge



Curve Characteristics

Fig.7 - Normalized Threshold Voltage

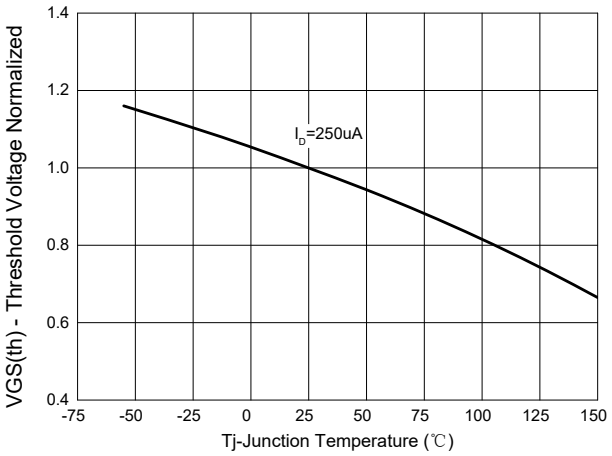


Fig.8 - Normalized On Resistance Characteristics

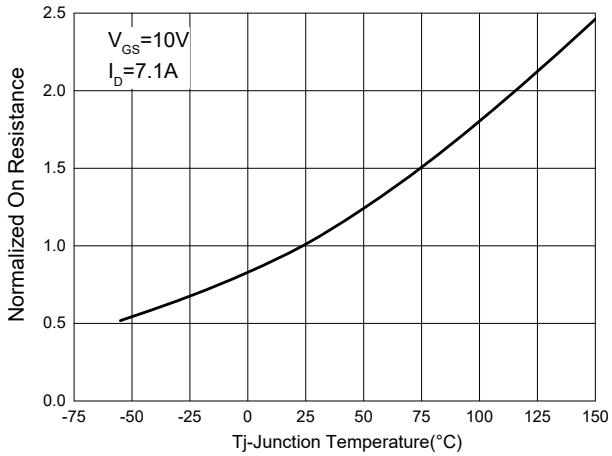


Fig.9 - I_S - V_{SD}

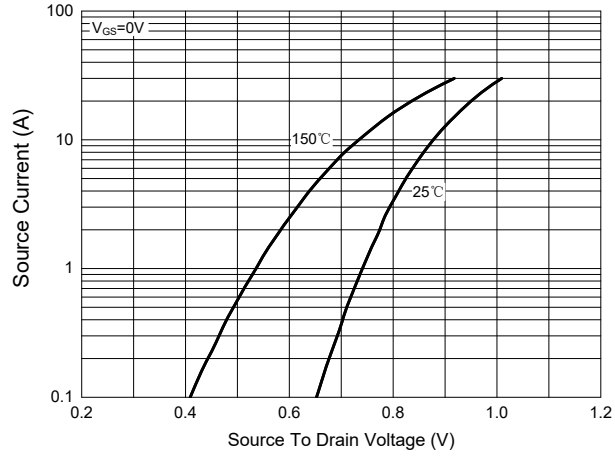


Fig.10 - Drain Current

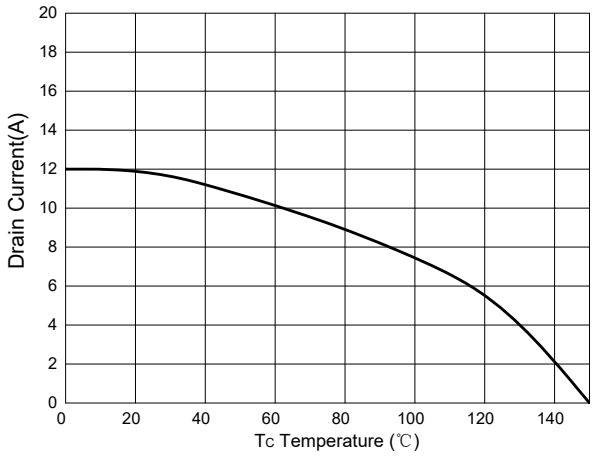
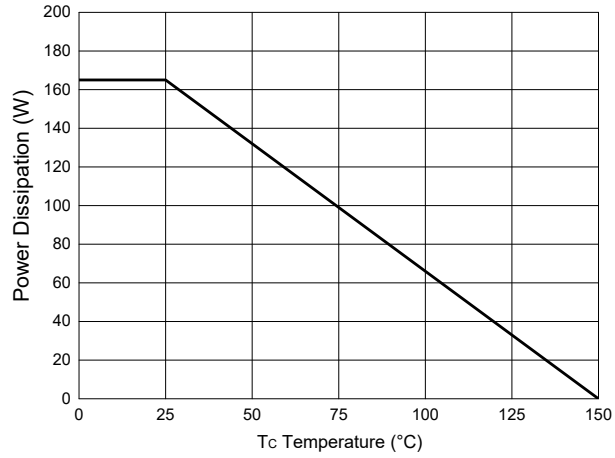


Fig.11 - PD Dissipation



Curve Characteristics

Fig.12 - Safe Operation Area

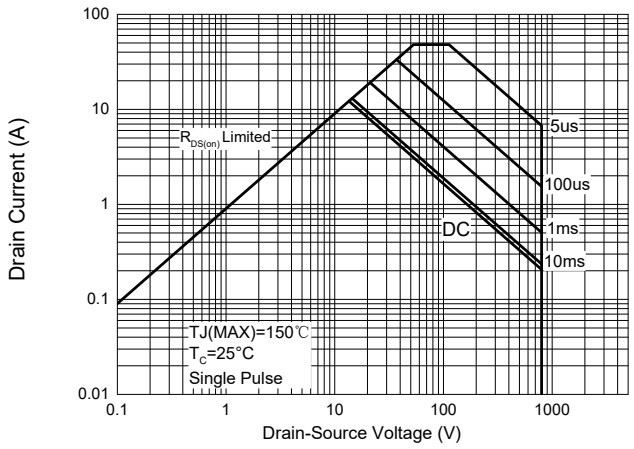
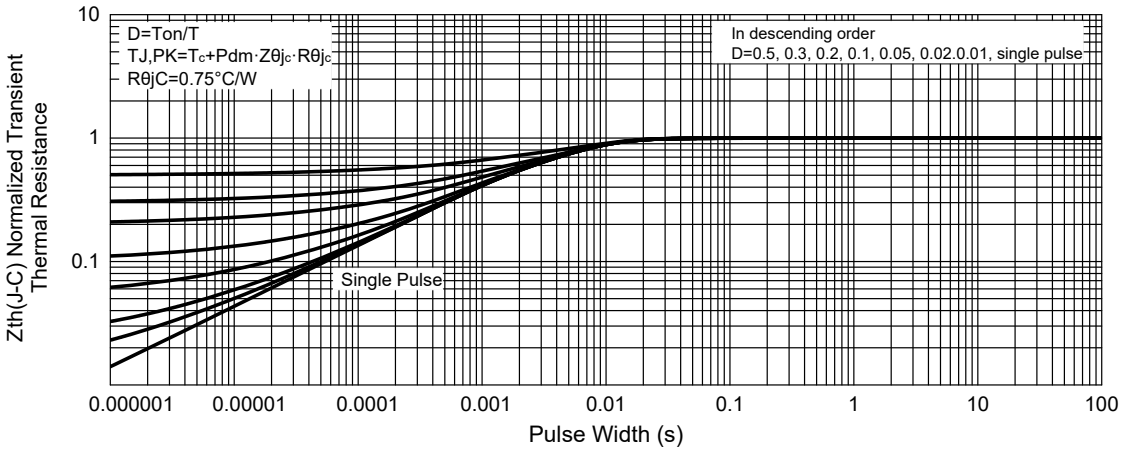


Fig.13 - Normalized Transient Thermal Impedance



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 2.5Kpcs/Reel