

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)

Maximum Ratings

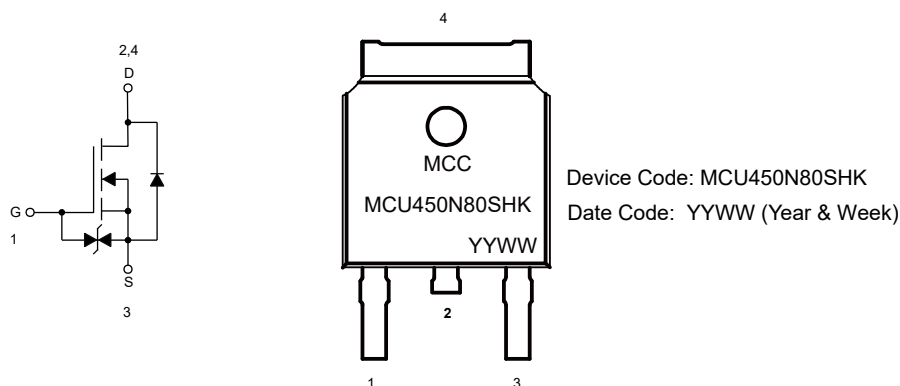
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 50°C/W Junction to Ambient^(Note3)
- Thermal Resistance: 0.75°C/W Junction to Case

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	800	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	12	A
		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:

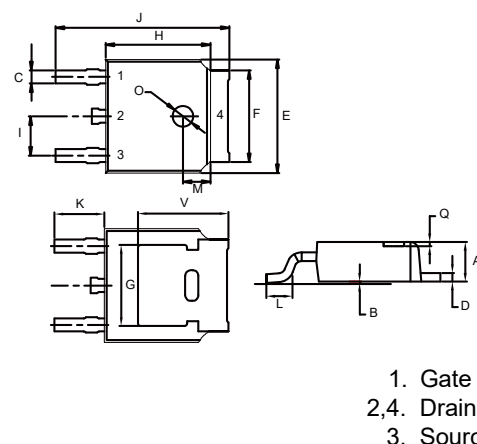
- Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
- High temperature solder exemption applied, see EU directive annex 7a.
- The value of $R_{\theta JC}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_C=25^\circ\text{C}$.
- Repetitive rating; pulse width limited by max. junction temperature.
- P_D is based on max. junction temperature, using junction-case thermal resistance.
- $T_J=25^\circ\text{C}$, $V_{DD}=50\text{V}$, $I_{AS}=2.35\text{A}$

Internal Structure and Marking Code



N-CHANNEL Super-Junction Power MOSFET

DPAK(TO-252)



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	450	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 ($T_J=25^\circ\text{C}$ unless otherwise specified)

Fig.1 - Typical Output Characteristics

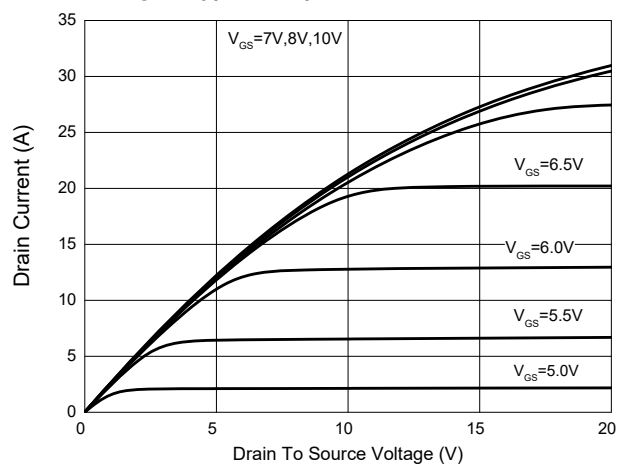


Fig. 2 - Transfer Characteristics

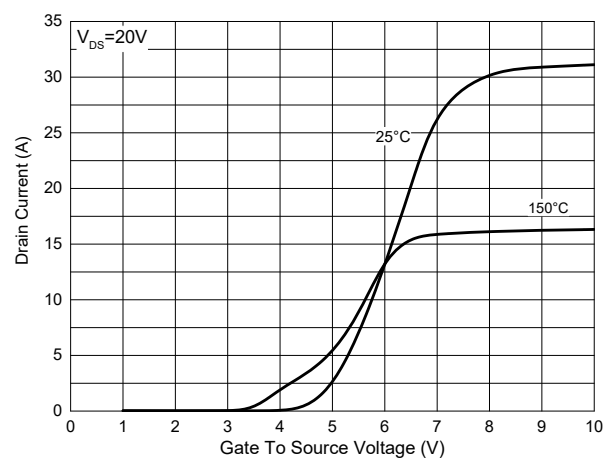


Fig.3 - $R_{DS(ON)} - V_{GS}$

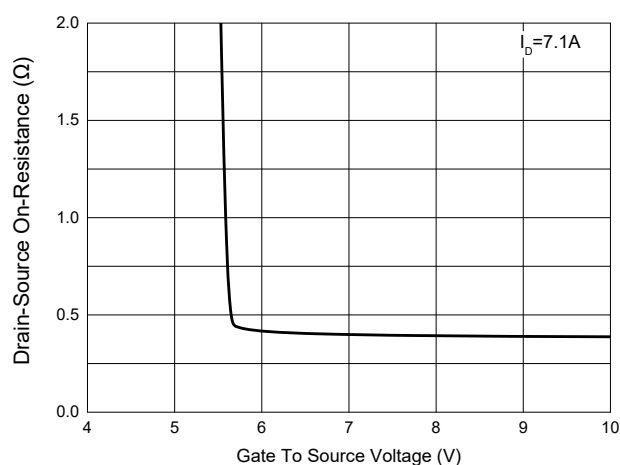


Fig.4 - $R_{DS(ON)} - I_D$

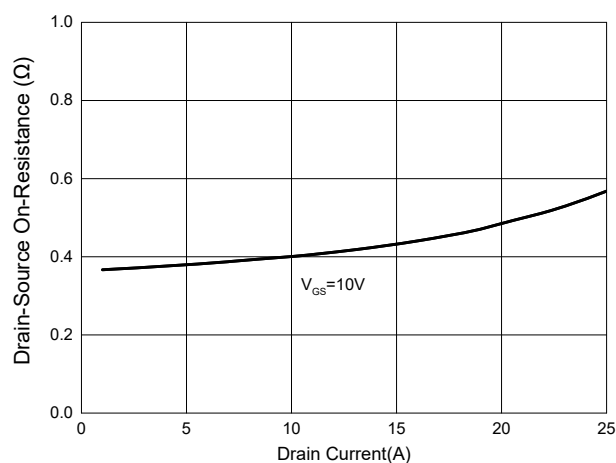


Fig.5 - Capacitance Characteristics

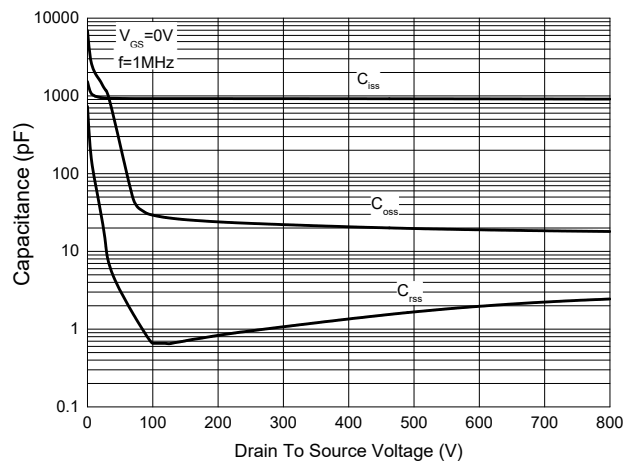
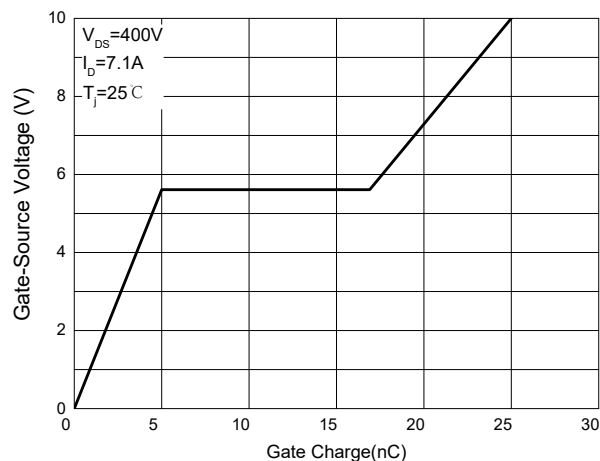


Fig.6 - Gate Charge



Curve Characteristics

Fig.7 - Normalized Threshold Voltage

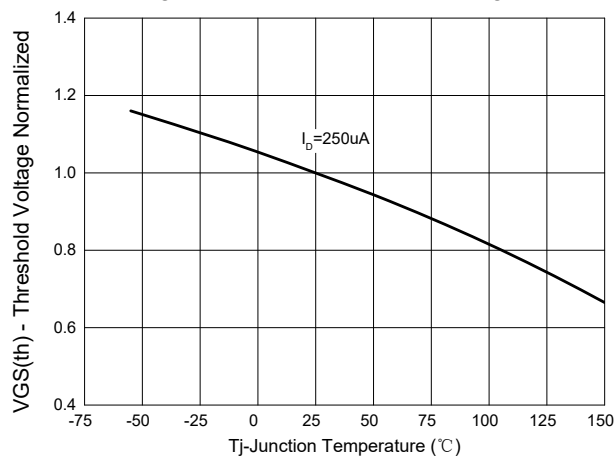


Fig.8 - Normalized On Resistance Characteristics

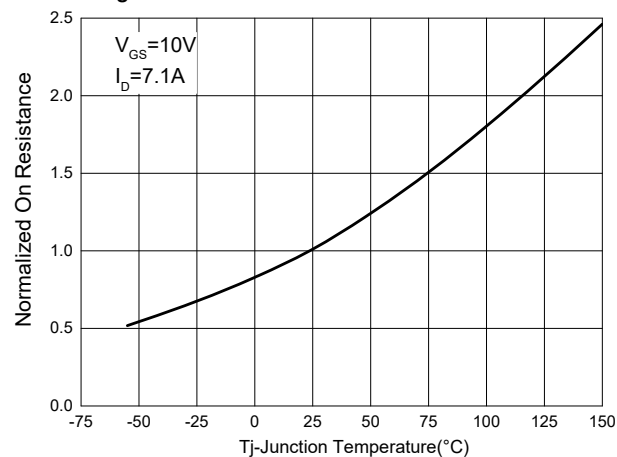


Fig.9 - $I_S - V_{SD}$

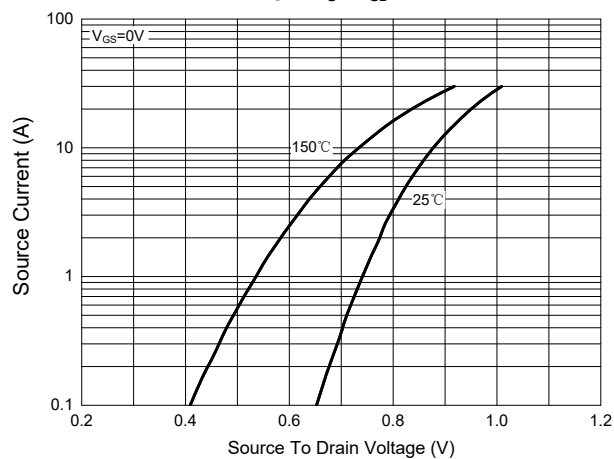


Fig.10 - Drain Current

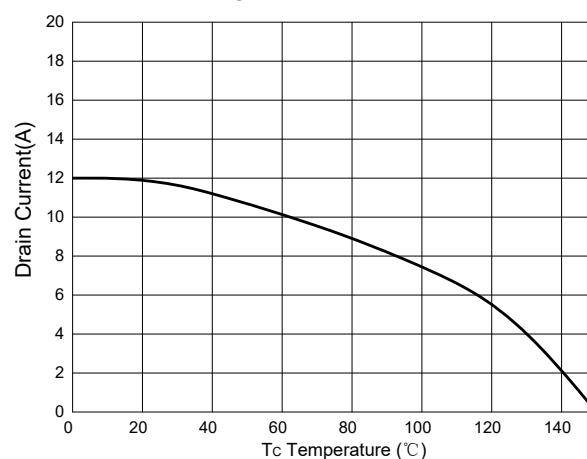
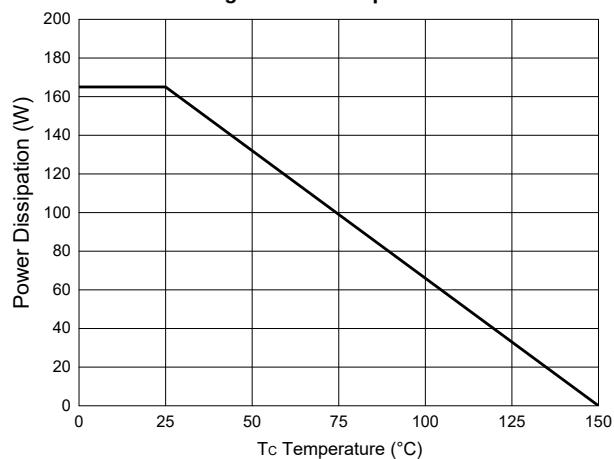


Fig.11 - PD Dissipation



Curve Characteristics

Fig.12 - Safe Operation Area

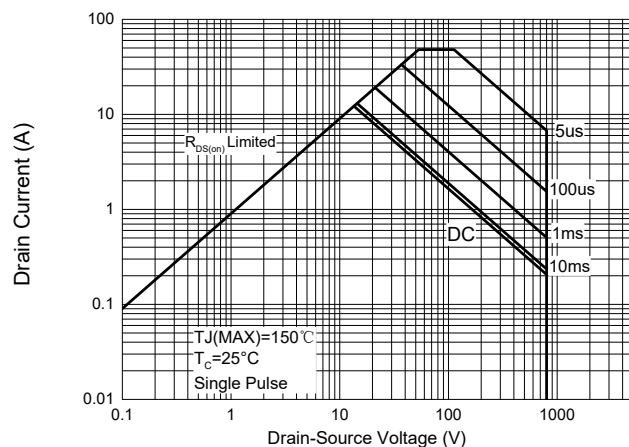
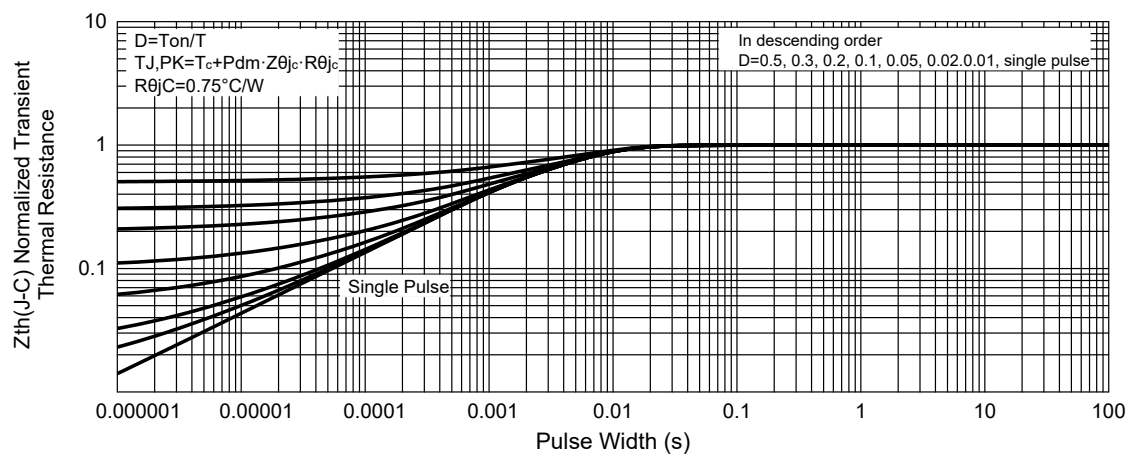


Fig.13 - Normalized Transient Thermal Impedance



Ordering Information

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

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