Features

- Super Junction technology for High Voltage Application
- Ultra Low Gate Charge Cause Lower Driving Requirement
- Low On-resistance and Low Conduction Loss
- Moisture Sensitivity Level 3
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free."Green "Device(Note 1)
- Lead Free Finish/RoHS Compliant.(Note 2) ("P" Suffix Designates RoHS Compliant. See Ordering Information)

N-CHANNEL Super-Junction Power MOSFET

Maximum Ratings

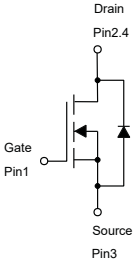
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 50°C/W Junction to Ambient(Note 3)
- Thermal Resistance: 1.9°C/W Junction to Case

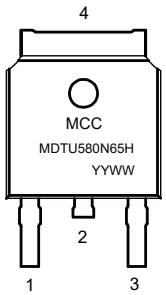
Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	650	V
Gate-Source Voltage		V_{GS}	±30	V
Continuous Drain Current	T_C=25°C	I_D	6.5	A
	T_C=100°C		4.1	
Pulsed Drain Current(Note 4)		I_{DM}	26	A
Total Power Dissipation(Note 5)		P_D	65	W
Single Avalanche Energy(Note 6)		E_{AS}	135	mJ

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 7(a)-I.
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°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}=100V, V_{GS}=10V, R_G=2.5Ω, L =30mH.

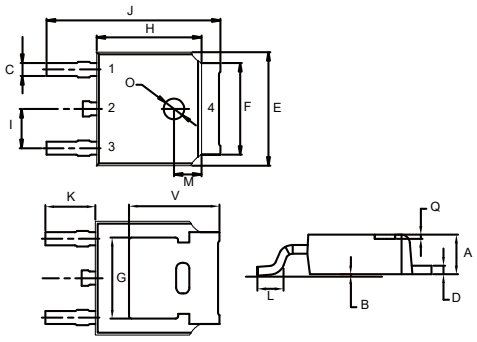
Internal Structure and Marking Code





4 codes in total
YY is the year
WW is the 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 @ 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	650			V
Gate-Source Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±30V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=650V, 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=4A		500	580	mΩ
Gate Resistance	R_G	f=1MHz, Open Drain		5.5		Ω
Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=4A			1.2	V
Reverse Recovery Time	t_{rr}	V_R=400V, I_F=4A dI_F/dt=100A/μs		171		ns
Reverse Recovery Charge	Q_{rr}			1440		nC
Peak Reverse Recovery Current	I_{rrm}			17.2		A
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=400V, V_{GS}=0V, f=1MHz		400		pF
Output Capacitance	C_{oss}			12.9		
Reverse Transfer Capacitance	C_{rss}			1.9		
Output capacitance - energy related	$C_{o(er)}$	V_{DS}=0 to 400V, V_{GS}=0V		20		
Output capacitance - time related	$C_{o(tr)}$			113		
Total Gate Charge	Q_g	V_{DS}=400V, V_{GS}=10V, I_D=4A		13.2		nC
Gate-Source Charge	Q_{gs}			2.3		
Gate-Drain Charge	Q_{gd}			7.1		
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=400V, V_{GS}=13V R_G=3Ω, I_D=4A		20		ns
Turn-On Rise Time	t_r			20		
Turn-Off Delay Time	$t_{d(off)}$			22.5		
Turn-Off Fall Time	t_f			48		

Curve Characteristics

Fig.1- Typical Output Characteristics

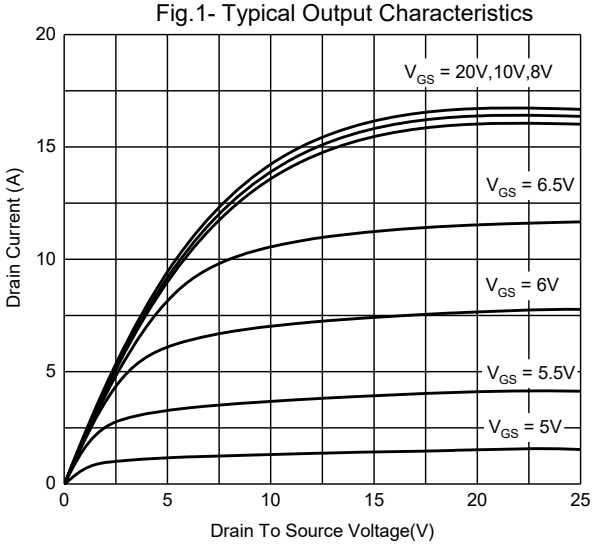


Fig.2- Transfer Characteristics

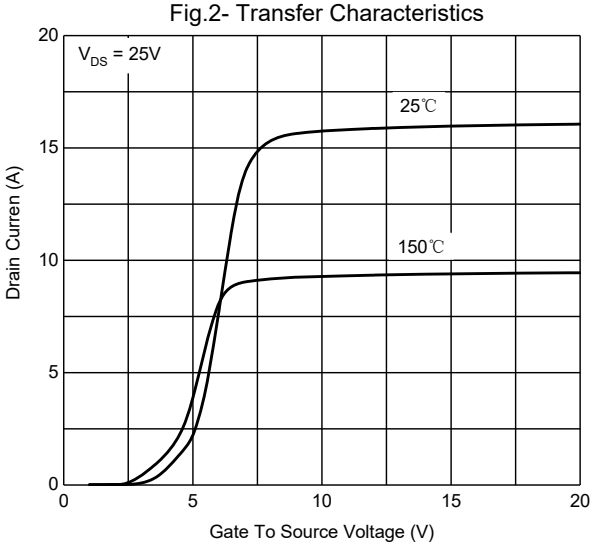


Fig.3- $R_{DS(ON)}$ —V_{GS}

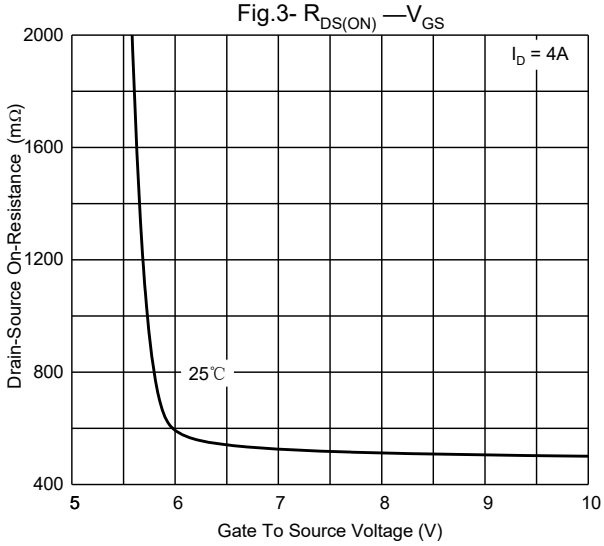


Fig.4- $R_{DS(ON)}$ —I_D

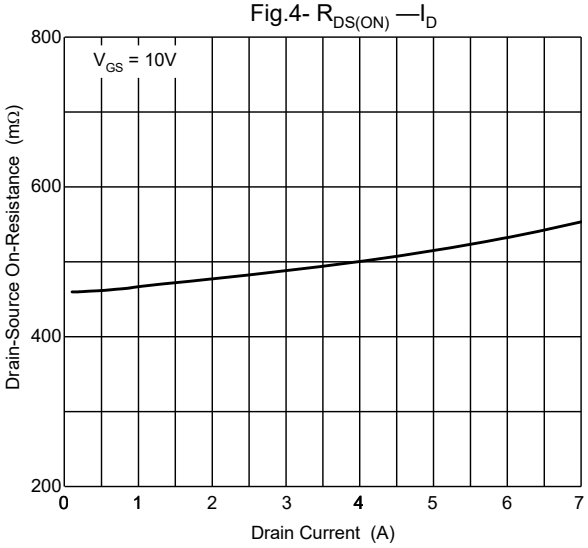


Fig.5- Capacitance Characteristics

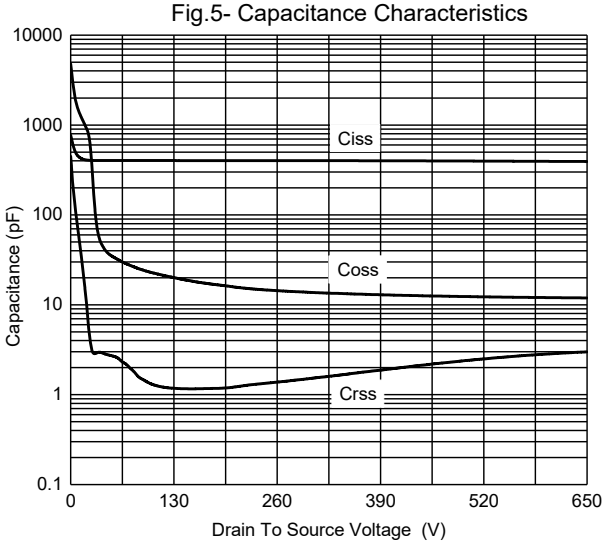
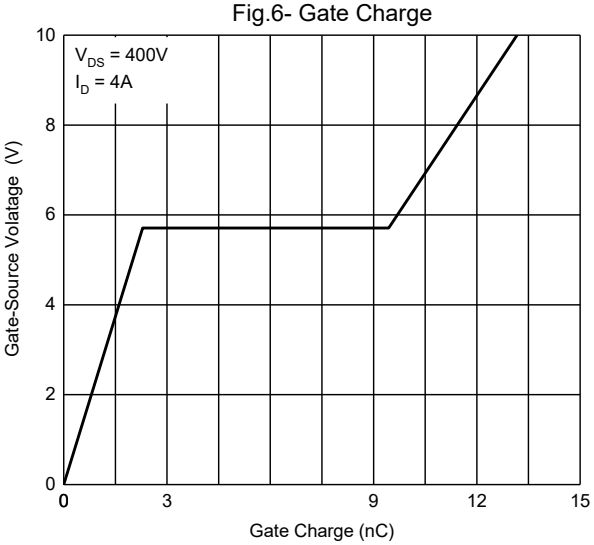


Fig.6- Gate Charge



Curve Characteristics

Fig. 7 - Normalized Threshold Voltage

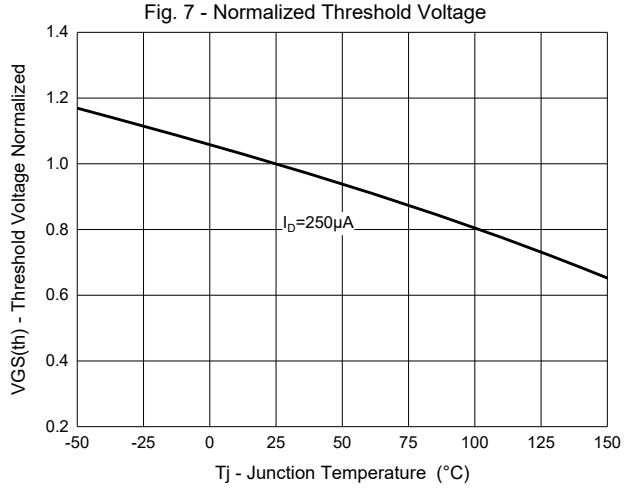


Fig. 8 - Normalized On Resistance Characteristics

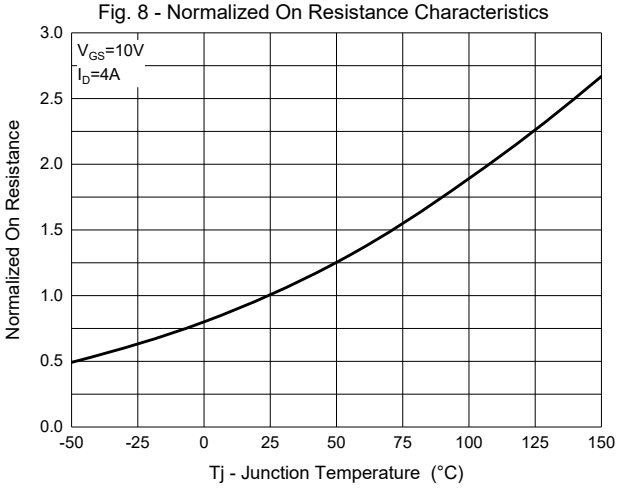


Fig. 9 - I_S-V_{SD}

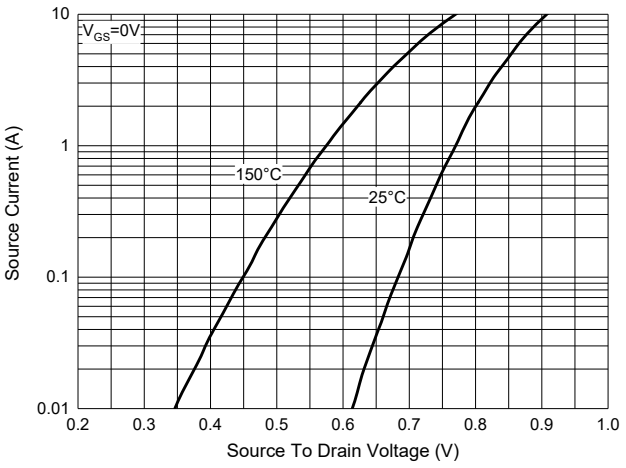


Fig. 10 - Drain Current

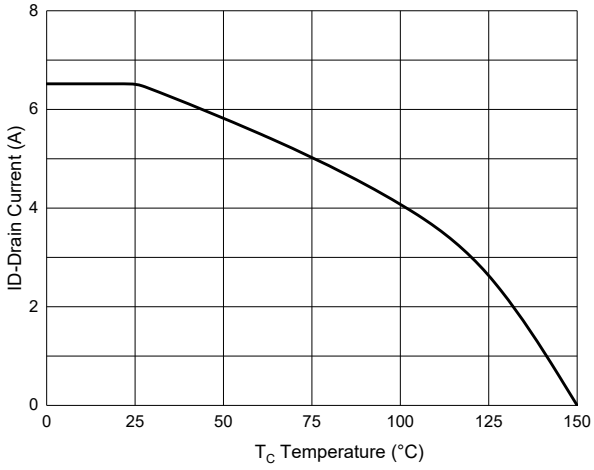
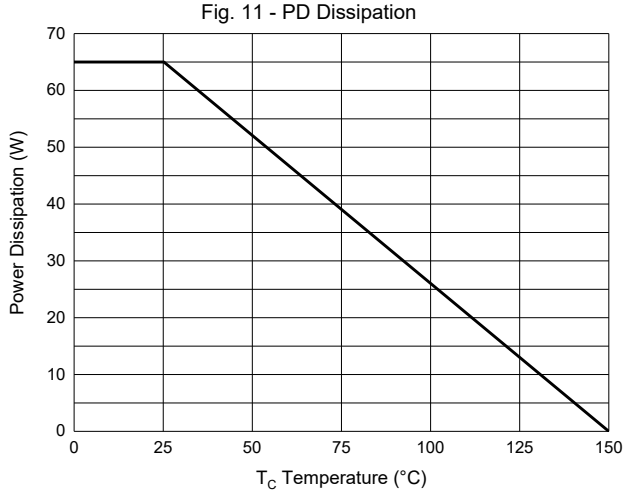


Fig. 11 - PD Dissipation



Curve Characteristics

Fig. 12 - Safe Operation Area

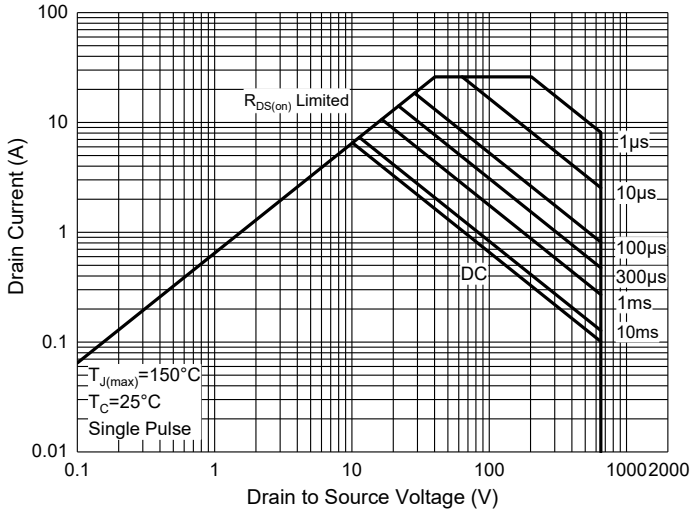
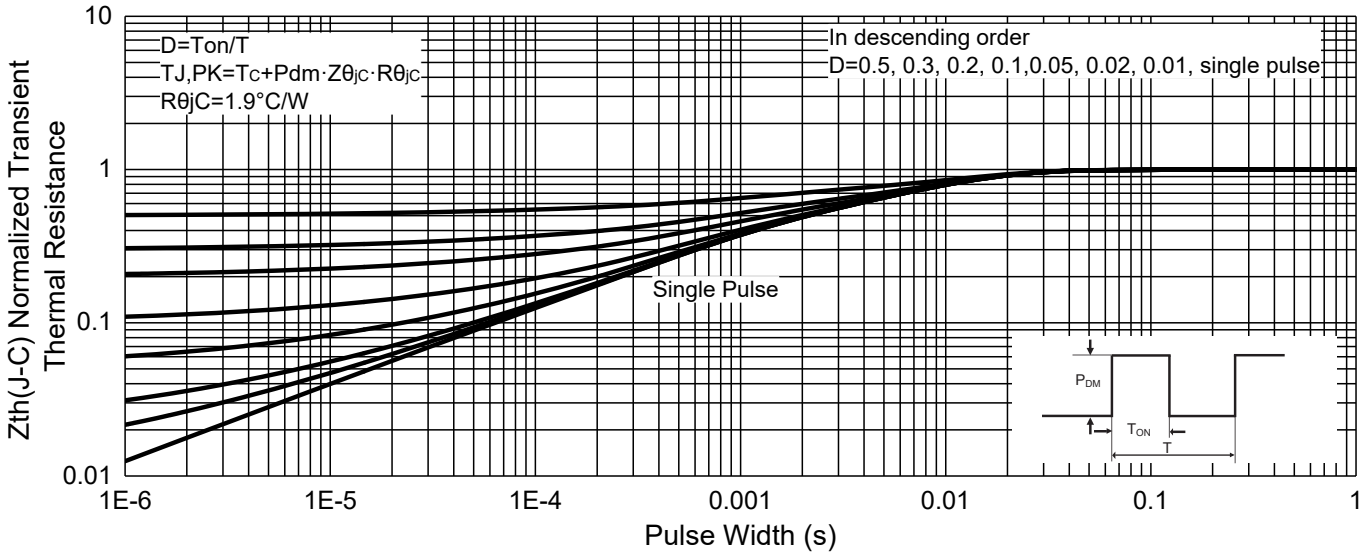


Fig. 13 - Normalized Transient Thermal Impedance



Ordering Information

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