

## Features

- Fast Switching
- Improved dv/dt Capability
- Split Gate Trench Mosfet Technology
- Excellent Package for Good Heat Dissipation
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device (Note 1)
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

## Maximum Ratings

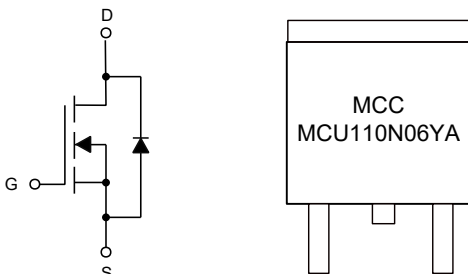
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 1.4°C/W Junction to Case

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	60	V
Gate-Source Voltage	$V_{GS}$	±20	V
Continuous Drain Current	$I_D$	$T_C=25^\circ\text{C}$	110
		$T_C=100^\circ\text{C}$	70
Pulsed Drain Current (Note 2)	$I_{DM}$	450	A
Single Pulse Avalanche Energy (Note 3)	$E_{AS}$	722	mJ
Total Power Dissipation	$P_D$	89	W

### Note:

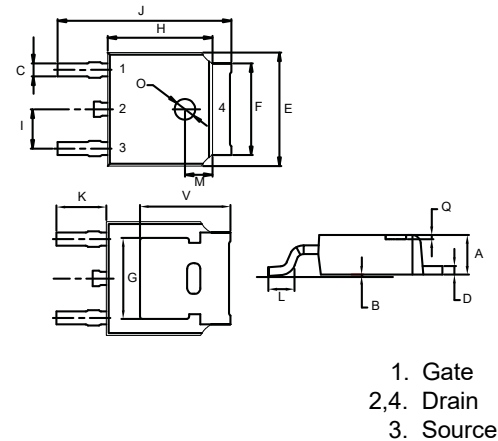
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. Pulse Width Limited by Maximum Junction Temperature.
3. EAS Condition:  $T_J=25^\circ\text{C}$ ,  $V_{DD}=30\text{V}$ ,  $V_G=10\text{V}$ ,  $R_g=25\Omega$ ,  $L=4\text{mH}$ ,  $I_{AS}=19\text{A}$ .

## Internal Structure and Marking Code



# N-CHANNEL MOSFET

## DPAK(TO-252)



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	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	0.047	0.069	1.20	1.75	
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
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	60			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=60V, V_{GS}=0V$			1	$\mu A$
		$V_{DS}=60V, V_{GS}=0V, T_j=150^\circ C$			100	
Gate-Threshold Voltage <sup>(Note 4)</sup>	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.2	1.7	2.5	V
Drain-Source On-Resistance <sup>(Note 4)</sup>	$R_{DS(on)}$	$V_{GS}=10V, I_D=55A$		3.2	4.4	m $\Omega$
		$V_{GS}=4.5V, I_D=20A$		3.7	5	
Body Diode Voltage	$V_{SD}$	$I_S=55A, V_{GS}=0V$		0.9	1.2	V
Gate resistance	$R_G$	f=1MHz, Open drain		2.3		$\Omega$
<b>Dynamic Characteristics<sup>(Note 5)</sup></b>						
Input Capacitance	$C_{iss}$	$V_{DS}=30V, V_{GS}=0V, f=1MHz$		5450		pF
Output Capacitance	$C_{oss}$			1050		
Reverse Transfer Capacitance	$C_{rss}$			45		
Total Gate Charge	$Q_g$	$V_{DS}=30V, V_{GS}=10V, I_D=55A$		90		nC
Gate-Source Charge	$Q_{gs}$			17		
Gate-Drain Charge	$Q_{gd}$			13		
Reverse Recovery Charge	$Q_{rr}$	$I_F=55A, di/dt=100A/\mu s$		75		ns
Reverse Recovery Time	$t_{rr}$			70		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=30V, I_D=55A, V_{GS}=10V, R_G=2.2\Omega$		23		ns
Turn-On Rise Time	$t_r$			7.5		
Turn-Off Delay Time	$t_{d(off)}$			80		
Turn-Off Fall Time	$t_f$			25		

Note 4. Pulse Test : Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 1.5\%$ .

5. Guaranteed by Design, Not Subject to Production Testing.

## Curve Characteristics

Fig. 1 - Typical Output Characteristics

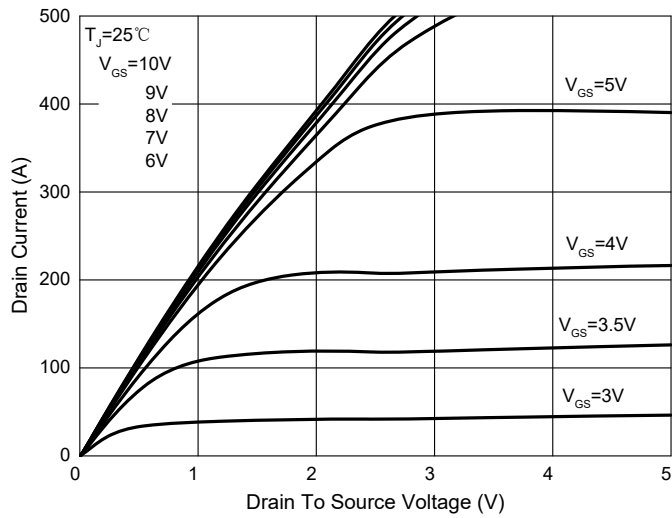


Fig. 2 - Transfer characteristics

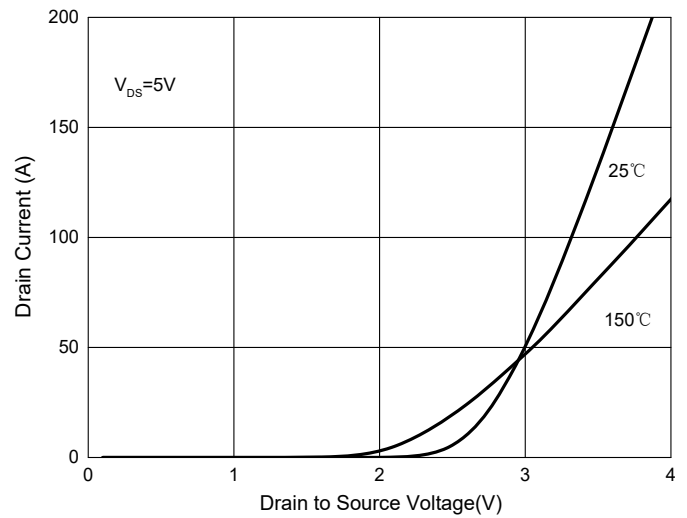


Fig. 3 -  $R_{DS(ON)} - V_{GS}$

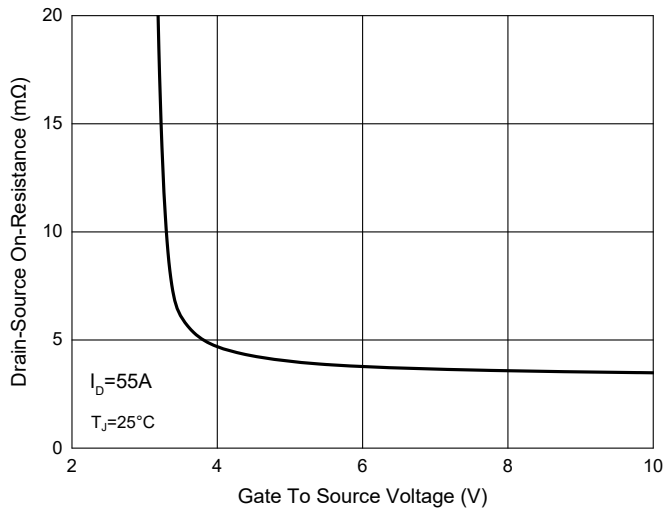


Fig. 4 -  $I_S - V_{SD}$

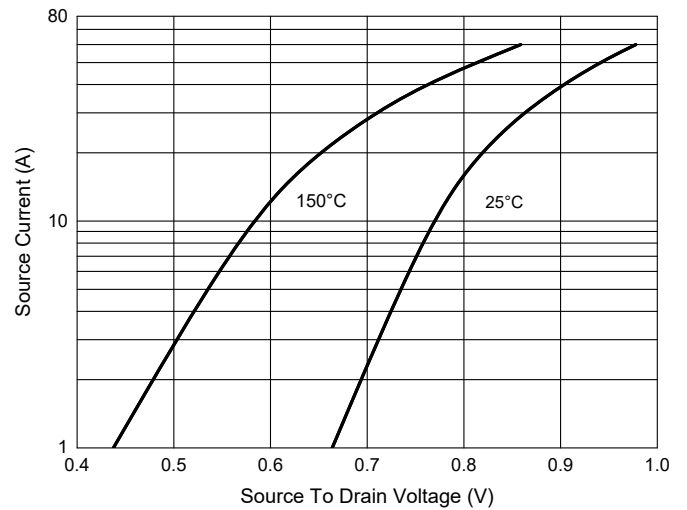


Fig. 5 -  $R_{DS(ON)} - I_D$

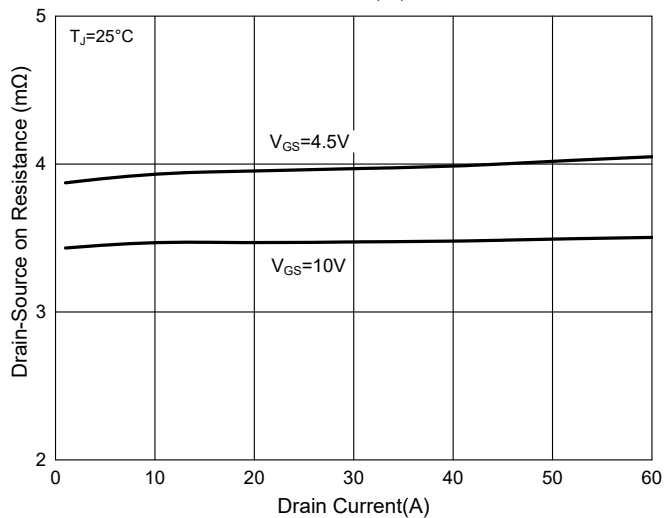
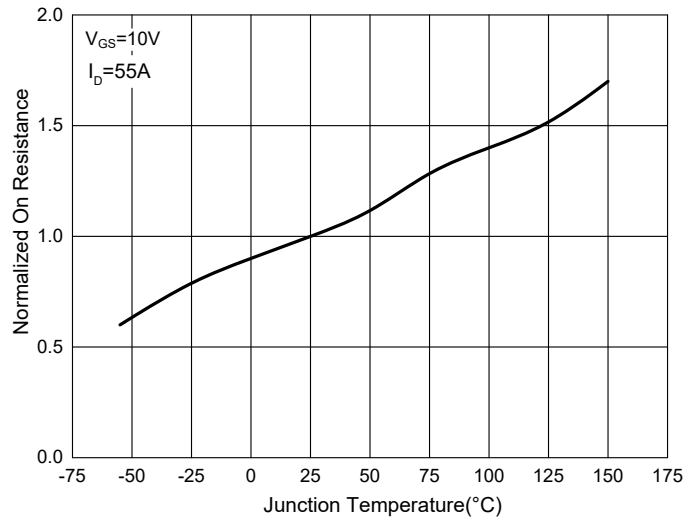


Fig. 6 - Normalized On Resistance Characteristics



Curve Characteristics

Fig. 7 - Capacitance Characteristics

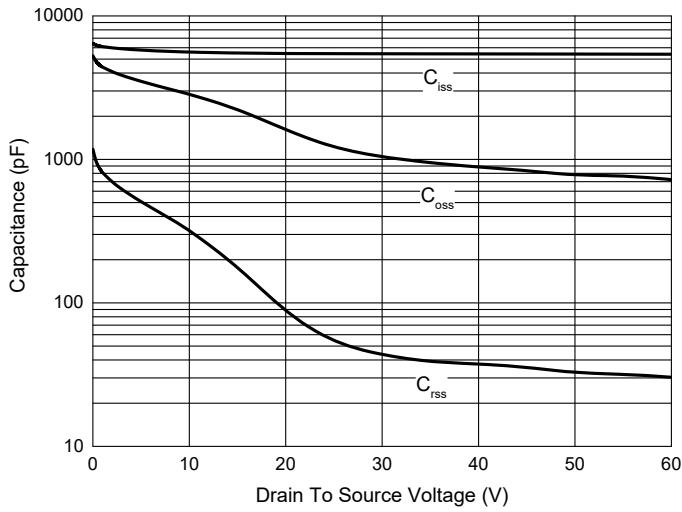


Fig. 8 - Gate Charge

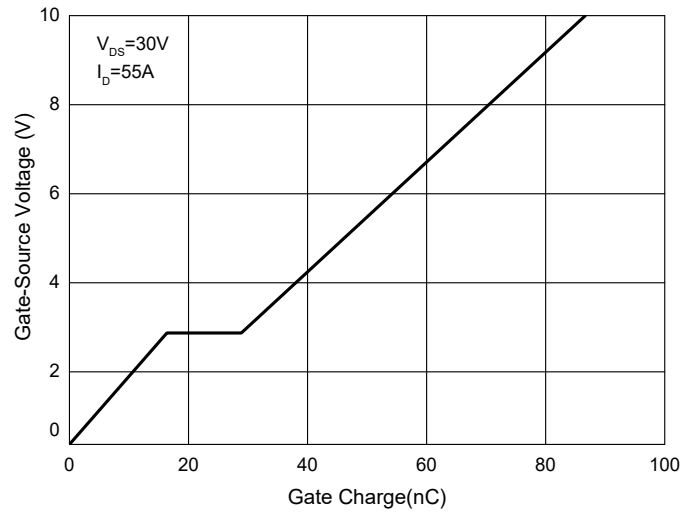


Fig. 9 - Power Derating Curve

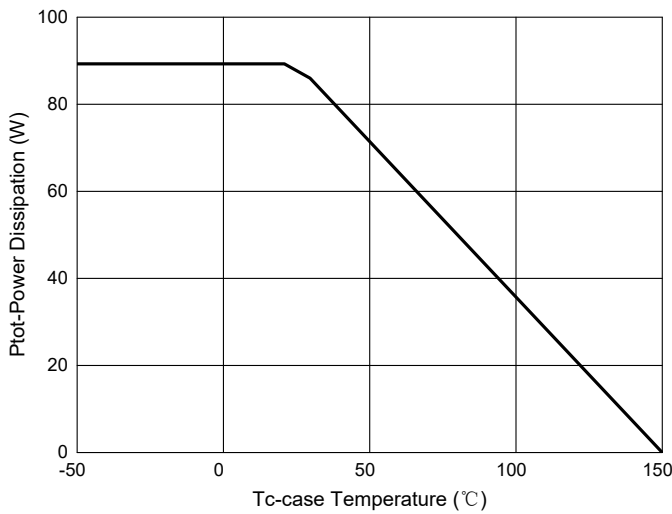


Fig. 10 - Safe Operation Area

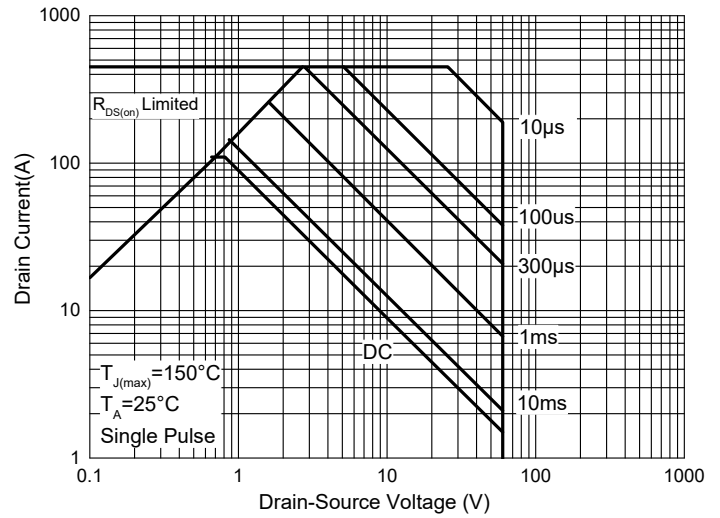
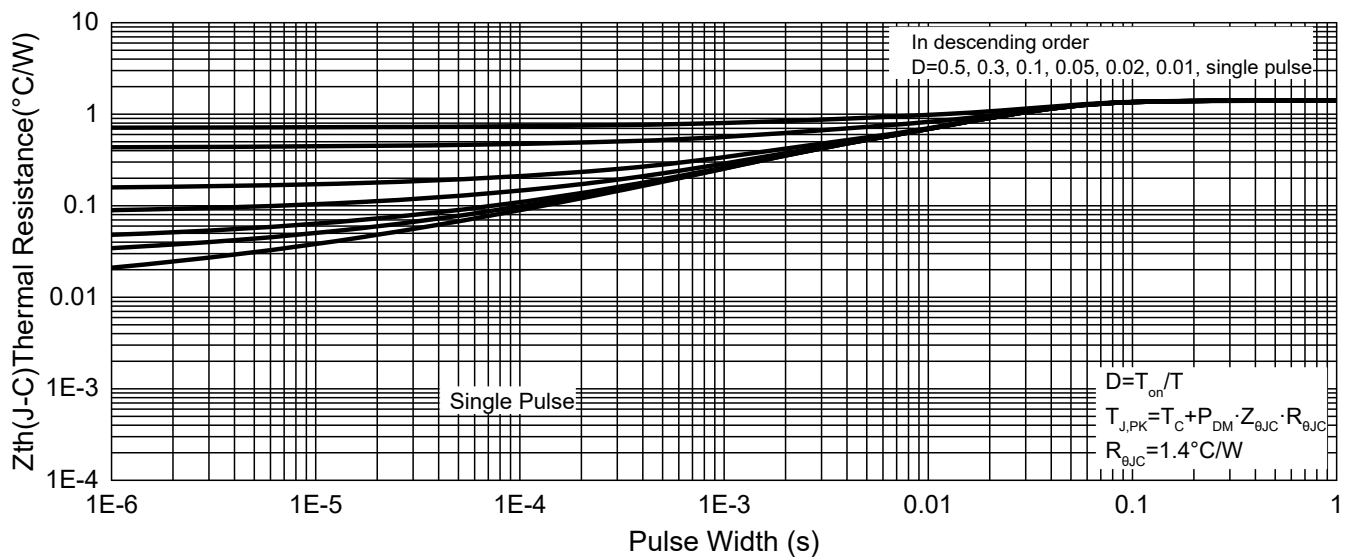


Fig. 11 - Maximum Transient Thermal Impedance



## Ordering Information

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

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