

## Features

- Fast Switching
- Improved dv/dt Capability
- Excellent Package for Good Heat Dissipation
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- 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: 1.5°C/W Junction to Case

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V <sub>DS</sub>	200	V
Gate-Source Voltage		V <sub>GS</sub>	±30	V
Continuous Drain Current	T <sub>C</sub> =25°C	I <sub>D</sub>	9	A
	T <sub>C</sub> =100°C		5.83	A
Pulsed Drain Current <sup>(Note 1)</sup>		I <sub>DM</sub>	36	A
Single Pulse Avalanche Energy <sup>(Note 2)</sup>		E <sub>AS</sub>	320	mJ
Peak Diode Recovery Energy <sup>(Note 3)</sup>		dV/dt	5	V/ns
Total Power Dissipation		P <sub>D</sub>	83	W

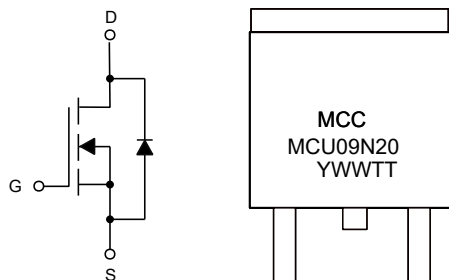
Note:

1. Pulse Width Limited by Maximum Junction Temperature.

2.  $L=10\text{mH}$ ,  $I_{AS}=8\text{A}$ ,  $V_{DD}=50\text{V}$ ,  $R_G=25\Omega$ , Starting  $T_J=25^\circ\text{C}$

3.  $I_{SD}\leq 9\text{A}$ ,  $di/dt\leq 200\text{A}/\mu\text{s}$ ,  $V_{DD}\leq BV_{DSS}$ , Starting  $T_J=25^\circ\text{C}$ .

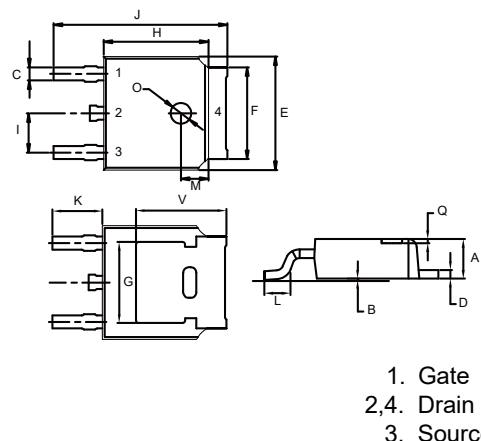
## Internal Structure and Marking Code



YWWTT: 5 codes in total  
Y is the year  
WW is the cycle  
TT is the line type

## N-CHANNEL 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	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	200			V
Breakdown Voltage Temperature Coefficient	$\Delta V_{(BR)DSS} / \Delta T_J$	Reference to 25°C, $I_D=250\mu A$		0.25		V/°C
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 30V$			±100	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=200V, V_{GS}=0V$			1	μA
		$V_{DS}=160V, V_{GS}=0V, T_C=125^\circ C$			10	
Gate-Threshold Voltage <sup>(Note 4)</sup>	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1	1.9	3	V
Drain-Source On-Resistance <sup>(Note 4)</sup>	$R_{DS(on)}$	$V_{GS}=10V, I_D=4.5A$		0.21	0.25	Ω
Forward Tranconductance <sup>(Note 4)</sup>	$g_{FS}$	$V_{DS}=30V, I_D=4.5A$		9.2		S
Dynamic Characteristics <sup>(Note 5)</sup>						
Input Capacitance	$C_{iss}$	$V_{DS}=25V, V_{GS}=0V, f=1MHz$		509		pF
Output Capacitance	$C_{oss}$			51.5		
Reverse Transfer Capacitance	$C_{rss}$			3.2		
Total Gate Charge	$Q_g$	$V_{DD}=160V, V_{GS}=10V, I_D=9A$		11.8		nC
Gate-Source Charge	$Q_{gs}$			2.36		
Gate-Drain Charge	$Q_{gd}$			3.98		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=100V, I_D=9A, R_G=10\Omega, V_{GS}=10V$		10.33		ns
Turn-On Rise Time	$t_r$			10.7		
Turn-Off Delay Time	$t_{d(off)}$			29.1		
Turn-Off Fall Time	$t_f$			11.1		
Drain-Source Body Diode Characteristics						
Continuous Body Diode Current	$I_S$	$T_C=25^\circ C$			9	A
Pulsed Diode Forward Current	$I_{SM}$				36	
Body Diode Voltage	$V_{SD}$	$I_S=9A, V_{GS}=0V$			1.4	V
Reverse Recovery Time	$t_{rr}$	$V_{GS}=0V, I_F=9A, di/dt=100A/\mu s$		201		ns
Reverse Recovery Charge	$Q_{rr}$			663		nC

Note 4. Pulse Test : Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .

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

## Curve Characteristics

Fig. 1 - Output Characteristics

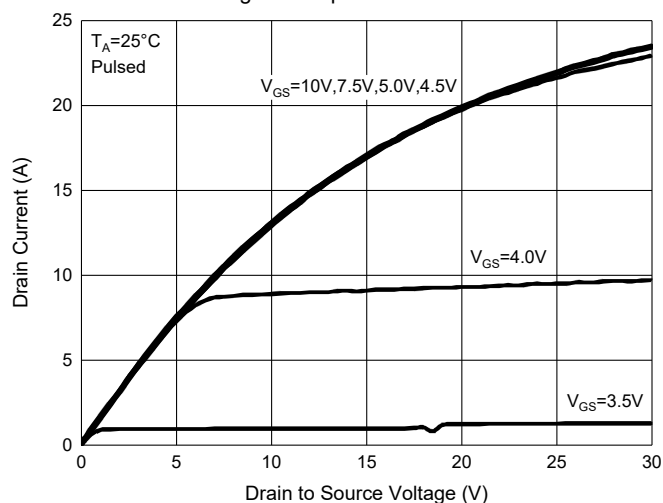


Fig. 2 - Transfer Characteristics

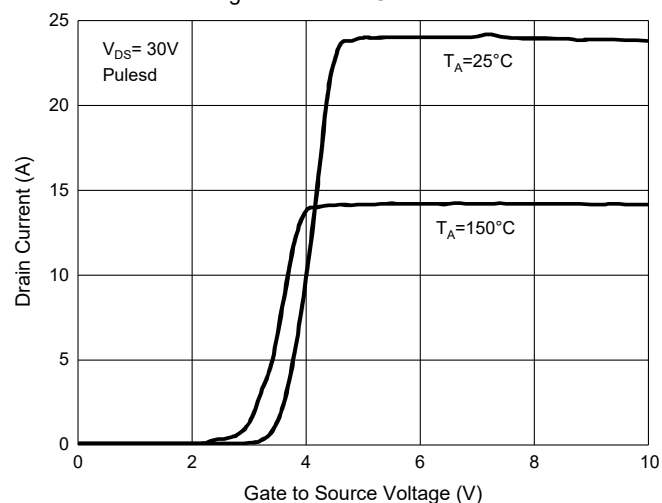


Fig. 3 -  $R_{DS(ON)} - I_D$

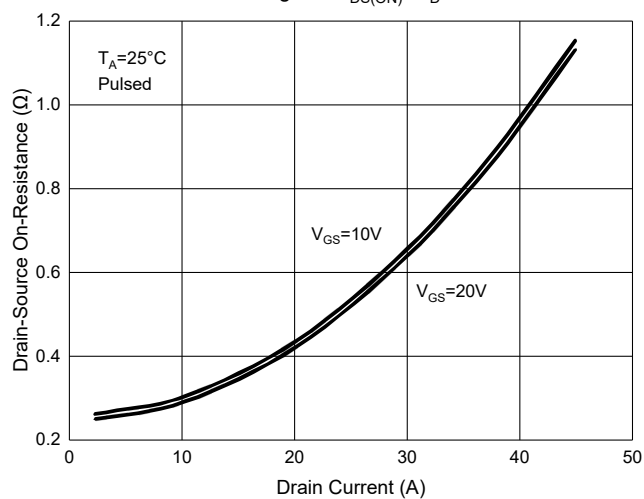


Fig. 4 -  $I_S - V_{SD}$

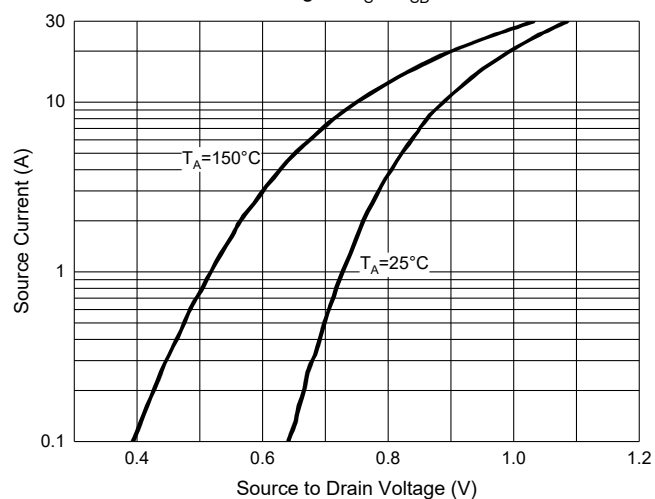


Fig. 5 - Capacitance Characteristics

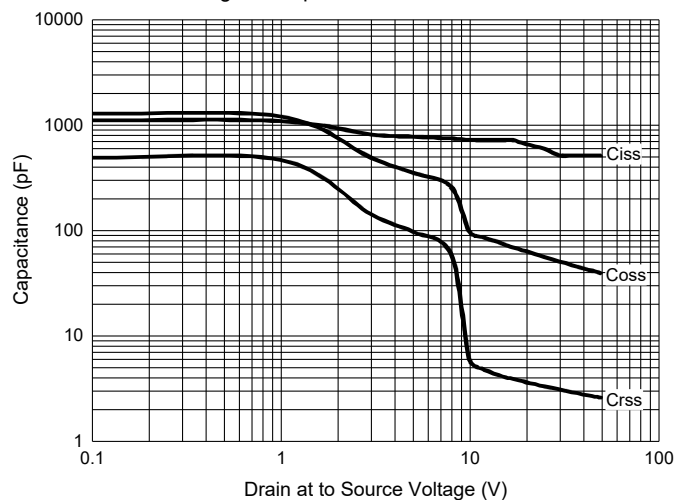
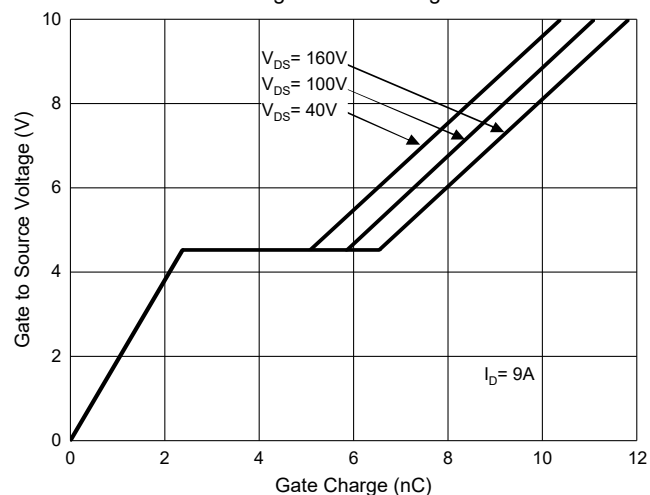


Fig. 6 - Gate Charge



## Ordering Information

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

Note : Adding "-HF" Suffix for Halogen Free, eg. Part Number-TP-HF

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