

## Features

- Fast Switching
- Improved dv/dt Capability
- 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)

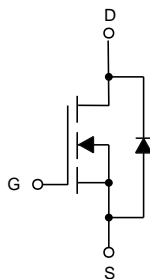
## Maximum Ratings

- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 60°C/W Junction to Ambient
- Thermal Resistance: 2.8°C/W Junction to Case

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	400	V
Gate-Source Voltage	$V_{GS}$	±30	V
Continuous Drain Current	$I_D$	6	A
Pulsed Drain Current <sup>(Note 1)</sup>	$I_{DM}$	24	A
Total Power Dissipation ( $T_C=25^\circ\text{C}$ )	$P_D$	45	W
Single Pulsed Avalanche Energy <sup>(Note2)</sup>	$E_{AS}$	115	mJ
Repetitive Avalanche Energy <sup>(Note1)</sup>	$E_{AR}$	14	mJ

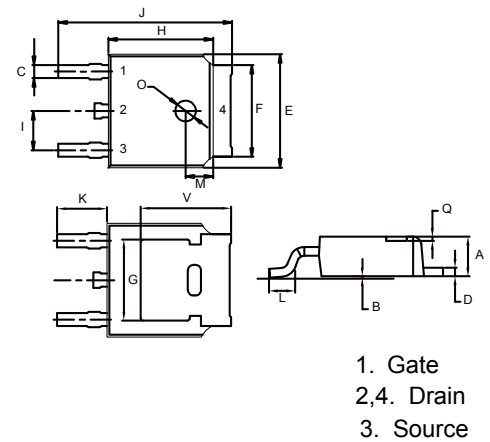
Note 1.Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.  
2.L=10.0mH,  $V_{DD}=50\text{V}$ ,  $R_G=25\Omega$ , Starting  $T_J=25^\circ\text{C}$ .

## Internal Structure



# 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	0.055	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
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	400			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 30V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=400V, V_{GS}=0V$			1	$\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	3		4	V
Drain-Source On-Resistance <sup>(Note 3)</sup>	$R_{DS(on)}$	$V_{GS}=10V, I_D=3A$		0.86	1	$\Omega$
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=25V, V_{GS}=0V, f=1MHz$		462		pF
Output Capacitance	$C_{oss}$			54.2		
Reverse Transfer Capacitance	$C_{rss}$			8.8		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=200V, I_D=3A, R_{GEN}=25\Omega$		10		ns
Turn-On Rise Time	$t_r$			25		
Turn-Off Delay Time	$t_{d(off)}$			40		
Turn-Off Fall Time	$t_f$			52		
Total Gate Charge	$Q_g$	$V_{DS}=320V, V_{GS}=10V, I_D=3A$		13.5	17.5	nC
Gate-Source Charge	$Q_{gs}$			2		
Gate-Drain Charge	$Q_{gd}$			6		
<b>Body Diode Characteristics</b>						
Diode Forward Current	$I_S$	$T_C=25^\circ C$			6	A
Pulsed Source Current	$I_{SP}$				24	
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=3A$			1.4	V
Reverse Recovery Time	$t_{rr}$	$I_S=3A, di/dt=100A/\mu s$		220		ns
Reverse Recovery Charge	$Q_{rr}$				3	$\mu C$

 Note 3. Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 1\%$ .

**Curve Characteristics**

Fig. 1 - Typical Output Characteristics

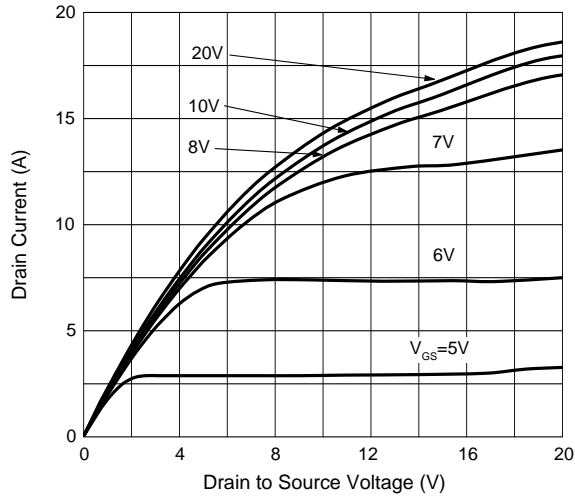


Fig. 2 - Transfer Characteristics

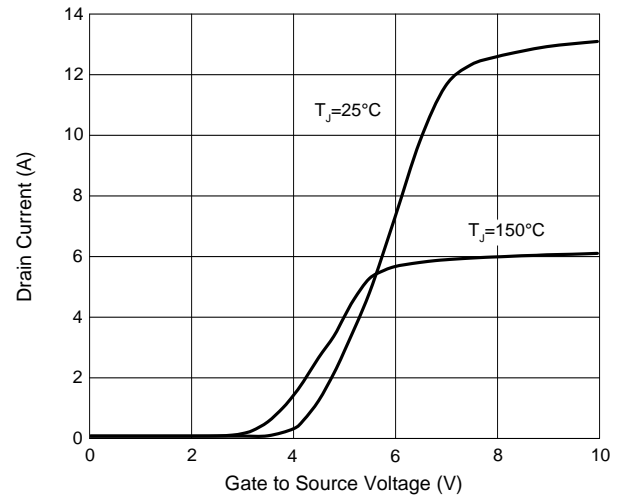


Fig. 3 - Capacitance Characteristics

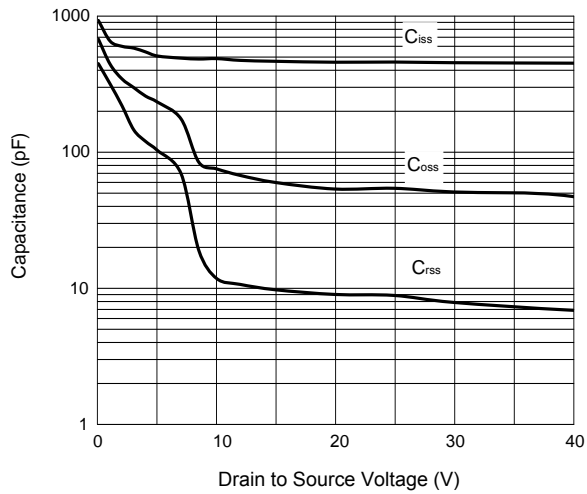


Fig. 4 - Normalized On-Resistance

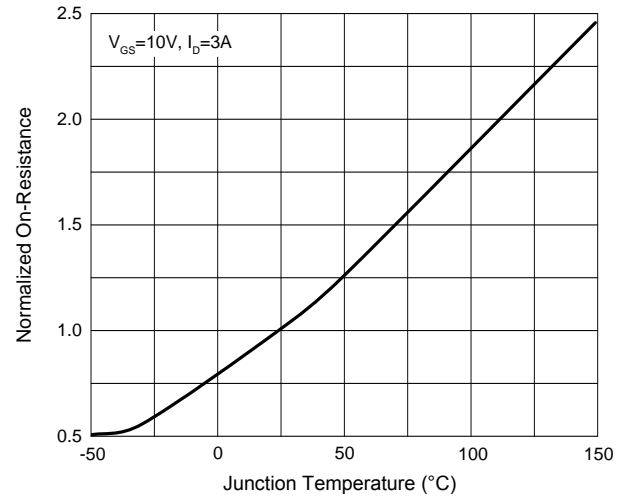


Fig. 5 -  $I_S - V_{SD}$

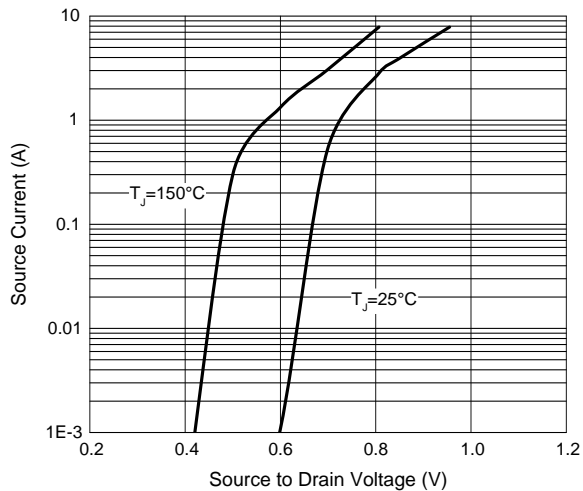
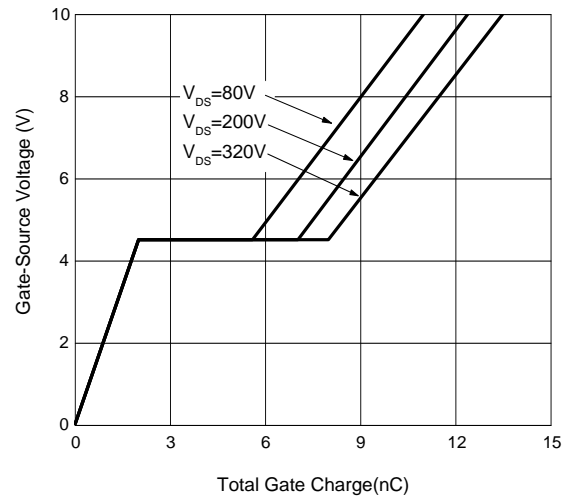


Fig. 6 - Total Gate Charge Characteristics



## 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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