

## Features

- Advanced Trench Process Technology
- High Density Cell Design for Ultra Low On-Resistance
- Reliable and Rugged
- 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)

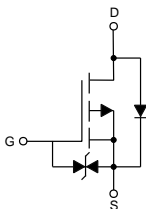
## Maximum Ratings

- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 1.79°C/W Junction to Case <sup>(Note 1)</sup>

Parameter	Symbol	Rating	Unit	
Drain-Source Voltage	$V_{DS}$	-100	V	
Gate-Source Voltage	$V_{GS}$	±20	V	
Continuous Drain Current	$I_D$	$T_C=25^\circ\text{C}$	-20	A
		$T_C=100^\circ\text{C}$	-12	A
Pulsed Drain Current	$I_{DM}$	-72	A	
Single Pulsed Avalanche Energy <sup>(Note 2)</sup>	$E_{AS}$	225	mJ	
Total Power Dissipation	$P_D$	70	W	

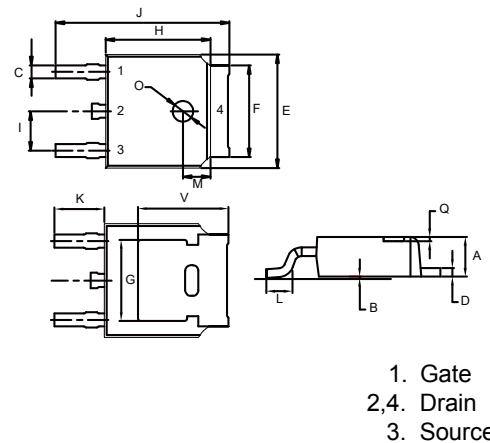
Note: 1. Surface Mounted on FR4 Board,  $t \leq 10$  sec.  
2.  $L=0.5\text{mH}$ ,  $V_{DD}=-50\text{V}$ ,  $V_G=-10\text{V}$ ,  $R_G=25\Omega$ , Starting  $T_J=25^\circ\text{C}$ .

## Internal Structure



# P-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	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-100			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 20$	$\mu A$
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-100V, V_{GS}=0V$			-1	$\mu A$
Gate-Threshold Voltage <sup>(Note 3)</sup>	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1	-1.9	-3	V
Drain-Source On-Resistance <sup>(Note 3)</sup>	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-16A$	85	100	116	m $\Omega$
Forward Transconductance <sup>(Note 3)</sup>	$g_{FS}$	$V_{DS}=-50V, I_D=-10A$	5			S
<b>Dynamic Characteristics<sup>(Note 4)</sup></b>						
Input Capacitance	$C_{iss}$	$V_{DS}=-25V, V_{GS}=0V, f=1MHz$		2100		pF
Output Capacitance	$C_{oss}$			590		
Reverse Transfer Capacitance	$C_{rss}$			140		
Total Gate Charge	$Q_g$	$V_{DS}=-80V, V_{GS}=-10V, I_D=-16A$		61		nC
Gate-Source Charge	$Q_{gs}$			14		
Gate-Drain Charge	$Q_{gd}$			29		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=-50V, I_D=-16A$ $V_{GS}=-10V, R_{GEN}=9.1\Omega$		16		ns
Turn-On Rise Time	$t_r$			73		
Turn-Off Delay Time	$t_{d(off)}$			34		
Turn-Off Fall Time	$t_f$			57		
<b>Drain-Source Body Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$	$T_C=25^\circ C$			-18	A
Body Diode Voltage	$V_{SD}$	$I_S=-10A, V_{GS}=0V$			-1.2	V
Reverse Recovery Time	$t_{rr}$	$I_F=-16A, di/dt=100A/\mu s$		88.3		ns
Reverse Recovery Charge	$Q_{rr}$				65.9	
Forward Turn-on Time	$t_{on}$	Intrinsic Turn-On Time is Negligible(Turn-On is Dominated by $L_S+L_D$ )				

Note 3. Pulse Test : Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .

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

**Curve Characteristics**

Fig. 1 - Typical Output Characteristics

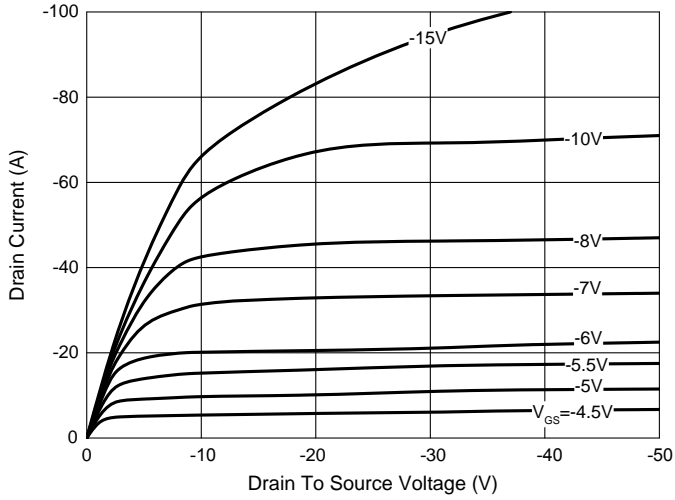


Fig. 2 -  $R_{DS(ON)}$ —Temperature

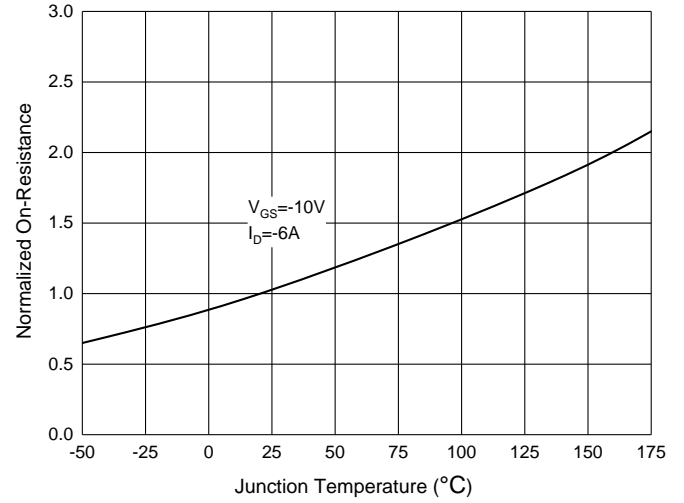


Fig. 3 -  $R_{DS(ON)}$ — $I_D$

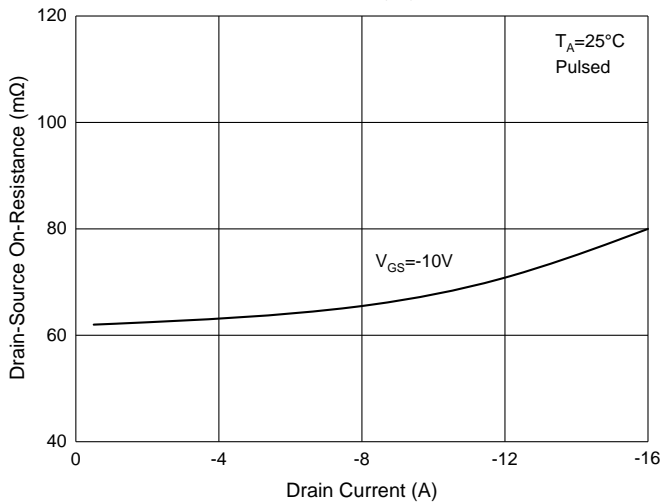


Fig. 4 - Total Gate Charge Characteristics

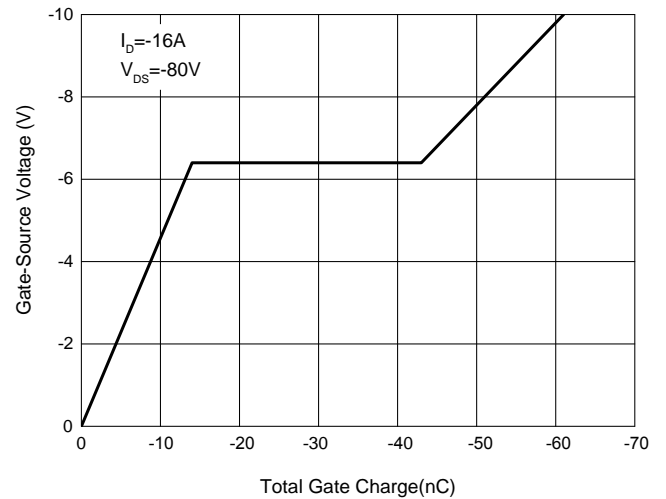
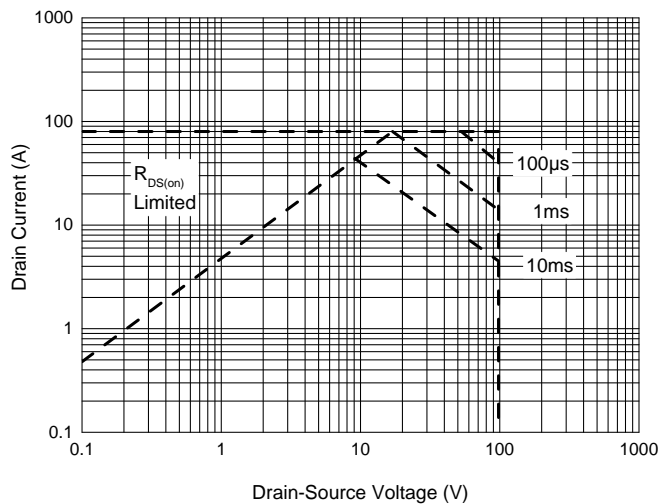


Fig. 5 - Safe Operation Area



## 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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