

## Features

- Trench Power LV MOSFET Technology
- Excellent Package for Heat Dissipation
- High Density Cell Design for Low  $R_{DS(on)}$
- 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

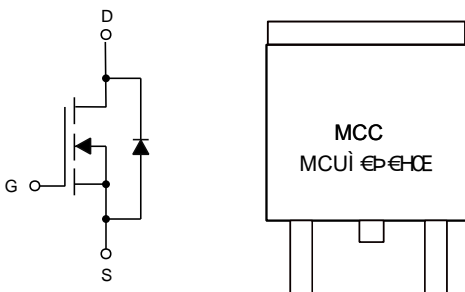
- Operating Junction Temperature Range : -55°C to +175°C
- Storage Temperature Range: -55°C to +175°C
- Thermal Resistance: 3.3°C/W Junction to Case<sup>(Note 1)</sup>

Parameter	Symbol	Rating	Unit	
Drain-Source Voltage	$V_{DS}$	30	V	
Gate-Source Voltage	$V_{GS}$	±20	V	
Continuous Drain Current	$I_D$	$T_C=25^\circ\text{C}$	80	A
		$T_C=100^\circ\text{C}$	56	A
Pulsed Drain Current <sup>(Note 2)</sup>	$I_{DM}$	190	A	
Single Pulse Avalanche Energy <sup>(Note 3)</sup>	$E_{AS}$	230	mJ	
Total Power Dissipation	$P_D$	$T_C=25^\circ\text{C}$	45	W
		$T_C=100^\circ\text{C}$	22.5	W

### Note:

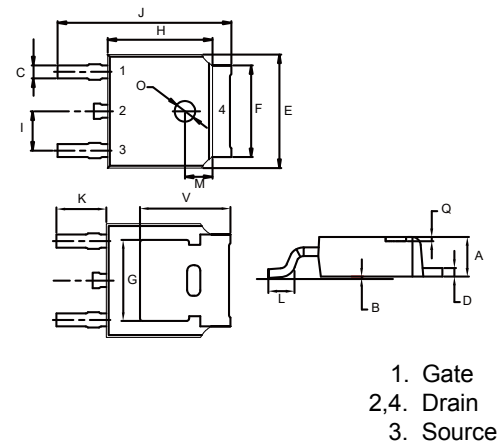
1.  $R_{\theta JA}$  is the Sum of the Junction-to-Case and Case-to-Ambient Thermal Resistance, Where the Case Thermal Reference is Defined as the Solder Mounting Surface of the Drain Pins.  $R_{\theta JC}$  is Guaranteed by Design, While  $R_{\theta JA}$  is Determined by the Board Design. The Maximum Rating Presented Here is Based on Mounting on a 1 in<sup>2</sup> Pad of 2oz Copper.
2. Pulse Test: Pulse Width ≤ 300µs, Duty Cycle ≤ 2%.
3.  $T_J=25^\circ\text{C}$ ,  $V_{DS}=30\text{V}$ ,  $V_{DD}=25\text{V}$ ,  $V_{GS}=10\text{V}$ ,  $L=1\text{mH}$ .

## 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	0.055	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	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	30			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=30V, V_{GS}=0V$			1	$\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1	1.5	2.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$		4.2	5.5	m $\Omega$
		$V_{GS}=4.5V, I_D=15A$		5.7	8	
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=20A$			1.2	V
Continuous Body Diode Current	$I_S$				80	A
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=15V, V_{GS}=0V, f=1MHz$		2150		pF
Output Capacitance	$C_{oss}$			435		
Reverse Transfer Capacitance	$C_{rss}$			252		
Total Gate Charge	$Q_g$	$V_{DS}=15V, V_{GS}=10V, I_D=20A$		52.8		nC
Gate-Source Charge	$Q_{gs}$			12.3		
Gate-Drain Charge	$Q_{gd}$			10.8		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V, V_{DD}=20V, I_D=2A, R_L=1\Omega$ $R_{GEN}=3\Omega$		9		ns
Turn-On Rise Time	$t_r$			15.5		
Turn-Off Delay Time	$t_{d(off)}$			29		
Turn-Off Fall Time	$t_f$			9		
Reverse Recovery Time	$t_{RR}$	$I_F=20A, di/dt=100A/\mu s$		27		ns
Reverse Recovery Charge	$Q_{RR}$			28		nC

**Curve Characteristics**

Fig. 1 - Output Characteristics

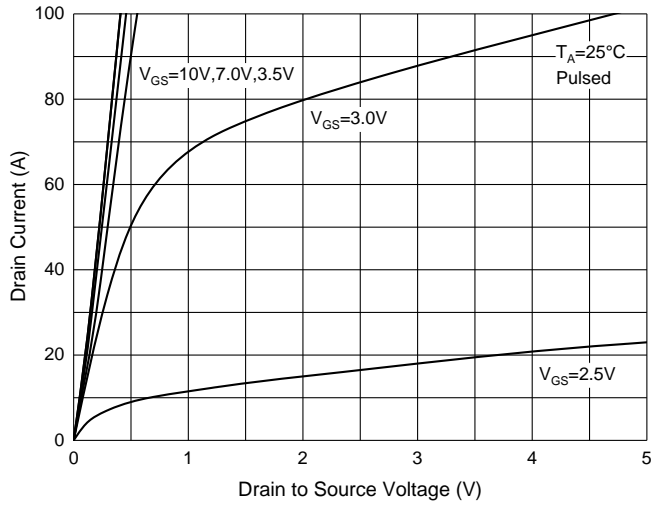


Fig. 2 - Transfer Characteristics

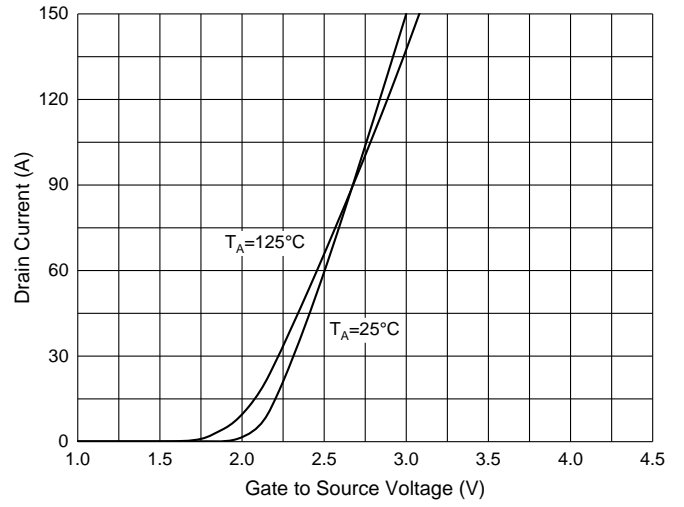


Fig. 3 - Capacitance Characteristics

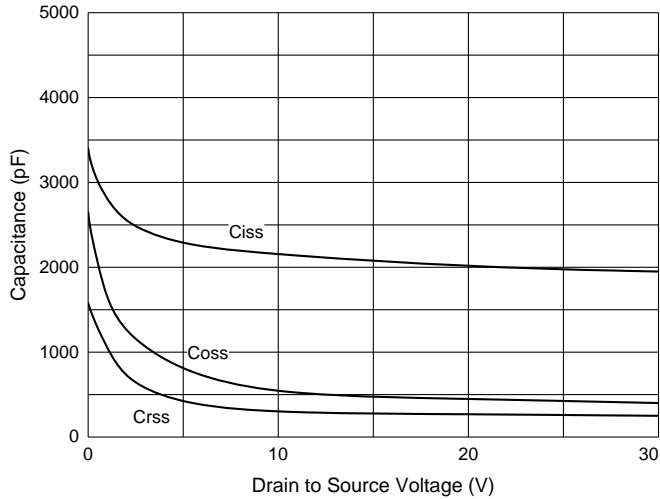


Fig. 4 - Gate Charge

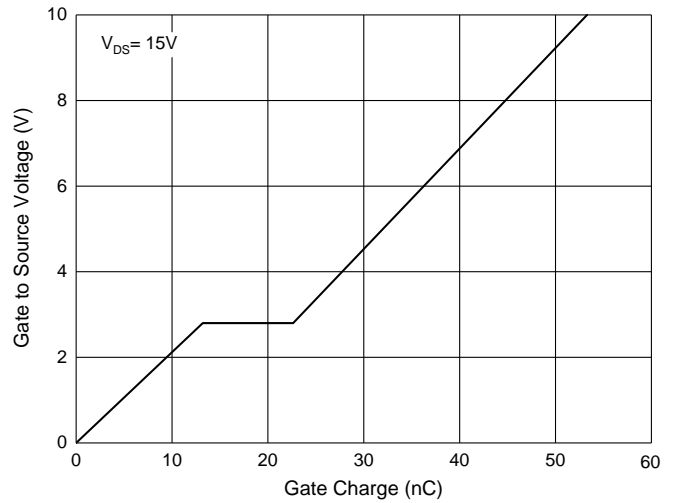


Fig. 5 -  $R_{DS(ON)} - I_D$

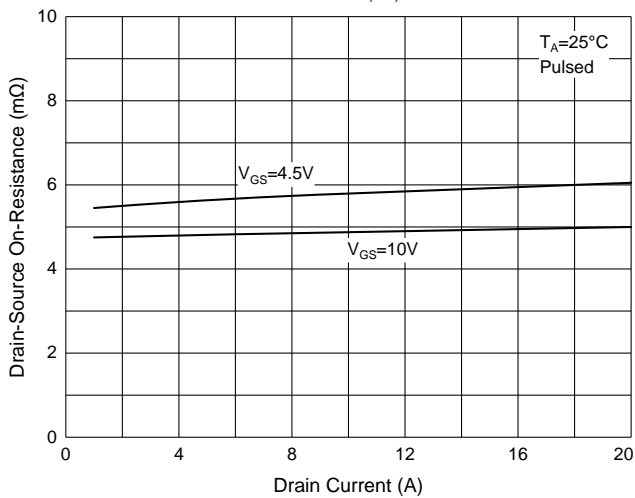
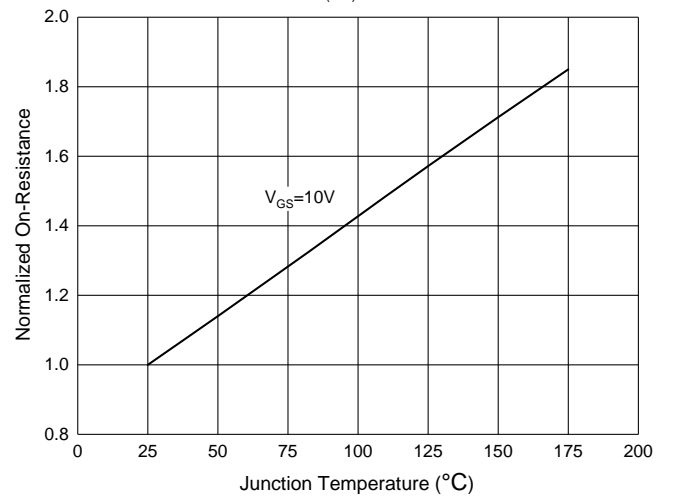


Fig. 6 -  $R_{DS(ON)} - \text{Temperature}$



## 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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