

**Features**

- Split Gate Trench 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**

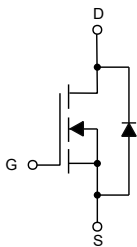
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 0.56°C/W Junction to Case

Parameter	Symbol	Rating	Unit	
Drain-Source Voltage	$V_{DS}$	100	V	
Gate-Source Voltage	$V_{GS}$	±20	V	
Continuous Drain Current	$I_D$	$T_C=25^\circ\text{C}$	160	A
		$T_C=100^\circ\text{C}$	101	A
Pulsed Drain Current <sup>(1)</sup>	$I_{DM}$	480	A	
Avalanche Energy <sup>(2)</sup>	$E_{AS}$	360	mJ	
Total Power Dissipation	$P_D$	223	W	

Note:

1. Pulse Test: Pulse Width ≤ 300µs, Duty Cycle ≤ 2%.
2.  $T_J=25^\circ\text{C}$ ,  $L=1.0\text{mH}$ ,  $I_{AS}=28.0\text{A}$ ,  $V_{DD}=50\text{V}$ .

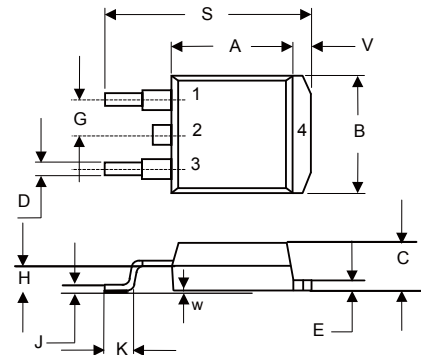
**Internal Structure**



1. Gate
- 2,4. Drain
3. Source

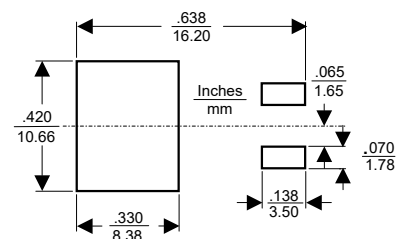
**N-CHANNEL  
MOSFET**

**D2-PAK**



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.331	0.370	8.40	9.40	
B	0.378	0.417	9.60	10.60	
C	0.165	0.189	4.20	4.80	
D	0.027	0.037	0.68	0.94	
E	0.045	0.055	1.14	1.40	
G	0.010		2.54		TYP.
H	0.096	0.134	2.43	3.40	
J	0.011	0.025	0.28	0.64	
K	0.071	0.131	1.80	3.32	
S	0.575	0.625	14.60	15.87	
V	0.042	0.058	1.07	1.47	
W	0.000	0.010	0.00	0.25	

**Suggested Solder Pad Layout**



**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	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=80V, V_{GS}=0V$			1	$\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1		3	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=30A$		3.4	4.0	m $\Omega$
		$V_{GS}=4.5V, I_D=15A$		4.5	5.8	m $\Omega$
<b>Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$				160	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=30A$			1.3	V
Reverse Recovery Time	$t_{rr}$	$I_S=30A, di/dt=100A/\mu s$		88		ns
Reverse Recovery Charge	$Q_{rr}$			161		nC
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=50V, V_{GS}=0V, f=1MHz$		4803		pF
Output Capacitance	$C_{oss}$			818		
Reverse Transfer Capacitance	$C_{rss}$			43		
Total Gate Charge	$Q_g$	$V_{DS}=50V, V_{GS}=10V, I_D=30A$		105		nC
Gate-Source Charge	$Q_{gs}$			17		
Gate-Drain Charge	$Q_{gd}$			28		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=50V, V_{GEN}=10V, R_G=4.5\Omega, R_L=1.66\Omega, I_{DS}=30A$		19		ns
Turn-On Rise Time	$t_r$			59		
Turn-Off Delay Time	$t_{d(off)}$			92		
Turn-Off Fall Time	$t_f$			121		

**Curve Characteristics**

Fig. 1 - Typical Output Characteristics

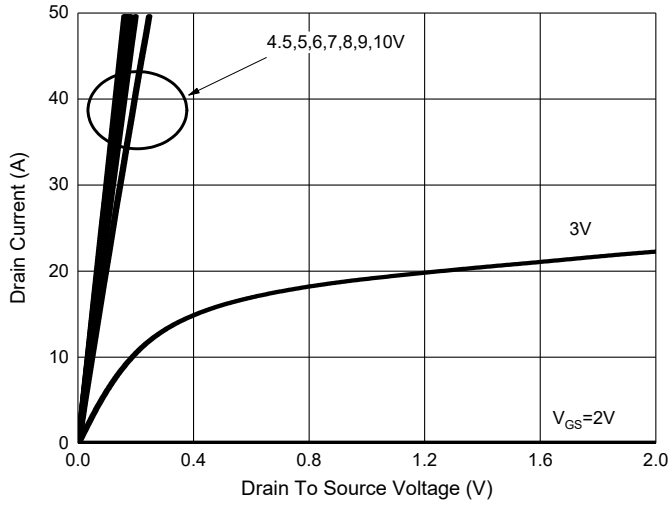


Fig. 2 -  $I_S - V_{SD}$

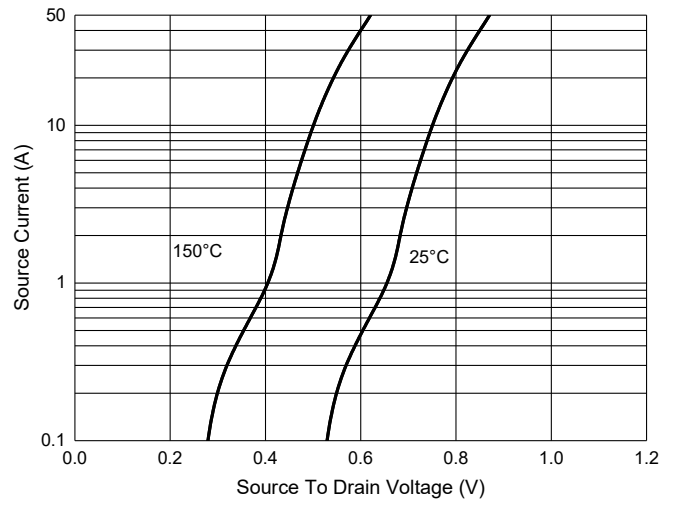


Fig. 3 -  $R_{DS(ON)} - I_D$

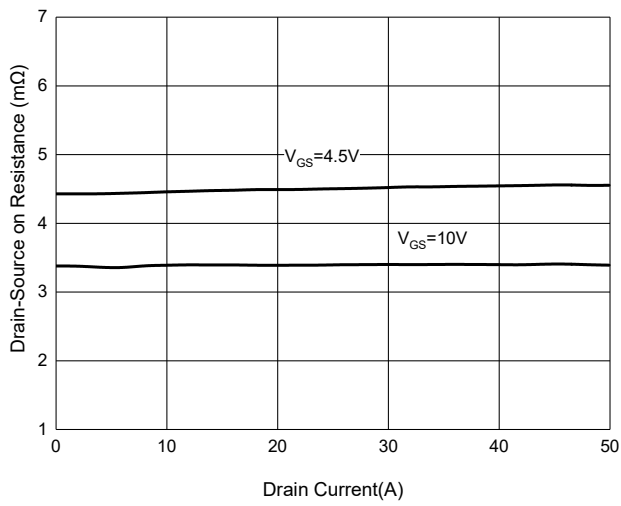


Fig. 4 - Normalized On Resistance Characteristics

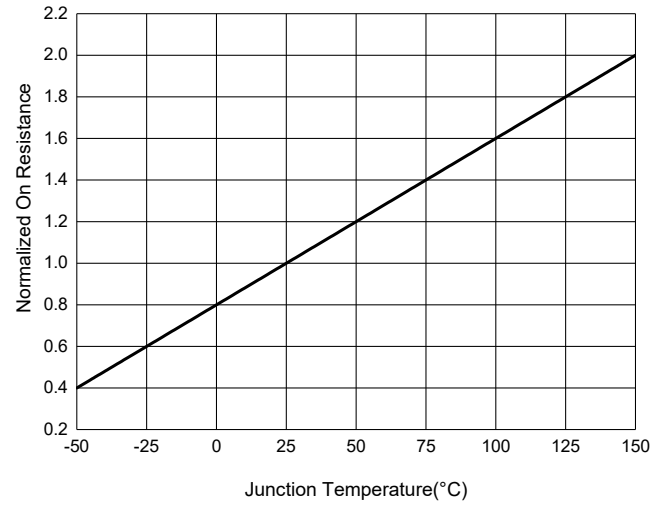


Fig. 5 - Capacitance Characteristics

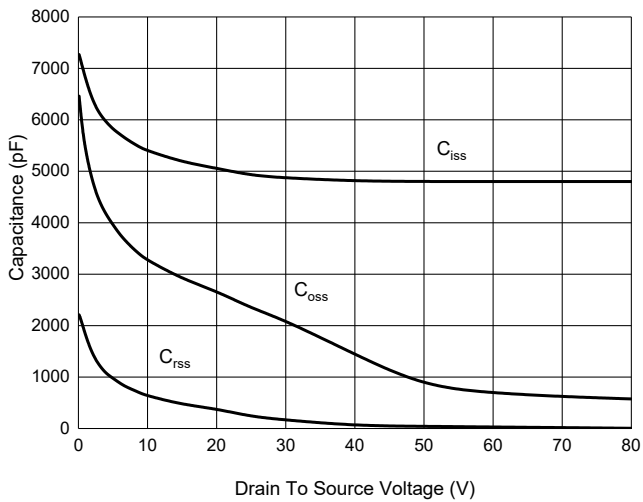
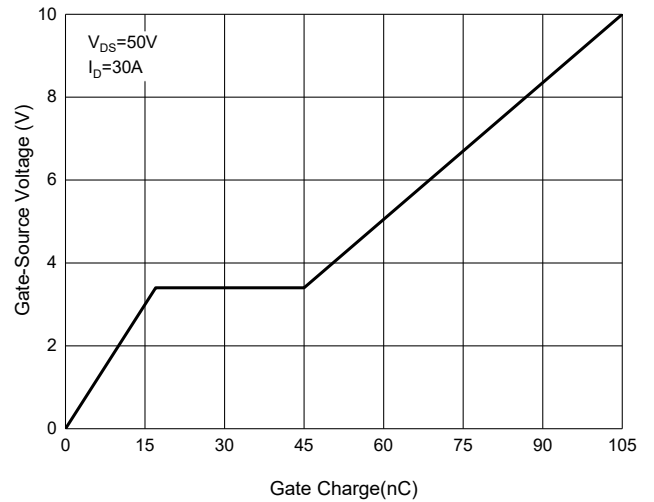
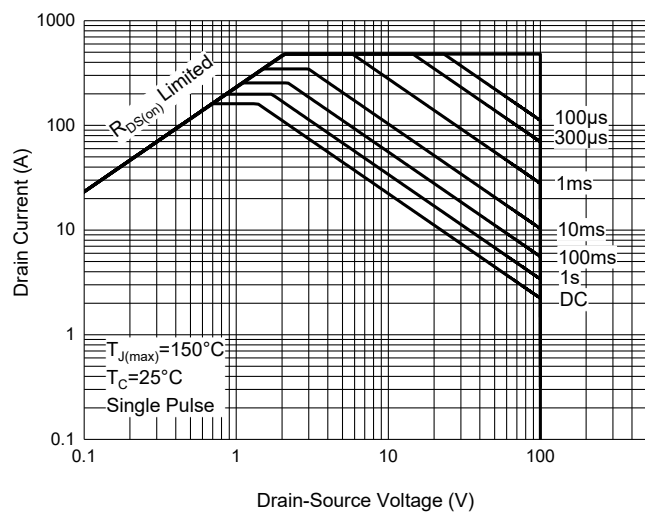


Fig. 6 - Gate Charge



## Curve Characteristics

Fig. 7 - Safe Operation Area



## Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 800pcs/Reel

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

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