

## Features

- Low  $R_{DS(on)}$  & FOM
- Extremely Low Switching Loss
- Excellent Stability and Uniformity
- Fast Switching and Soft Recovery
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1

## Maximum Ratings

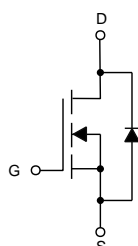
- Operating Junction Temperature Range:  $-55^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$
- Storage Temperature Range:  $-55^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$
- Thermal Resistance:  $62^{\circ}\text{C/W}$  Junction to Ambient<sup>(1)</sup>
- Thermal Resistance:  $0.65^{\circ}\text{C/W}$  Junction to Case

Parameter	Symbol	Value
Drain-Source Voltage	$V_{DS}$	100V
Gate-Source Voltage	$V_{GS}$	$\pm 20\text{V}$
Continuous Drain Current <sup>(2)</sup> , $T_C=25^{\circ}\text{C}$	$I_D$	130A
Pulsed Drain Current <sup>(3)</sup> , $T_C=25^{\circ}\text{C}$	$I_{D,pluse}$	390A
Power Dissipation <sup>(4)</sup> , $T_C=25^{\circ}\text{C}$	$P_D$	192W
Single Pulsed Avalanche Energy <sup>(5)</sup>	$E_{AS}$	500mJ

### Note:

1. The Value of  $R_{\theta JA}$  is Measured with the Device Mounted on 1 in<sup>2</sup> FR-4 Board with 2oz. Copper, In a Still Air Environment with  $T_A=25^{\circ}\text{C}$ .
2. Calculated Continuous Current Based on Maximum Allowable Junction Temperature.
3. Repetitive Rating: Pulse Width Limited By Max. Junction Temperature.
4.  $P_d$  is Based on Max. Junction Temperature, Using Junction-Case Thermal Resistance.
5.  $V_{DD}=50\text{V}$ ,  $R_G=25\Omega$ ,  $L=0.5\text{mH}$ , Starting  $T_J=25^{\circ}\text{C}$ .

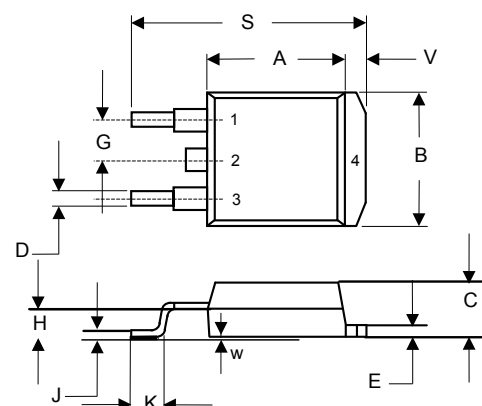
## Internal Structure



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

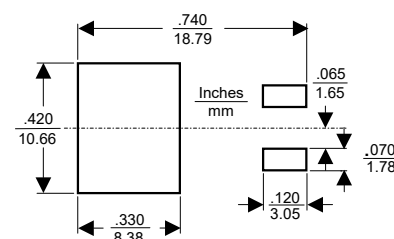
## N-Channel MOSFET

## D2-PAK



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.320	0.359	8.13	9.14	
B	0.380	0.411	9.65	10.45	
C	0.160	0.190	4.06	4.83	
D	0.020	0.035	0.51	0.89	
E	0.045	0.055	1.14	1.40	
G	0.083	0.105	2.10	2.67	
H	0.096	0.134	2.43	3.40	
J	0.014	0.021	0.35	0.53	
K	0.090	0.131	2.29	3.32	
S	0.575	0.625	14.22	16.22	
V	0.045	0.055	1.14	1.40	
W	0.000	0.006	0.00	0.15	

## Suggested Solder Pad Layout



Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	100			V
Gate-Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.2	2	4	V
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V			±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =100V, V <sub>GS</sub> =0V			1	μA
Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =60A		4.0	4.6	mΩ
Dynamic Characteristics						
Drain-Source On-Voltage	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =50V, f=1MHz		6124.6		pF
Output Capacitance	C <sub>oss</sub>			792.3		pF
Reverse Transfer Capacitance	C <sub>rss</sub>			15.1		pF
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =50V, R <sub>G</sub> =2.2Ω, I <sub>D</sub> =22 A		28.2		ns
Rise Time	t <sub>r</sub>			7.5		ns
Turn-Off Delay Time	t <sub>d(off)</sub>			81.9		ns
Fall Time	t <sub>f</sub>			20.1		ns
Gate Charge Characteristics						
Total Gate Charge	Q <sub>g</sub>	I <sub>D</sub> =22A, V <sub>DS</sub> =50V, V <sub>GS</sub> =10V		101.6		nC
Gate-Source Charge	Q <sub>gs</sub>			20.6		nC
Gate-Drain Charge	Q <sub>gd</sub>			28.7		nC
Gate Plateau Voltage	V <sub>plateau</sub>			4.2		V
Body Diode Characteristics						
Diode Forward Current	I <sub>S</sub>	V <sub>GS</sub> <V <sub>th</sub>			130	A
Pulsed Source Current	I <sub>SP</sub>				390	A
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =20A, V <sub>GS</sub> =0V			1.3	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>S</sub> =10A, di/dt=100A/μs		82.1		ns
Reverse Recovery Charge	Q <sub>rr</sub>			248.4		nC
Peak Reverse Recovery Current	I <sub>rrm</sub>			4.9		A

## Curve Characteristics

Fig. 1 - Typical Output Characteristics

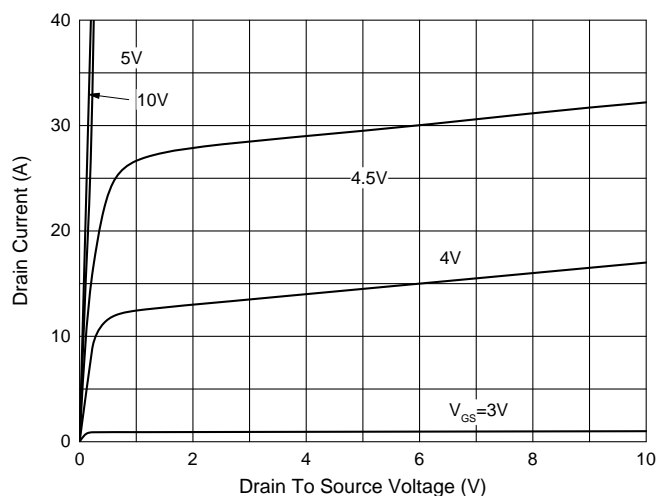


Fig. 2 - Transfer Characteristics

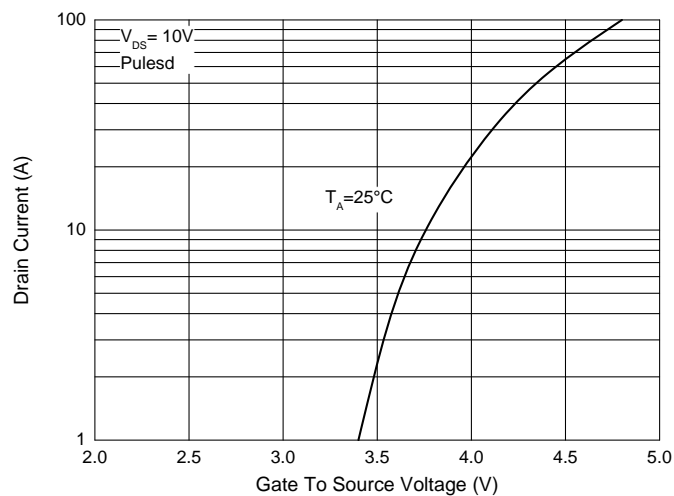


Fig. 3 - Capacitance Characteristics

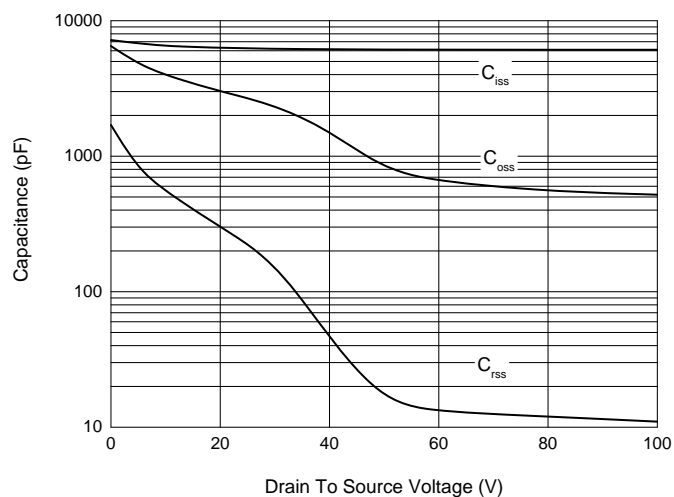


Fig. 4 - Total Gate Charge Characteristics

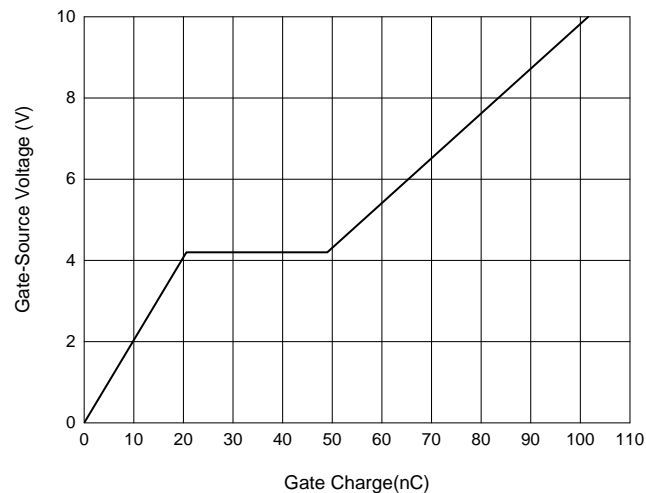


Fig. 5 -  $I_S - V_{SD}$

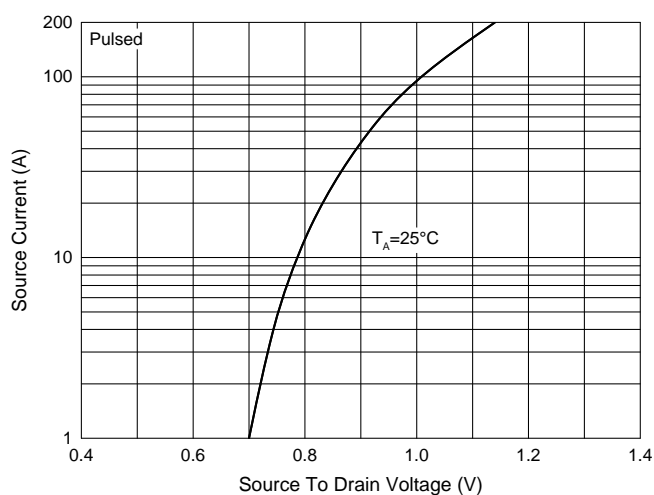
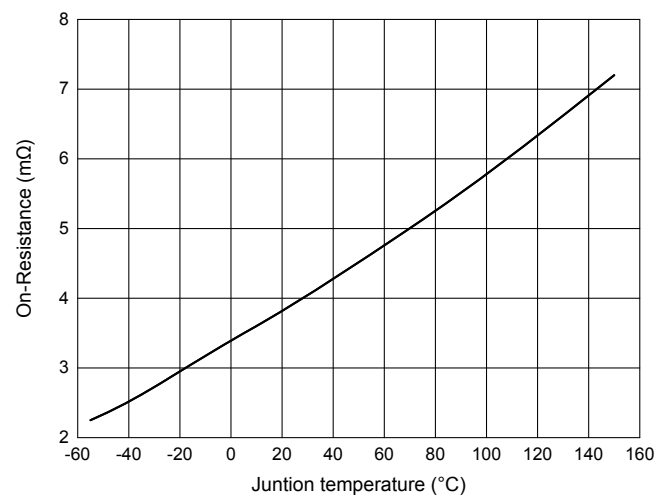


Fig. 6 - On-Resistance Characteristics



## Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 800pcs/Reel
Part Number-BP	Tube: 5Kpcs/Ctn

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

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