

Features

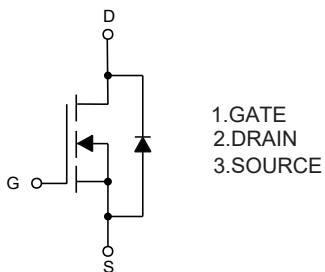
- High Current Rating
- Lower $R_{DS(ON)}$
- Lower Capacitance
- Lower Total Gate Charge
- Tighter V_{SD} Specifications
- Avalanche Energy Specified
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings

- Operating Junction Temperature Range: -55°C to $+150^{\circ}\text{C}$
- Storage Temperature Range: -55°C to $+150^{\circ}\text{C}$
- Thermal Resistance: 62.5°C/W Junction to Ambient

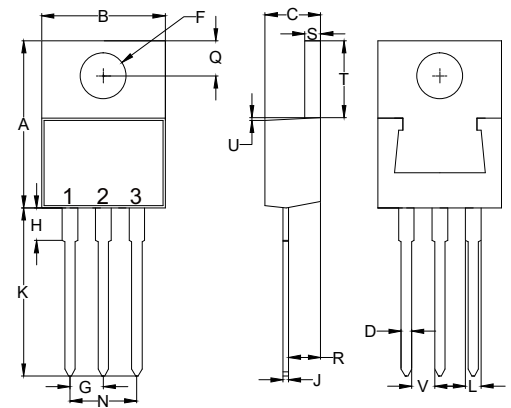
Parameter	Symbol	Rating	Unit
Drain -Source Voltage	V_{DS}	600	V
Gate -Source Voltage	V_{GS}	± 30	V
Drain Current-Continuous	I_D	4.0	A
Continuous Drain-Source Diode Forward Current	I_S	4.0	A
Single Pulsed Avalanche Energy ^(Note1)	E_{AS}	260	mJ

Internal Structure



**N-CHANNEL
MOSFET**

TO-220



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.560	0.625	14.22	15.88	
B	0.380	0.420	9.65	10.67	
C	0.140	0.190	3.56	4.82	
D	0.020	0.045	0.51	1.14	
F	0.139	0.161	3.53	4.09	Φ
G	0.090	0.110	2.29	2.79	
H	-----	0.250	-----	6.35	
J	0.012	0.025	0.30	0.64	
K	0.500	0.580	12.70	14.73	
L	0.045	0.060	1.14	1.52	
N	0.190	0.210	4.83	5.33	
Q	0.100	0.135	2.54	3.43	
R	0.080	0.115	2.04	2.92	
S	0.045	0.055	1.14	1.39	
T	0.230	0.270	5.84	6.86	
U	-----	0.050	-----	1.27	
V	0.045	-----	1.15	-----	

ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	600			V
Gate-Threshold Voltage ^(Note2)	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0		4.0	V
Gate-Body Leakage Current ^(Note2)	I_{GSS}	$V_{GS} = \pm 30V, V_{DS} = 0V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 600V, V_{GS} = 0V$			25	μA
Drain-Source On-Resistance ^(Note2)	$R_{DS(on)}$	$V_{GS}=10V, I_D=2A$		2	3	Ω
Drain- Source Diode Forward Voltage ^(Note2)	V_{SD}	$V_{GS} = 0V, I_S = 4A$			1.5	V
Forward Transconductance ^(Note2)	g_{fs}	$V_{DS}=50V, I_D=2A$	2.5			S
Dynamic Characteristics						
Input Capacitance ^(Note3)	C_{iss}	$V_{DS}=25V, V_{GS}=0V, f=1MHz$		540	760	pF
Output Capacitance ^(Note3)	C_{oss}			125	180	
Reverse Transfer Capacitance ^(Note3)	C_{rss}			8	20	
Switching Characteristics						
Total Gate Charge	Q_g	$V_{DS}=480V, V_{GS}=10V, I_D=4A$		5	10	nC
Gate-Source Charge	Q_{gs}			2.7		
Gate-Drain Charge	Q_{gd}			2		
Turn-on Delay Time ^(Note3)	$t_{d(on)}$	$V_{DD}=300V, V_{GS}=10V, R_G=9.1\Omega, I_D=4A$		12	20	ns
Turn-on Rise Time ^(Note3)	t_r			7	10	
Turn-off Delay Time ^(Note3)	$t_{d(off)}$			19	40	
Turn-off Fall Time ^(Note3)	t_f			10	20	

Note: 1. L=30mH, $I_L=4A, V_{DD}=100V, V_{GS}=10V, R_G=25\Omega$, Starting $T_J=25^\circ C$

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

3. These Parameters Have No Way to Verify

Curve Characteristics

Fig. 1 - Output Characteristics

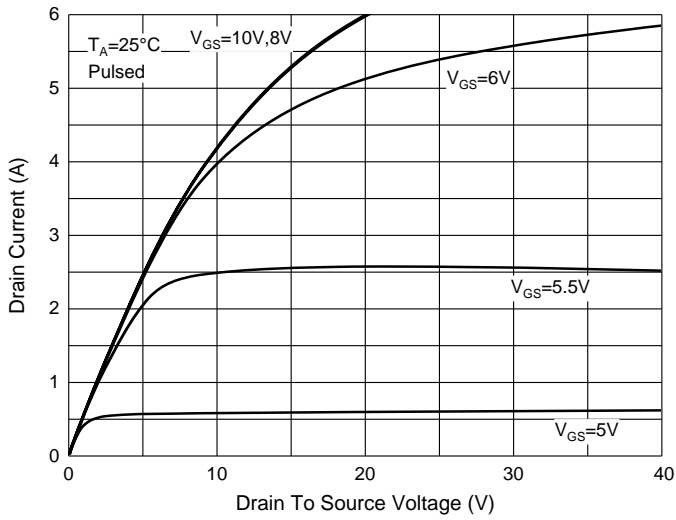


Fig. 2 - Transfer Characteristics

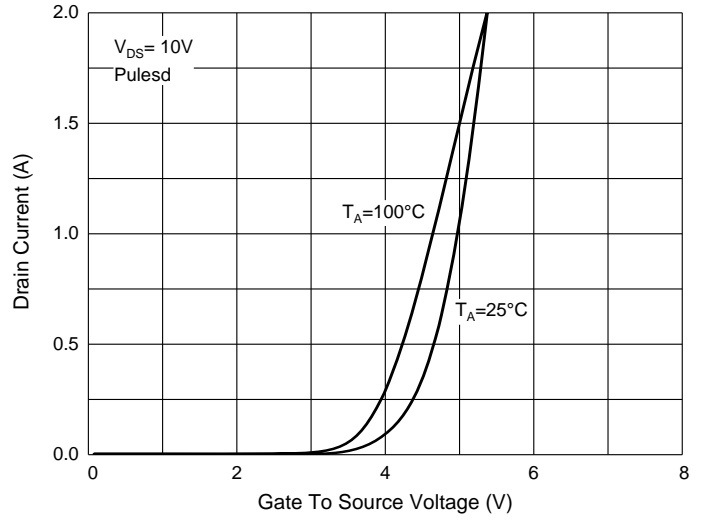


Fig. 3 - $R_{DS(ON)} - I_D$

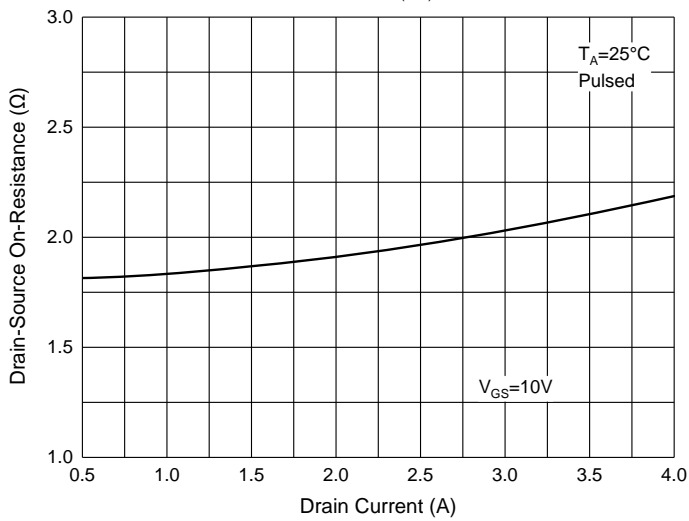


Fig. 4 - $R_{DS(ON)} - V_{GS}$

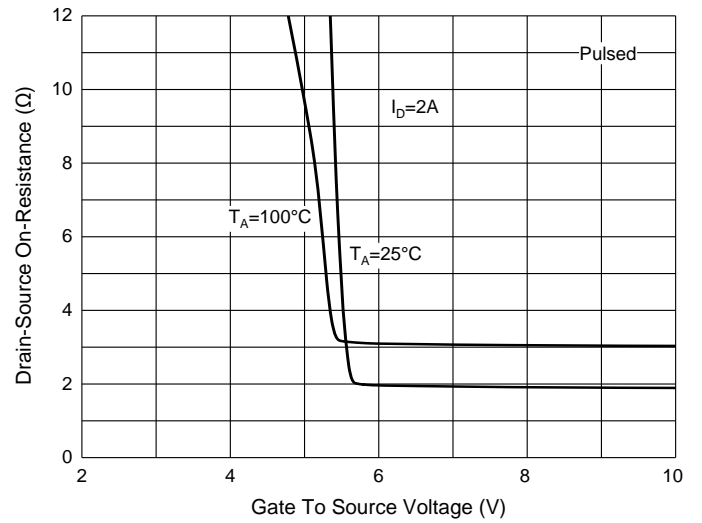


Fig. 5 - $I_S - V_{SD}$

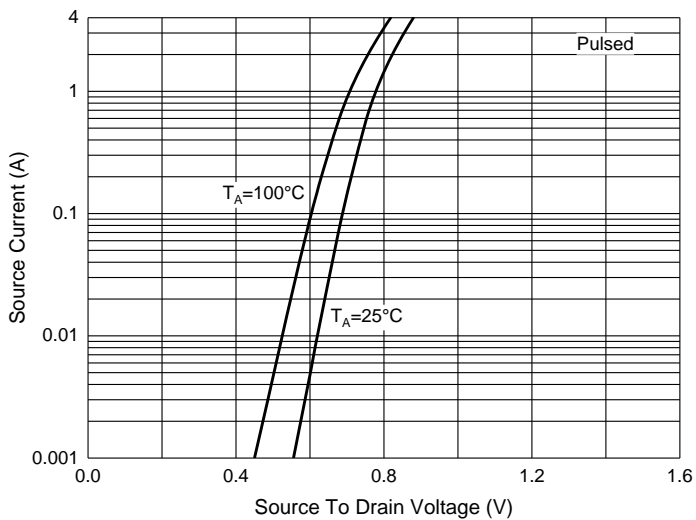
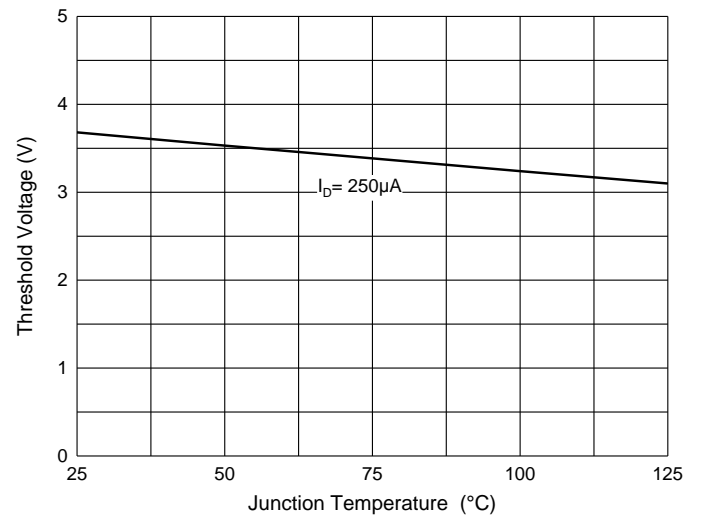


Fig. 6 - Threshold Voltage



Ordering Information

Device	Packing
Part Number-BP	Bulk:1Kpcs/Box

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

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