

Features

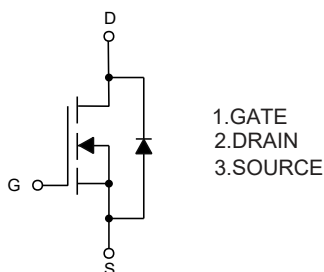
- High Current Rating
- Lower $R_{DS(ON)}$
- Lower Capacitance
- Lower Total Gate Charge
- Tighter V_{SD} Specifications
- Avalanche Energy Specified
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Lead Free Finish/RoHS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

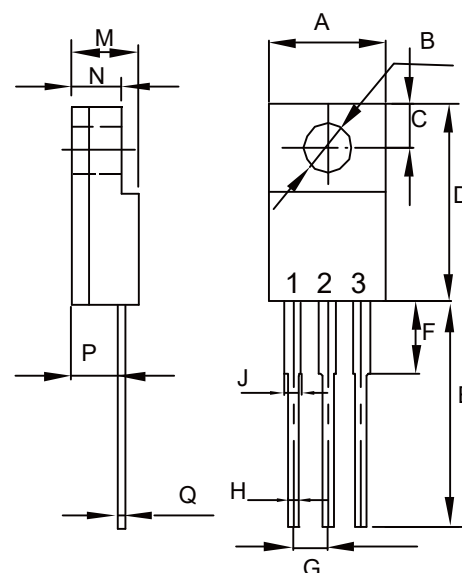
Parameter	Symbol	Rating	Unit
Drain -Source Voltage	V_{DS}	600	V
Gate -Source Voltage	V_{GS}	± 30	V
Drain Current-Continuous	I_D	4.0	A
Continuous Drain-Source Diode Forward Current	I_S	4.0	A
Single Pulsed Avalanche Energy ^(Note1)	E_{AS}	80	mJ

Internal Structure



N-CHANNEL MOSFET

TO-220F



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.392	0.421	9.96	10.70	
B	0.138		3.50		Φ
C	0.106		2.70		TYP.
D	0.567	0.642	14.40	16.30	
E	0.520		13.20		TYP.
F	---	0.177	---	4.50	
G	0.100		2.54		TYP.
H	0.020	0.035	0.50	0.90	
J	0.043	0.053	1.10	1.35	
M	0.169	0.201	4.30	5.10	
N	---	0.140	---	3.56	
P	0.083	0.126	2.10	3.20	
Q	0.020	0.032	0.50	0.80	

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 =250μA	600			V
Gate-Threshold Voltage ^(Note2)	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2.0		4.0	V
Gate-Body Leakage Current ^(Note2)	I _{GSS}	V _{GS} =± 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 =9.1Ω, 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

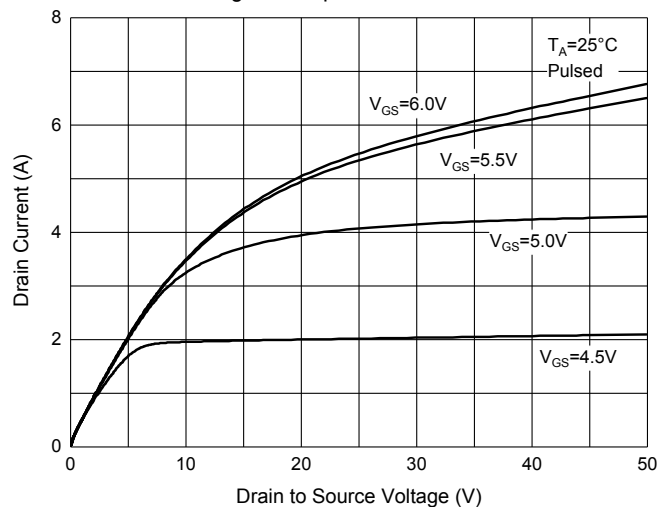


Fig. 2 - Transfer Characteristics

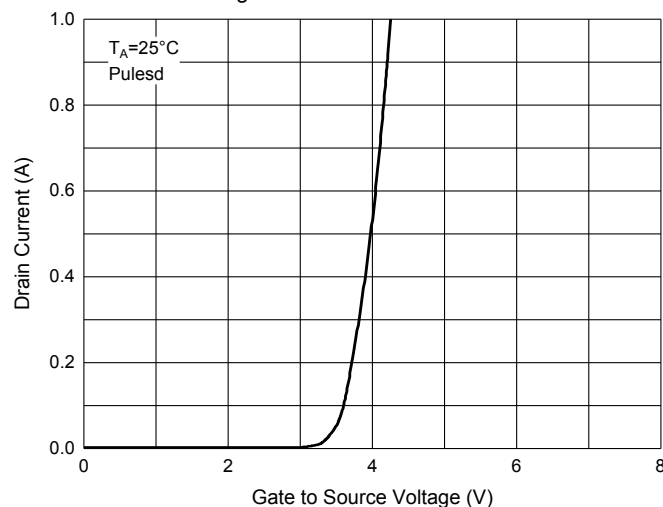


Fig. 3 - $R_{DS(ON)} - I_D$

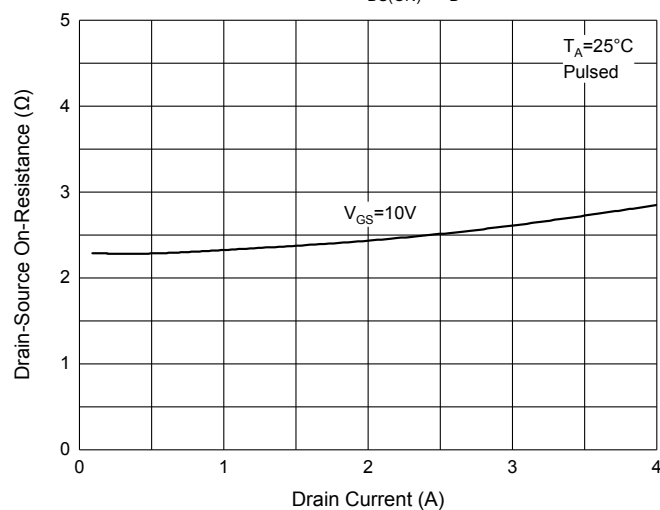


Fig. 4 - $R_{DS(ON)} - V_{GS}$

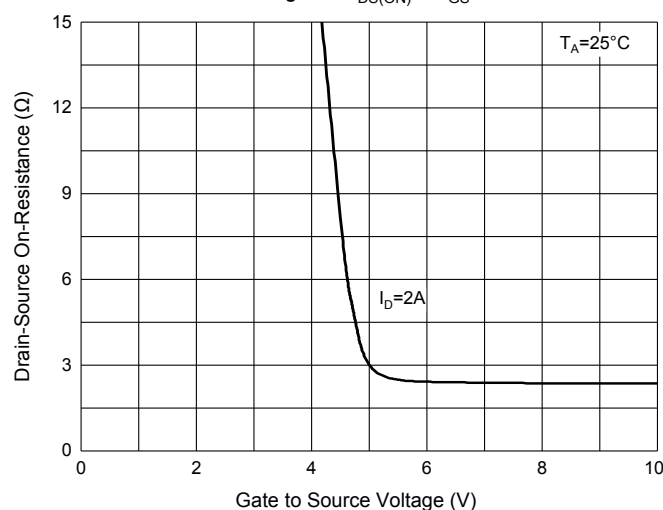
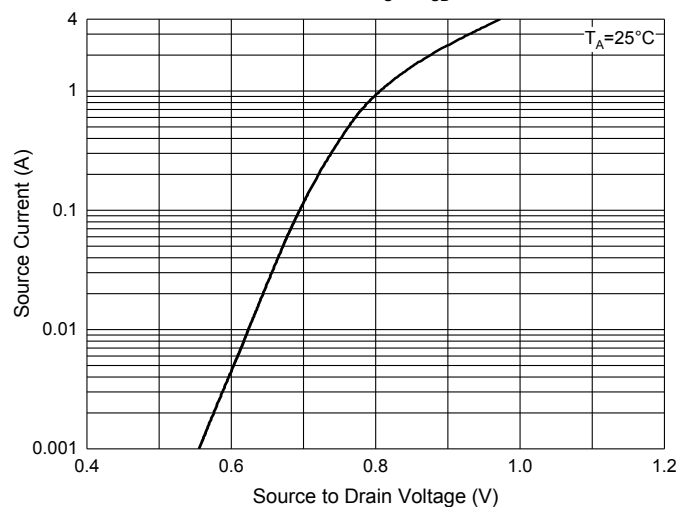


Fig. 5 - $I_S - V_{SD}$



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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