

Features

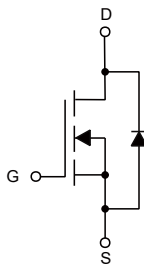
- High Current Rating
- Lower $R_{DS(ON)}$
- Lower Capacitance
- Lower Total Gate Charge
- Tighter V_{SD} Specifications
- Avalanche Energy Specified
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Lead Free Finish/RoHS 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: 100°C/W Junction to Ambient

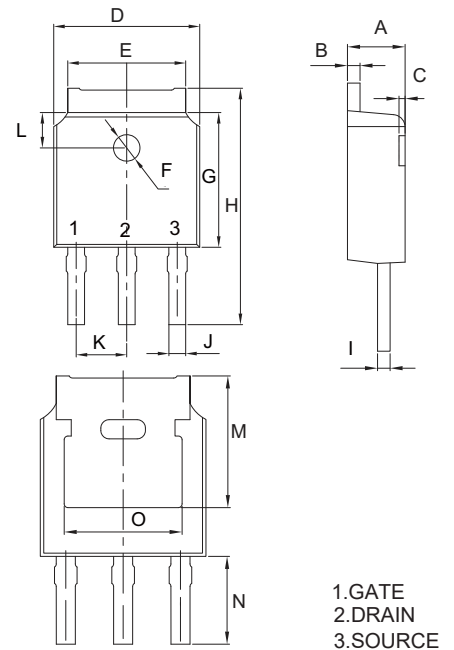
Parameter	Symbol	Rating	Unit
Drain -Source Voltage	V_{DS}	600	V
Gate -Source Voltage	V_{GS}	± 30	V
Drain Current-Continuous	I_D	4.0	A
Continuous Drain-Source Diode Forward Current	I_S	4.0	A
Single Pulsed Avalanche Energy ^(Note1)	E_{AS}	260	mJ

Internal Structure



N-CHANNEL MOSFET

TO-251S



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.087	0.094	2.20	2.40	
B	0.018	0.023	0.46	0.58	
C	0.000	0.012	0.00	0.30	
D	0.256	0.264	6.50	6.70	
E	0.201	0.215	5.10	5.46	
F	0.043	0.051	1.10	1.30	ϕ
G	0.236	0.244	6.00	6.20	
H	0.409	0.433	10.40	11.00	
I	0.018	0.023	0.46	0.58	
J	0.026	0.034	0.66	0.86	
K	0.086	0.094	2.19	2.39	
L	0.063		1.60		REF.
M	0.211		5.35		REF.
N	0.138		3.50		REF.
O	0.190		4.83		REF.

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}	$V_{DS}=50V, I_D=2A$	2.0	2.6		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, $I_L=4A, V_{DD}=100V, V_{GS}=10V, R_G=25\Omega, \text{Starting } T_J=25^\circ C$

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

3. These Parameters Have No Way to Verify

Curve Characteristics

Fig. 1 - Output Characteristics

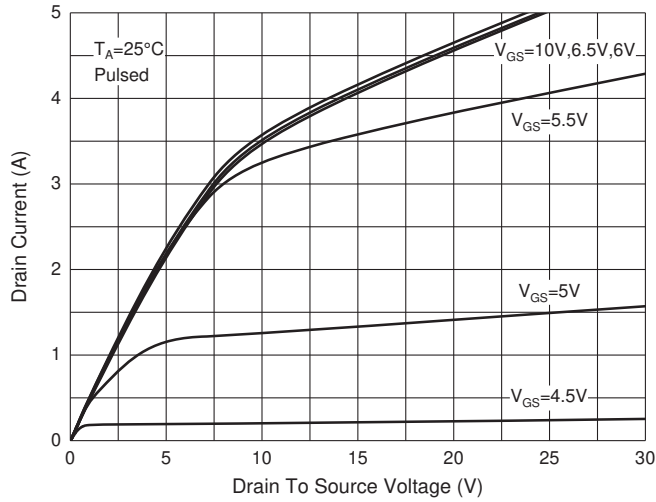


Fig. 2 - Transfer Characteristics

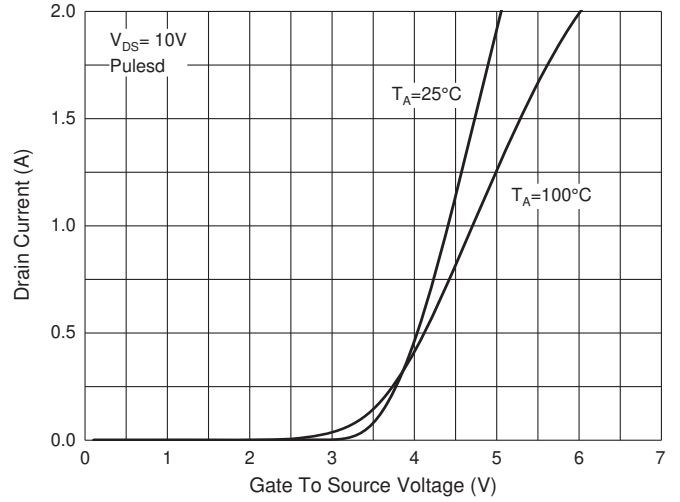


Fig. 3 - $R_{DS(ON)} - I_D$

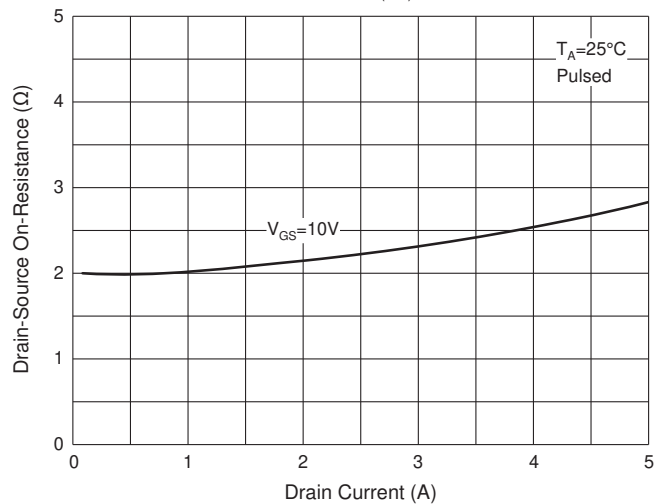


Fig. 4 - $R_{DS(ON)} - V_{GS}$

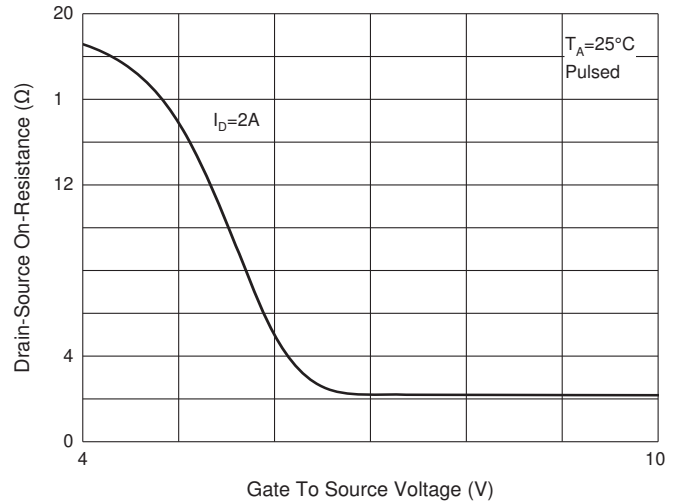


Fig. 5 - $I_S - V_{SD}$

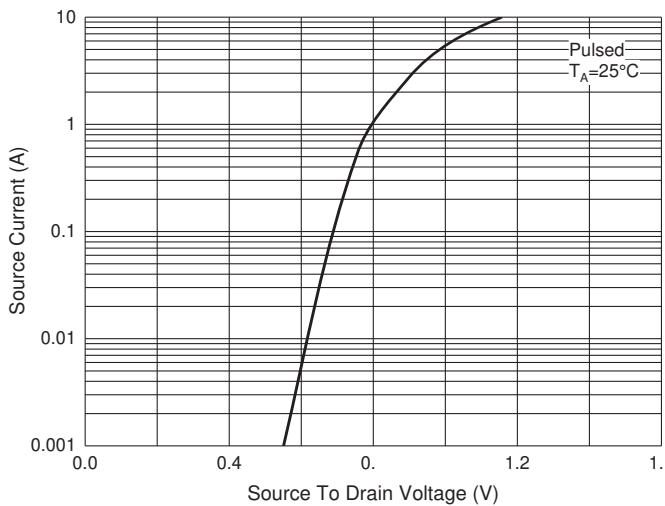
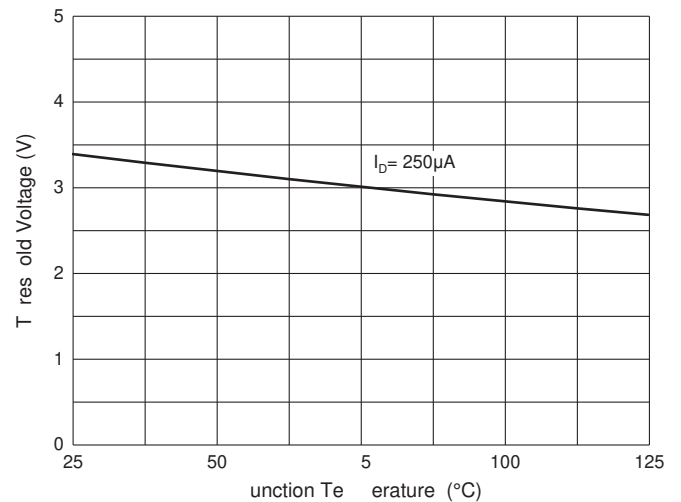


Fig. - T res old Voltage



Ordering Information

Device	Packing
Part Number-BP	Bulk:4Kpcs/Box

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

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