

Features

- Halogen Free. "Green" Device (Note 1)
- Very Low FOM $R_{DS(on)} \times Q_g$
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1

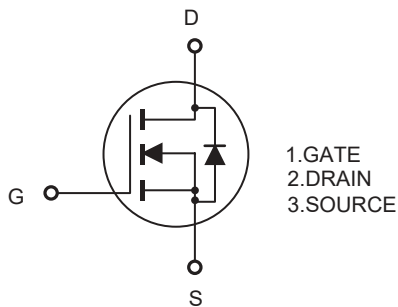
Maximum Ratings

- Operating Junction Temperature Range: -55°C to $+150^{\circ}\text{C}$
- Storage Temperature Range: -55°C to $+150^{\circ}\text{C}$
- Thermal Resistance: 62°C/W Junction to Ambient
- Thermal Resistance: 0.83°C/W Junction to Case

Parameter	Symbol	Rating	Unit
Drain -Source Voltage($V_{GS} = 0\text{V}$)	V_{DS}	700	V
Gate -Source Voltage	V_{GS}	± 30	V
Drain Current-Continuous	I_D	20	A
Drain Current-Pulse ^(Note 2)	I_{DM}	60	A
Power Dissipation($T_C = 25^{\circ}\text{C}$)	P_D	151	W
Single Pulsed Avalanche Energy ^(Note 3)	E_{AS}	480	mJ
Avalanche Current ^(Note 2)	I_{AR}	4	A
Repetitive Avalanche Energy ^(Note 2)	E_{AR}	0.75	mJ

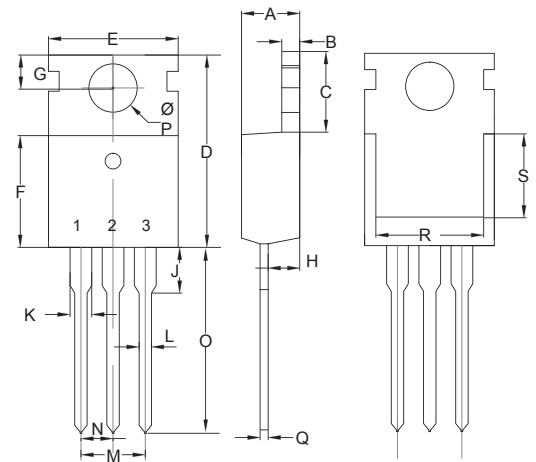
Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

Internal Structure



**N-Channel
Enhancement Mode
Field Effect Transistor**

TO-220AB(H)



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.172	0.188	4.37	4.77	
B	0.049	0.057	1.25	1.45	
C	0.246	0.270	6.25	6.85	
D	0.594	0.634	15.10	16.10	
E	0.382	0.406	9.70	10.30	
F	0.346	0.370	8.80	9.40	
G	0.102	0.118	2.60	3.00	
H	0.087	0.102	2.20	2.60	
J	-----	0.134	-----	3.40	
K	0.046	0.058	1.17	1.47	
L	0.028	0.037	0.70	0.95	
M	0.200		5.08		TYP.
N	0.100		2.54		TYP.
O	0.502	0.543	12.75	13.80	
P	0.134	0.150	3.40	3.80	ϕ
Q	0.016	0.026	0.40	0.65	
R	0.276	-----	7.00	-----	
S	0.217	-----	5.50	-----	

Electrical Characteristics @ 25°C (Unless Otherwise Noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	700			V
Gate-Source Leakage Current	I_{GSS}	$V_{GS} = \pm 30V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=700V, V_{GS}=0V, T_J=25^\circ C$			1	μA
		$V_{DS}=700V, V_{GS}=0V, T_J=150^\circ C$			100	
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.5		4.0	V
Drain-Source On-Resistance ^(Note 4)	$R_{DS(on)}$	$V_{GS}=10V, I_D=10A$		0.19	0.21	Ω
Forward Transconductance ^(Note 4)	g_{FS}	$V_{DS}=10V, I_D=10A$		18.8		S
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=50V, V_{GS}=0V, f=1MHz$		2328		μF
Output Capacitance	C_{oss}			116		
Reverse Transfer Capacitance	C_{rss}			7		
Total Gate Charge	Q_g	$V_{DD}=480V, V_{GS}=10V, I_D=20A$		46		nC
Gate-Source Charge	Q_{gs}			11		
Gate-Drain Charge	Q_{gd}			13		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=300V, I_D=20A, R_G=25\Omega$		43		ns
Turn-On Rise Time	t_r			14		
Turn-Off Delay Time	$t_{d(off)}$			150		
Turn-Off Fall Time	t_f			7		
Drain-Source Body Diode Characteristics						
Continuous Body Diode Current	I_S	$T_C=25^\circ C$			20.6	A
Pulsed Diode Forward Current	I_{SM}				70	
Body Diode Voltage	V_{SD}	$T_J=25^\circ C, I_{SD}=20A, V_{GS}=0V$		0.95	1.2	V
Reverse Recovery Time	t_{rr}	$V_R=560V, I_F=I_S, di_F/dt=100A/\mu s$		410		ns
Reverse Recovery Charge	Q_{rr}				3.8	μC
Peak Reverse Recovery Current	I_{rrm}				35	A

Notes

- Pulse Width limited by maximum junction temperature
- $I_{AS} = 4A, V_{DD} = 50V, R_G = 25\Omega, \text{Starting } T_J = 25^\circ C$
- Pulse Test: Pulse Width $\leq 300\mu s, \text{Duty Cycle } \leq 1\%$

Curve Characteristics

Fig. 1 - Output Characteristics

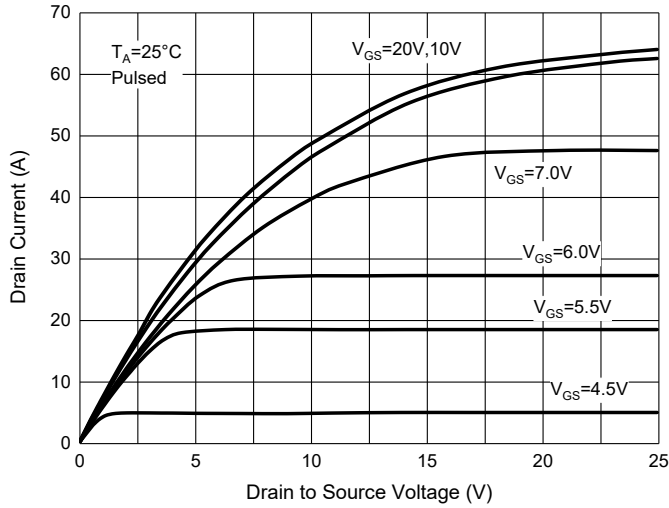


Fig. 2 - Transfer Characteristics

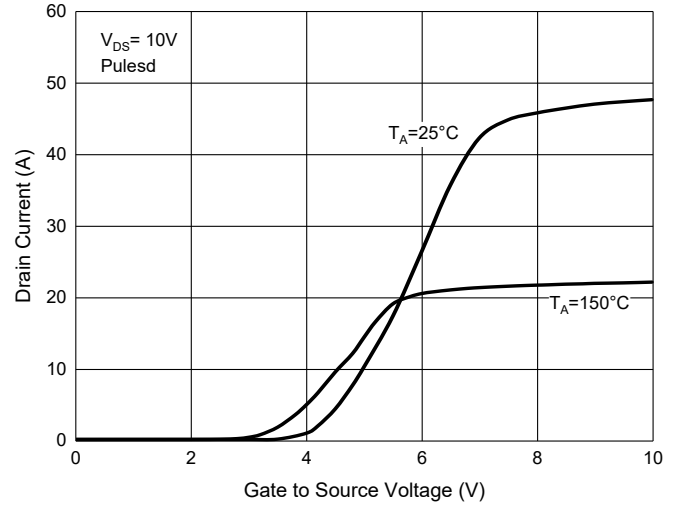


Fig. 3 - $R_{DS(ON)} - I_D$

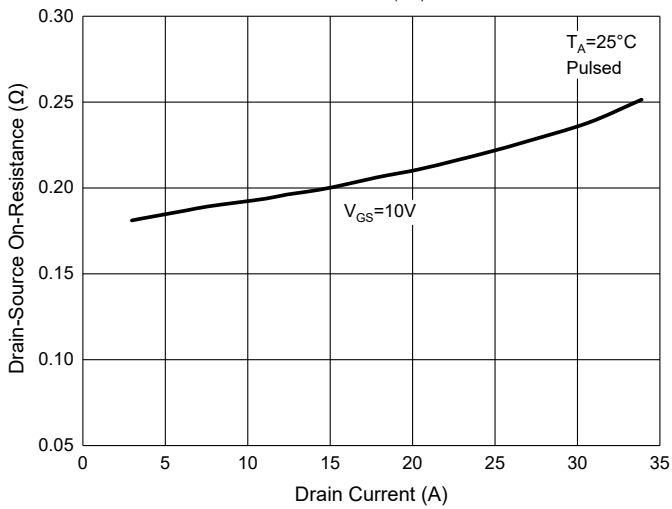


Fig. 4 - Capacitance Characteristics

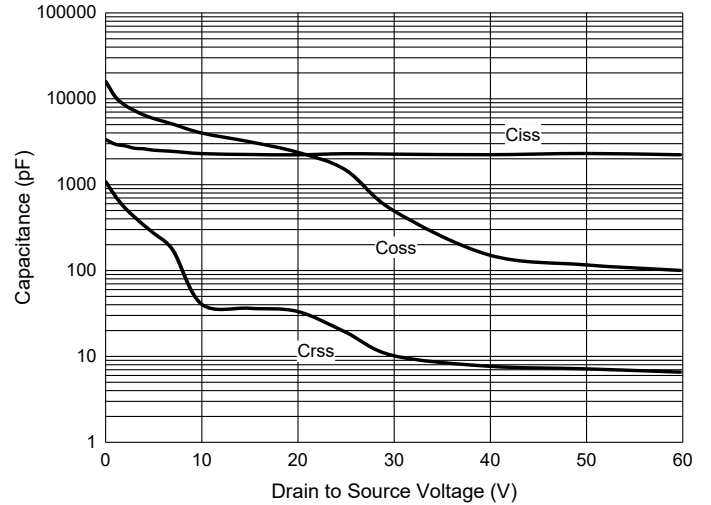


Fig. 5 - Gate Charge

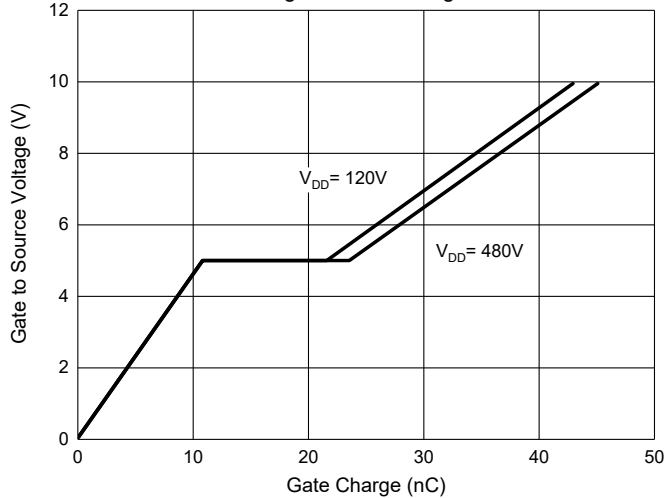
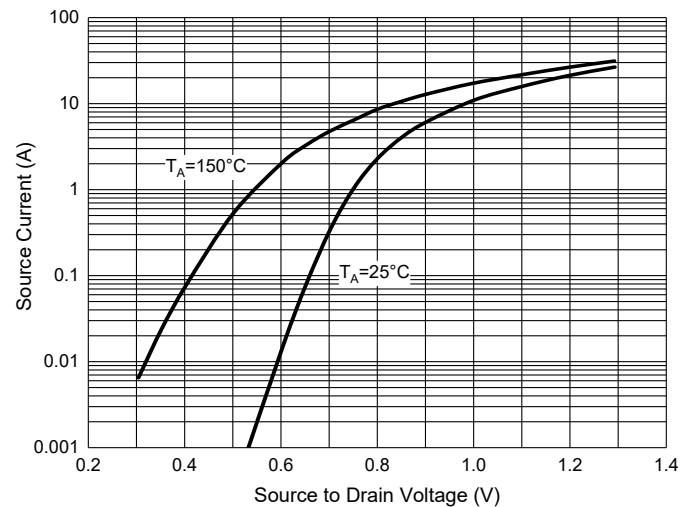


Fig. 6 - $I_S - V_{SD}$



Ordering Information

Device	Packing
Part Number-BP	Bulk:50pcs/Tube, 1Kpcs/Box,5Kpcs/Carton

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