

**Features**

- Split Gate Trench MOSFET Technology
- Low Thermal Resistance
- Halogen Free. "Green" Device (Note 1)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

**Maximum Ratings**

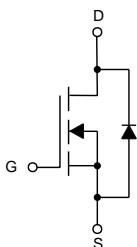
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 0.85°C/W Junction to Case<sup>(2)</sup>

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V <sub>DS</sub>	100	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current	I <sub>D</sub>	100	A
Pulsed Drain Current <sup>(3)</sup>	I <sub>DM</sub>	240	A
Total Power Dissipation	P <sub>D</sub>	147	W
Single Pulsed Avalanche Energy <sup>(4)</sup>	E <sub>AS</sub>	800	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.
2. Surface Mounted on 1 in<sup>2</sup> pad area, t ≤ 10 sec
3. Pulse Test: Pulse Width ≤ 300us, Duty cycle ≤ 2%.
4. T<sub>J</sub> = 25°C, V<sub>DD</sub> = 50V, L = 1.0mH.

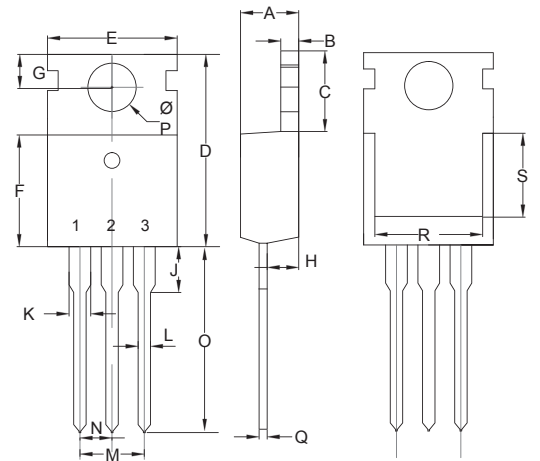
**Internal Structure**



1. Gate
2. Drain
3. Source

**N-CHANNEL  
MOSFET**

**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 Specified)**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	100			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=80V, V_{GS}=0V$			1	$\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2		4	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$		2.9	3.5	m $\Omega$
		$V_{GS}=4.5V, I_D=10A$		6.6	8.5	m $\Omega$
<b>Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$				100	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=20A$			1.3	V
Reverse Recovery Time	$t_{rr}$	$I_F=20A, di_F/dt=100A/\mu s$		96		ns
Reverse Recovery Charge	$Q_{rr}$			233		nC
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=50V, V_{GS}=0V, f=1MHz$		6897		pF
Output Capacitance	$C_{oss}$			1039		
Reverse Transfer Capacitance	$C_{rss}$			27		
Total Gate Charge	$Q_g$	$V_{DS}=50V, V_{GS}=10V, I_D=20A$		122		nC
Gate-Source Charge	$Q_{gs}$			32		
Gate-Drain Charge	$Q_{gd}$			31		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=50V, V_{GEN}=10V,$ $R_G=4.5\Omega, R_L=2.5\Omega,$ $I_{DS}=20A$		26		ns
Turn-On Rise Time	$t_r$			55		
Turn-Off Delay Time	$t_{d(off)}$			72		
Turn-Off Fall Time	$t_f$			66		

**Curve Characteristics**

Fig. 1 - Typical Output Characteristics

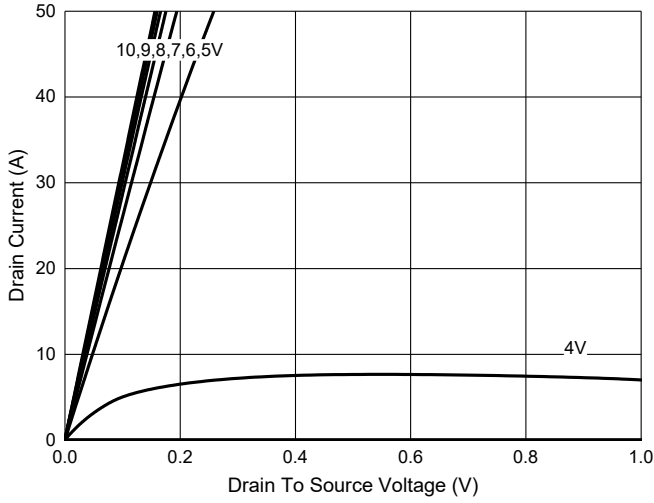


Fig. 2 -  $I_S - V_{SD}$

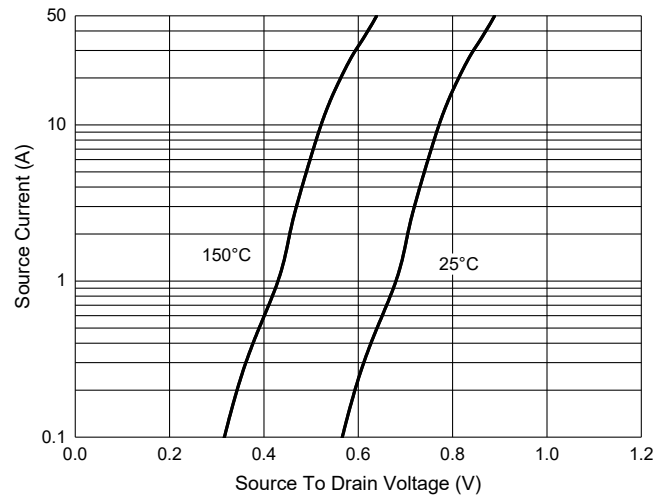


Fig. 3 -  $R_{DS(ON)} - I_D$

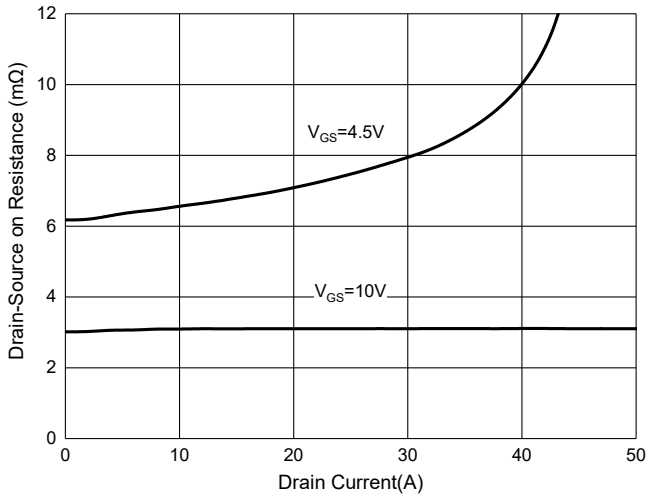


Fig. 4 - Normalized On Resistance Characteristics

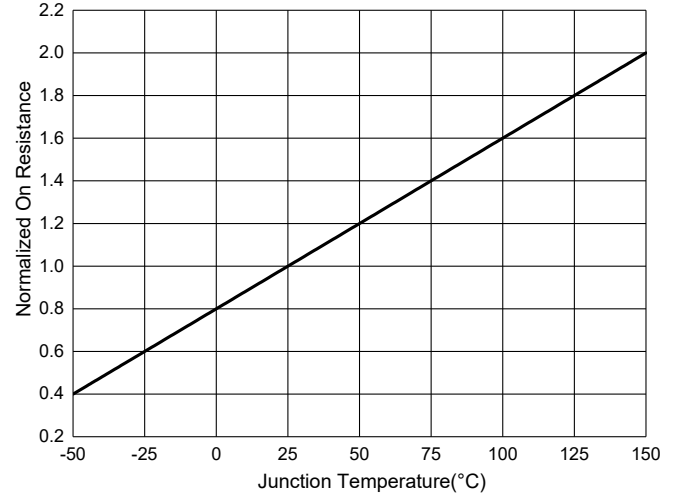


Fig. 5 - Capacitance Characteristics

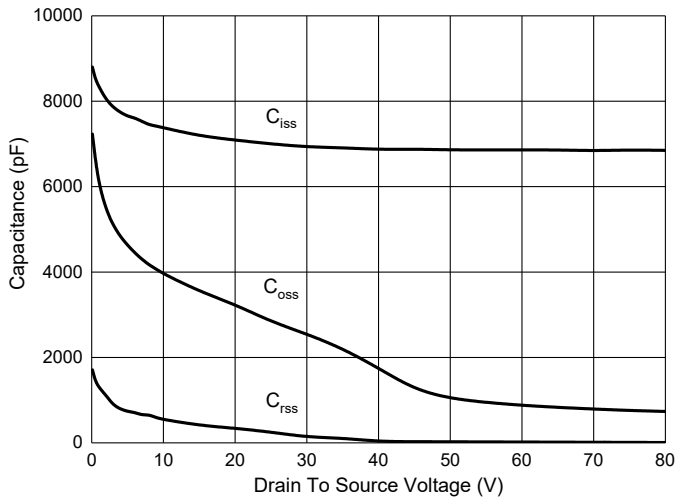
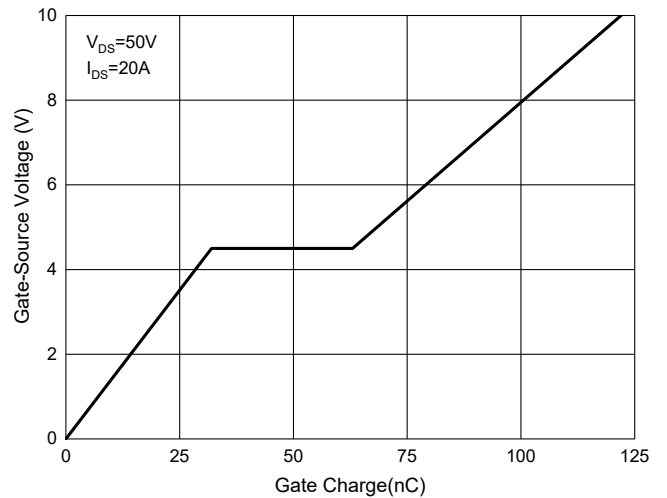
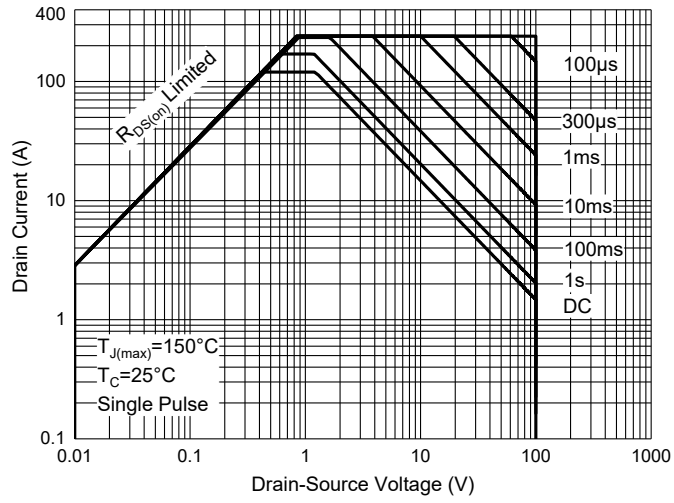


Fig. 6 - Gate Charge



## Curve Characteristics

Fig. 7 - Safe Operation Area



## Ordering Information

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

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