

Features

- Very Low FOM $R_{DS(on)} \times Q_g$
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device (Note 1)
- 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: 62°C/W Junction to Ambient
- Thermal Resistance: 1.6°C/W Junction to Case

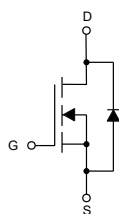
Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V _{DS}	650	V
Gate-Source Voltage		V _{GS}	±30	V
Continuous Drain Current		I _D	11	A
Pulsed Drain Current ^(Note 2)		I _{DM}	33	A
Single Pulse Avalanche Energy ^(Note 3)		E _{AS}	211	mJ
Avalanche Current ^(Note 2)		I _{AR}	1.6	A
Repetitive Avalanche Energy ^(Note 2)		E _{AR}	0.32	mJ
Total Power Dissipation	T _C =25°C	P _D	78	W

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. Repetitive Rating, Pulse Width Limited by Maximum Junction Temperature.

3. $I_{AS}=1.6\text{A}$, $V_{DD}=50\text{V}$, $R_G=25\Omega$, Starting $T_J=25^\circ\text{C}$.

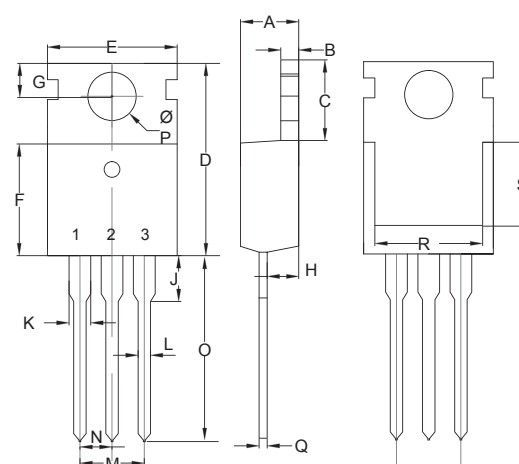
Internal Structure



1. Gate
2. Drain
3. Source

N-CHANNEL Super-Junction Power MOSFET

TO-220AB(H)



DIMENSIONS

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
Static Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	650			V
Gate-Source Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±30V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =650V, V _{GS} =0V			1	μA
		V _{DS} =650V, V _{GS} =0V, T _J =150°C			100	
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2.5		4	V
Drain-Source On-Resistance ^(Note 4)	R _{DS(on)}	V _{GS} =10V, I _D =5.5A		0.34	0.38	Ω
Forward tranconductance ^(Note 4)	g _{FS}	V _{DS} =10V, I _D =5.5A		7.8		S
Dynamic Characteristics ^(Note 5)						
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, f=1MHz		901		pF
Output Capacitance	C _{oss}			50		
Reverse Transfer Capacitance	C _{rss}			5.5		
Total Gate Charge	Q _g	V _{DD} =520V, V _{GS} =10V, I _D =11A		21		nC
Gate-Source Charge	Q _{gs}			4.5		
Gate-Drain Charge	Q _{gd}			7		
Turn-On Delay Time	t _{d(on)}	V _{DD} =400V, I _D =11A, R _G =25Ω		41		ns
Turn-On Rise Time	t _r			20		
Turn-Off Delay Time	t _{d(off)}			123		
Turn-Off Fall Time	t _f			6.4		
Drain-Source Body Diode Characteristics						
Continuous Body Diode Current	I _S	T _C =25°C			9.2	A
Pulsed Diode Forward Current	I _{SM}				29	
Body Diode Voltage	V _{SD}	I _{SD} =11A, V _{GS} =0V		0.9	1.2	V
Reverse Recovery Time	t _{rr}	V _R =520V, I _F =I _S , di _F /dt=100A/μs		280		ns
Reverse Recovery Charge	Q _{rr}			2.8		μC
Peak Reverse Recovery Current	I _{rrm}			17		A

Note 4. Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 1\%$.

5. ~~Guaranteed by Design~~, Not Subject to Production Testing.

Curve Characteristics

Fig. 1 - Typical Output Characteristics

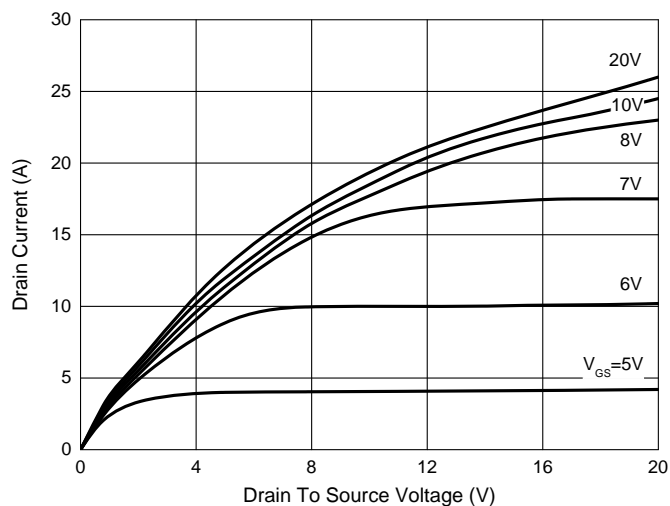


Fig. 2 - Transfer Characteristics

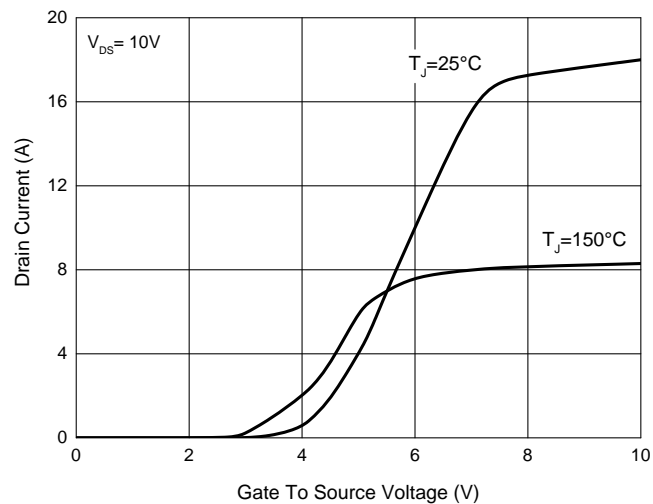


Fig. 3 - $R_{DS(ON)} - I_D$

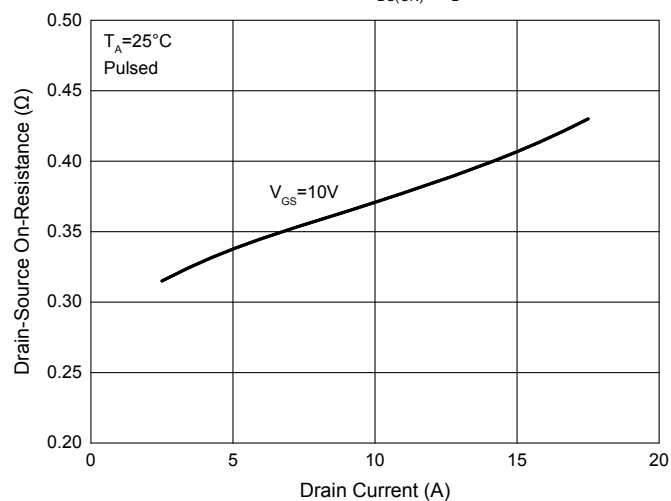


Fig. 4 - Capacitance Characteristics

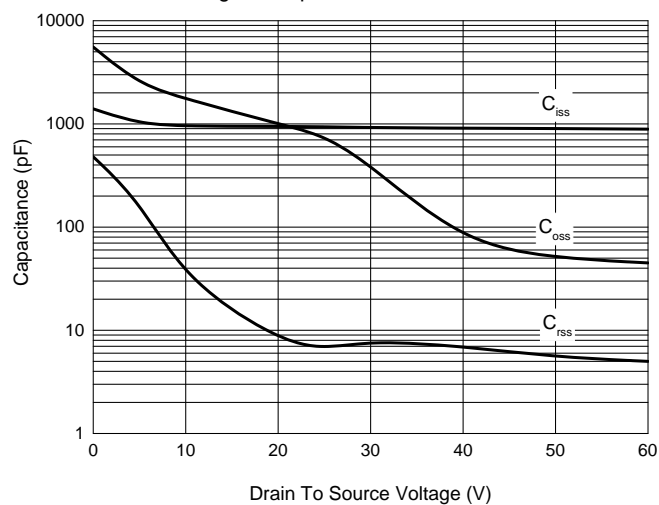


Fig. 5 - Total Gate Charge Characteristics

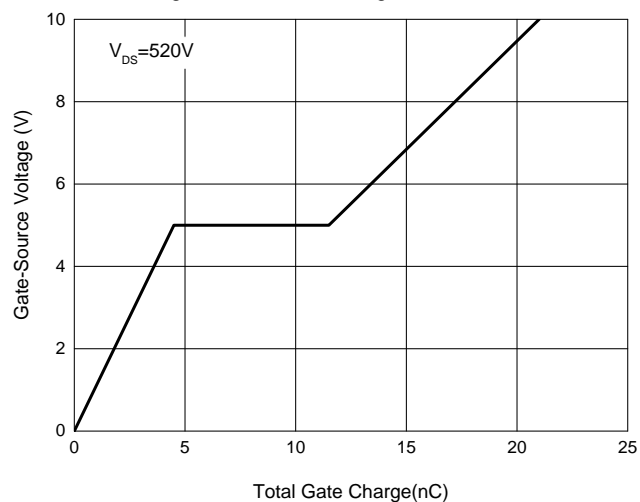
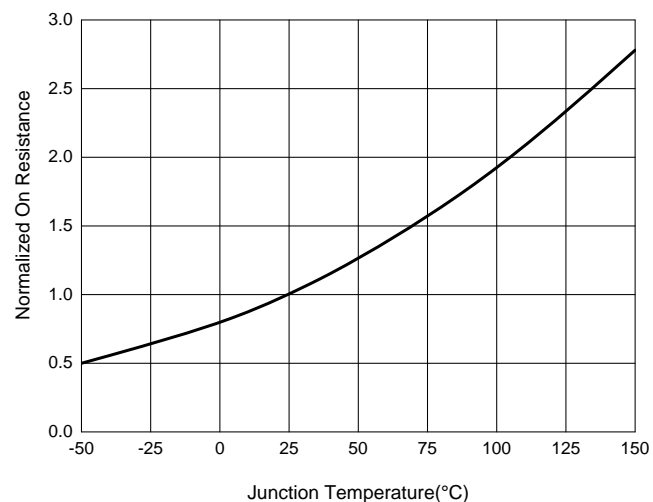


Fig. 6 - Normalized On Resistance Characteristics



Ordering Information

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

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