

Features

- Very Low FOM $R_{DS(on)} \times Q_g$
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free. "Green" Device (Note 1)
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings

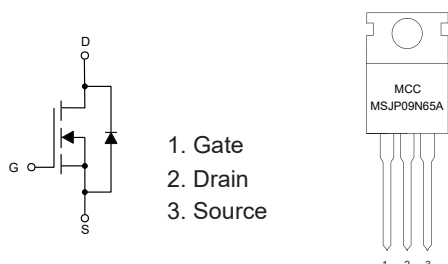
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 50°C/W Junction to Ambient (Note 2)
- Thermal Resistance: 1.1°C/W Junction to Case

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V _{DS}	650	V
Gate-Source Voltage		V _{GS}	±30	V
Continuous Drain Current	T _C =25°C	I _D	9	A
	T _C =100°C		5.7	
Pulsed Drain Current ^(Note3)		I _{DM}	30	A
Total Power Dissipation ^(Note4)		P _D	113	W
Single Pulsed Avalanche Energy ^(Note5)		E _{AS}	70	mJ

Note:

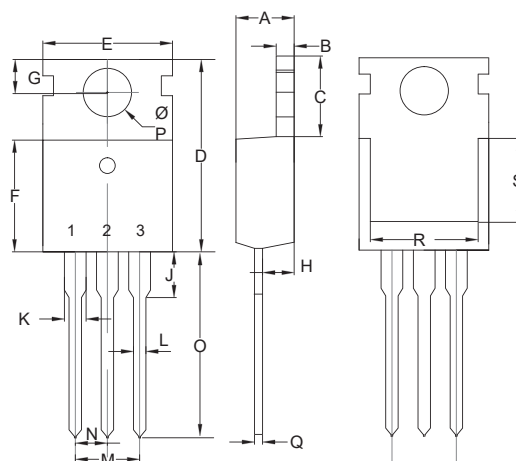
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$.
3. Pulse Test: Pulse Width≤300us, Duty cycle ≤2%.
4. Pd is based on max. junction temperature, using junction-case thermal resistance.
5. VDD=500V, RG=25Ω, L=79mH.

Internal Structure and Marking Code



N-CHANNEL Super-Junction Power MOSFET

TO-220AB(H)



DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.169	0.185	4.30	4.70	
B	0.049	0.055	1.25	1.40	
C	0.244	0.268	6.20	6.80	
D	0.598	0.638	15.20	16.20	
E	0.382	0.398	9.70	10.10	
F	0.354	0.370	9.00	9.40	
G	0.102	0.118	2.60	3.00	
H	0.087	0.102	2.20	2.60	
J	0.110	0.126	2.80	3.20	
K	0.048	0.055	1.22	1.40	
L	0.028	0.037	0.70	0.95	
M	0.188	0.212	4.78	5.38	
N	0.094	0.106	2.39	2.69	
O	0.496	0.535	12.60	13.60	
P	0.138	0.150	3.50	3.80	Φ
Q	0.016	0.024	0.40	0.60	
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
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2	3.2	4	V
Drain-Source On-Resistance ^(Note 3)	R _{DS(on)}	V _{GS} =10V, I _D =1.5A		0.72	0.96	Ω
Gate Resistance	R _G	f = 1.0MHz ,Open Drain		20		Ω
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =30V,V _{GS} =0V,f=1MHz		383		pF
Output Capacitance	C _{oss}			372		
Reverse Transfer Capacitance	C _{rss}			13		
Total Gate Charge	Q _g	V _{DS} =300V,V _{GS} =10V,I _D =5A		10.6		nC
Gate-Source Charge	Q _{gs}			2.4		
Gate-Drain Charge	Q _{gd}			4.3		
Turn-On Delay Time	t _{d(on)}	V _{DS} =300V, I _D =5A,R _G =6Ω		5.9		ns
Turn-On Rise Time	t _r			13.2		
Turn-Off Delay Time	t _{d(off)}			13.6		
Turn-Off Fall Time	t _f			32.8		
Drain-Source Body Diode Characteristics						
Continuous Body Diode Current	I _S				9	A
Body Diode Voltage	V _{SD}	I _{SD} =4.7A, V _{GS} =0V			1.3	V
Reverse Recovery Time	t _{rr}	I _S =5A, di _F /dt=100A/μs		229		ns
Reverse Recovery Charge	Q _{rr}			1499		nC

Curve Characteristics

Fig. 1 - Typical Output Characteristics

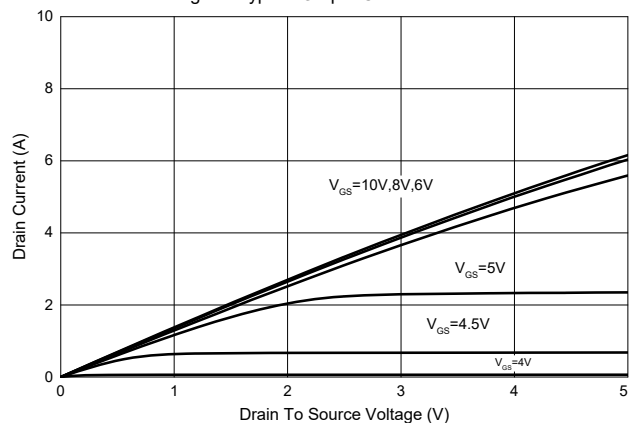


Fig. 2 - Transfer Characteristics

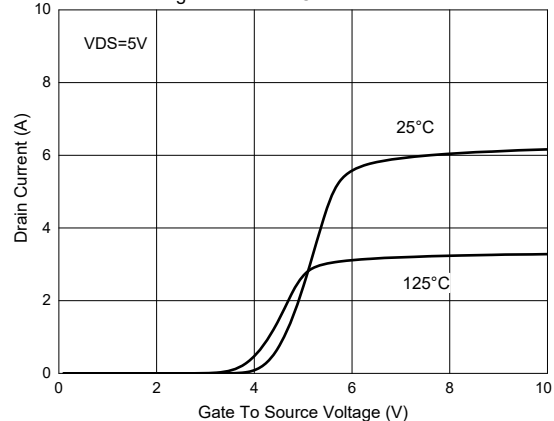


Fig. 3 - $R_{DS(ON)}$ — I_D

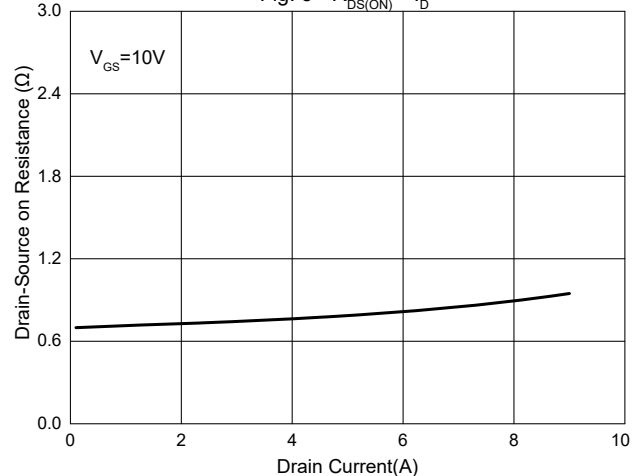


Fig. 4 - $R_{DS(ON)}$ — V_{GS}

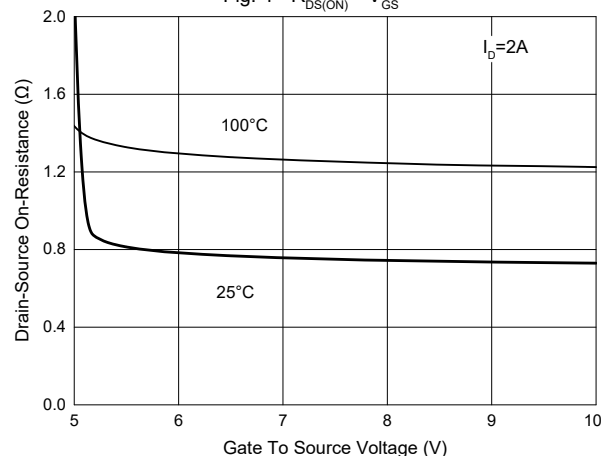


Fig. 5 - Normalized On Resistance Characteristics

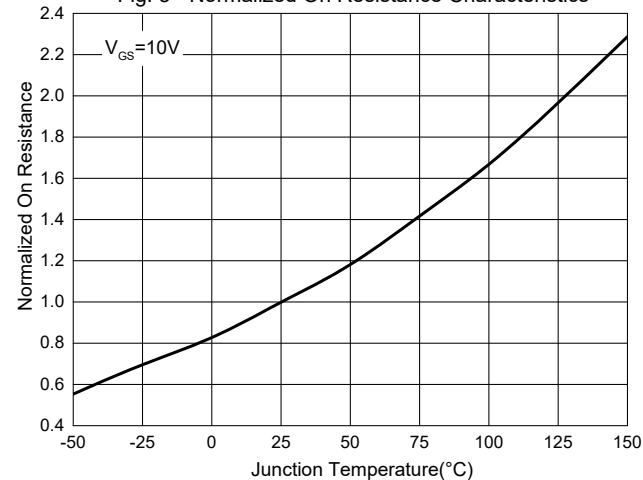
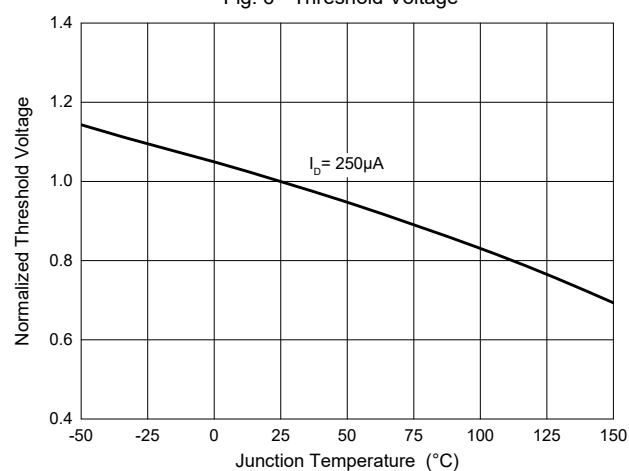


Fig. 6 - Threshold Voltage



Curve Characteristics

Fig. 7 - Capacitance Characteristics

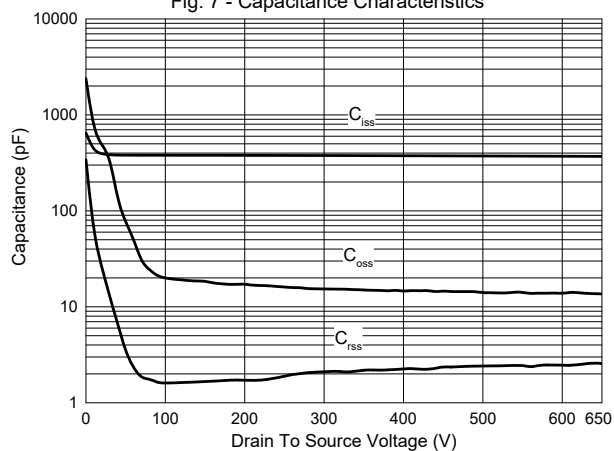


Fig. 8 - Gate Charge

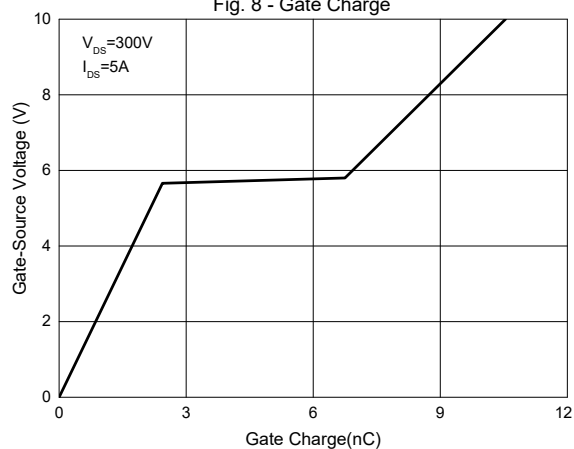


Fig. 9 - $I_S - V_{SD}$

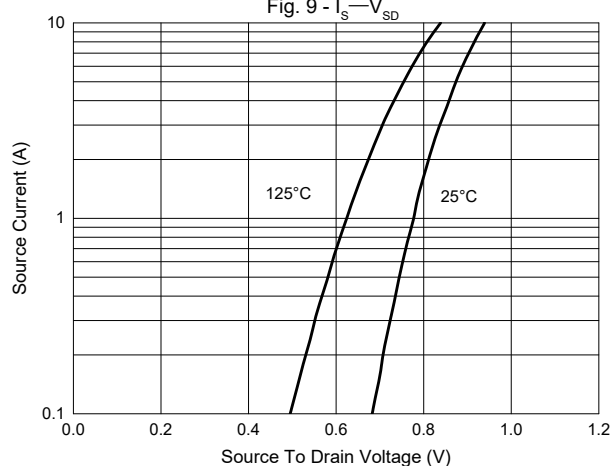


Fig. 10 - Current Dissipation

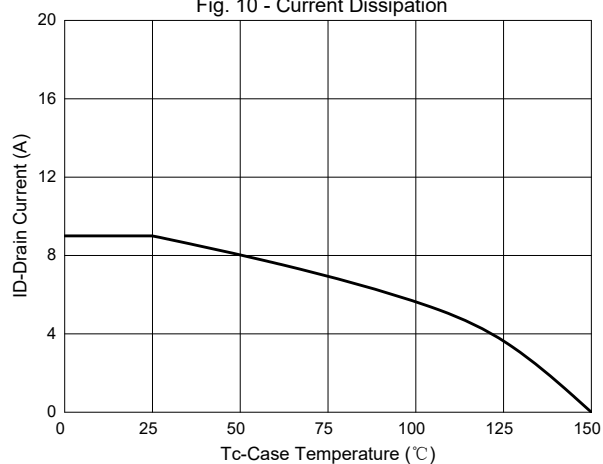
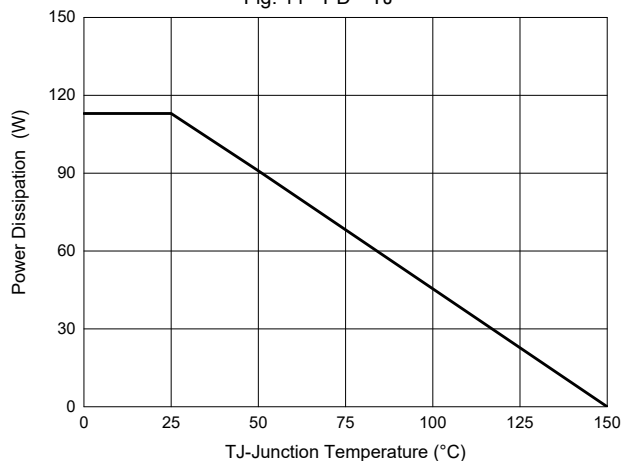


Fig. 11 - PD—TJ



Curve Characteristics

Fig. 12 - Safe Operation Area

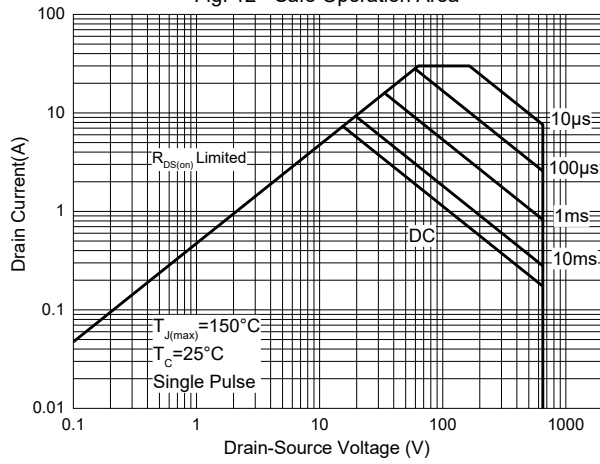
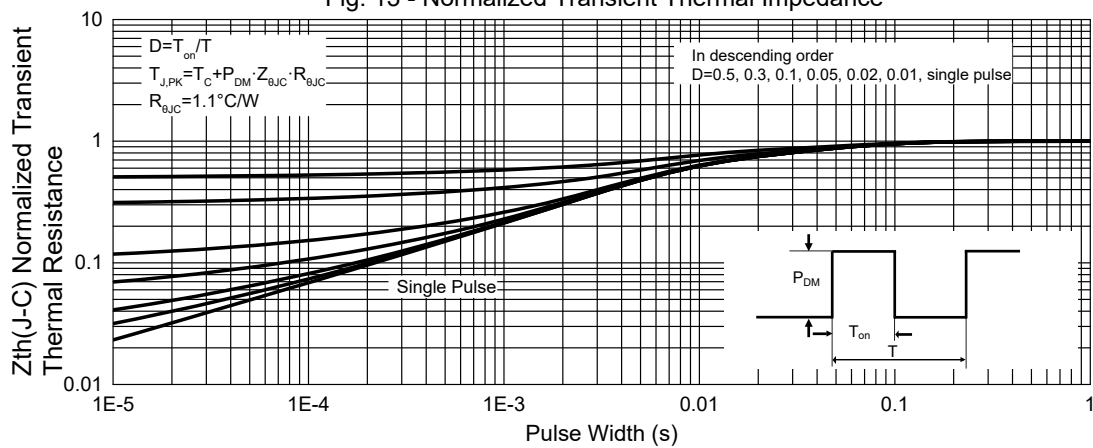


Fig. 13 - Normalized Transient Thermal Impedance



Ordering Information

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

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