

Features

- Split Gate Trench MOSFET Technology
- Low $R_{DS(ON)}$ & FOM
- Extremely Low Switching Loss
- Halogen Free. "Green" Device (Note1)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant (Note2) ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings

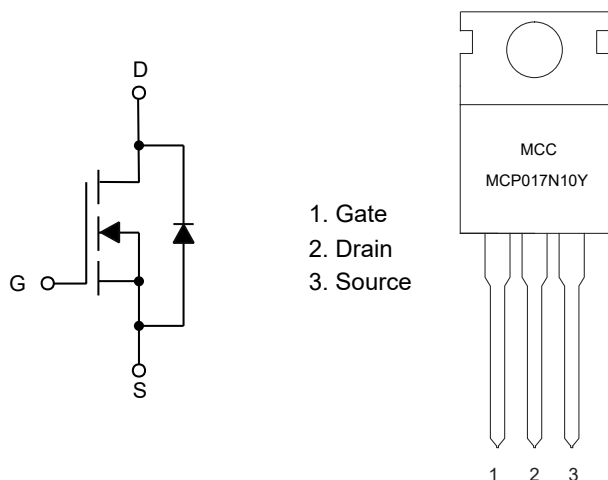
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 40°C/W Junction to Ambient (Note3)
- Thermal Resistance: 2.4°C/W Junction to Case

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V _{DS}	100	V
Gate-Source Voltage		V _{GS}	±20	V
Continuous Drain Current	T _C =25°C	I _D	39	A
	T _C =100°C		24	
Pulsed Drain Current ^(Note4)		I _{DM}	156	A
Total Power Dissipation ^(Note5)		P _D	52	W
Single Pulsed Avalanche Energy ^(Note6)		E _{AS}	77	mJ

Note:

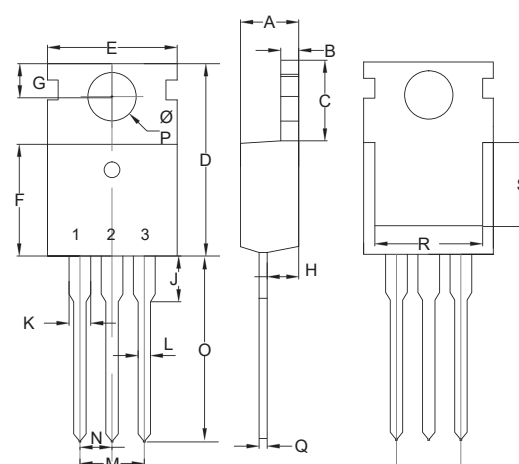
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. High Temperature Solder Exemption Applied, see EU Directive Annex 7a.
3. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$.
4. Repetitive rating; pulse width limited by max. junction temperature.
5. P_D is based on max. junction temperature, using junction-case thermal resistance.
6. $T_J=25^\circ\text{C}$, $V_{DD}=50\text{V}$, $V_{GS}=10\text{V}$, $R_G=25\Omega$, $L=0.5\text{mH}$.

Internal Structure and Marking Code



N-CHANNEL MOSFET

TO-220AB(H)



DIMENSIONS				
DIM	INCHES		MM	
	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	
N	0.100		2.54	
O	0.502	0.543	12.75	13.80
P	0.134	0.150	3.40	3.80
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	100			V
Gate-Source Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =100V, V _{GS} =0V			1	μA
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2	2.8	4	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A		14	17	mΩ
Gate Resistance	R _g	f=1MHz, Open Drain		1.2		Ω
Diode Characteristics						
Continuous Body Diode Current	I _S				39	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =20A			1.3	V
Reverse Recovery Time	t _{rr}	I _F =20A, di/dt=100A/μs		39.2		ns
Reverse Recovery Charge	Q _{rr}			50		nC
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, f=1MHz		1385		pF
Output Capacitance	C _{oss}			320		
Reverse Transfer Capacitance	C _{rss}			13		
Total Gate Charge	Q _g	V _{DS} =50V, V _{GS} =10V, I _D =25A		21		nC
Gate-Source Charge	Q _{gs}			5.9		
Gate-Drain Charge	Q _{gd}			5.2		
Turn-On Delay Time	t _{d(on)}	V _{DD} =50V, V _{GS} =10V, R _G =2.2Ω, I _D =25A		11.2		ns
Turn-On Rise Time	t _r			3.8		
Turn-Off Delay Time	t _{d(off)}			19.2		
Turn-Off Fall Time	t _f			4.5		

Curve Characteristics

Fig. 1 - Typical Output Characteristics

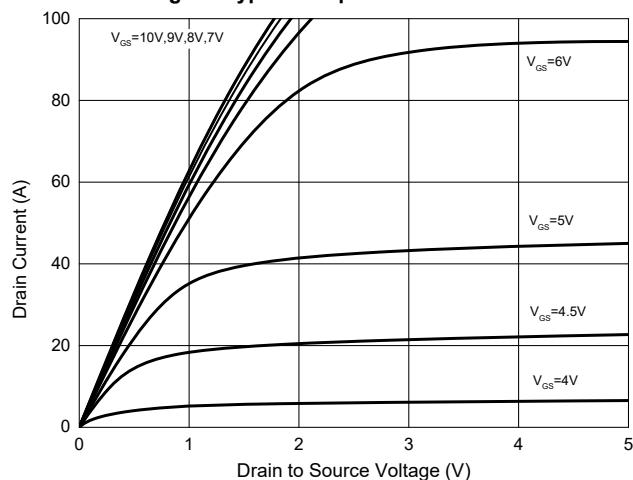


Fig. 2 - Transfer Characteristics

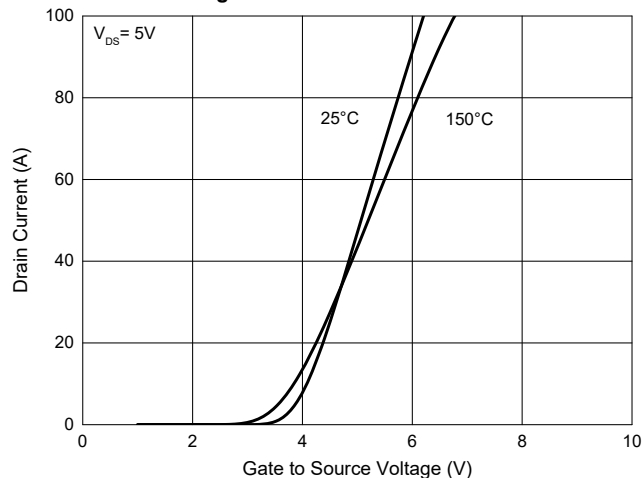


Fig. 3 - $R_{DS(ON)}$ - V_{GS}

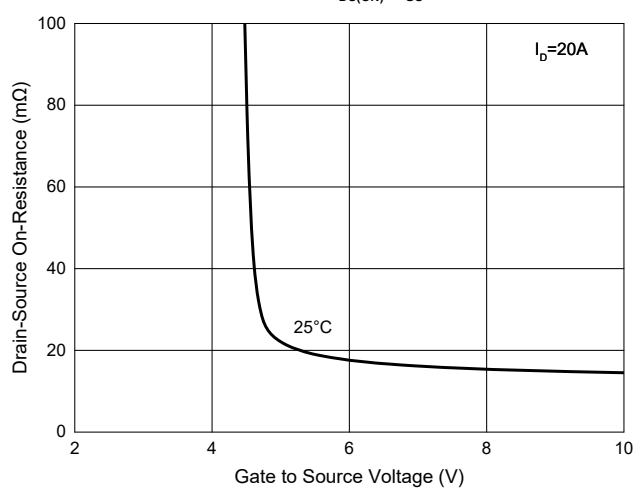


Fig. 4 - $R_{DS(ON)}$ - I_D

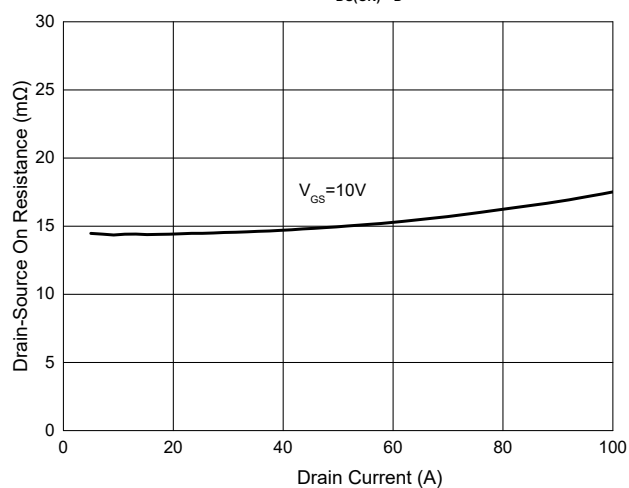


Fig. 5 - Capacitance Characteristics

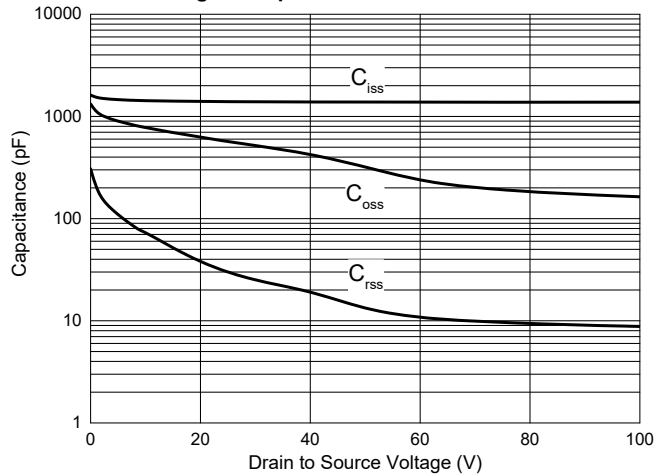
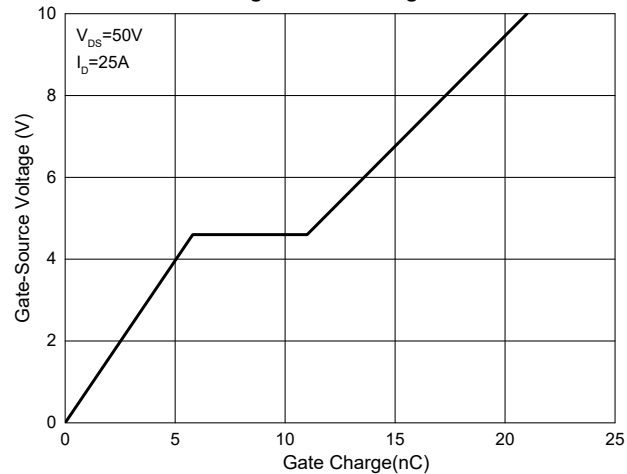


Fig. 6 - Gate Charge



Curve Characteristics

Fig. 7 - Normalized Threshold Voltage

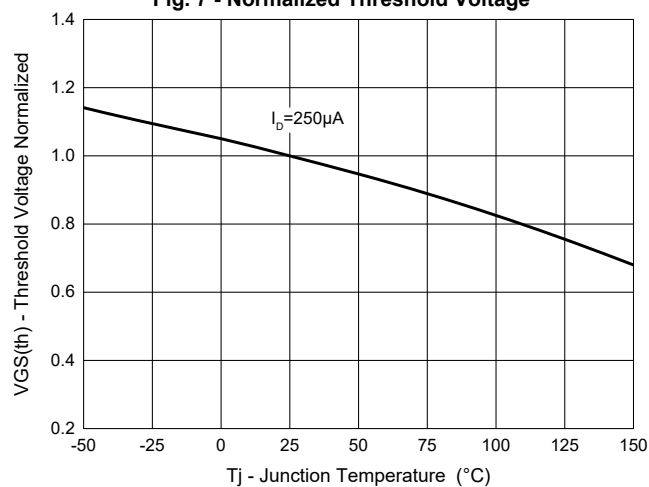


Fig. 8 - Normalized On Resistance Characteristics

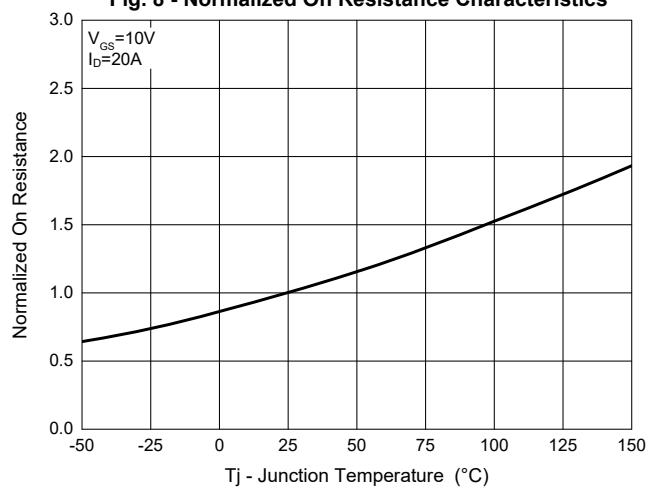


Fig. 9 - I_S - V_{SD}

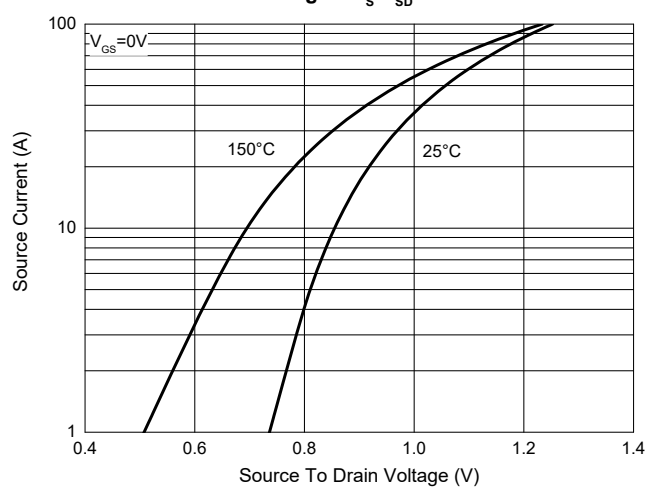


Fig. 10 - Drain Current

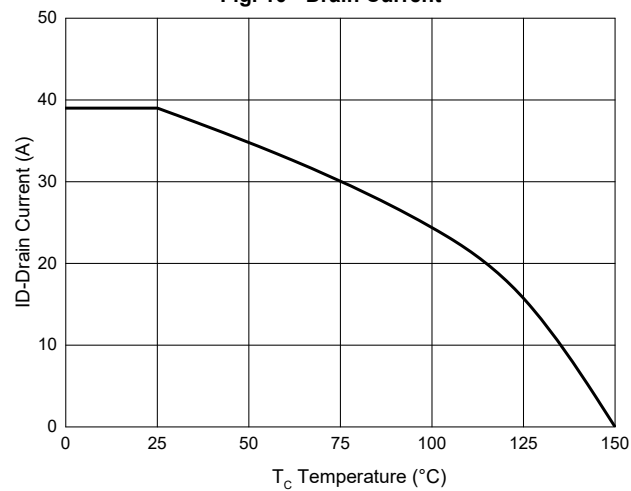
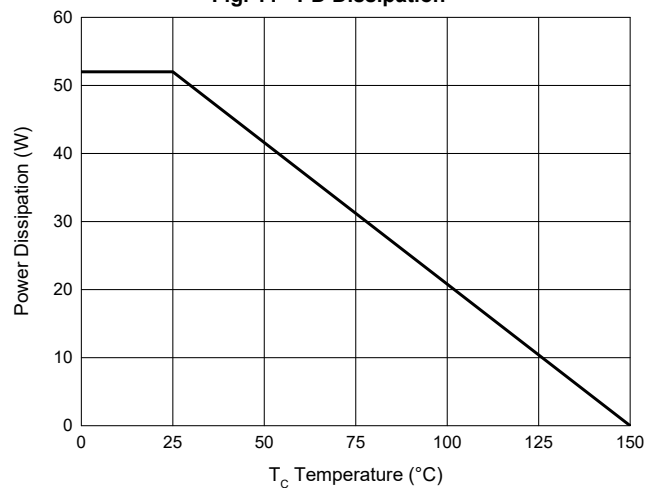


Fig. 11 - PD Dissipation



Curve Characteristics

Fig. 12 - Safe Operation Area

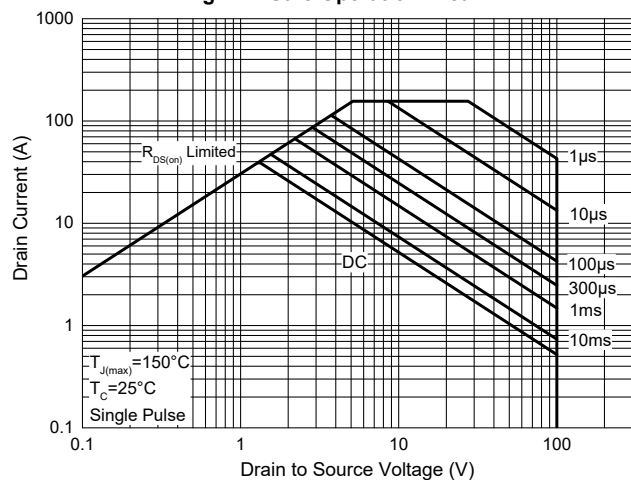
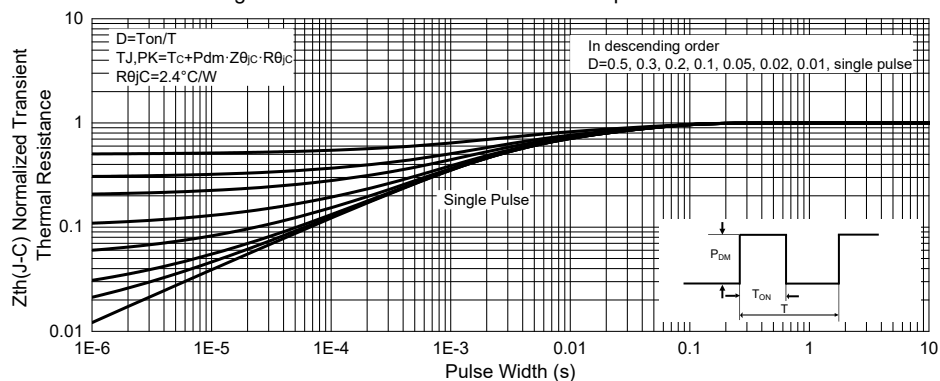


Fig. 13 - Normalized Transient Thermal Impedance



Ordering Information

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

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