

Features

- Very Low FOM $R_{DS(on)} \times Q_g$
- Moisture Sensitivity Level 1
- 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

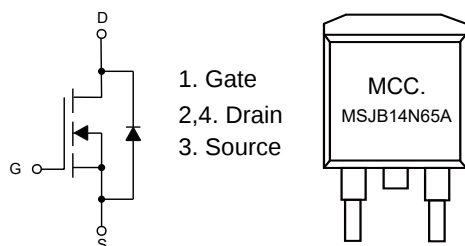
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 50°C/W Junction to Ambient (Note 2)
- Thermal Resistance: 0.9°C/W Junction to Case

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	14	A
	T _C =100°C		8.8	
Pulsed Drain Current ^(Note 3)		I _{DM}	56	A
Total Power Dissipation ^(Note 4)		P _D	139	W
Avalance Energy ^(Note 5)		E _{AS}	100	mJ

Note:

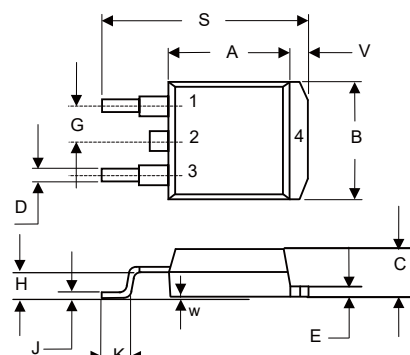
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$.
3. Repetitive rating; pulse width limited by max. junction temperature.
4. P_D is based on max. junction temperature, using junction-case thermal resistance.
5. $T_J=25^\circ\text{C}$, $V_{DD}=500\text{V}$, $V_{GS}=10\text{V}$, $L=50\text{mH}$.

Internal Structure and Marking Code



N-CHANNEL Super-Junction Power MOSFET

D²-PAK

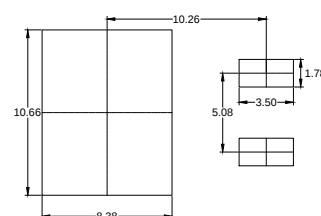


DIMENSIONS

DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.331	0.370	8.40	9.40	
B	0.378	0.417	9.60	10.60	
C	0.165	0.189	4.20	4.80	
D	0.027	0.037	0.68	0.94	
E	0.045	0.055	1.14	1.40	
G	0.10		2.54		TYP.
H	0.096	0.134	2.43	3.40	
J	0.011	0.025	0.28	0.64	
K	0.071	0.131	1.80	3.32	
S	0.575	0.625	14.60	15.87	
V	0.042	0.058	1.07	1.47	
W	0.000	0.010	0.00	0.25	

Suggested Solder Pad Layout

Unit:mm



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	2.0	3.3	4.0	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =5A		320	400	mΩ
Gate Resistance	R _g	f=1MHz, Open drain		21		Ω
Diode Characteristics						
Continuous Body Diode Current	I _S				14	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =10A			1.4	V
Reverse Recovery Time	t _{rr}	I _F =11A, dI _F /dt=600A/μs		170		ns
Reverse Recovery Charge	Q _{rr}			4.5		μC
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =300V,V _{GS} =0V,f=1MHz		750		pF
Output Capacitance	C _{oss}			22		
Reverse Transfer Capacitance	C _{rss}			2.4		
Total Gate Charge	Q _g	V _{DS} =520V,V _{GS} =10V,I _D =11A		23		nC
Gate-Source Charge	Q _{gs}			5		
Gate-Drain Charge	Q _{gd}			12		
Turn-On Delay Time	t _{d(on)}	V _{DS} =325V,V _{GS} =10V, R _{GEN} =2.2Ω, I _{DS} =11A		46		ns
Turn-On Rise Time	t _r			17		
Turn-Off Delay Time	t _{d(off)}			50		
Turn-Off Fall Time	t _f			11		

Curve Characteristics

Fig. 1 - Typical Output Characteristics

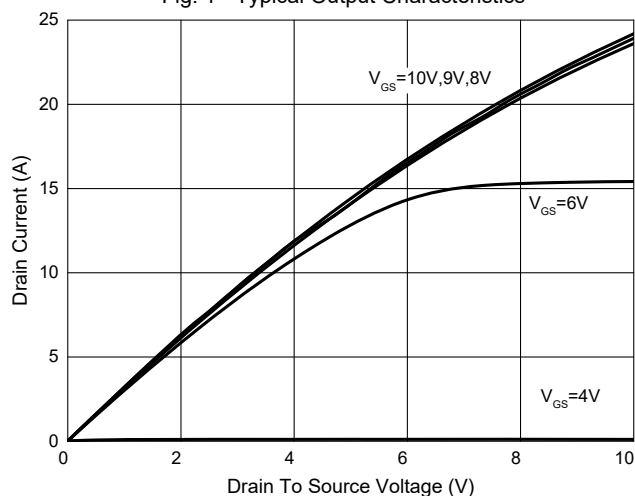


Fig. 2 - Transfer Characteristics

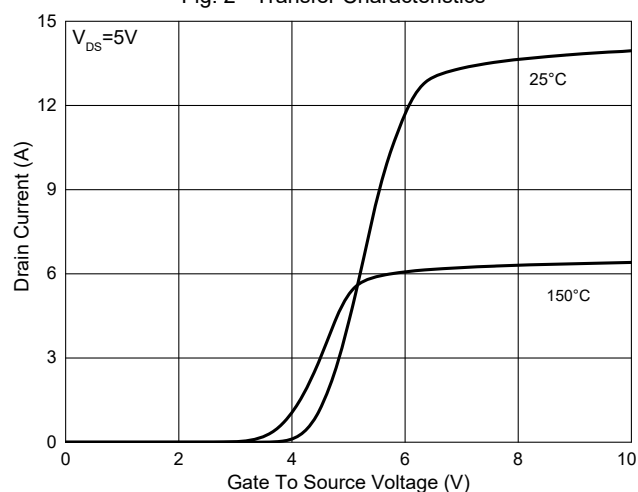


Fig. 3 - $R_{DS(ON)} - V_{GS}$

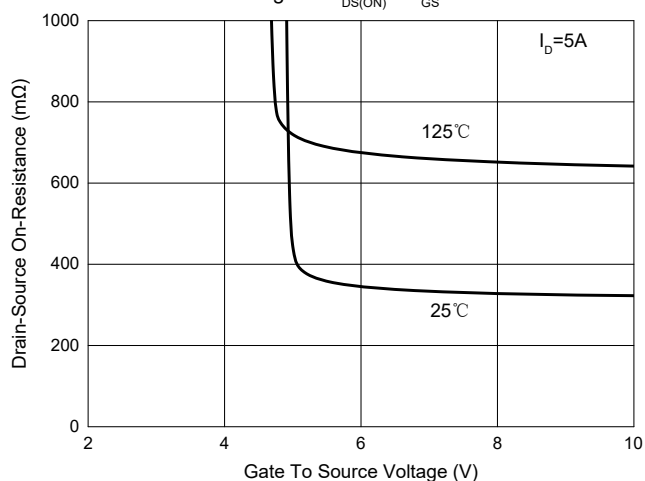


Fig. 4 - $R_{DS(ON)} - I_D$

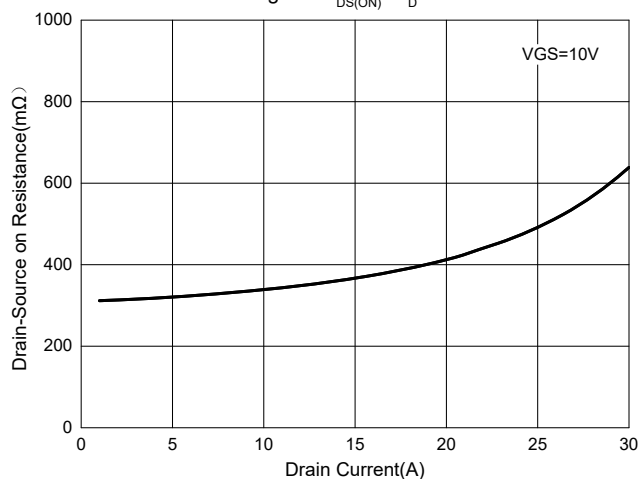


Fig. 5 - Capacitance Characteristics

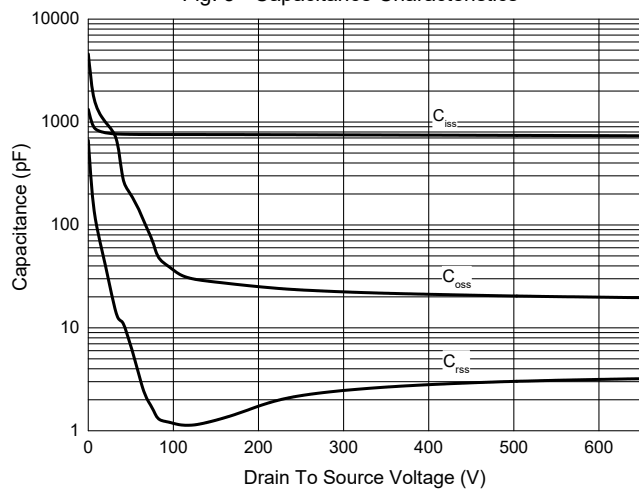
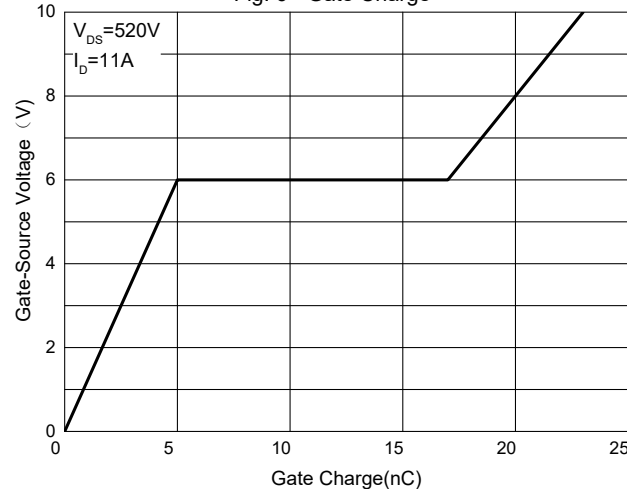


Fig. 6 - Gate Charge



Curve Characteristics

Fig. 7 - Normalized Threshold Voltage

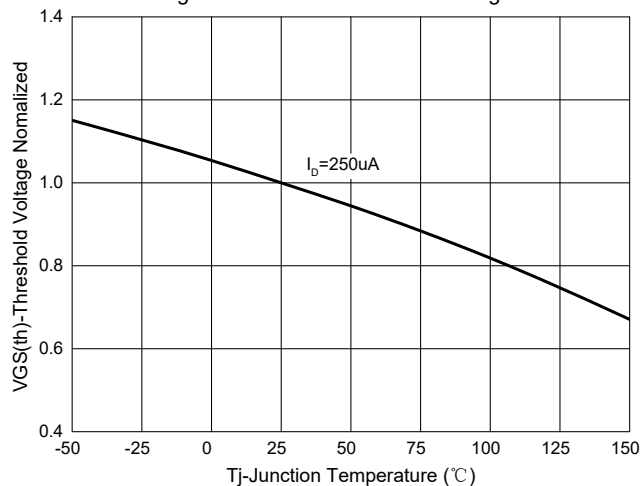


Fig.8-Normalized On Resistance Characteristics

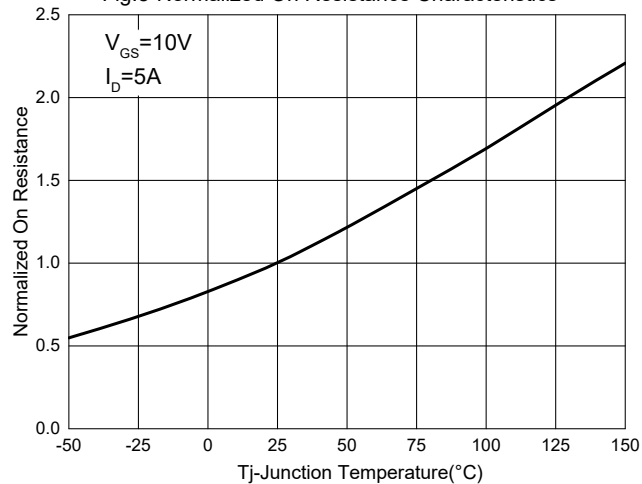


Fig.9 - $I_S - V_{SD}$

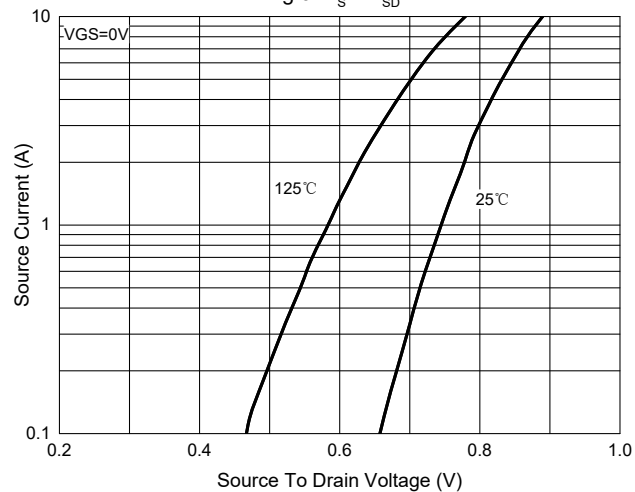


Fig. 10 - Drain Current

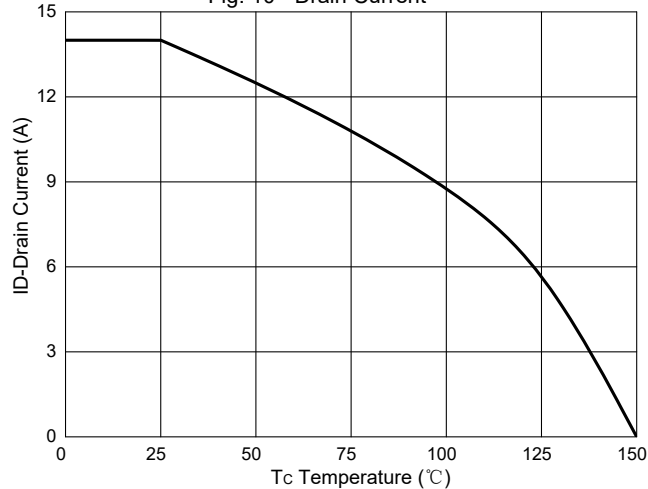
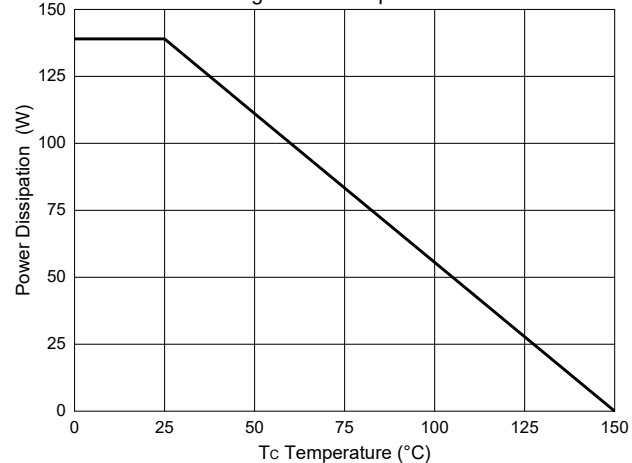


Fig.11-PD Dissipation



Curve Characteristics

Fig. 12 - Safe Operation Area

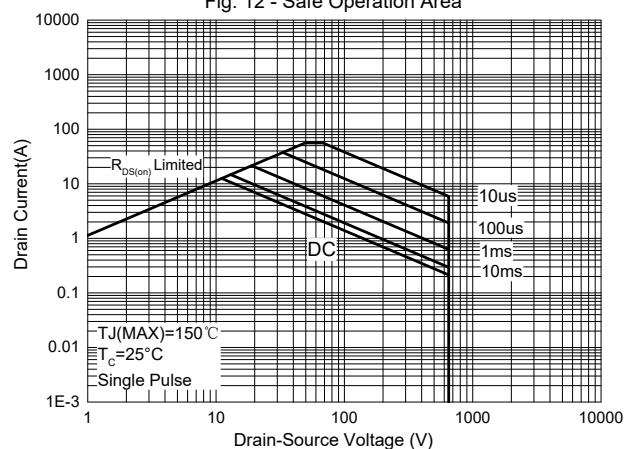
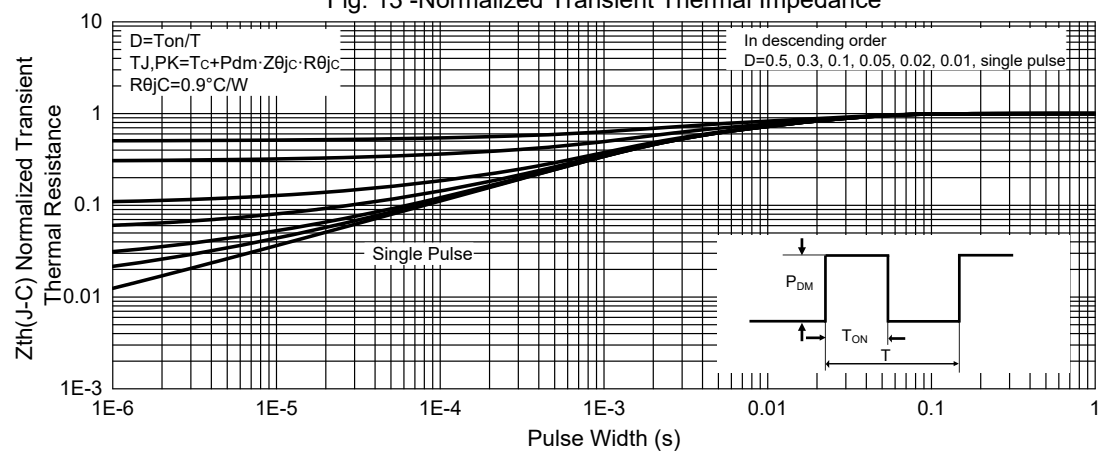


Fig. 13 - Normalized Transient Thermal Impedance



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 800pcs/Reel

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