

Features

- Very Low FOM $R_{DS(on)} \times Q_g$
- 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)
- Moisture Sensitivity Level 3

Maximum Ratings

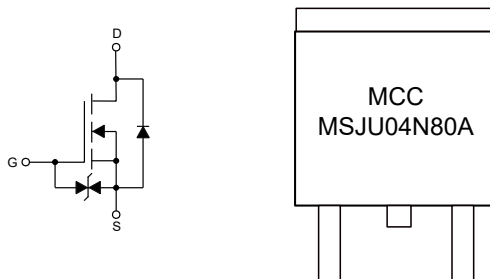
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 1.41°C/W Junction to Case

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	800	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	4.5	A
Pulsed Drain Current ⁽²⁾	I_{DM}	13.5	A
Total Power Dissipation ⁽³⁾	P_D	88	W
Single Pulsed Avalanche Energy	E_{AS}	50	mJ

Note:

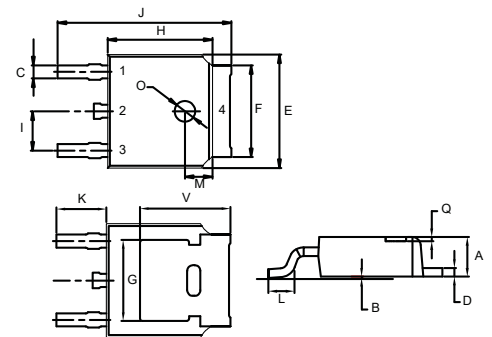
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. Repetitive rating; pulse width limited by max. junction temperature.
3. P_D is based on max. junction temperature, using junction-case thermal resistance.

Internal Structure and Marking Code



N-CHANNEL Super-Junction Power MOSFET

DPAK(TO-252)



1. Gate
- 2,4. Drain
3. Source

DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.087	0.094	2.20	2.40	
B	0.000	0.005	0.00	0.13	
C	0.026	0.034	0.66	0.86	
D	0.018	0.023	0.46	0.58	
E	0.256	0.264	6.50	6.70	
F	0.201	0.215	5.10	5.46	
G	0.190		4.83		TYP.
H	0.236	0.244	6.00	6.20	
I	0.086	0.094	2.18	2.39	
J	0.386	0.409	9.80	10.40	
K	0.114		2.90		TYP.
L	0.055	0.067	1.40	1.70	
M	0.063		1.60		TYP.
O	0.043	0.051	1.10	1.30	
Q	0.000	0.012	0.00	0.30	
V	0.211		5.35		TYP.

Electrical Characteristics @ 25°C (Unless Otherwise Specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	800			V
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 10	μA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=800V, V_{GS}=0V$			1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.5	3.6	4.5	V
Drain-Source On-Resistance ^(Note 4)	$R_{DS(on)}$	$V_{GS}=10V, I_D=2.5A$		0.97	1.3	Ω
Gate Resistance	R_g	$f=1MHz, \text{Open drain}$		21		Ω
Dynamic Characteristics ^(Note 5)						
Input Capacitance	C_{iss}	$V_{DS}=100V, V_{GS}=0V, f=500kHz$		396		pF
Output Capacitance	C_{oss}			21		
Reverse Transfer Capacitance	C_{rss}			14		
Total Gate Charge	Q_g	$V_{DD}=640V, V_{GS}=10V, I_D=4.5A$		11.5		nC
Gate-Source Charge	Q_{gs}			3.2		
Gate-Drain Charge	Q_{gd}			4.6		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=400V, I_D=4.5A, R_G=25\Omega$		13.3		ns
Turn-On Rise Time	t_r			28.2		
Turn-Off Delay Time	$t_{d(off)}$			55.8		
Turn-Off Fall Time	t_f			25.7		
Drain-Source Body Diode Characteristics						
Continuous Body Diode Current	I_S	$T_C=25^\circ C$			4.5	A
Pulsed Diode Forward Current	I_{SM}				13.5	
Body Diode Voltage	V_{SD}	$I_{SD}=4.5A, V_{GS}=0V$			1.4	V
Reverse Recovery Time	t_{rr}	$V_R=100V, I_F=I_S, di_F/dt=100A/\mu s$		267		ns
Reverse Recovery Charge	Q_{rr}				2.3	μC

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

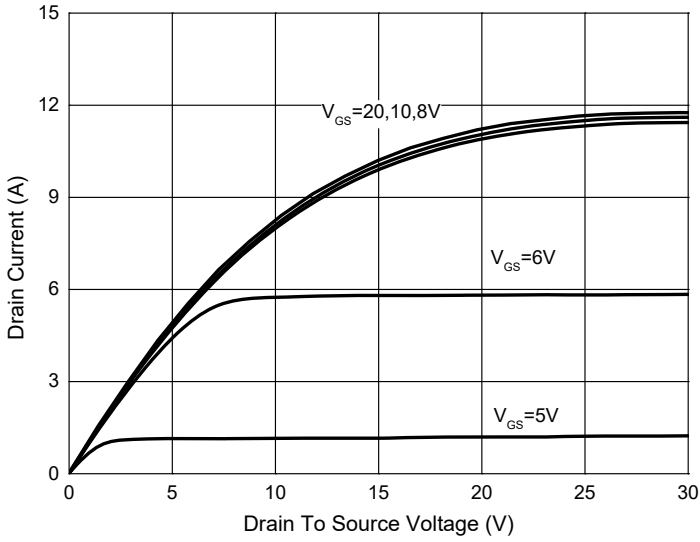


Fig. 2 - Transfer Characteristics

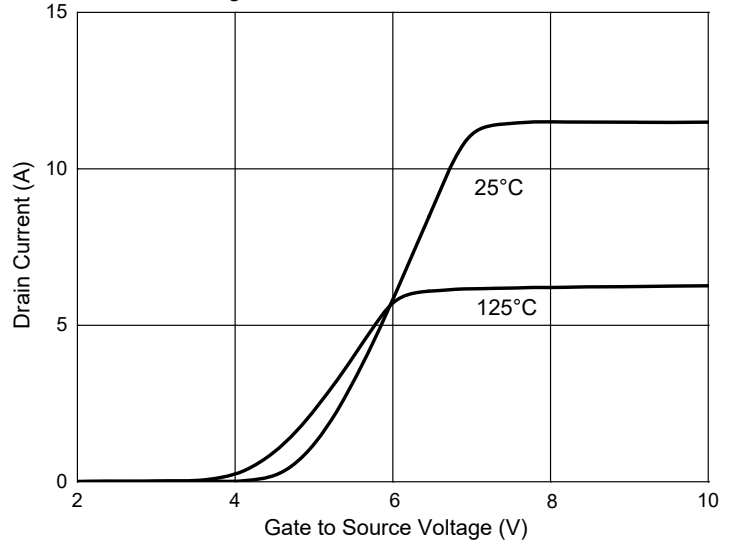


Fig. 3 - $I_S - V_{SD}$

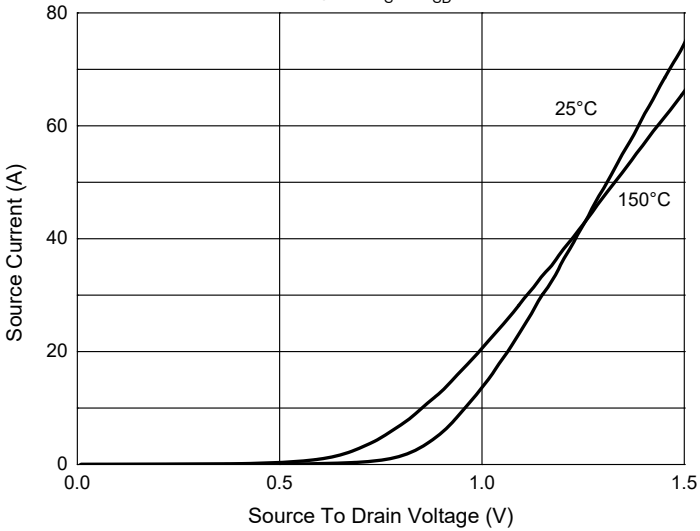


Fig.4 - $R_{DS(ON)} - I_D$

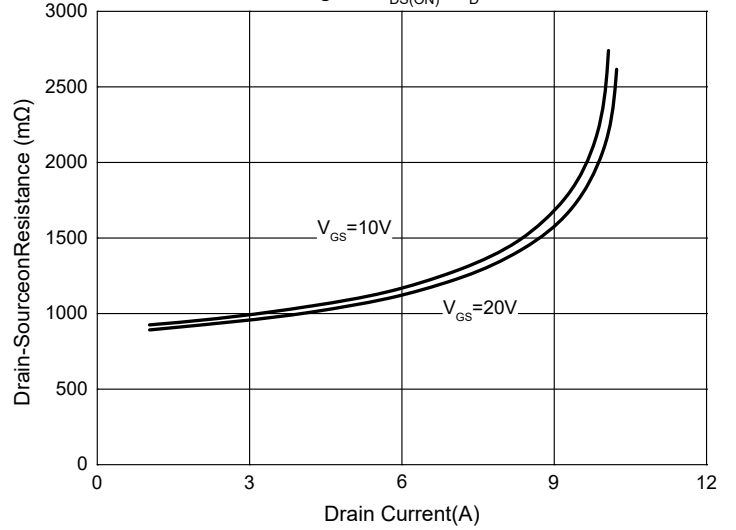


Fig. 5 - Drain-Source Breakdown Voltage

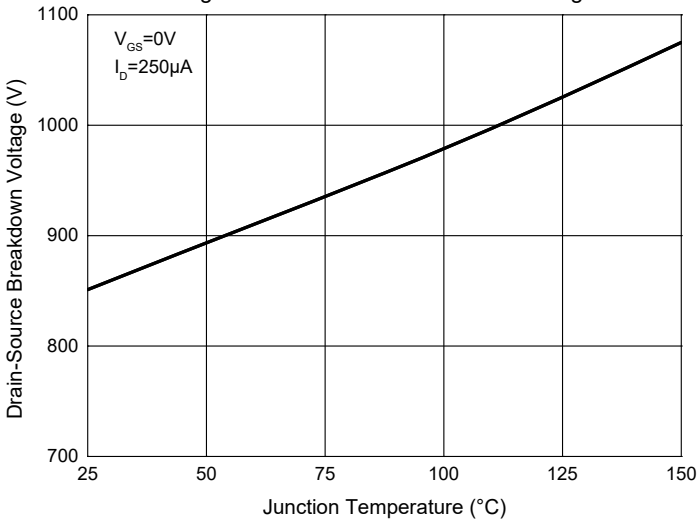
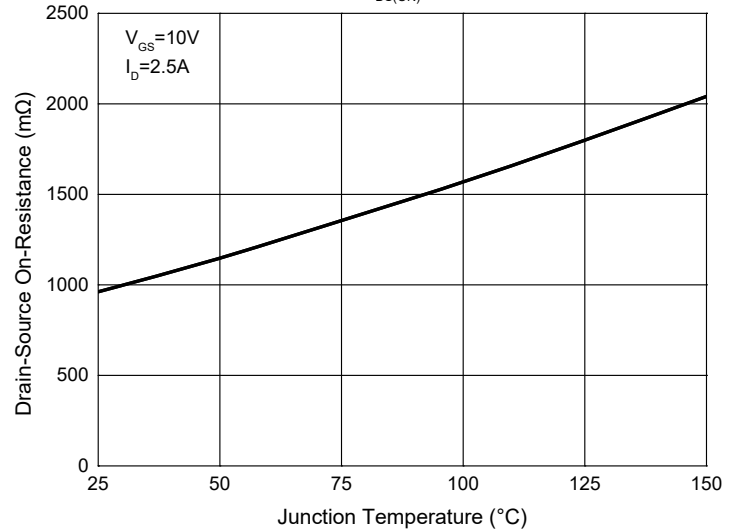


Fig. 6 - $R_{DS(ON)}$



Curve Characteristics

Fig. 7 - Gate Charge

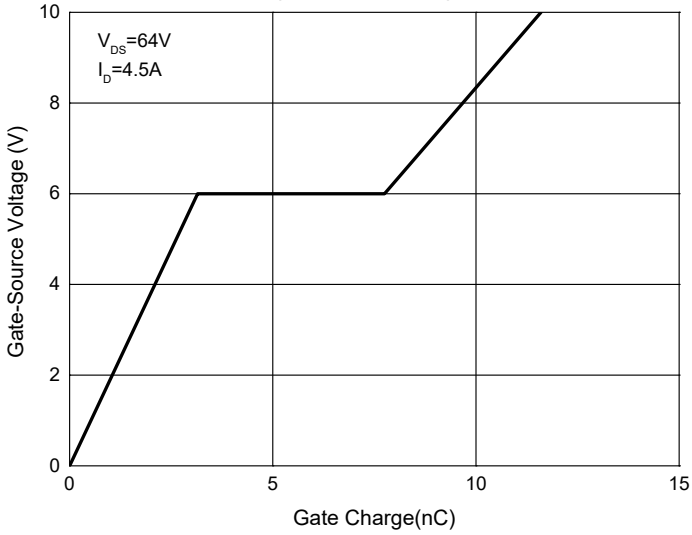


Fig. 8 - Capacitance Characteristics

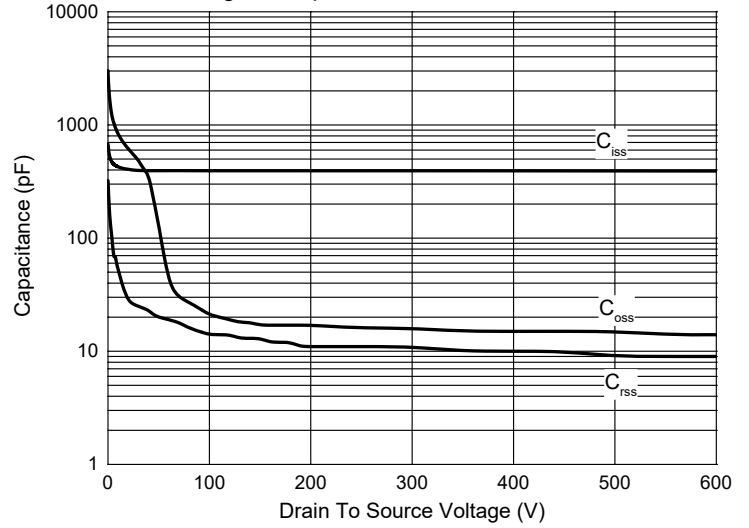


Fig. 9 - Safe Operation Area

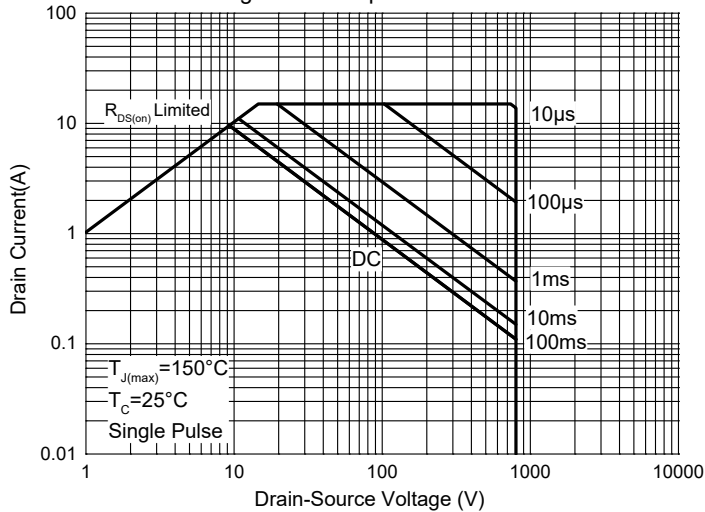
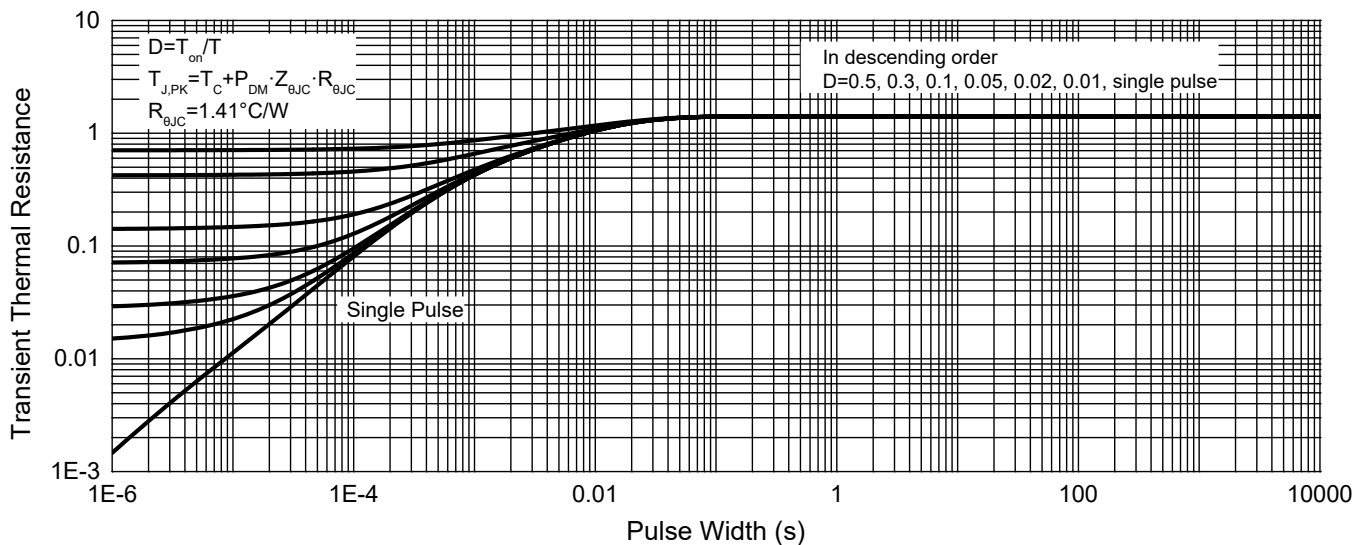


Fig. 10 - Transient Thermal Impedance



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 2.5Kpcs/Reel

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