

Features

- Very Low FOM $R_{DS(on)} \times Q_g$
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device (Note1)
- 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: 62°C/W Junction to Ambient
- Thermal Resistance: 2°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	$T_C=25^\circ\text{C}$	7
		$T_C=100^\circ\text{C}$	4.2
Pulsed Drain Current (Note 2)	I_{DM}	21	A
Single Pulse Avalanche Energy (Note 3)	E_{AS}	142	mJ
Total Power Dissipation	$T_C=25^\circ\text{C}$	P_D	63

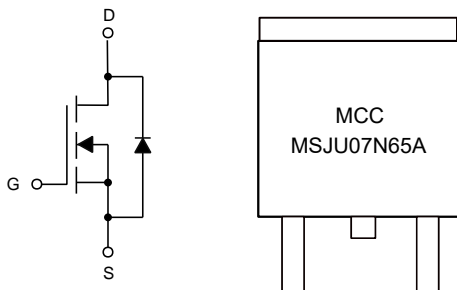
Note:

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.

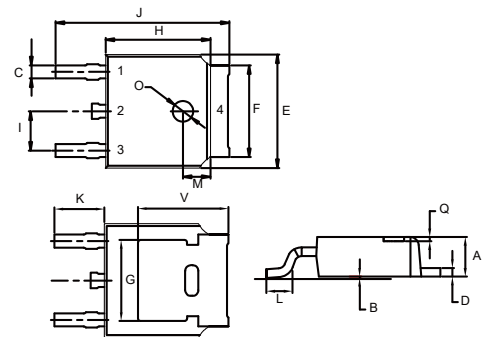
3. $V_{DD}=50\text{V}$, $R_G=25\Omega$, Starting $T_J=25^\circ\text{C}$.

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	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	650			V
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 30V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=650V, V_{GS}=0V$			1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2	3	4	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=2.5A$		0.53	0.6	Ω
Gate Resistance	R_G	f = 1.0MHz Open Drain		21		Ω
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=7A$			1.4	V
Continuous Body Diode Current	I_S				7	A
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V, f=1MHz$		545		pF
Output Capacitance	C_{oss}			640		
Reverse Transfer Capacitance	C_{rss}			28.6		
Total Gate Charge	Q_g	$V_{DD}=520V, V_{GS}=10V, I_D=7A$		13		nC
Gate-Source Charge	Q_{gs}			2.8		
Gate-Drain Charge	Q_{gd}			5.6		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=350V, I_D=7A, R_G=25\Omega$		18		ns
Turn-On Rise Time	t_r			33		
Turn-Off Delay Time	$t_{d(off)}$			80		
Turn-Off Fall Time	t_f			28		
Reverse Recovery Time	t_{rr}	$V_R=100V, I_F=7A, di/dt = 100A/\mu s$		271		ns
Reverse Recovery Charge	Q_{rr}			2.9		μC
Peak Reverse Recovery Current	I_{rrm}			21.2		A

Curve Characteristics

Fig. 1 - Typical Output Characteristics

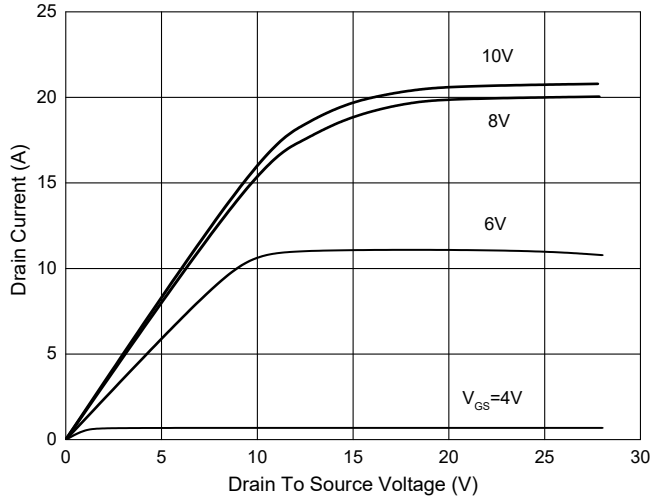


Fig. 2 - Transfer Characteristics

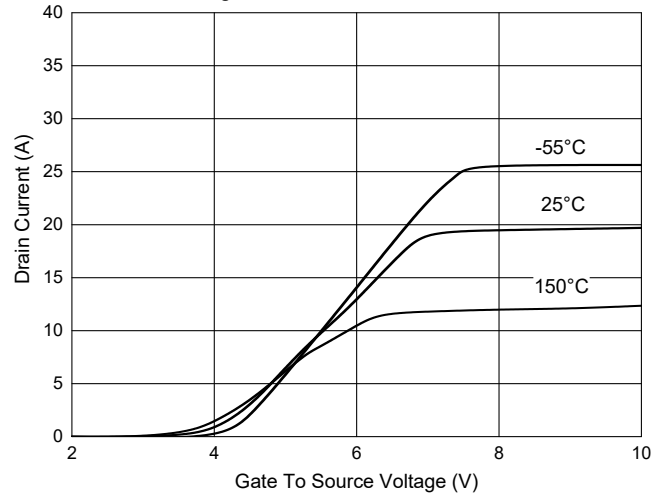


Fig. 3 - $R_{DS(ON)}-I_D$

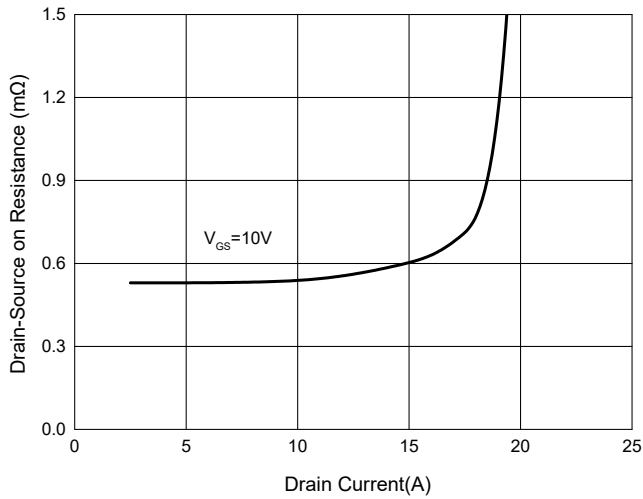


Fig. 4 - Normalized On Resistance Characteristics

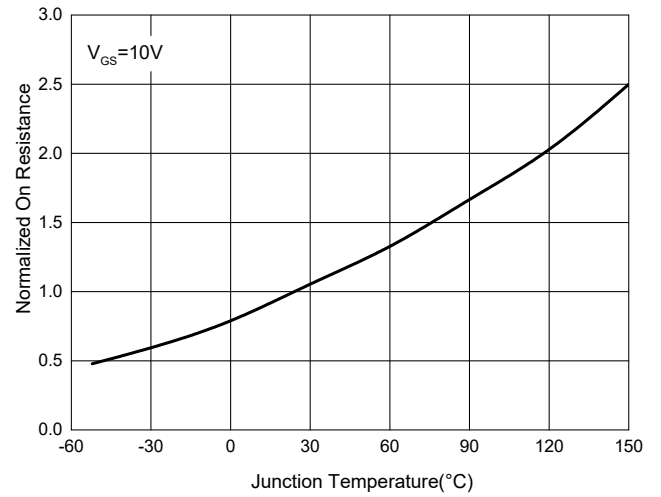


Fig. 5 - Gate Charge

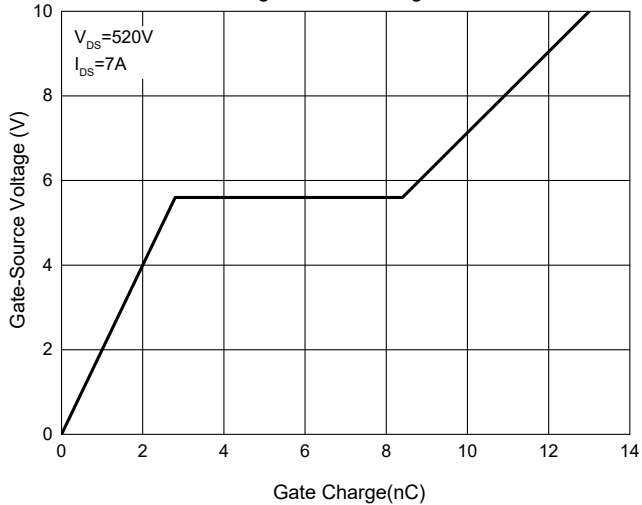


Fig. 6 - Capacitance Characteristics

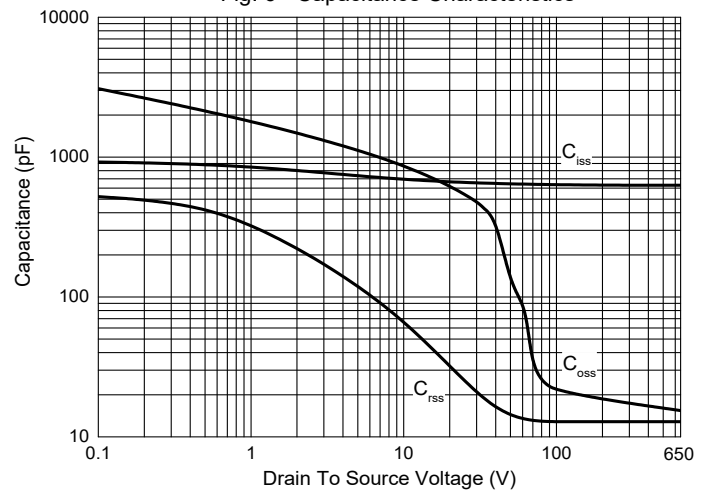


Fig. 7 - Normalized Drain-Source Breakdown Voltage

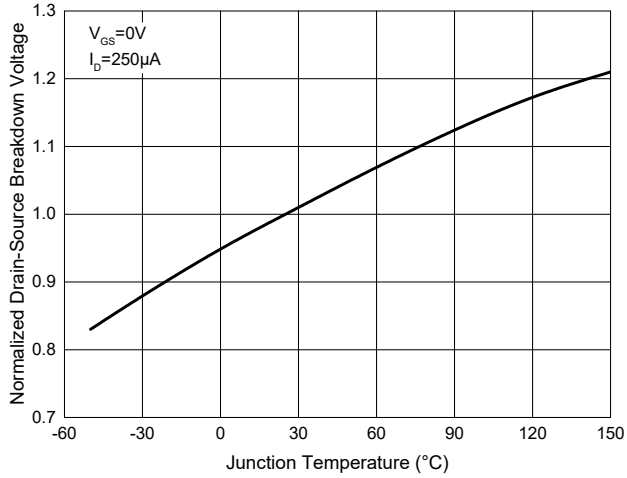


Fig. 8 - Safe Operation Area

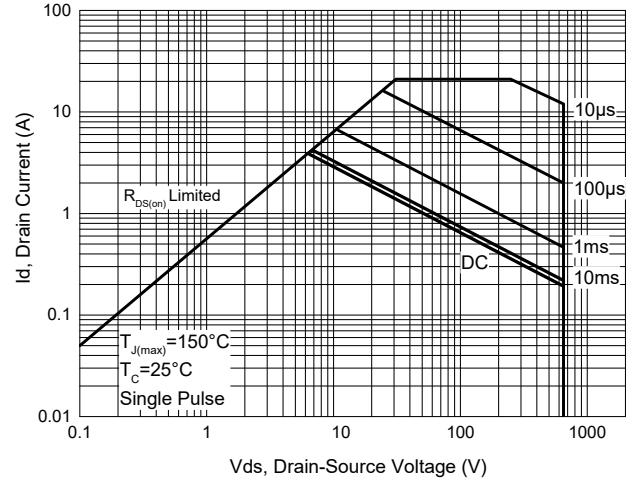
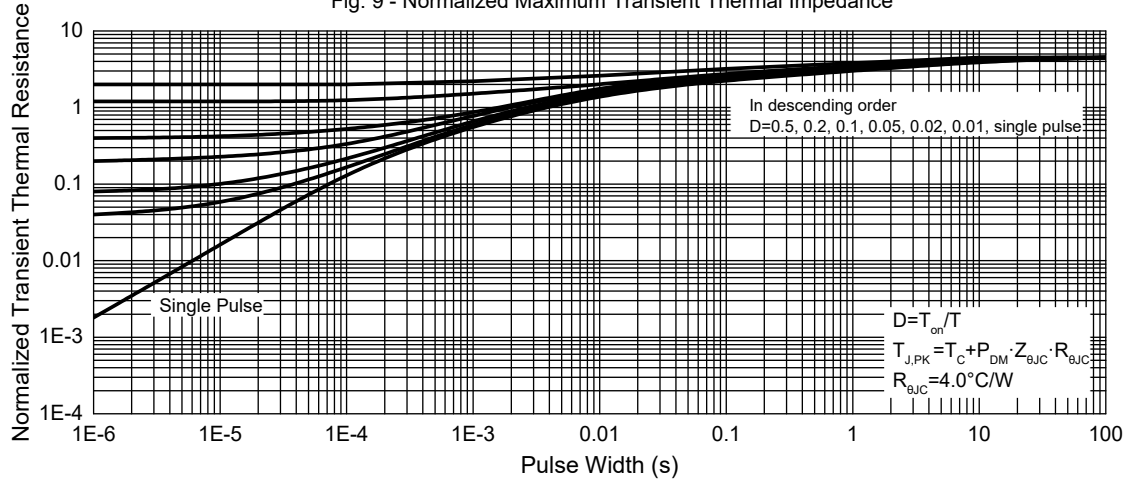


Fig. 9 - Normalized Maximum Transient Thermal Impedance



Ordering Information

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

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