

**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 1

**Maximum Ratings**

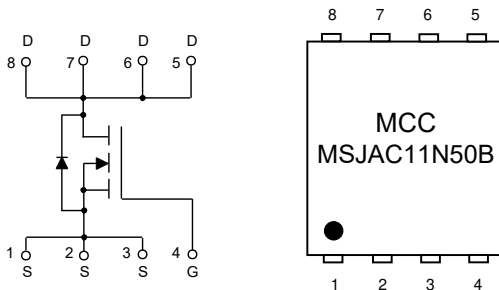
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 62.5°C/W Junction to Ambient(Steady-State)
- Thermal Resistance: 1.5°C/W Junction to Case(Steady-State)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	500	V
Gate-Source Voltage	$V_{GS}$	±30	V
Continuous Drain Current	$I_D$	11	A
Pulsed Drain Current <sup>(2)</sup>	$I_{DM}$	33	A
Total Power Dissipation <sup>(3)</sup>	$P_D$	83	W
Single Pulsed Avalanche Energy	$E_{AS}$	220	mJ

Note:

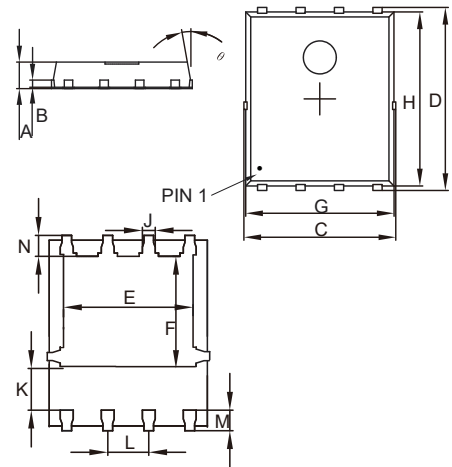
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. Repetitive rating; pulse width limited by max. junction temperature.
3.  $P_D$  is based on max. junction temperature, using junction-case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

**Internal Structure and Marking Code**



**N-CHANNEL  
MOSFET**

**DFN5060**



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.031	0.047	0.80	1.20	
B	0.010		0.254		TYP.
C	0.193	0.222	4.90	5.64	
D	0.232	0.250	5.90	6.35	
E	0.148	0.167	3.75	4.25	
F	0.126	0.154	3.20	3.92	
G	0.189	0.213	4.80	5.40	
H	0.222	0.239	5.65	6.06	
K	0.045	0.059	1.15	1.50	
J	0.012	0.020	0.30	0.50	
L	0.046	0.054	1.17	1.37	
M	0.012	0.028	0.30	0.71	
N	0.016	0.028	0.40	0.71	

**Electrical Characteristics @ 25°C (Unless Otherwise Specified)**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	500			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 30V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=500V, V_{GS}=0V$			1	$\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.5	3.0	3.5	V
Drain-Source On-Resistance <sup>(Note 4)</sup>	$R_{DS(on)}$	$V_{GS}=10V, I_D=3.8A$		0.35	0.38	$\Omega$
Gate Resistance	$R_g$	Drain open, $f=1MHz$		3.0		$\Omega$
<b>Diode Characteristics</b> <sup>(Note 5)</sup>						
Continuous Body Diode Current	$I_S$				11	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=11A$			1.4	V
Reverse Recovery Time	$t_{rr}$	$I_S=11A, di/dt=100A/\mu s$		256		ns
Reverse Recovery Charge	$Q_{rr}$			2.3		nC
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=25V, V_{GS}=0V, f=1MHz$		702		pF
Output Capacitance	$C_{oss}$			357		
Reverse Transfer Capacitance	$C_{rss}$			33.7		
Total Gate Charge	$Q_g$	$V_{DS}=400V, V_{GS}=10V, I_D=11A$		21.8		nC
Gate-Source Charge	$Q_{gs}$			4.8		
Gate-Drain Charge	$Q_{gd}$			9.7		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=250V, V_{GS}=10V, R_G=25\Omega, I_D=11A$		15.2		ns
Turn-On Rise Time	$t_r$			32		
Turn-Off Delay Time	$t_{d(off)}$			59.6		
Turn-Off Fall Time	$t_f$			28.4		

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

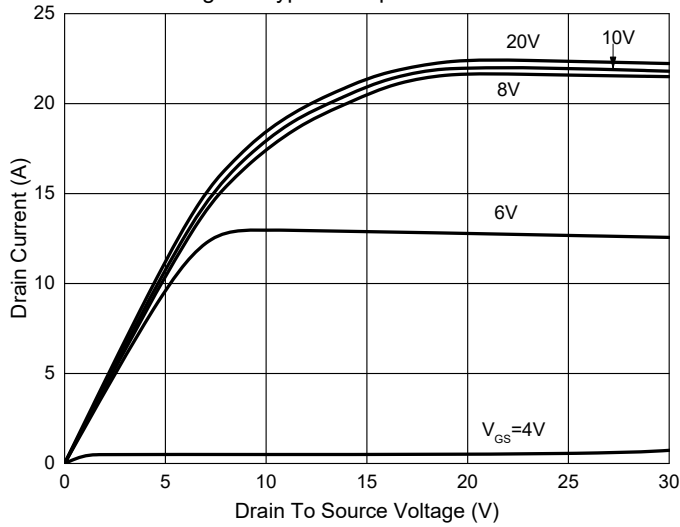


Fig. 2 - Transfer Characteristics

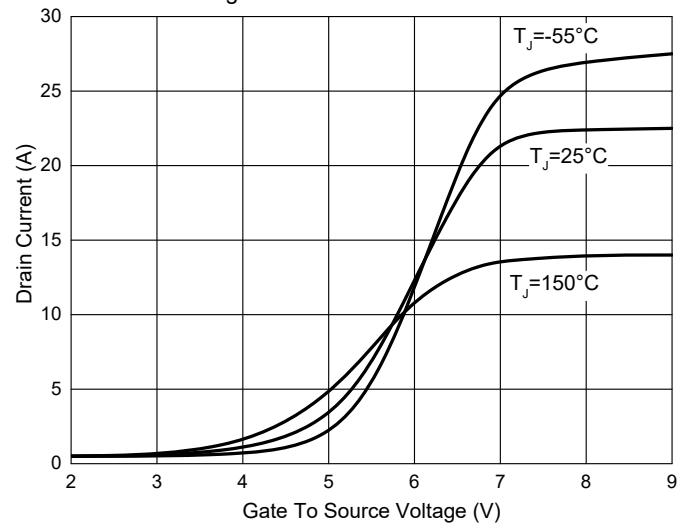


Fig. 3 -  $R_{DS(ON)} - I_D$

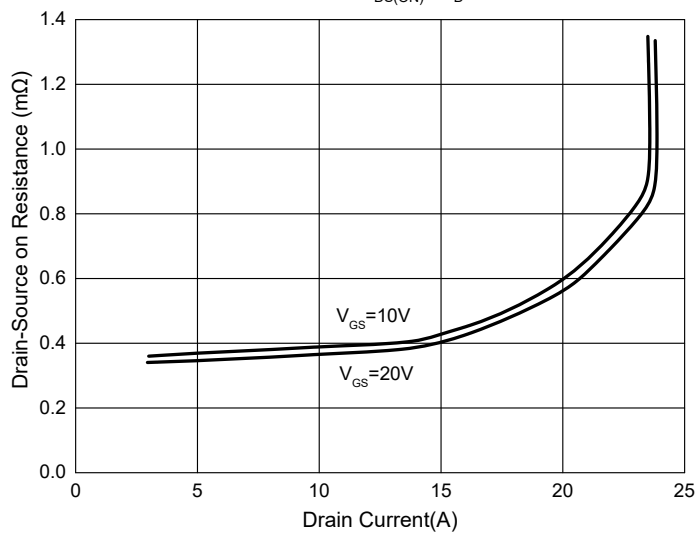


Fig. 4 - Drain-Source on Resistance

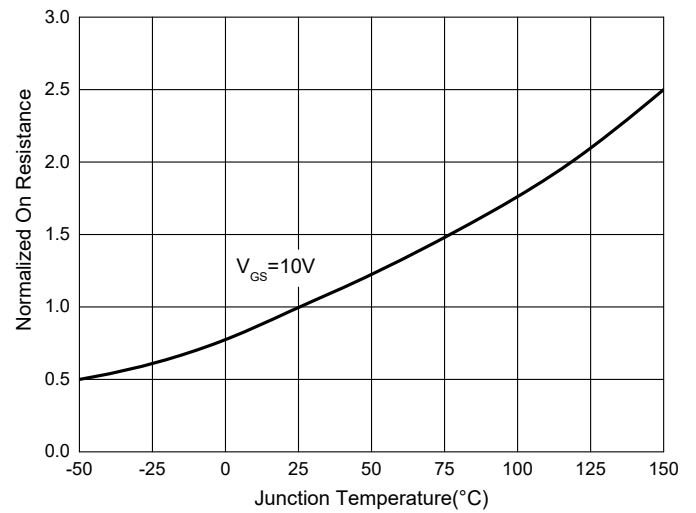


Fig. 5 - Capacitance Characteristics

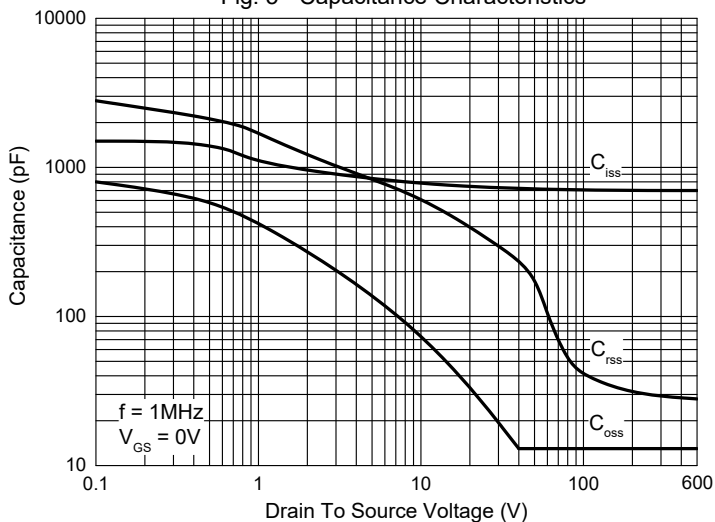
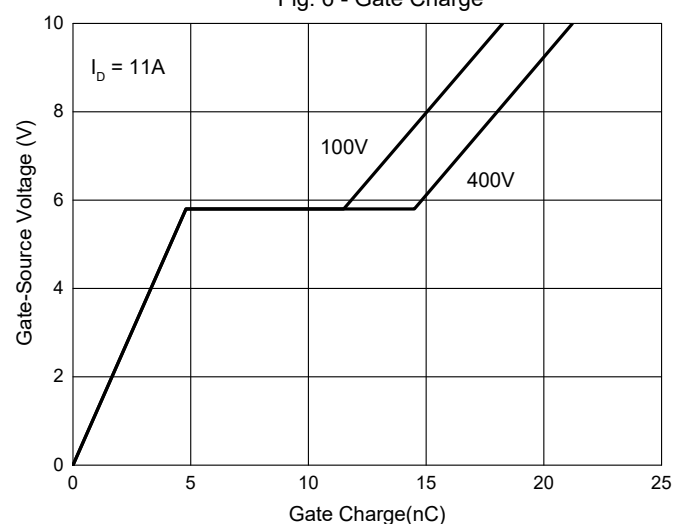


Fig. 6 - Gate Charge



## Curve Characteristics

Fig. 7 - Safe Operation Area

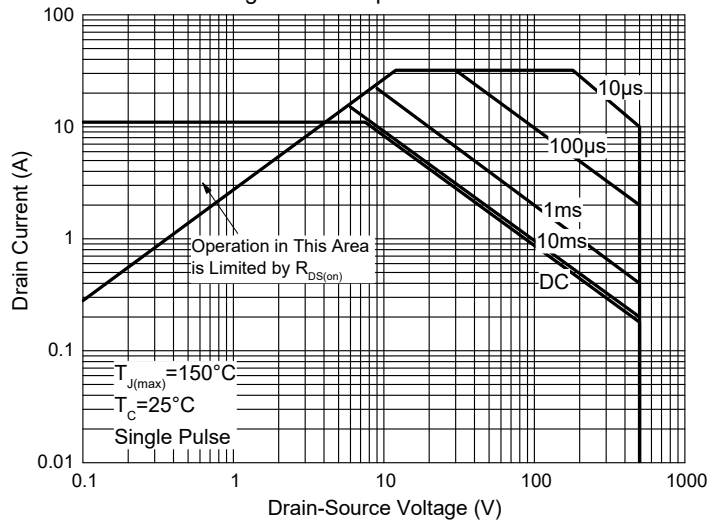
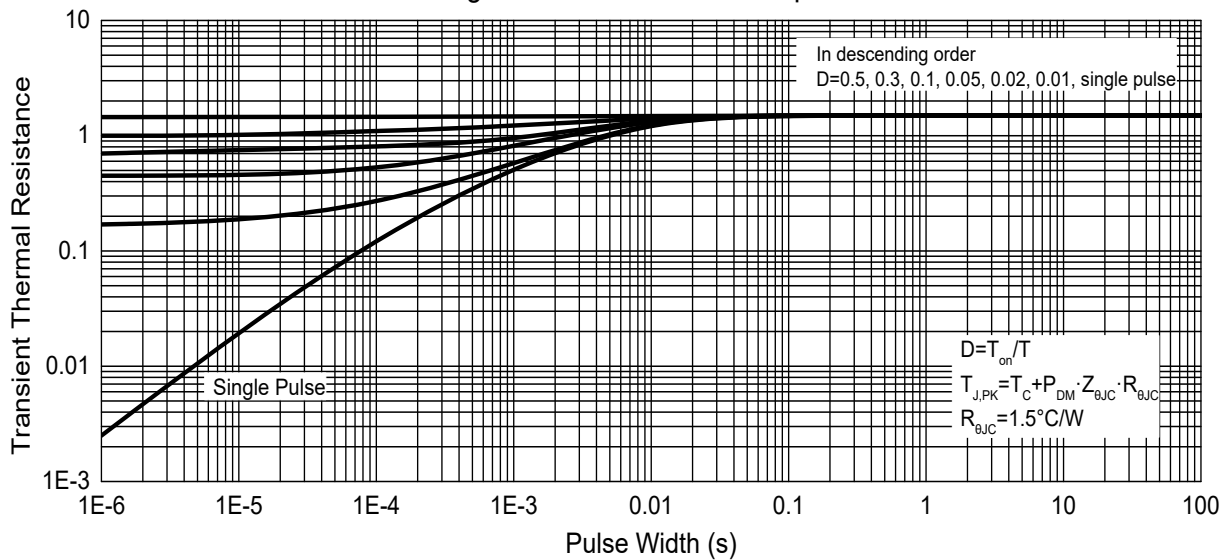


Fig. 8 - Transient Thermal Impedance



## Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 5Kpcs/Reel

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