

### Features

- Split Gate Trench MOSFET Technology
- Excellent Package for Heat Dissipation
- High Density Cell Design for Low  $R_{DS(on)}$
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device (Note 1)
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

### Maximum Ratings

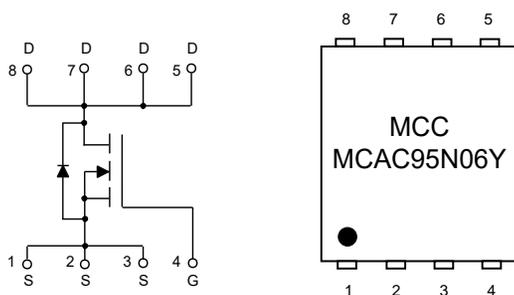
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 20°C/W Junction to Ambient<sup>(Note 2)</sup>
- Thermal Resistance: 1.04°C/W Junction to Case

Parameter	Symbol	Rating	Unit	
Drain-Source Voltage	$V_{DS}$	60	V	
Gate-Source Voltage	$V_{GS}$	±20	V	
Continuous Drain Current <sup>(Note 3)</sup>	$I_D$	$T_C=25^\circ\text{C}$	95	A
		$T_C=100^\circ\text{C}$	60	A
Pulsed Drain Current <sup>(Note 4)</sup>	$I_{DM}$	390	A	
Avalanche Energy <sup>(Note 5)</sup>	$E_{AS}$	500	mJ	
Total Power Dissipation <sup>(Note 6)</sup>	$P_D$	120	W	

**Note:**

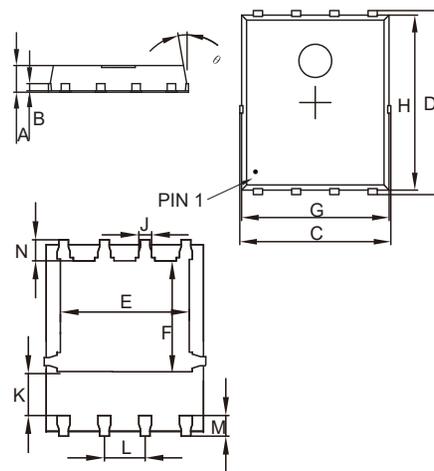
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of  $R_{\theta JA}$  is measured with the device mounted on 1 in<sup>2</sup> FR-4 board with 2oz. copper, in a still air environment with  $T_A=25^\circ\text{C}$ .
3. The maximum current rating is package limited.
4. Repetitive rating; pulse width limited by max. junction temperature.
5.  $V_{DD}=50\text{V}$ ,  $R_G=25\Omega$ ,  $L=0.5\text{mH}$ , starting  $T_J=25^\circ\text{C}$ .
6.  $P_D$  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	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	60			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=60V, V_{GS}=0V$			1	$\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.2	1.8	2.2	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$		2.1	2.5	m $\Omega$
		$V_{GS}=4.5V, I_D=15A$		2.7	3.4	m $\Omega$
<b>Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$				95	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=20A$			1.2	V
Reverse Recovery Time	$t_{rr}$	$I_S=25A, di/dt=100A/\mu s$		68		ns
Reverse Recovery Charge	$Q_{rr}$			73		nC
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=25V, V_{GS}=0V, f=100KHz$		5950		pF
Output Capacitance	$C_{oss}$			1250		
Reverse Transfer Capacitance	$C_{rss}$			85		
Total Gate Charge	$Q_g$	$V_{DS}=50V, V_{GS}=10V, I_D=50A$		93		nC
Gate-Source Charge	$Q_{gs}$			17		
Gate-Drain Charge	$Q_{gd}$			14		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V, V_{DD}=30V, I_D=25A, R_{GEN}=2\Omega$		22.5		ns
Turn-On Rise Time	$t_r$			6.7		
Turn-Off Delay Time	$t_{d(off)}$			80.3		
Turn-Off Fall Time	$t_f$			26.9		

**Curve Characteristics**

Fig. 1 - Typical Output Characteristics

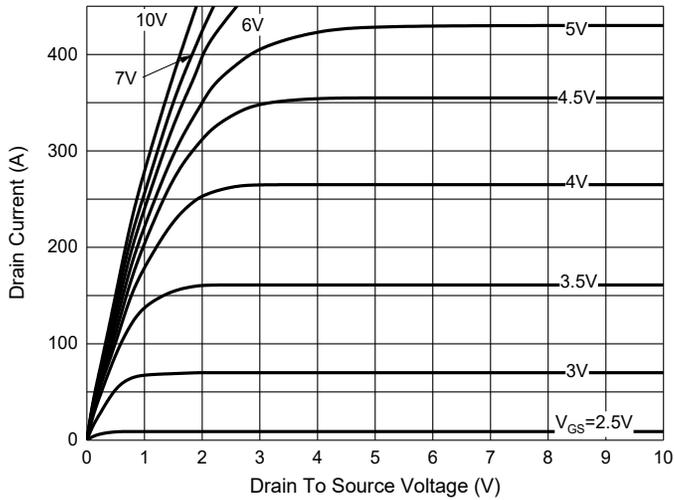


Fig. 2 - I<sub>S</sub>—V<sub>SD</sub>

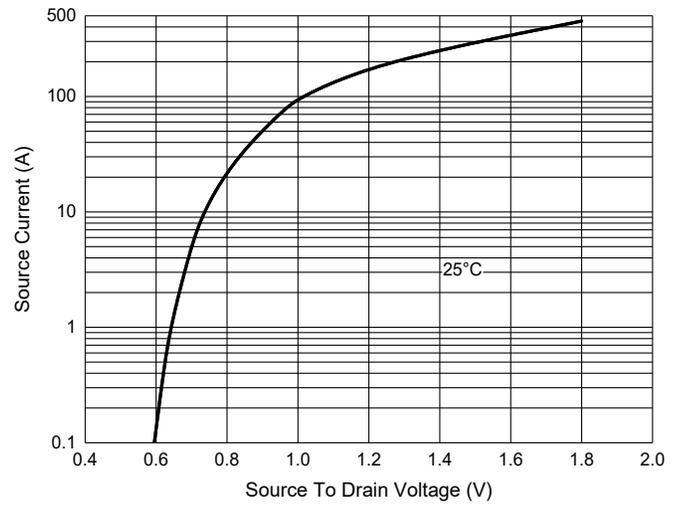


Fig. 3 - R<sub>DS(ON)</sub>—I<sub>D</sub>

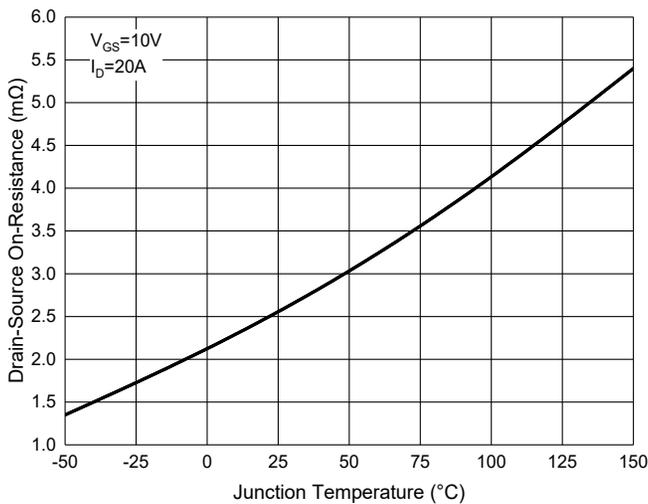


Fig. 4 - Capacitance Characteristics

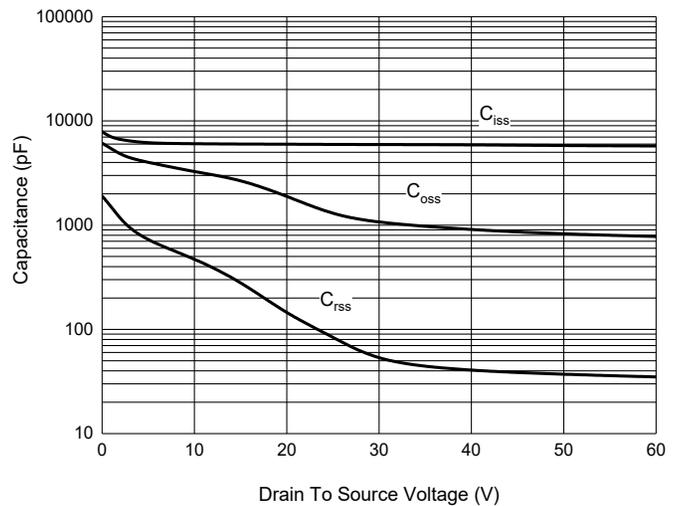


Fig. 5 - Gate Charge

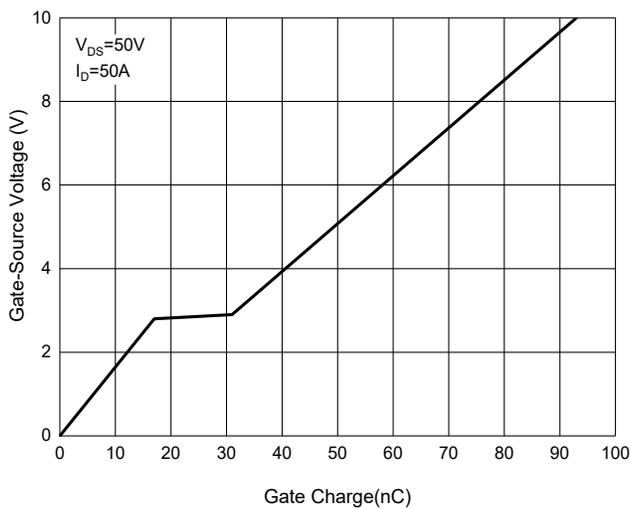
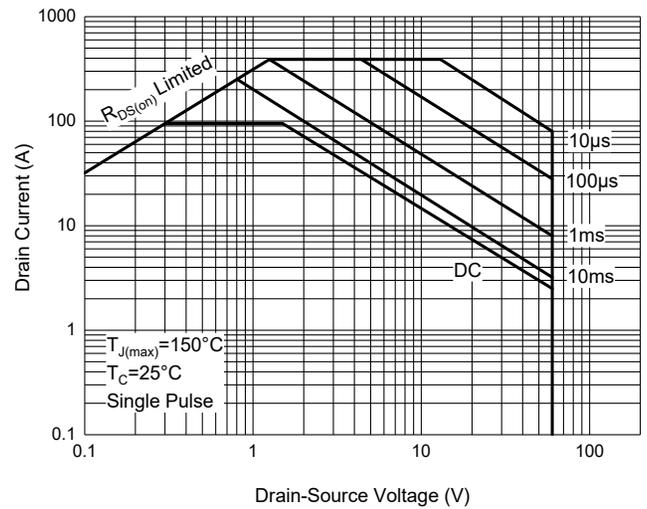
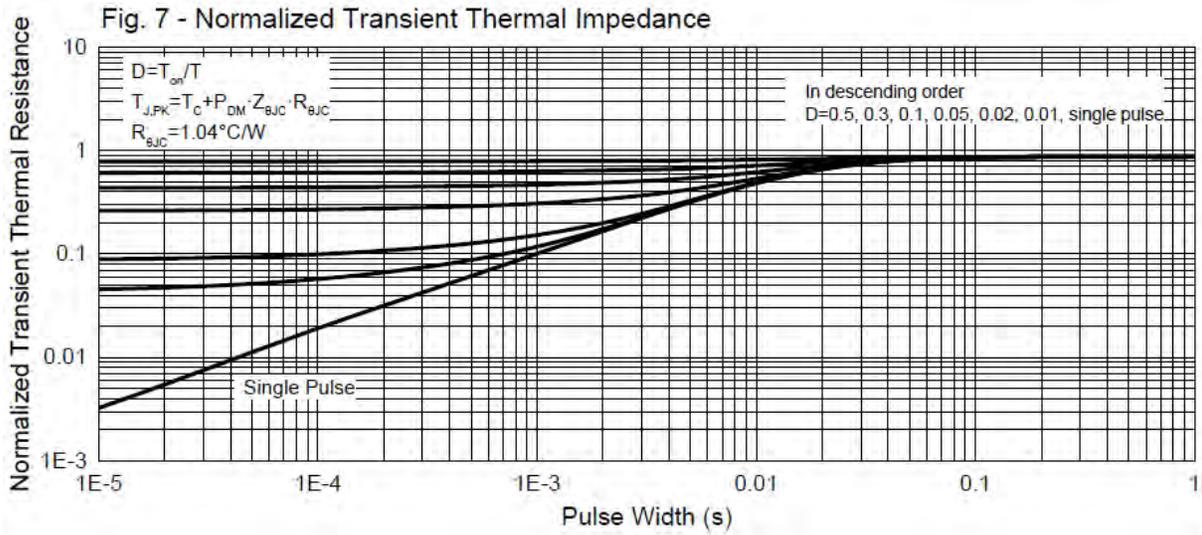


Fig. 6 - Safe Operation Area



Curve Characteristics



## Ordering Information

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

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