

**Features**

- Trench Power LV MOSFET Technology
- High Density Cell Design for Low  $R_{DS(ON)}$
- High Speed Switching
- 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**

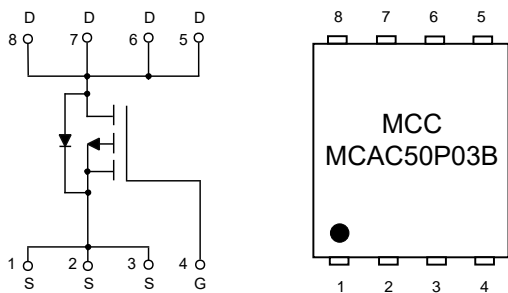
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 17°C/W Junction to Ambient <sup>(2)</sup>
- Thermal Resistance: 1.5°C/W Junction to Case <sup>(2)</sup>

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	-30	V
Gate-Source Voltage	$V_{GS}$	±25	V
Continuous Drain Current	$I_D$	-50	A
Pulsed Drain Current <sup>(3)</sup>	$I_{DM}$	-210	A
Total Power Dissipation	$P_D$	83	W
Single Pulsed Avalanche Energy <sup>(4)</sup>	$E_{AS}$	360	mJ

Note:

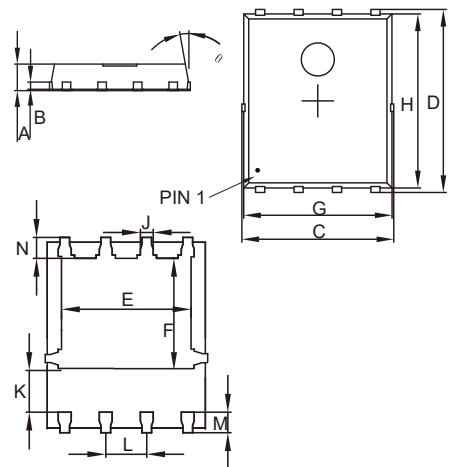
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2.  $R_{\theta JA}$  is the sum of the junction-to-case and case-to-ambient thermal resistance, where the case thermal reference is defined as the solder mounting surface of the drain pins.  $R_{\theta JC}$  is guaranteed by design, while  $R_{\theta JA}$  is determined by the board design. The maximum rating presented here is based on mounting on a 1 in<sup>2</sup> pad of 2oz copper.
3. Pulse Test: Pulse Width ≤ 300us, Duty cycle ≤ 2%.
4.  $T_J = 25^\circ C$ ,  $V_{DD} = -25V$ ,  $V_G = -10V$ ,  $L = 2mH$ .

**Internal Structure and Marking Code**



**P-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	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 25V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-30V, V_{GS}=0V$			-1	$\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.2	-1.8	-2.8	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-20A$		4	5.5	m $\Omega$
		$V_{GS}=-4.5V, I_D=-20A$		6	9.5	m $\Omega$
Gate Resistance	$R_g$	Drain open, $f=1MHz$		6.5		$\Omega$
<b>Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$				-50	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=-20A$			-1.2	V
Reverse Recovery Time	$t_{rr}$	$I_S=-15A, di/dt=100A/\mu s$		24		ns
Reverse Recovery Charge	$Q_{rr}$			8.5		nC
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=-15V, V_{GS}=0V, f=1MHz$		6464		pF
Output Capacitance	$C_{oss}$			779		
Reverse Transfer Capacitance	$C_{rss}$			477		
Total Gate Charge	$Q_g$	$V_{DS}=-15V, V_{GS}=-10V, I_D=-20A$		111.7		nC
Gate-Source Charge	$Q_{gs}$			21.1		
Gate-Drain Charge	$Q_{gd}$			22.9		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=-15V, V_{GS}=-10V, R_G=3\Omega, R_L=0.75\Omega$		15		ns
Turn-On Rise Time	$t_r$			75		
Turn-Off Delay Time	$t_{d(off)}$			130		
Turn-Off Fall Time	$t_f$			80		

**Curve Characteristics**

Fig. 1 - Typical Output Characteristics

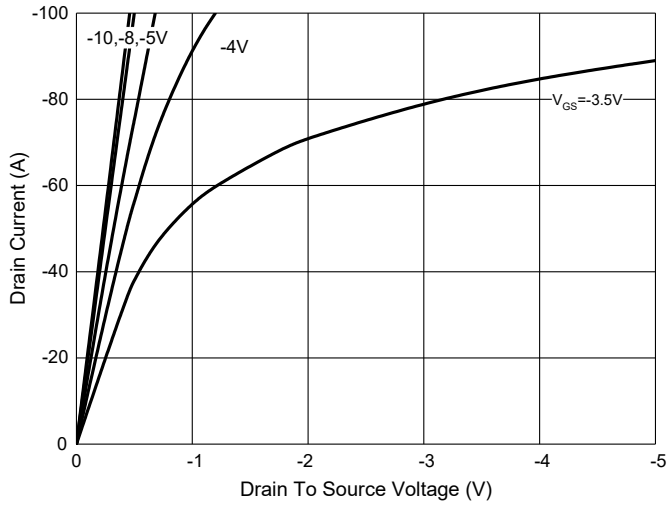


Fig. 2 - Transfer Characteristics

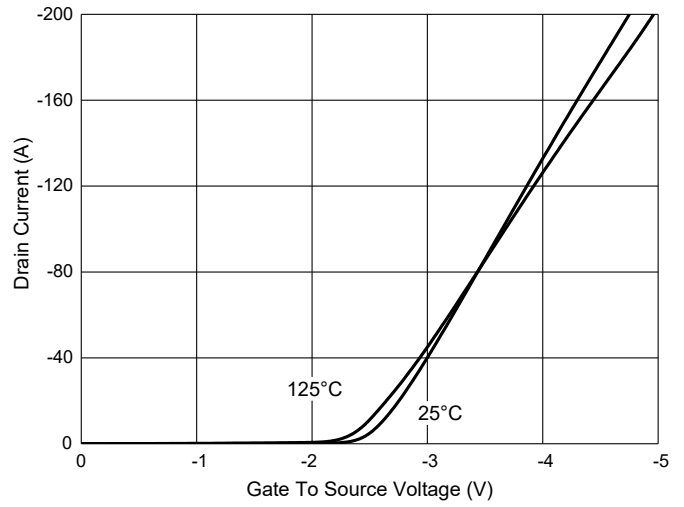


Fig. 3 -  $R_{DS(ON)} - I_D$

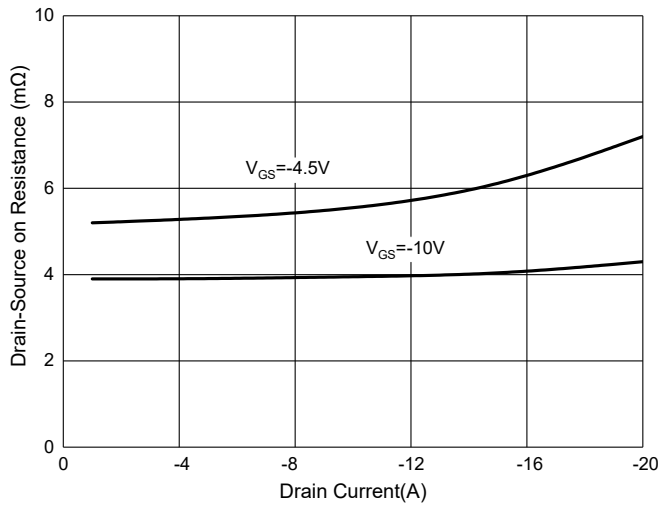


Fig. 4 - Normalized On Resistance Characteristics

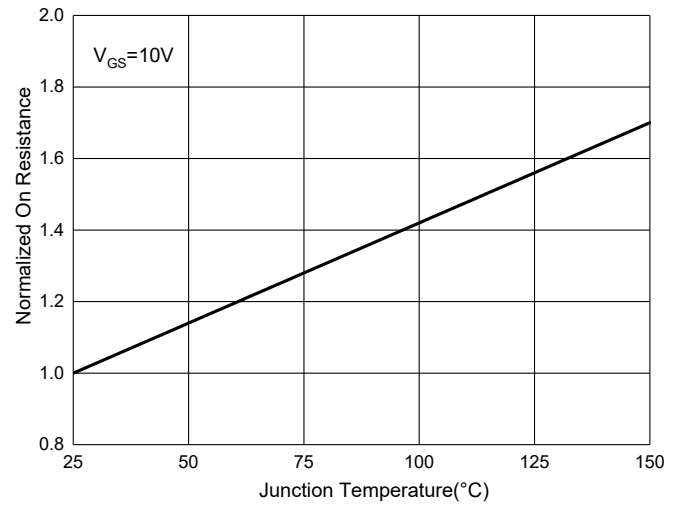


Fig. 5 - Capacitance Characteristics

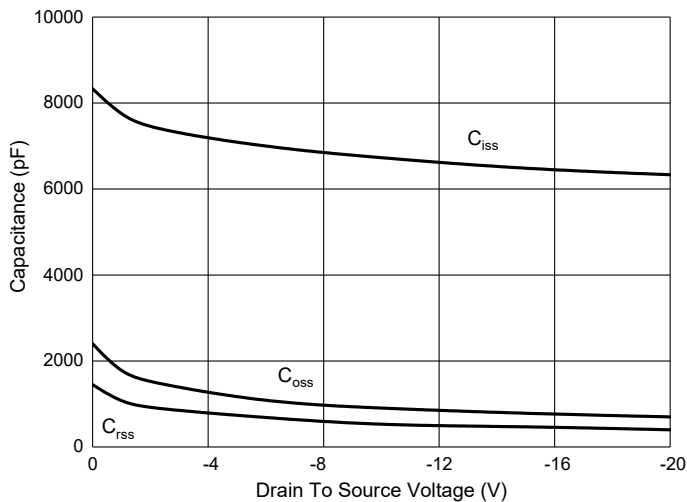
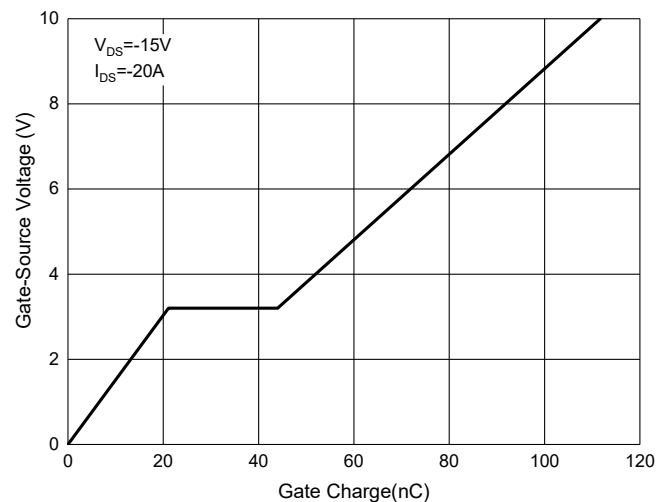


Fig. 6 - Gate Charge



Curve Characteristics

Fig. 7 - Safe Operation Area

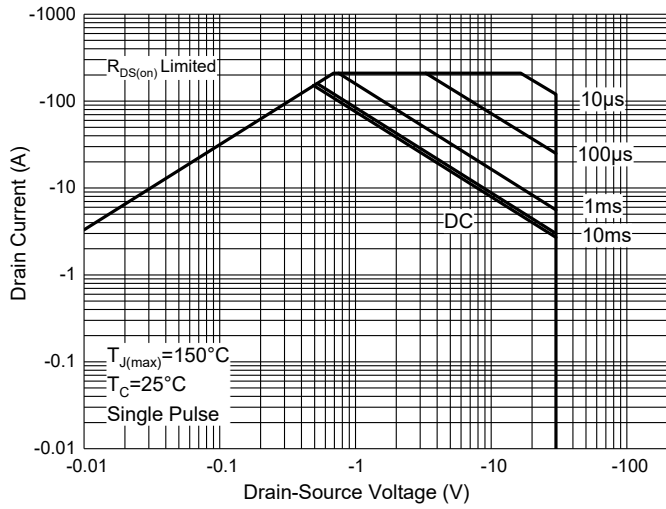
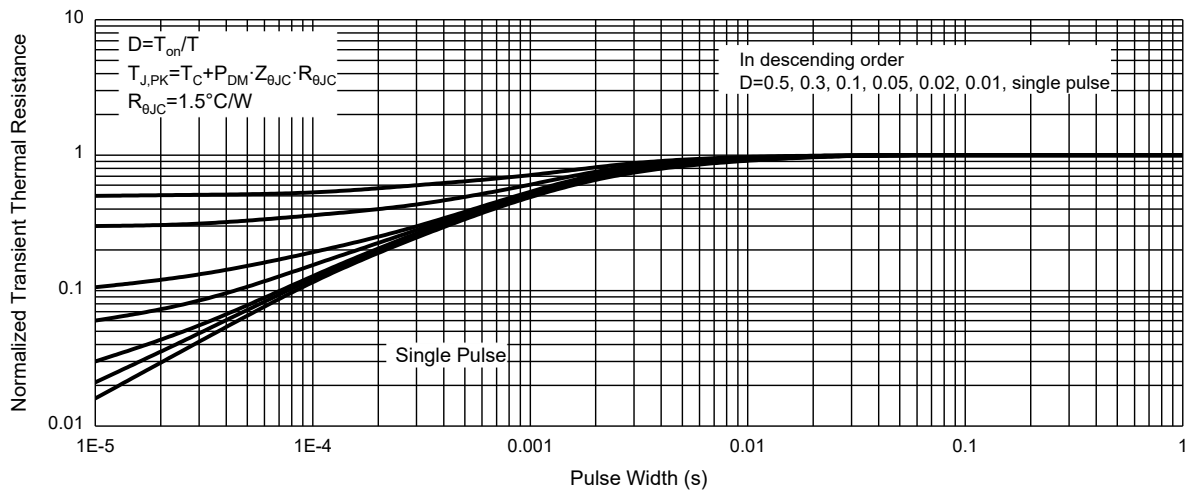


Fig. 8 - Normalized Transient Thermal Impedance



## Ordering Information

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

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