

### Features

- Trench Power LV MOSFET Technology
- High Density Cell Design for Low  $R_{DS(ON)}$
- High Speed Switching
- Moisture Sensitivity Level 1
- 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)

### Maximum Ratings

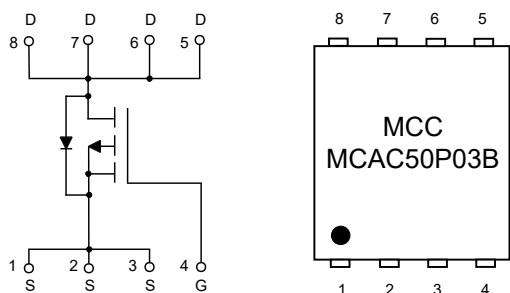
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 17°C/W Junction to Ambient (Note 2)
- Thermal Resistance: 1.5°C/W Junction to Case

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	-30	V
Gate-Source Voltage	$V_{GS}$	±25	V
Continuous Drain Current	$I_D$	$T_C=25^\circ\text{C}$	-50
		$T_C=100^\circ\text{C}$	-32
Pulsed Drain Current (Note 3)	$I_{DM}$	-200	A
Total Power Dissipation (Note 4)	$P_D$	83	W
Single Pulsed Avalanche Energy (Note 5)	$E_{AS}$	360	mJ

Note:

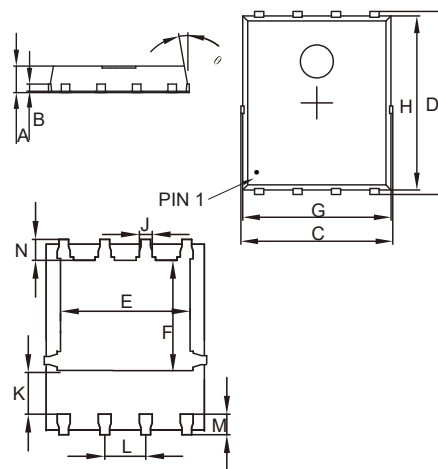
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of  $R_{\theta JA}$  is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with  $T_A=25^\circ\text{C}$ .
3. Repetitive rating; pulse width limited by max. junction temperature.
4.  $P_D$  is based on max. junction temperature, using junction-case thermal resistance.
5.  $T_J=25^\circ\text{C}$ ,  $V_{DD}=-25\text{V}$ ,  $V_G=-10\text{V}$ ,  $L=2\text{mH}$ .

### Internal Structure and Marking Code



## P-CHANNEL MOSFET

### DFN5060



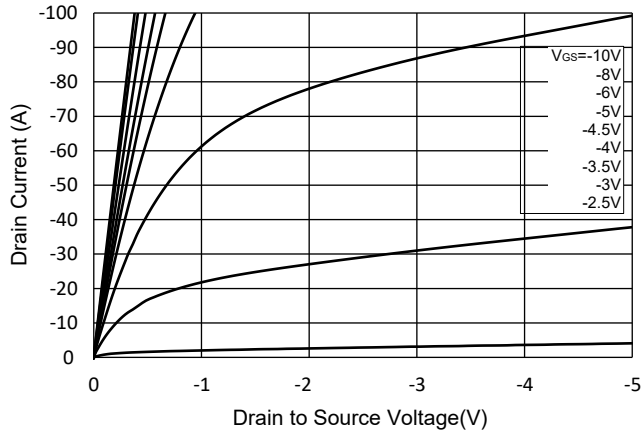
DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.031	0.047	0.80	1.20	
B	0.010		0.254		TYP.
C	0.193	0.222	4.90	5.64	
D	0.232	0.250	5.90	6.35	
E	0.148	0.167	3.75	4.25	
F	0.126	0.154	3.20	3.92	
G	0.189	0.213	4.80	5.40	
H	0.222	0.239	5.65	6.06	
K	0.045	0.059	1.15	1.50	
J	0.012	0.020	0.30	0.50	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

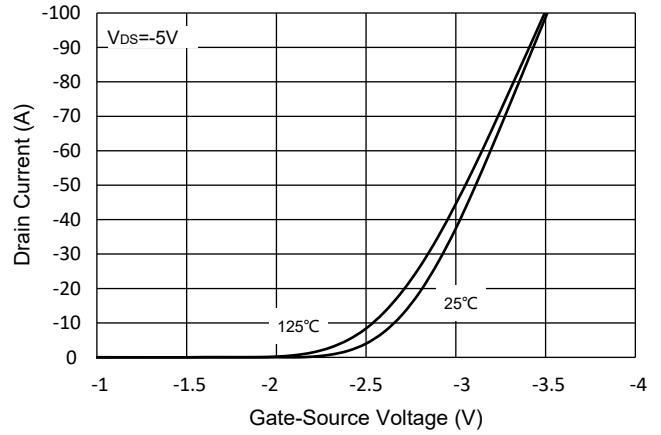
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 25V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-30V, V_{GS}=0V$			-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	
Gate Resistance	$R_g$	f=1Mhz, Drain open		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	$C_{iss}$	$V_{DS}=-15V, V_{GS}=0V, f=1MHz$		6426		pF
Output Capacitance	$C_{oss}$			754		
Reverse Transfer Capacitance	$C_{riss}$			670		
Total Gate Charge	$Q_g$	$V_{DS}=-15V, V_{GS}=-10V, I_D=-20A$		111		nC
Gate-Source Charge	$Q_{gs}$			16		
Gate-Drain Charge	$Q_{gd}$			22.5		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=-15V, V_{GS}=-10V, R_G=3\Omega, I_D=-20A$		13.6		ns
Turn-On Rise Time	$t_r$			25.7		
Turn-Off Delay Time	$t_{d(off)}$			192		
Turn-Off Fall Time	$t_f$			90		

**Curve Characteristics**

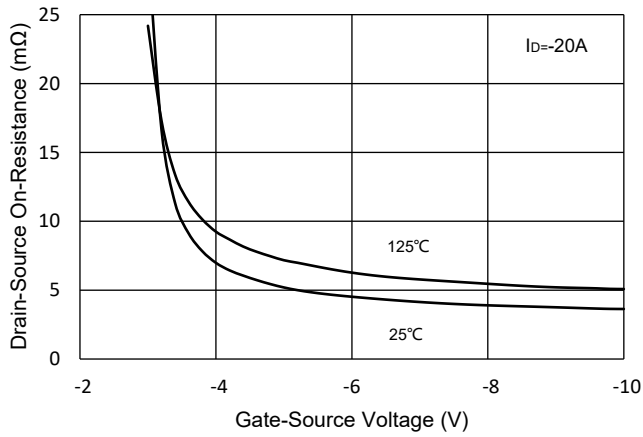
**Fig. 1 - Typical Output Characteristics**



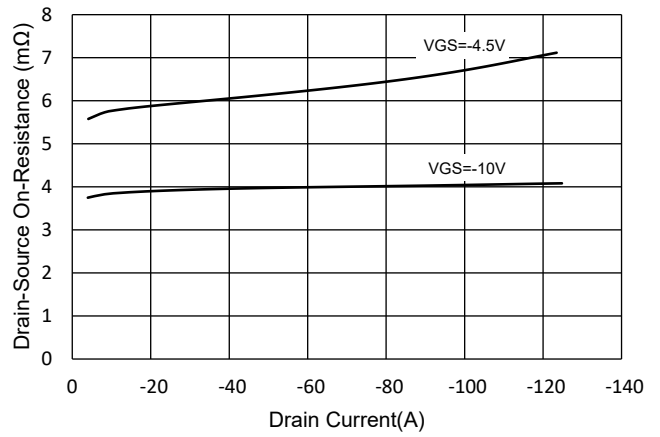
**Fig.2 Transfer Characteristic**



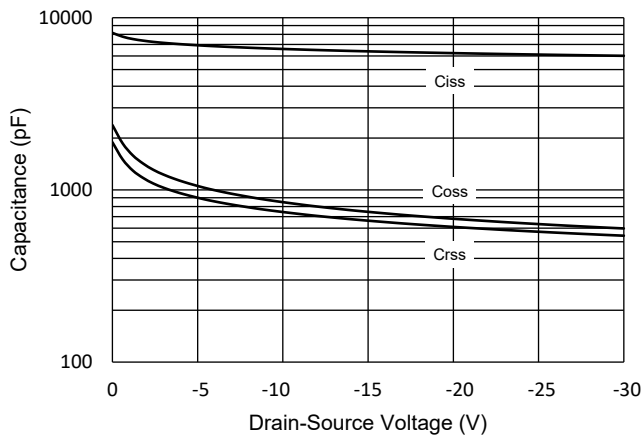
**Fig.3 RDS(ON)-Vgs**



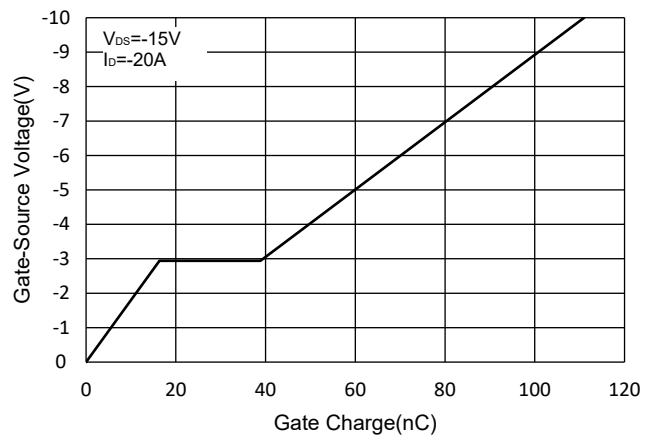
**Fig.4 RDS(ON)-ID**



**Fig.5 Capacitance Characteristics**

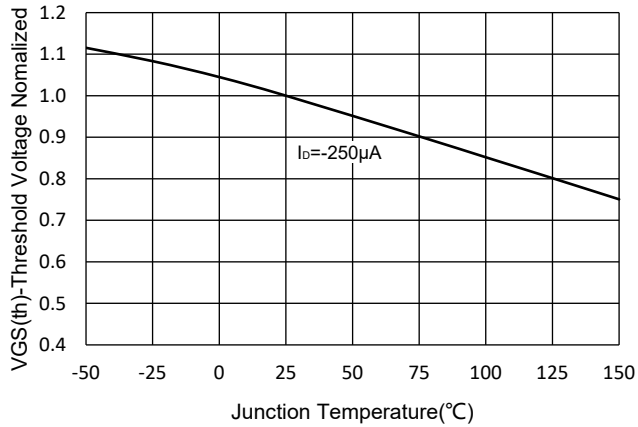


**Fig.6 Gate Charge**

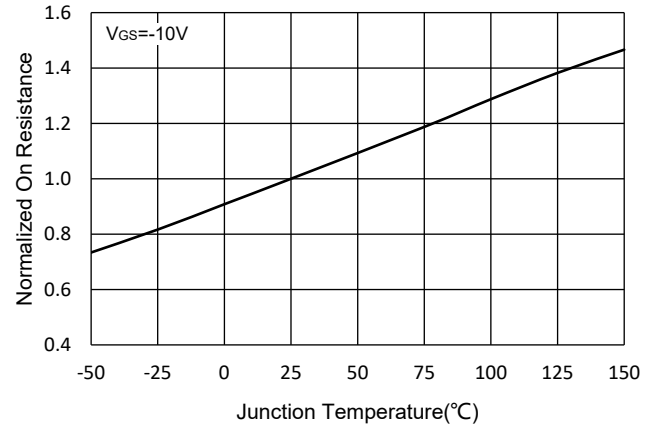


**Curve Characteristics**

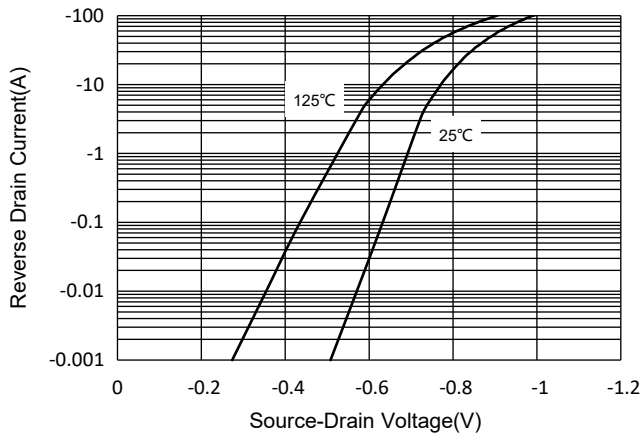
**Fig.7 Normalized Threshold Voltage**



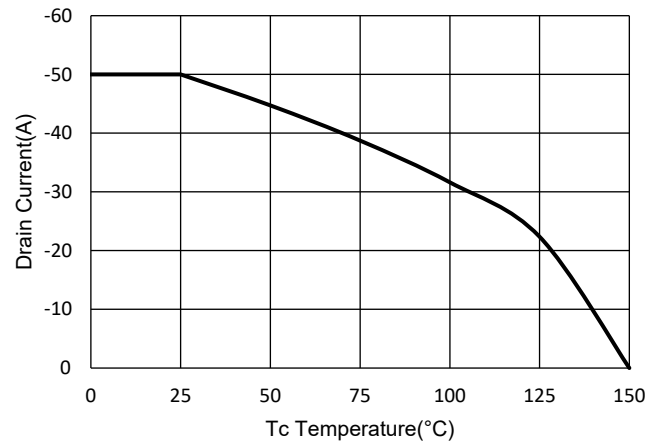
**Fig.8 Normalized On Resistance Characteristics**



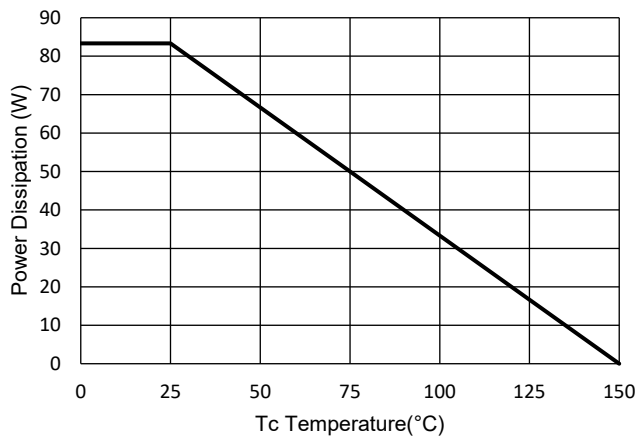
**Fig.9 IS-VSD**



**Fig.10 Drain Current**



**Fig.11 Power Dissipation**



Curve Characteristics

Fig.12 Safe Operation Area

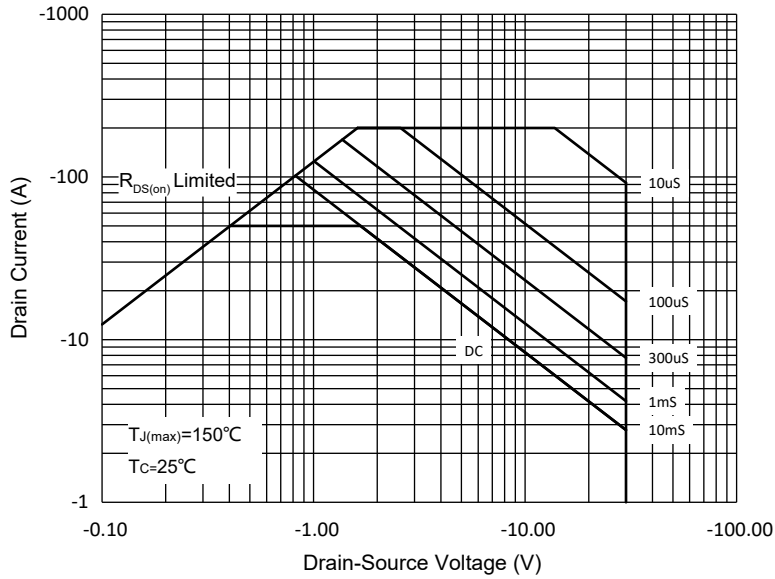
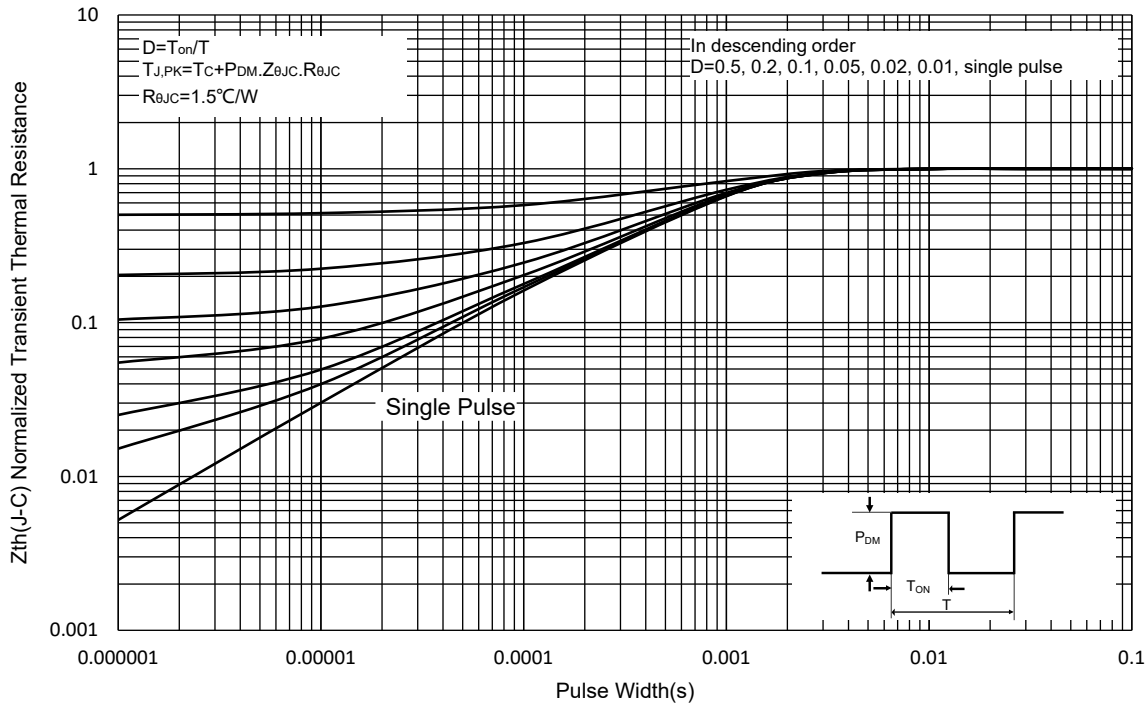


Fig.13 Normalized Transient Thermal Impedance



## Ordering Information

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

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