

**Features**

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

**Maximum Ratings**

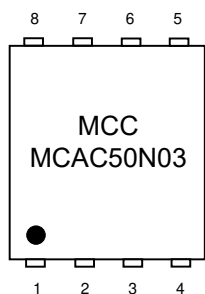
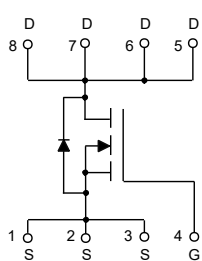
- Operating Junction Temperature Range : -55°C to +175°C
- Storage Temperature Range: -55°C to +175°C
- Thermal Resistance: 5°C/W Junction to Case

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	±20	V
Continuous Drain Current	$I_D$	$T_C=25^\circ C$	50 A
		$T_C=100^\circ C$	35 A
Pulsed Drain Current (Note 2)	$I_{DM}$	190	A
Avalanche Energy (Note 3)	$E_{AS}$	80	mJ
Total Power Dissipation	$P_D$	30	W

**Note:**

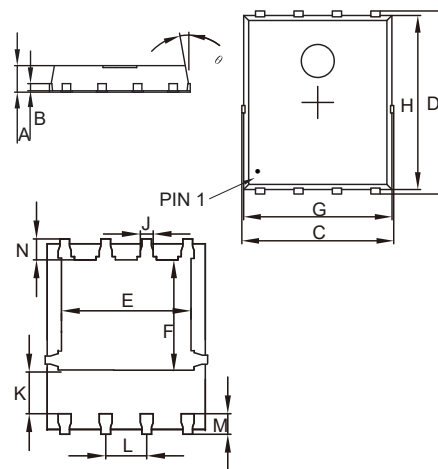
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. Pulse Test: Pulse Width ≤ 300µs, Duty Cycle ≤ 2%.
3.  $T_J=25^\circ C$ ,  $V_{DD}=20V$ ,  $V_G=10V$ ,  $L=0.5mH$ ,  $R_G=25\Omega$ .

**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	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	30			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=30V, V_{GS}=0V$			1	$\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1	1.5	2.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=15A$		3.9	4.7	m $\Omega$
		$V_{GS}=4.5V, I_D=15A$		5	6	m $\Omega$
<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	$t_{rr}$	$I_S=25A, di/dt=100A/\mu s$		29		ns
Reverse Recovery Charge	$Q_{rr}$			27		nC
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=15V, V_{GS}=0V, f=1MHz$		1620		pF
Output Capacitance	$C_{oss}$			336		
Reverse Transfer Capacitance	$C_{rss}$			195		
Total Gate Charge	$Q_g$	$V_{DS}=15V, V_{GS}=10V, I_D=20A$		55.7		nC
Gate-Source Charge	$Q_{gs}$			13		
Gate-Drain Charge	$Q_{gd}$			11.3		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=20V, V_{GS}=10V, R_G=3\Omega, R_L=1\Omega, I_{DS}=2A$		6		ns
Turn-On Rise Time	$t_r$			36		
Turn-Off Delay Time	$t_{d(off)}$			29		
Turn-Off Fall Time	$t_f$			7		

**Curve Characteristics**

Fig. 1 - Typical Output Characteristics

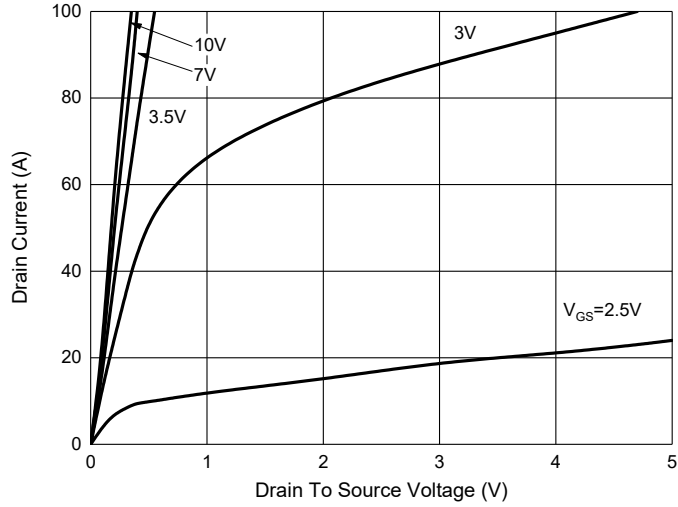


Fig. 2 - Transfer Characteristics

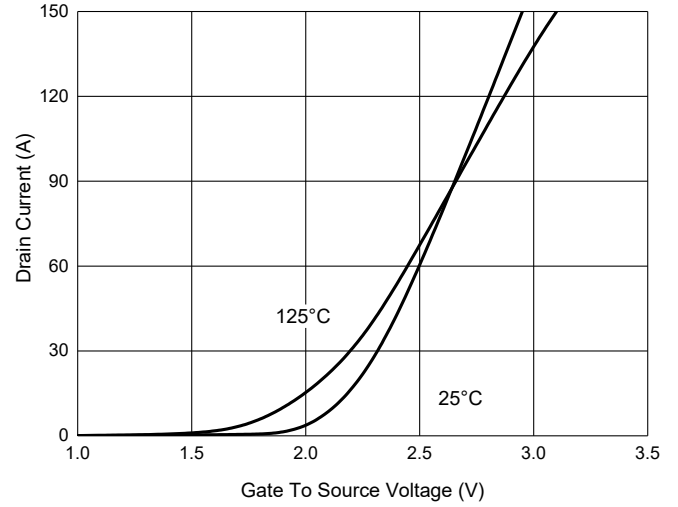


Fig. 3 -  $R_{DS(ON)} - I_D$

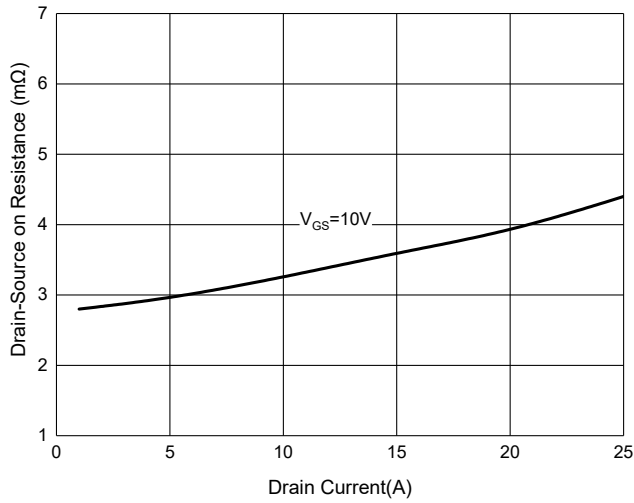


Fig. 4 - Normalized On Resistance Characteristics

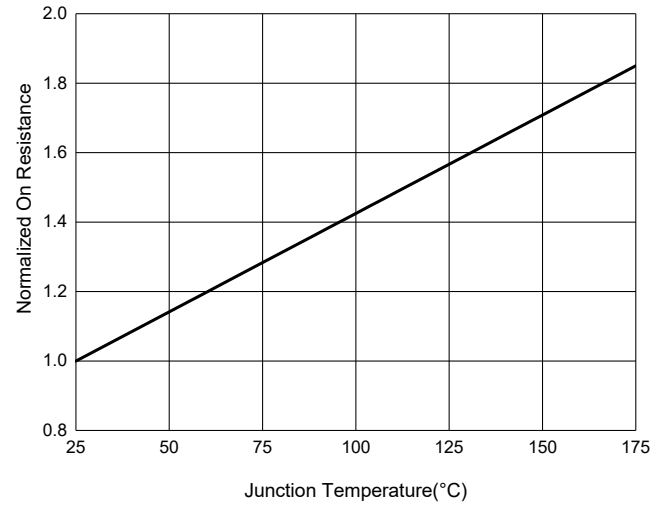


Fig. 5 - Capacitance Characteristics

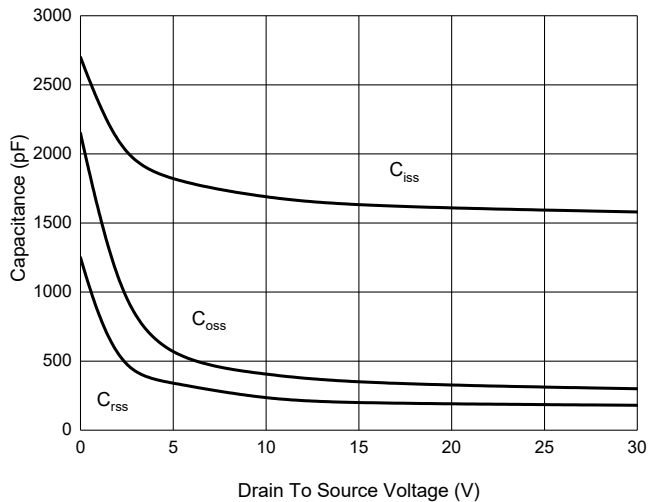
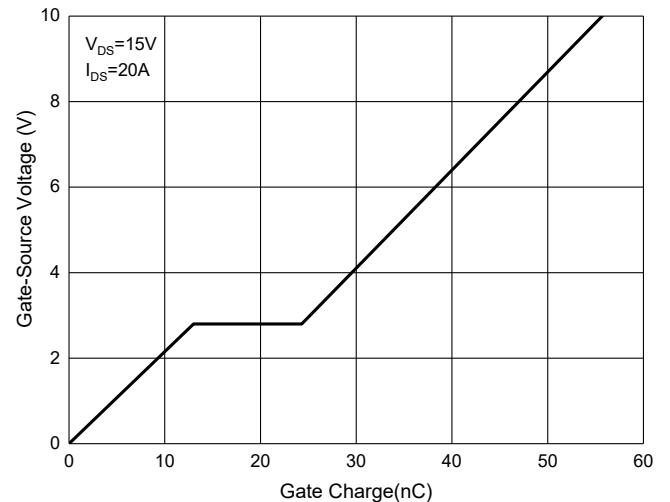
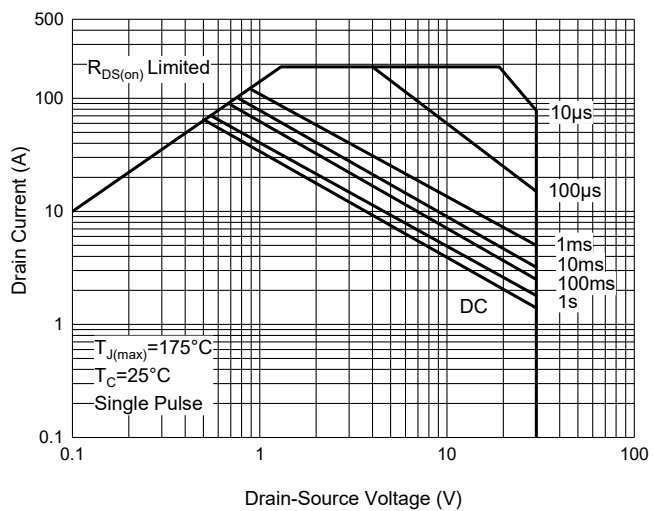


Fig. 6 - Gate Charge



## Curve Characteristics

Fig. 7 - Safe Operation Area



## Ordering Information

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

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