

**Features**

- High Density Cell Design For Low  $R_{DS(ON)}$
- Trench Power LV MOSFET Technology
- Excellent Package for Heat Dissipation
- 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**

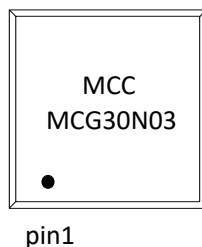
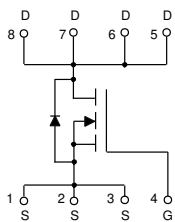
- Operating Junction Temperature Range : -55°C to +175°C
- Storage Temperature Range: -55°C to +175°C
- Maximum Thermal Resistance: 7.5°C/W Junction to Case <sup>(Note 2)</sup>

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	±20	V
Continuous Drain Current	$I_D$	$T_C=25^\circ\text{C}$	30
		$T_C=100^\circ\text{C}$	21
Pulsed Drain Current <sup>(Note 3)</sup>	$I_{DM}$	100	A
Total Power Dissipation	$P_D$	$T_C=25^\circ\text{C}$	20
		$T_C=100^\circ\text{C}$	10
Single Pulse Avalanche Energy <sup>(Note 4)</sup>	$E_{AS}$	128	mJ

Note:

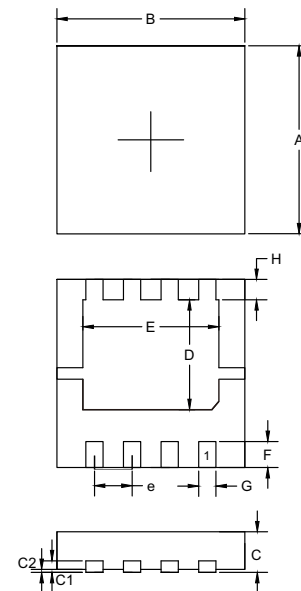
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The Maximum Rating Presented Here is Based on Mounting on a 1in<sup>2</sup> Pad of 2oz Copper.
3. Pulse Test: Pulse Width ≤ 300us, Duty Cycle ≤ 2%.
4.  $T_J=25^\circ\text{C}$ ,  $V_{DD}=20\text{V}$ ,  $V_G=10\text{V}$ ,  $L=0.5\text{mH}$ ,  $R_G=25\Omega$

**Internal Structure and Marking Code**



**N-CHANNEL MOSFET**

**DFN3333**



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.126	0.130	3.20	3.30	
B	0.126	0.130	3.20	3.30	
C	0.030	0.033	0.75	0.85	
C1	0.007	0.009	0.18	0.22	
C2	---	0.002	---	0.05	
D	0.071	0.079	1.80	2.00	
E	0.087	0.098	2.20	2.50	
F	0.016	0.020	0.40	0.50	
G	0.010	0.014	0.25	0.35	
H	0.012	0.016	0.30	0.40	
e	0.024	0.028	0.60	0.70	

**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	$I_{DSS}$	$V_{DS}=30V, V_{GS}=0V, T_J=25^\circ C$			1	$\mu A$
		$V_{DS}=30V, V_{GS}=0V, T_J=55^\circ C$			5	
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	$R_{DS(on)}$	$V_{GS}=10V, I_D=15A$		8	10	m $\Omega$
		$V_{GS}=4.5V, I_D=15A$		10	13	
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=15A$		0.85	1.2	V
Maximum Body-Diode Continuous Current	$I_S$				30	A
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=15V, V_{GS}=0V, f=1MHz$		1020		pF
Output Capacitance	$C_{oss}$			225		
Reverse Transfer Capacitance	$C_{rss}$			126		
<b>Switching Characteristics</b>						
Total Gate Charge	$Q_g$	$V_{DS}=15V, V_{GS}=10V, I_D=30A$		28		nC
Gate-Source Charge	$Q_{gs}$			7		
Gate-Drain Charge	$Q_{gd}$			5		
Reverse Recovery Charge	$Q_{rr}$	$I_F=15A, di/dt=100A/\mu s$		25		ns
Reverse Recovery Time	$t_{rr}$			26		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V, V_{DS}=20V, I_D=2A, R_L=1\Omega, R_{GEN}=3\Omega$		8		ns
Turn-On Rise Time	$t_r$			15		
Turn-Off Delay Time	$t_{d(off)}$			27		
Turn-Off Fall Time	$t_f$			7		

Fig. 1 - Output Characteristics

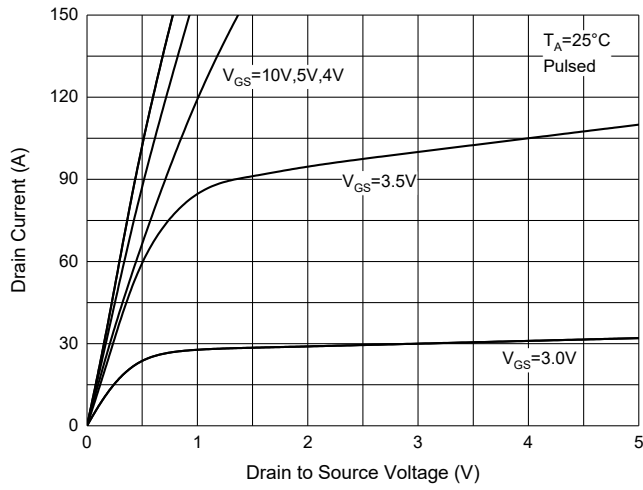


Fig. 2 - Transfer Characteristics

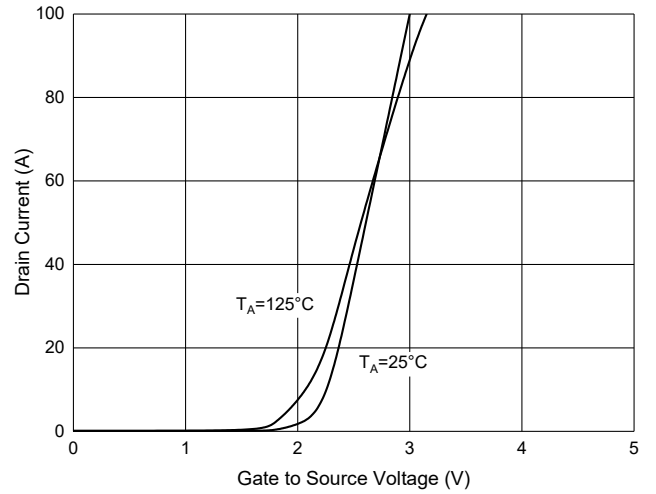


Fig. 3 - Capacitance Characteristics

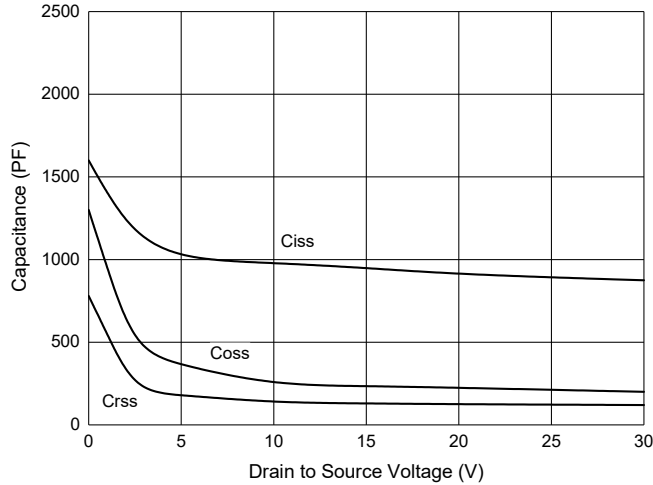


Fig. 4 - Gate Charge

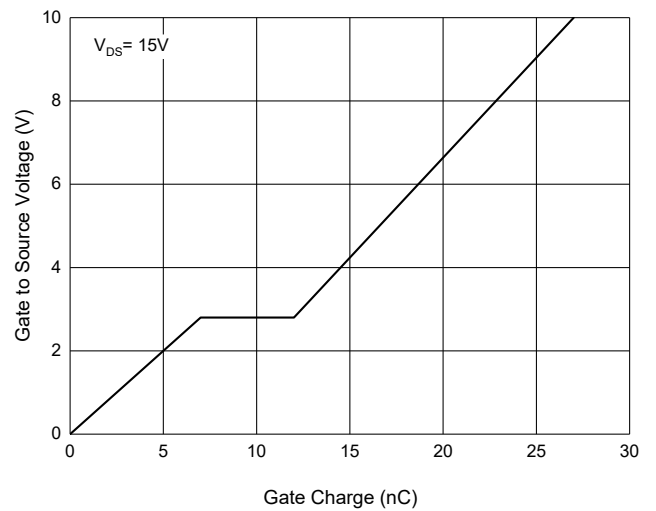


Fig. 5 -  $R_{DS(ON)} - I_D$

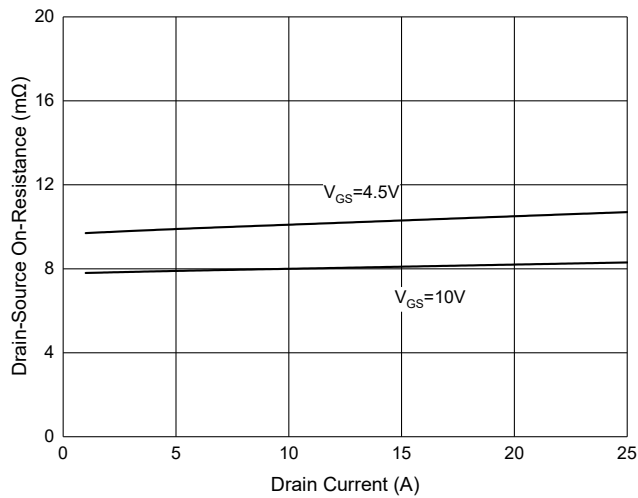
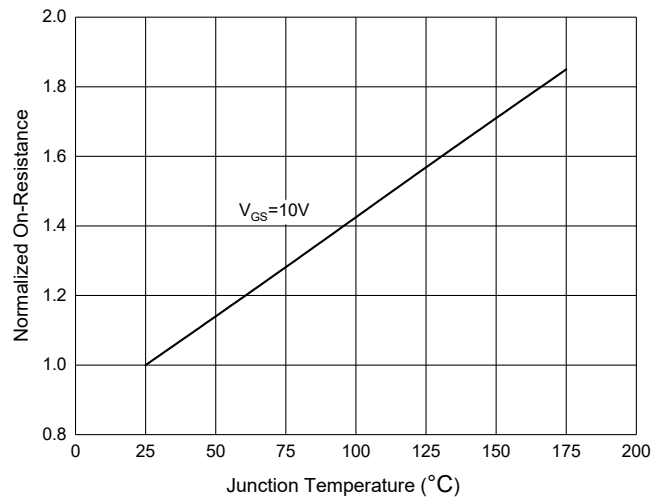


Fig. 6 -  $R_{DS(ON)} - \text{Temperature}$



## Ordering Information

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

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