

Features

- High Density Cell Design for Low $R_{DS(on)}$
- Trench Power LV MOSFET Technology
- 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: 53.4°C/W Junction to Ambient
- Thermal Resistance: 5.9°C/W Junction to Case

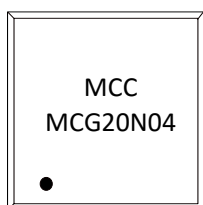
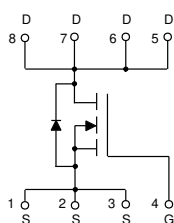
Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	$T_C=25^\circ\text{C}$	20
		$T_C=100^\circ\text{C}$	14
Pulsed Drain Current	I_{DM}	90	A
Total Power Dissipation	P_D	$T_C=25^\circ\text{C}$	21
		$T_A=25^\circ\text{C}$	2.34
Single Pulsed Avalanche Energy ^(Note 2)	E_{AS}	70	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. $T_J=25^\circ\text{C}$, $V_{DD}=20\text{V}$, $V_G=10\text{V}$, $L=0.5\text{mH}$, $R_G=25\Omega$.

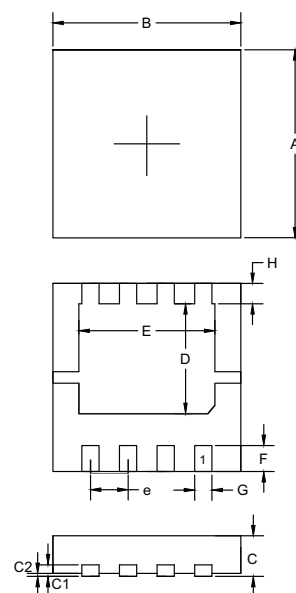
Internal Structure and Marking Code



pin1

N-CHANNEL MOSFET

DFN3333



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	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
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	40			V
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=40V, V_{GS}=0V$			1	μA
Gate-Threshold Voltage ^(Note 2)	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1	1.5	2.5	V
Drain-Source On-Resistance ^(Note 2)	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$		11	14	m Ω
		$V_{GS}=4.5V, I_D=10A$		14.3	18.5	
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=10A$		0.7	1.2	v
Maximum Body-Diode Continuous Current	I_S				35	A
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=20V, V_{GS}=0V, f=1MHz$		750		pF
Output Capacitance	C_{oss}			150		
Reverse Transfer Capacitance	C_{rss}			80		
Switching Characteristics						
Total Gate Charge	Q_g	$V_{DS}=20V, V_{GS}=10V, I_D=20A$		15		nC
Gate-Source Charge	Q_{gs}			3		
Gate-Drain Charge	Q_{gd}			2.5		
Reverse Recovery Charge	Q_{rr}	$I_S=20A, di/dt=100A/\mu s$		26		ns
Reverse Recovery Time	t_{rr}			29		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V, V_{DD}=20V, I_D=2A, R_L=1\Omega$ $R_{GEN}=3\Omega$		6		ns
Turn-On Rise Time	t_r			17.5		
Turn-Off Delay Time	$t_{d(off)}$			31		
Turn-Off Fall Time	t_f			17		

 Note 2. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.

Curve Characteristics

Fig. 1 - Typical Output Characteristics

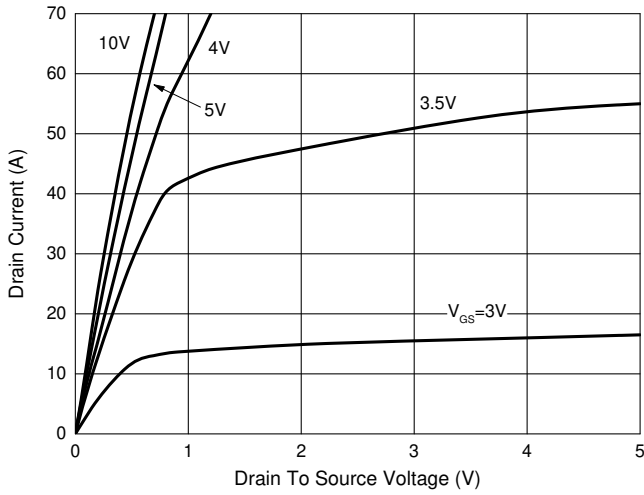


Fig. 2 - Transfer Characteristics

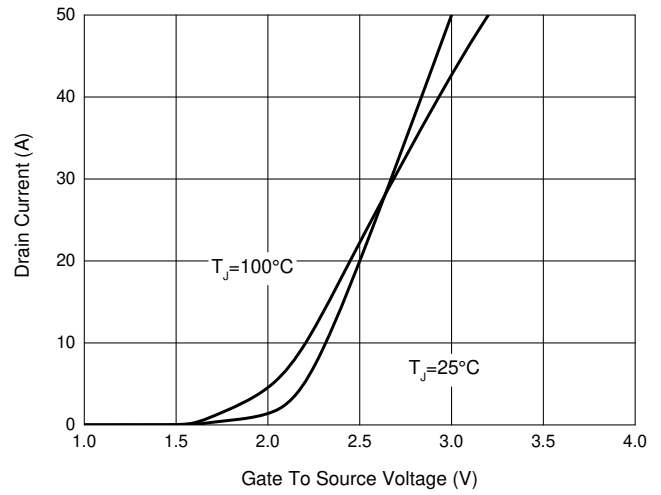


Fig. 3 - Capacitance Characteristics

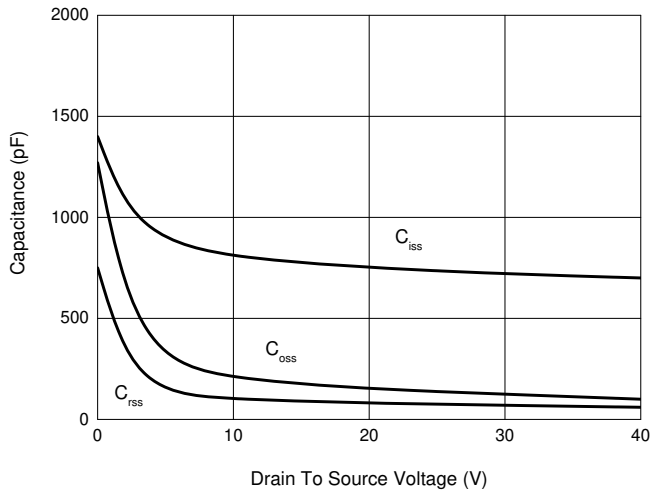


Fig. 4 - Gate Charge Characteristics

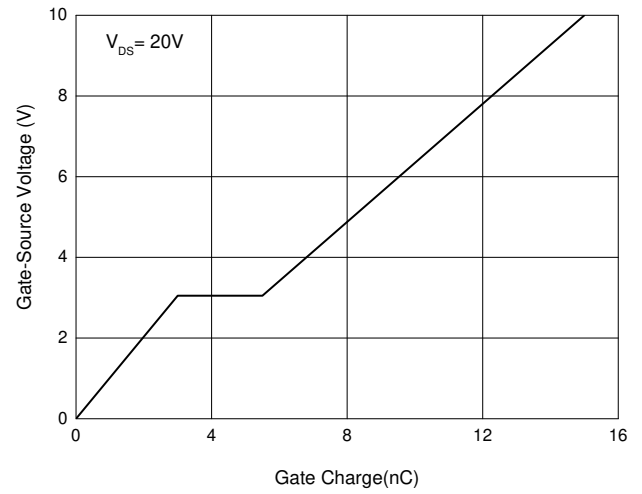


Fig. 5 - $R_{DS(ON)} - I_D$

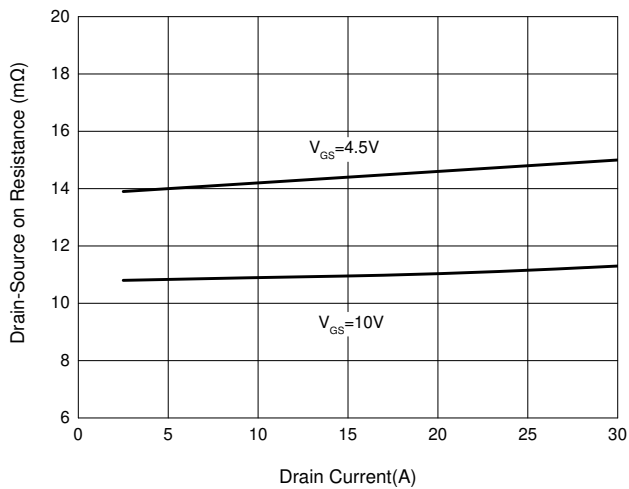
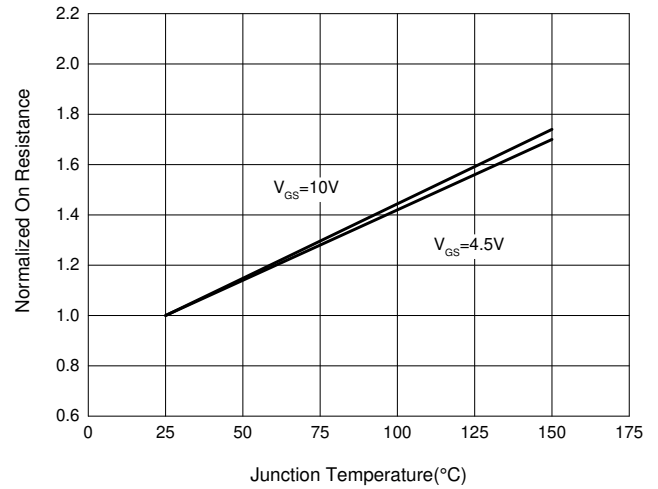


Fig. 6 - Normalized On Resistance Characteristics



Ordering Information

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

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