

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
- 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

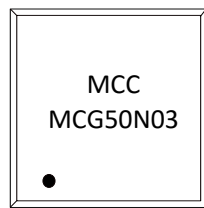
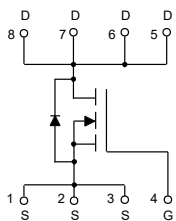
- Operating Junction Temperature Range : -55°C to +175°C
- Storage Temperature Range: -55°C to +175°C
- Thermal Resistance: 5°C/W Junction to Case (Note 2)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	$T_C=25^\circ\text{C}$	50
		$T_C=100^\circ\text{C}$	35
Pulsed Drain Current (Note 3)	I_{DM}	190	A
Single Pulse Avalanche Energy (Note 4)	E_{AS}	225	mJ
Total Power Dissipation	P_D	$T_C=25^\circ\text{C}$	30
		$T_C=100^\circ\text{C}$	15

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 in² pad of 2oz Copper.
3. Pulse Test; Pulse Width ≤ 300µs, Duty Cycle ≤ 2%.
4. $T_J=25^\circ\text{C}$, $V_{DS}=30\text{V}$, $V_{DD}=25\text{V}$, $V_{GS}=10\text{V}$, $L=1\text{mH}$.

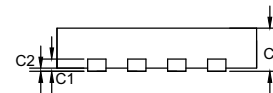
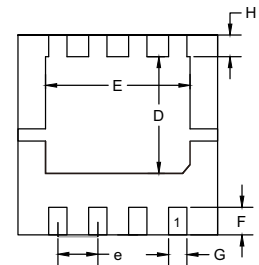
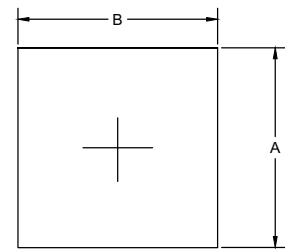
Internal Structure and Marking Code



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	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	30			V
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V$			1	μA
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	$R_{DS(on)}$	$V_{GS}=10V, I_D=15A$		4.9	6	m Ω
		$V_{GS}=4.5V, I_D=15A$		6.3	8	
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=20A$			1.2	V
Continuous Body Diode Current	I_S				50	A
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V, f=1MHz$		2150		pF
Output Capacitance	C_{oss}			435		
Reverse Transfer Capacitance	C_{rss}			252		
Total Gate Charge	Q_g	$V_{DS}=15V, V_{GS}=10V, I_D=20A$		52.8		nC
Gate-Source Charge	Q_{gs}			12.3		
Gate-Drain Charge	Q_{gd}			10.8		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V, V_{DD}=20V, I_D=4A, R_L=1\Omega$ $R_{GEN}=3\Omega$		9		ns
Turn-On Rise Time	t_r			15.5		
Turn-Off Delay Time	$t_{d(off)}$			29		
Turn-Off Fall Time	t_f			9		
Reverse Recovery Charge	Q_{rr}	$I_F=25A, di/dt=100A/\mu s$		28		nC
Reverse Recovery Time	t_{rr}			27		ns

Curve Characteristics

Fig. 1 - Output Characteristics

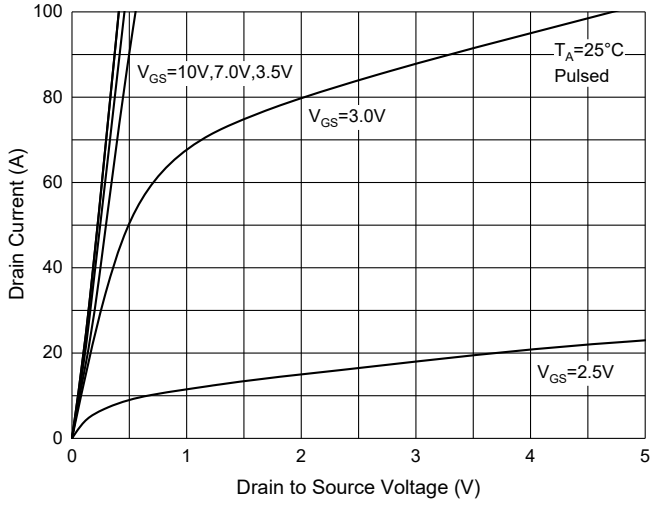


Fig. 2 - Transfer Characteristics

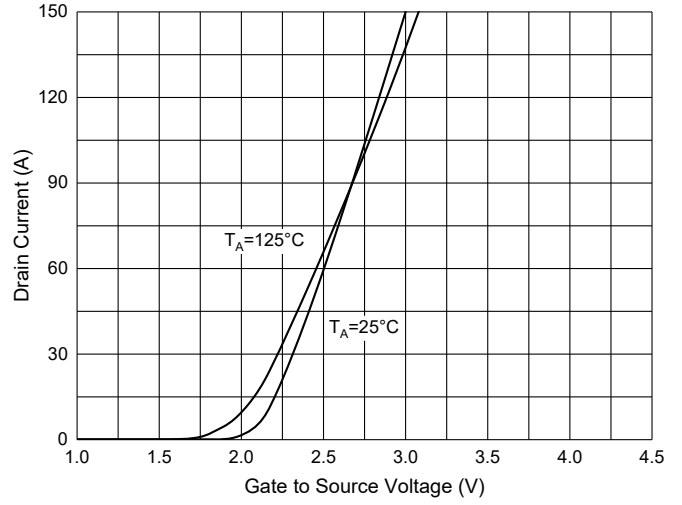


Fig. 3 - Capacitance Characteristics

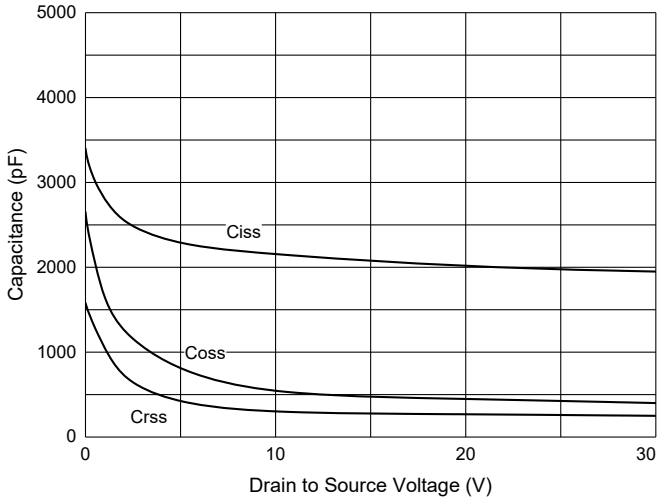


Fig. 4 - Gate Charge

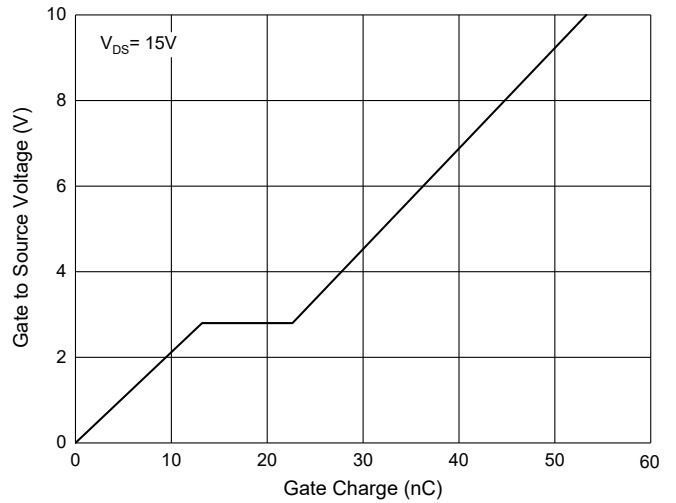


Fig. 5 - $R_{DS(ON)} - I_D$

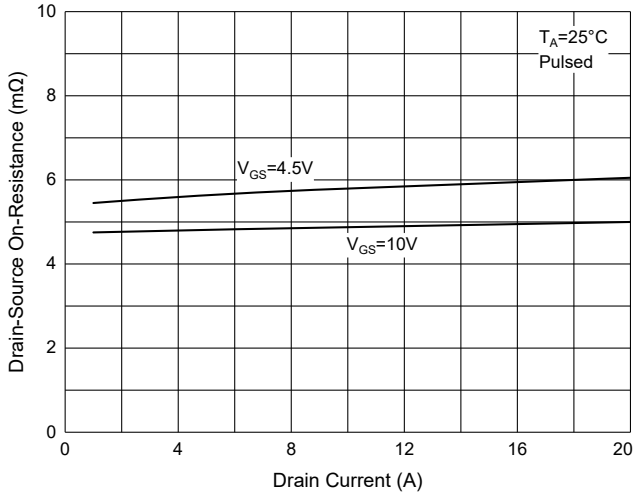
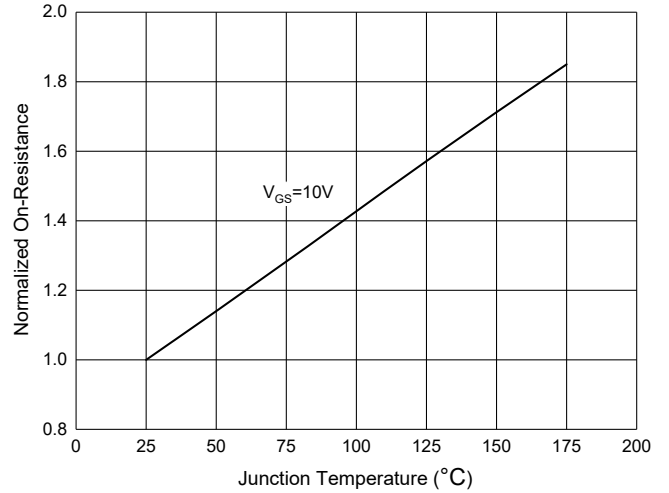


Fig. 6 - $R_{DS(ON)} - \text{Temperature}$



Curve Characteristics

Fig. 7 - Safe Operation Area

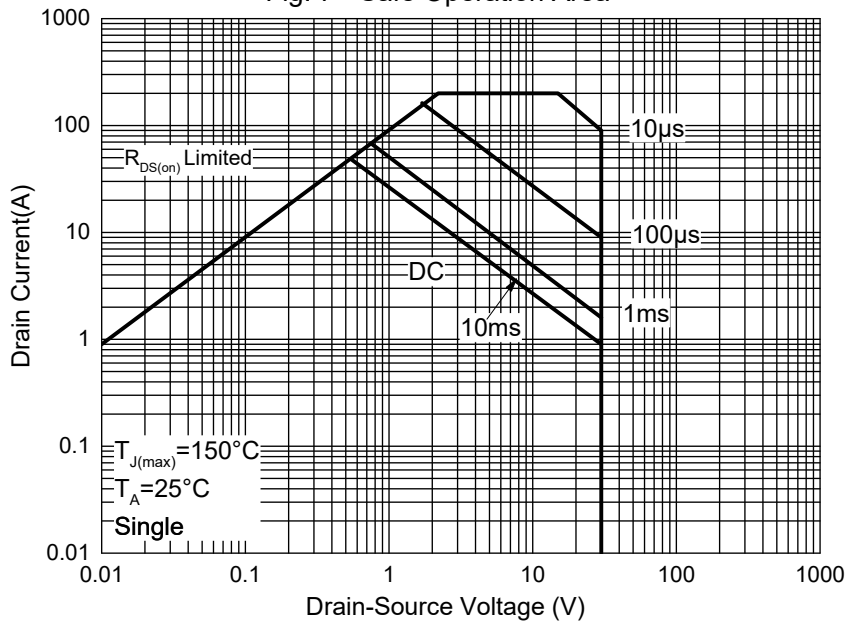
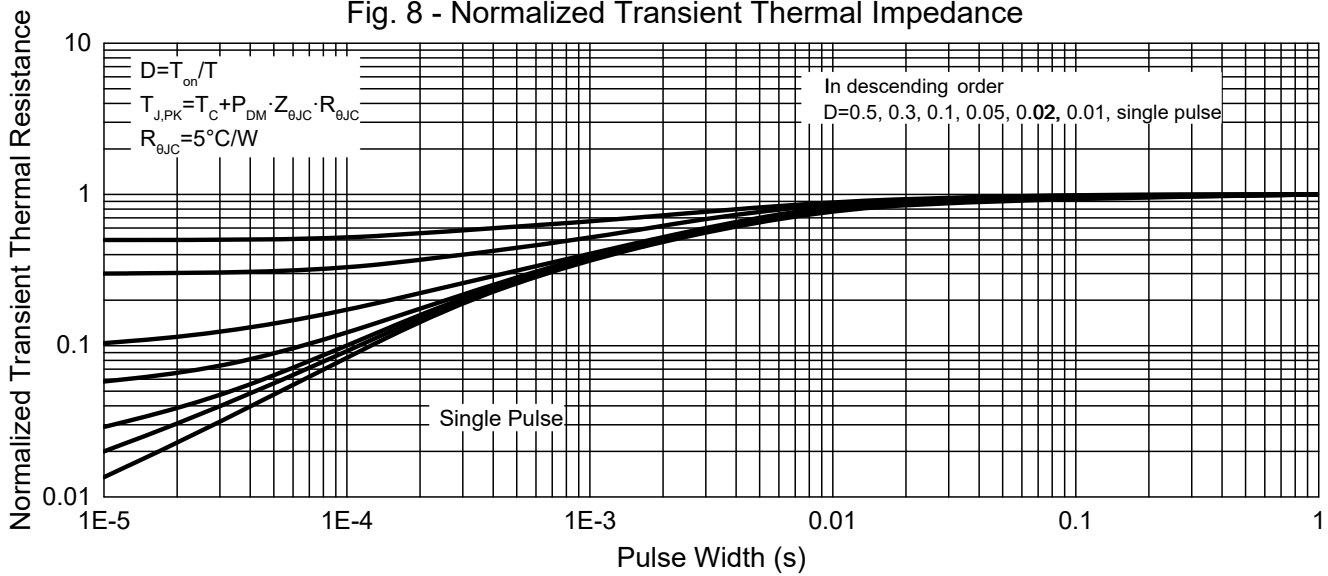


Fig. 8 - Normalized Transient Thermal Impedance



Ordering Information

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

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