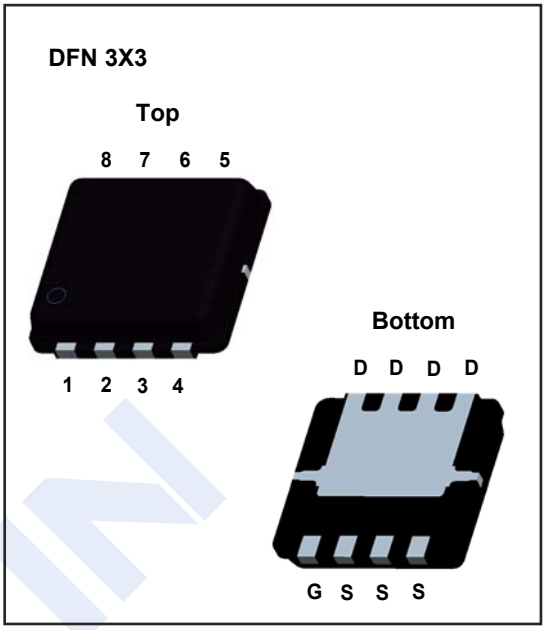
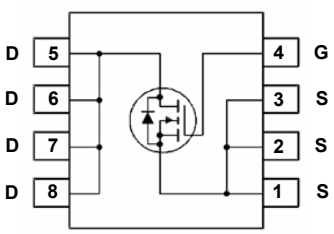
N-Channel MOSFET

FDMC3612 (KDMC3612)



■ Features

- $V_{DS\ (V)}$ = 100V
- I_D = 12A
- $R_{DS(ON)}$ < 110mΩ (V_{GS} = 10V)
- $R_{DS(ON)}$ < 122mΩ (V_{GS} = 6V)
- Low Profile - 1 mm max in Power 33



■ Absolute Maximum Ratings Ta = 25℃

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current -Continuous	Tc=25℃ (Package limited)	I_D	16	A
	Tc=25℃ (Silicon limited)		12	
	Ta=25℃ (Note.1)		3.3	
Continuous Drain Current -Pulsed			15	
Single Pulse Avalanche Energy (Note.2)		E_{AS}	32	mJ
Power Dissipation	Tc=25℃	P_D	35	W
	Ta=25℃ (Note.1)		2.3	
Thermal Resistance.Junction- to-Ambient (Note.1)		R_{thJA}	53	℃/W
Thermal Resistance.Junction- to-Case		R_{thJC}	3.5	
Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{stg}	-55 to 150	

Note.1: 53 °C/W when mounted on a 1 in² pad of 2 oz copper

Note.2: Starting T_J = 25 °C; N-ch: L = 1 mH, I_{AS} = 8 A, V_{DD} = 90 V, V_{GS} = 10 V.

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■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	I_D=250μA, V_{GS}=0V	100			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=80V, V_{GS}=0V			1	μA
Gate-Body Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} , I_D=250μA	2	2.5	4	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=3.3A		92	110	mΩ
		V_{GS}=6V, I_D=3A		98	122	
		V_{GS}=10V, I_D=3.3A T_J=125℃		177	212	
Forward Transconductance	g_{FS}	V_{DS}=10V, I_D=3.3A		13		S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=50V, f=1MHz		662	880	pF
Output Capacitance	C_{oss}			40	55	
Reverse Transfer Capacitance	C_{rss}			23	35	
Gate Resistance	R_g	V_{GS}=0V, V_{DS}=0V, f=1MHz		1.3		Ω
Total Gate Charge	Q_g	V_{GS}=0V to 10V, V_{DS}=50V, I_D=3.3A		14.4	21	nC
		V_{GS}=0V to 5V, V_{DS}=50V, I_D=3.3A		7.9	12	
Gate Source Charge	Q_{gs}			2.3		
Gate Drain Charge	Q_{gd}			3.7		
Turn-On DelayTime	$t_{d(on)}$	V_{GS}=10V, V_{DS}=50V, I_D=3.3A,R_G=6Ω		7.4	15	ns
Turn-On Rise Time	t_r			2.8	10	
Turn-Off DelayTime	$t_{d(off)}$			19	34	
Turn-Off Fall Time	t_f			2	10	
Body Diode Reverse Recovery Time	t_{rr}	I_F= 3.3A, dI/dt= 100A/μs		34	55	
Body Diode Reverse Recovery Charge	Q_{rr}			37	60	nC
Maximum Body-Diode Continuous Current	I_S				3.3	A
Diode Forward Voltage (Note.1)	V_{SD}	I_S=3.3A,V_{GS}=0V		0.88	1.2	V
		I_S=2A,V_{GS}=0V		0.77	1.2	

Note.1:Pulse Test: Pulse Width < 300 μs, Duty cycle < 2.0%.

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■ Typical Characterisitics

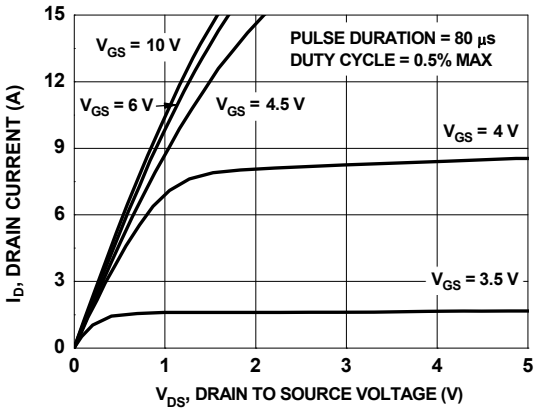

Figure 1. On Region Characteristics

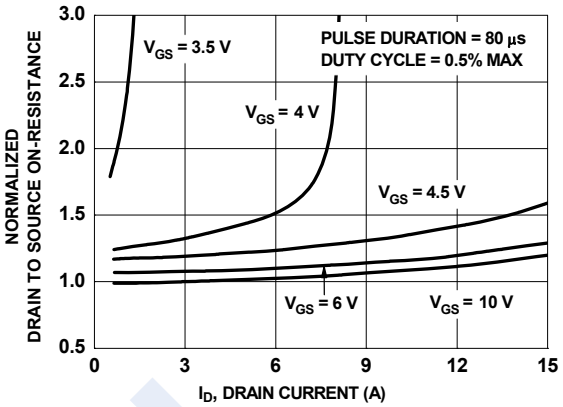

Figure 2.Normalized On-Resistance vs Drain Current and Gate Voltage

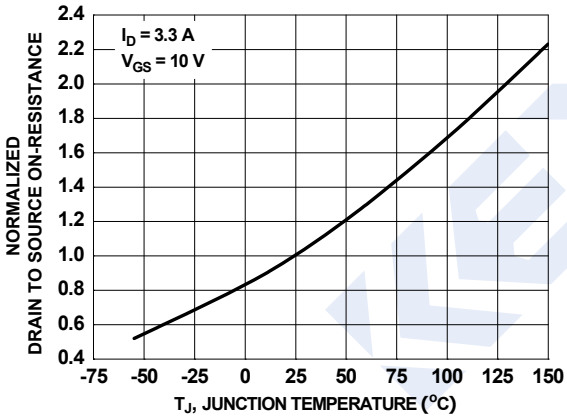

Figure 3. Normalized On Resistance vs Junction Temperature

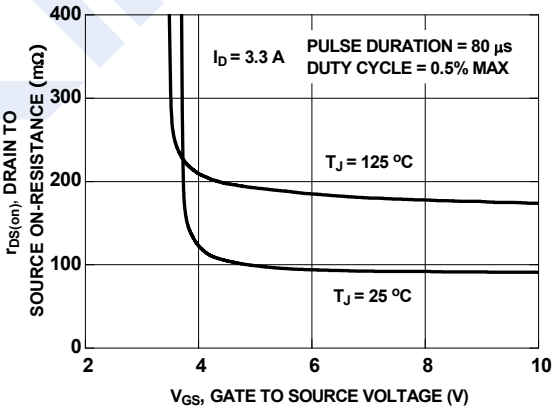

Figure 4.On-Resistance vs Gate to Source Voltage

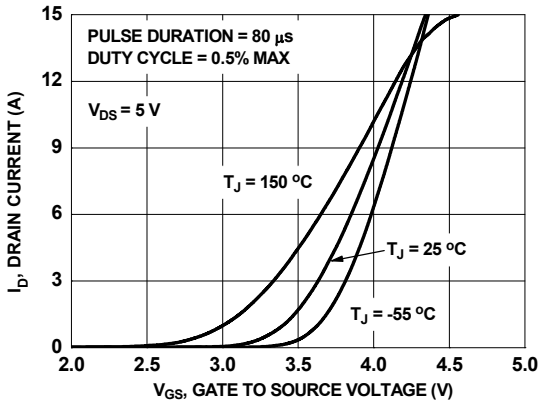

Figure 5. Transfer Characteristics

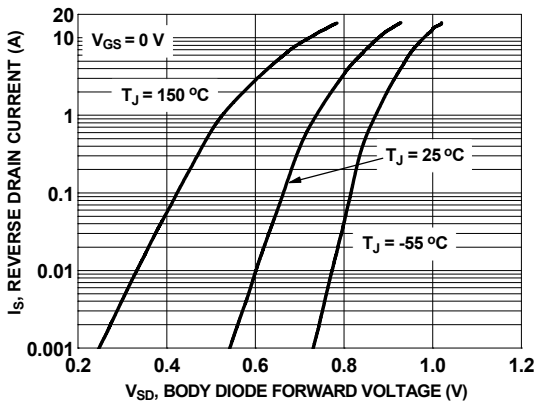

Figure 6.Source to Drain Diode Forward Voltage vs Source Current

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■ Typical Characterisitics

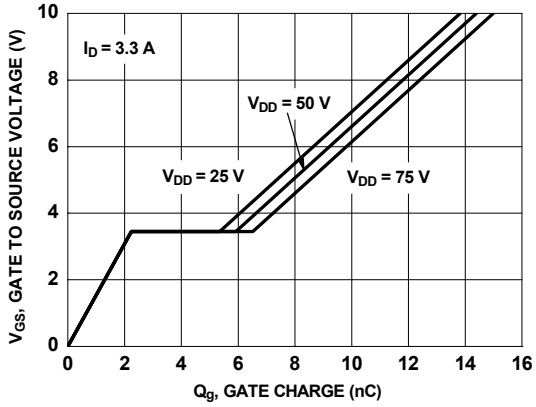

Figure 7. Gate Charge Characteristics

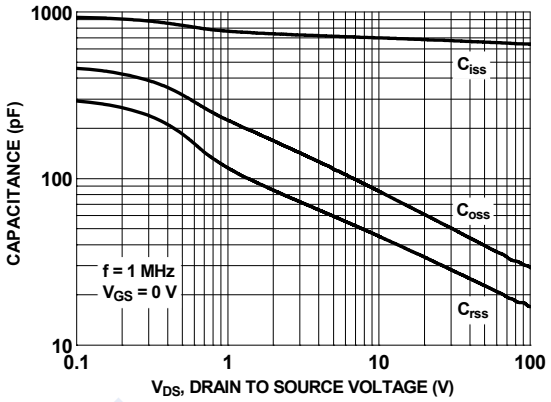

Figure 8.Capacitance vs Drain to Source Voltage

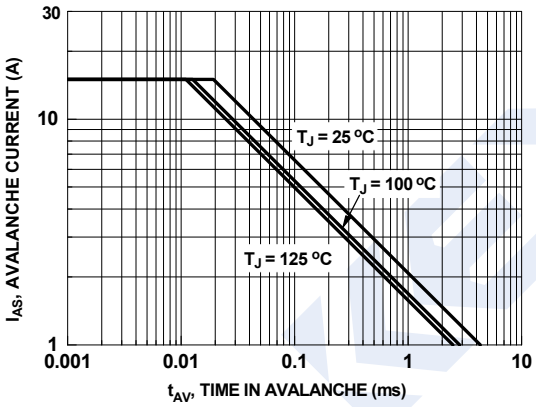

Figure 9. Unclamped Inductive Switching Capability

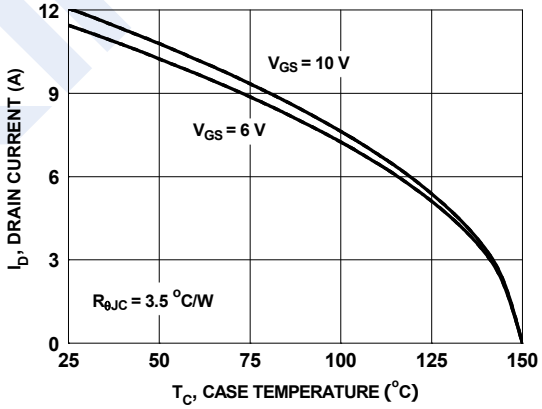

Figure 10.Maximum Continuous Drain Current vs Case Temperature

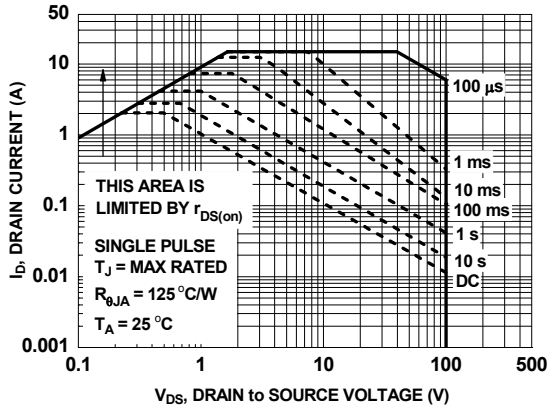

Figure 11. Forward Bias Safe Operating Area

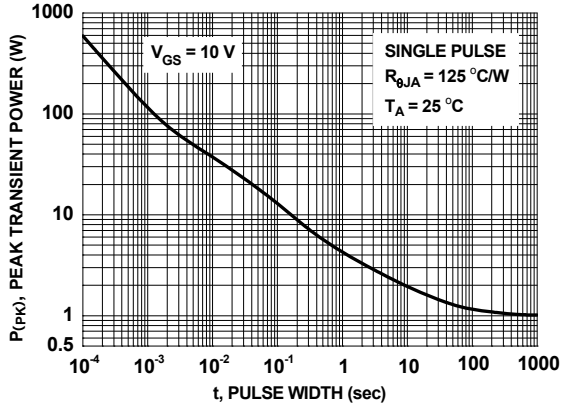

Figure 12.Single Pulse Maximum Power Dissipation

N-Channel MOSFET

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■ Typical Characterisitics

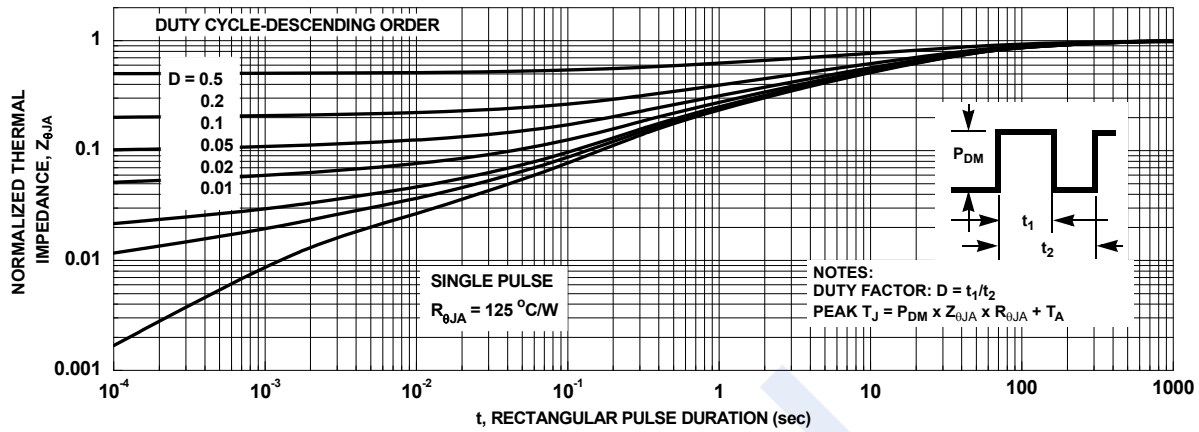
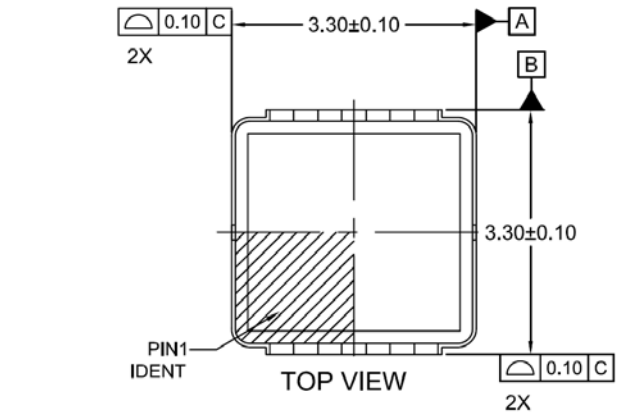
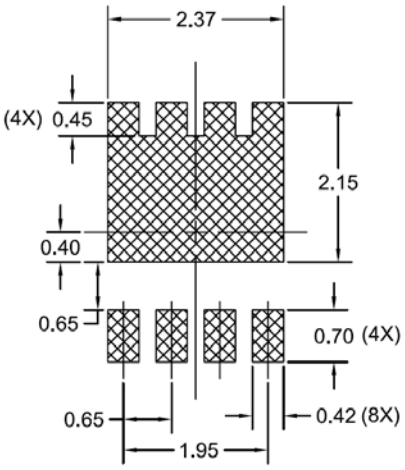


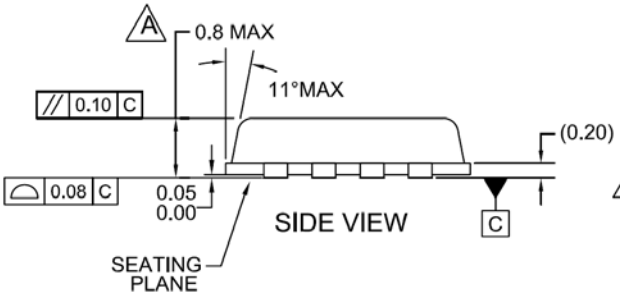
Figure 13. Junction-to-Ambient Transient Thermal Response Curve

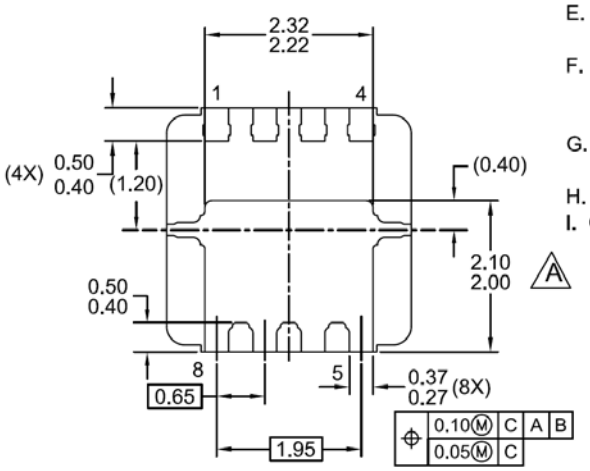
Dimensional Outline and Pad Layout





RECOMMENDED LAND PATTERN





NOTES:

A. EXCEPT AS NOTED, PACKAGE CONFORMS TO JEDEC REGISTRATION MO-240 VARIATION BA..
B. DIMENSIONS ARE IN MILLIMETERS.
C. DIMENSIONS AND TOLERANCES PER ASME Y14.5M, 1994.
D. SEATING PLANE IS DEFINED BY TERMINAL TIPS ONLY
E. BODY DIMENSIONS DO NOT INCLUDE MOLD FLASH PROTRUSIONS NOR GATE BURRS.
F. FLANGE DIMENSIONS INCLUDE INTERTERMINAL FLASH OR PROTRUSION. INTERTERMINAL FLASH OR PROTRUSION SHALL NOT EXCEED 0.25MM PER SIDE.
G. LAND PATTERN RECOMMENDATION IS BASED ON FSC DESIGN ONLY.
H. DRAWING FILENAME: MKT-MLP08Trev1.
I. GENERAL RADII FOR ALL CORNERS SHALL BE 0.20MM MAX.