LMPDD0903DF 100V P-Channel MOSFET

Features

- -100V/-10A, $R_{DS(ON)}$<140mΩ@V_{GS}=-10V
- V_{GS} Guaranteed ±25V
- Improved dv/dt capability
- Fast switching
- Green Device Available
- TO-252-2L package design

Product Description

These P-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode.

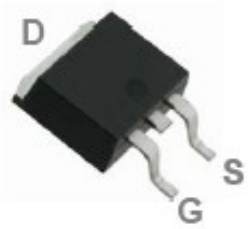
These devices are well suited for high efficiency fast switching applications.

Applications

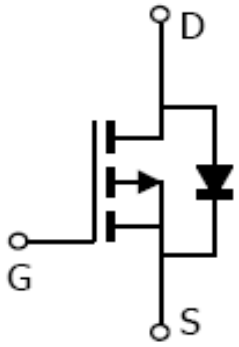
- Networking
- Load Switch
- Led applications

Pin Configuration

LMPDD0903DF (TO-252-2L)



PIN	Description
1	Gate
2	Drain
3	Source



Ordering Information

Ordering Information					
Part Number	P/N	PKG code	Pb Free code	Package	Quantity
LMPDD0903DF	LMPDD0903	D	F	TO-252-2L	2500

Marking Information

Marking Information		
Part Marking	Part Number	LFC code
DD0903 XWMMMM	DD0903	XWMMMM

Absolute Maximum Ratings

(T_C=25ºC Unless otherwise noted)

Symbol	Parameter		Typical	Unit
V_{DS}	Drain-Source Voltage		-100	V
V_{GS}	Gate –Source Voltage		±25	V
I_D	Continuous Drain Current	T_C=25℃	-10	A
		T_C=100℃	-6.5	
I_{DM}	Pulsed Drain Current		-40	A
P_D	Power Dissipation (T_C=25℃)		88	W
	Power Dissipation (Derate above 25℃)		0.59	W/℃
T_J	Operating Junction Temperature Range		-55 to +150	℃
T_{STG}	Storage Temperature Range		-55 to +150	℃
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		62	℃/W
$R_{\theta JC}$	Thermal Resistance-Junction to Case		1.7	℃/W

Electrical Characteristics

(T_C=25ºC Unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=-250uA	-100			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=-250uA	-1		-3	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V,V_{GS}=±25V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-100V,V_{GS}=0V			-1	uA
		V_{DS}=-80V,V_{GS}=0V, T_J=125ºC			-10	
I_S	Continuous Source Current	V_G=V_D=0V, Force Current			-10	A
I_{SM}	Pulsed Source Current				-20	
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS} =-10V,I_D=-6A		115	140	mΩ
		V_{GS} =-4.5V,I_D=-3A		130	170	mΩ
V_{SD}	Diode Forward Voltage	V_{GS}=0V,I_S=-1A			-1.2	V
Dynamic						
Q_g	Total Gate Charge	V_{DS}=-50V,V_{GS}=-10V, I_D=-6A		40.4	70	nC
Q_{gs}	Gate-Source Charge			7.7	15	
Q_{gd}	Gate-Drain Charge			6.6	13	
C_{iss}	Input Capacitance	V_{DS}=-30V,V_{GS}=0V, f=1MHz		2250	3900	pF
C_{oss}	Output Capacitance			130	250	
C_{rss}	Reverse Transfer Capacitance			90	180	
$t_{d(on)}$	Turn-On Time	V_{DD}=-30V,I_D=-1A, V_{GS}=-10V,R_G=6Ω		27	54	ns
t_r				12	24	
$t_{d(off)}$	Turn-Off Time			150	300	
t_f				45	90	
R_g	Gate Resistance	V_{DS}=0V,V_{GS}=0V, f=1MHz		10		Ω

Typical Performance Characteristics

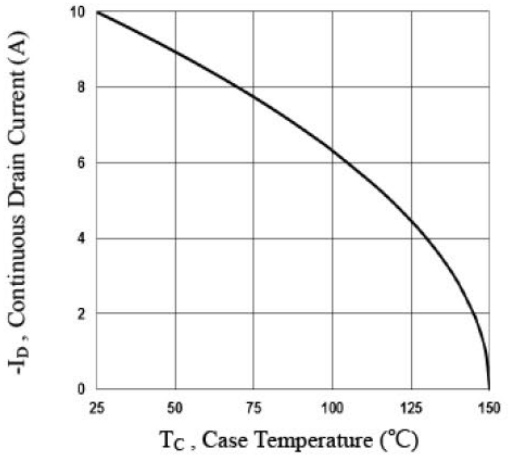


Fig.1 Continuous Drain Current vs. T_c

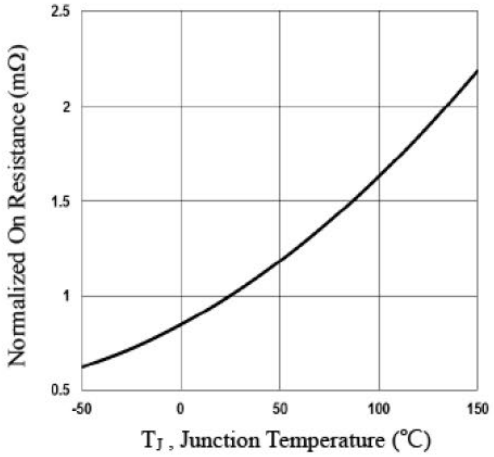


Fig.2 Normalized RDSON vs. T_J

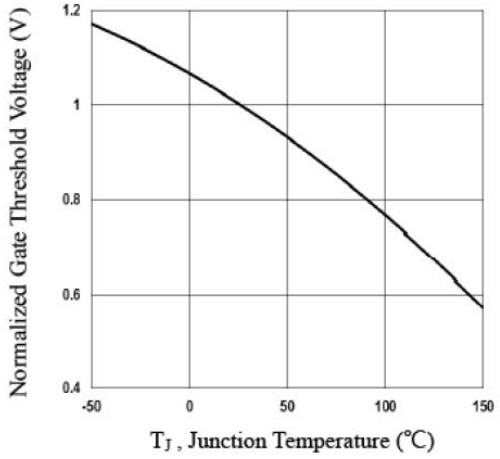


Fig.3 Normalized V_{th} vs. T_J

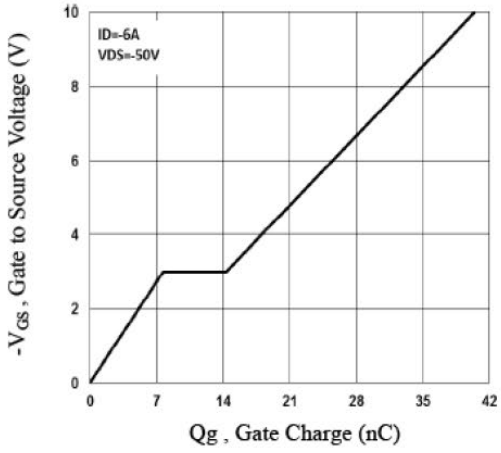


Fig.4 Gate Charge Waveform

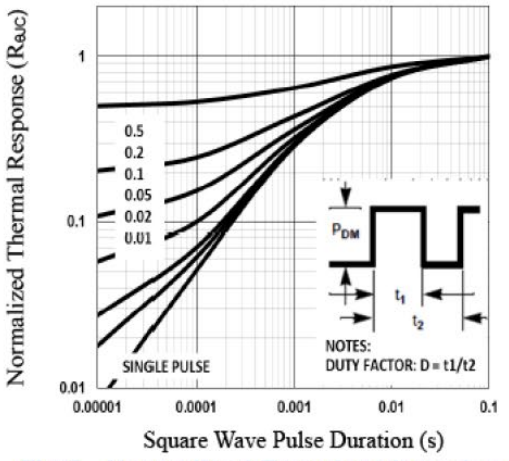


Fig.5 Normalized Transient Impedance

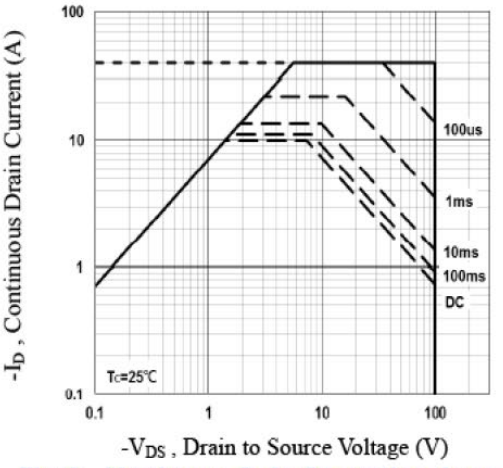
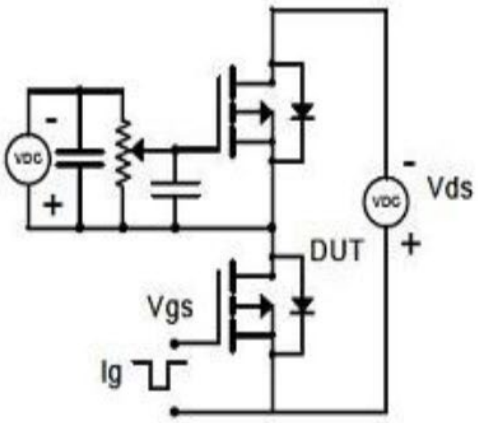
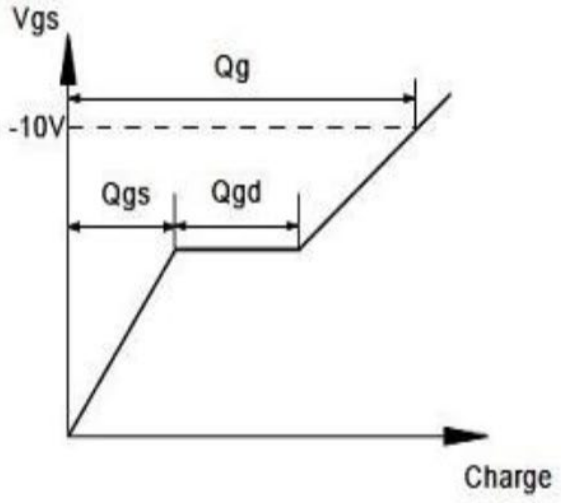


Fig.6 Maximum Safe Operation Area

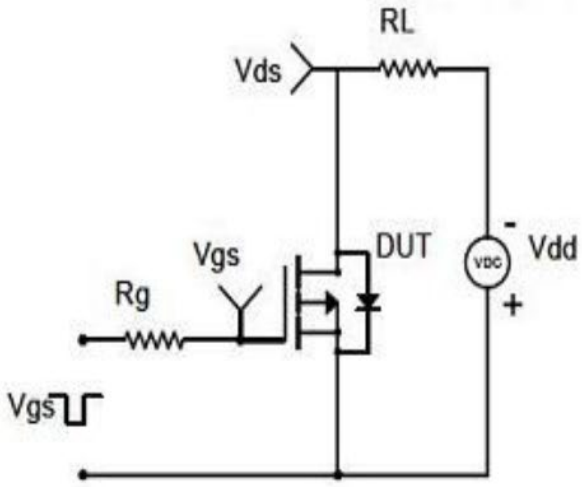
Typical Performance Characteristics(continue)

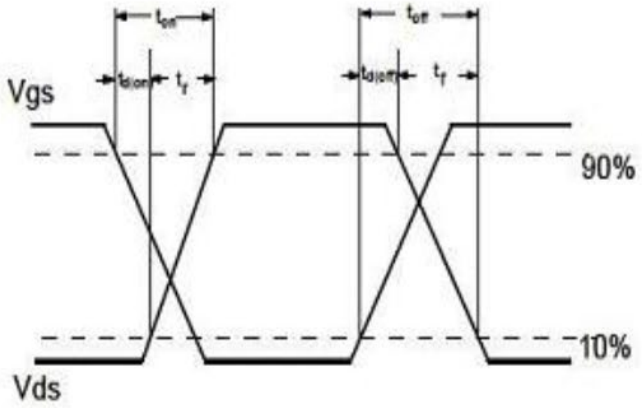
Gate Charge Test Circuit & Waveform





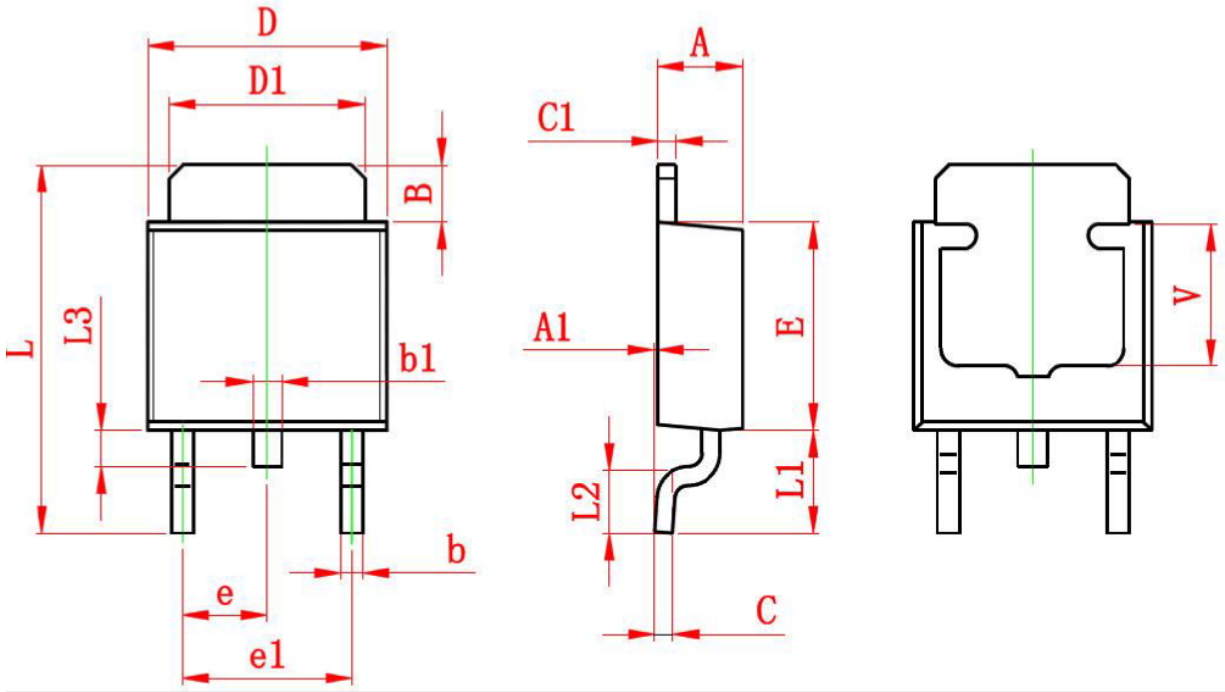
Resistive Switching Test Circuit & Waveforms





Package Dimension:

TO-252-2L PLASTIC PACKAGE



Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
B	1.350	1.650	0.053	0.065
b	0.500	0.700	0.020	0.028
b1	0.700	0.900	0.028	0.035
c	0.430	0.580	0.017	0.023
c1	0.430	0.580	0.017	0.023
D	6.350	6.650	0.250	0.262
D1	5.200	5.400	0.205	0.213
E	5.400	5.700	0.213	0.224
e	2.300 TYP		0.091 TYP	
e1	4.500	4.700	0.177	0.185
L	9.500	9.900	0.374	0.390
L1	2.550	2.900	0.100	0.114
L2	1.400	1.780	0.055	0.070
L3	0.600	0.900	0.024	0.035
V	3.800 REF		0.150 REF	

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