GSMD0903

100V P-Channel MOSFETs

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.

Features

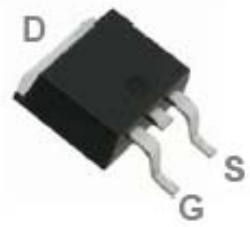
- -100V, -25A, $R_{DS(ON)}$=42mΩ@V_{GS}=-10V
- Improved dv/dt capability
- Fast switching
- VGS guarantee ±25V
- Green Device Available
- TO-252-2L package design

Applications

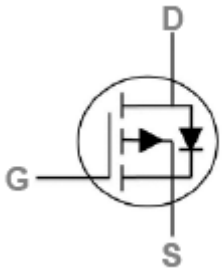
- Networking
- Load Switch
- LED applications

Packages & Pin Assignments

GSMD0903DF (TO-252-2L)

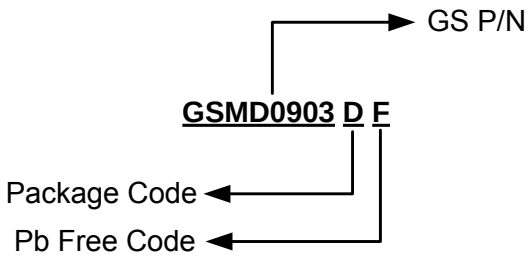


Top View



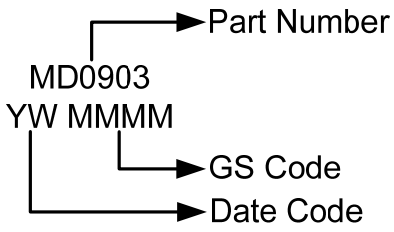
Description
Gate
Source
Drain

Ordering Information



Part Number	Package	Quantity Reel
GSMD0903DF	TO-252-2L	2500 PCS

Marking Information



Absolute Maximum Ratings

T_A=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_A=25℃	-25	A
		T_A=100℃	-16	
I_{DM}	Pulsed Drain Current		-100	A
EAS	Single Pulse Avalanche Energy		150	mJ
IAS	Single Pulse Avalanche Current		-24.5	A
P_D	Power Dissipation (T_A=25℃)		50	W
	Power Dissipation (Derate above 25℃)		0.4	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		2.5	℃/W

Electrical Characteristics

T_A=25℃ 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
$\triangle BV_{DSS}/\triangle T_J$	BV_{DSS} Temperature Coefficient	Reference to 25℃, I_D=-1mA		-0.05		V/℃
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=-250uA	-1.5	-2.2	-3.0	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=125℃			-30	
I_S	Continuous Source Current	V_G=V_D=0V, Force Current			-25	A
I_{SM}	Pulsed Source Current				-100	
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS} =-10V,I_D=-20A		33	42	mΩ
		V_{GS} =-4.5V,I_D=-10A		39	52	mΩ
V_{SD}	Diode Forward Voltage	V_{GS}=0V,I_S=-1A		-0.8	-1.1	V
t_{rr}	Reverse Recovery Time	V_{GS} =0V,I_S=-1A, di/dt=100A/us		41		ns
Q_{rr}	Reverse Recovery Charge			73		uC
Dynamic						
Q_g	Total Gate Charge	V_{DS}=-50V,V_{GS}=-10V, I_D=-20A		76.4		nC
Q_{gs}	Gate-Source Charge			13.6		
Q_{gd}	Gate-Drain Charge			18.5		
C_{iss}	Input Capacitance	V_{DS}=-30V,V_{GS}=0V, f=1MHz		3250		pF
C_{oss}	Output Capacitance			310		
C_{rss}	Reverse Transfer Capacitance			180		
$t_{d(on)}$	Turn-On Time	V_{DD}=-30V,I_D=-1A, V_{GS}=-10V,R_G=6Ω		13	24	ns
t_r				7	14	
$t_{d(off)}$	Turn-Off Time			108	195	
t_f				46	84	
R_g	Gate Resistance	V_{DS}=0V,V_{GS}=0V, f=1MHz		3.4		Ω

Typical Performance Characteristics

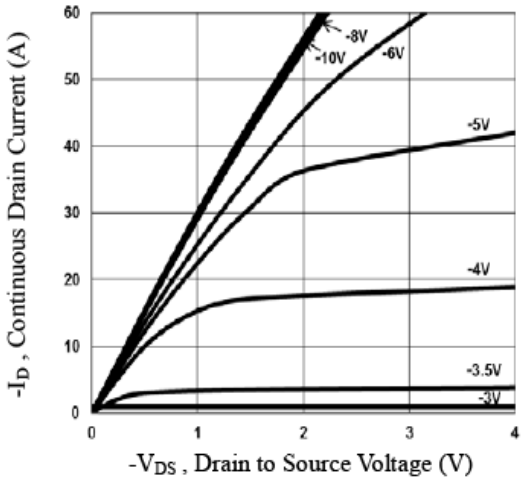


Fig.1 Output Characteristics

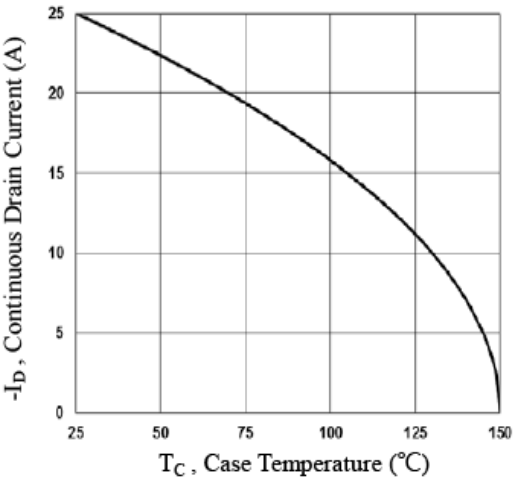


Fig.2 Continuous Drain Current vs. T_c

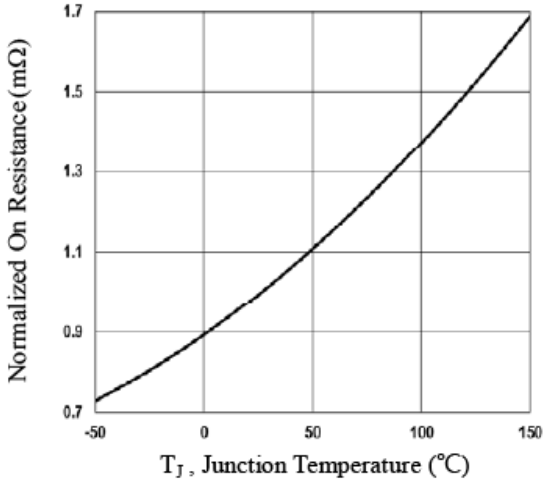


Fig.3 Normalized RDSON vs. T_J

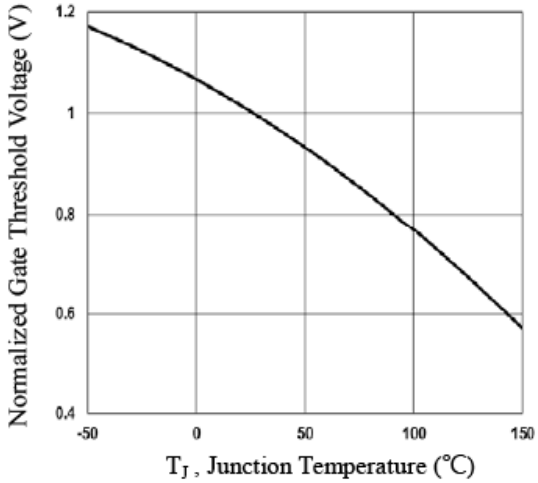


Fig.4 Normalized V_{th} vs. T_J

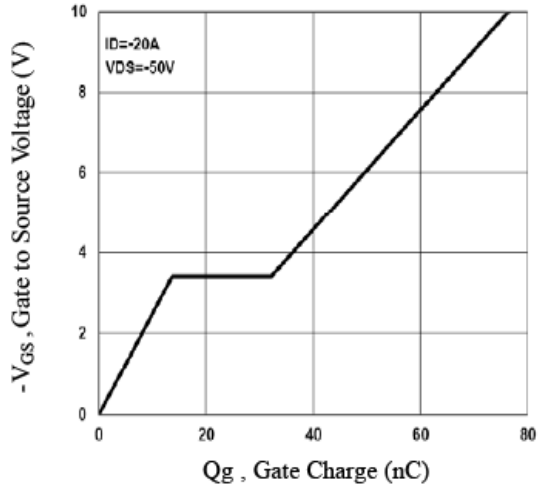


Fig.5 Gate Charge Waveform

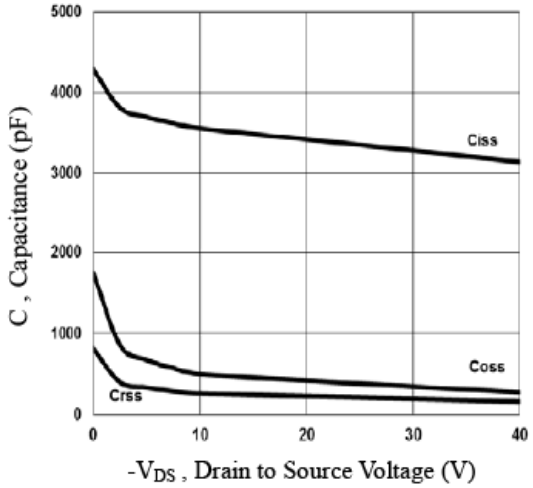


Fig.6 Capacitance Characteristics

Typical Performance Characteristics (Continue)

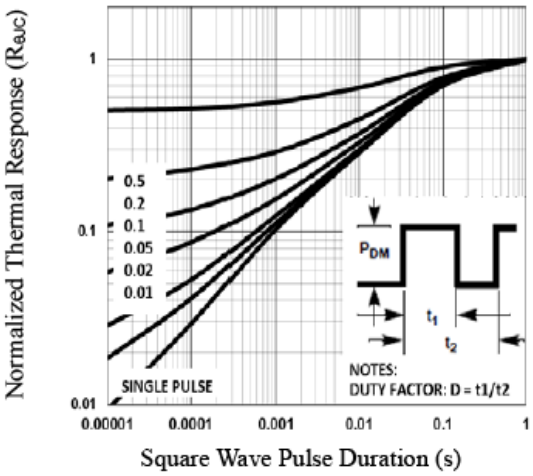


Fig.7 Normalized Transient Impedance

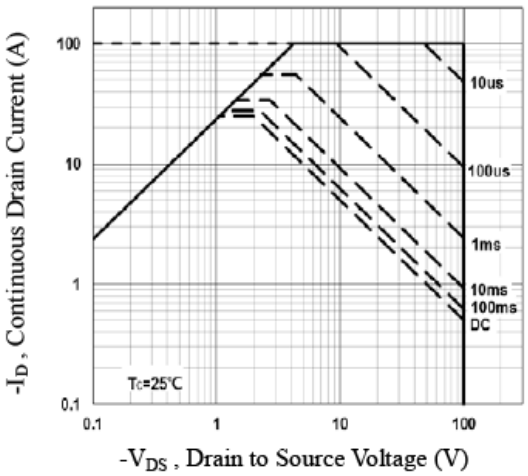
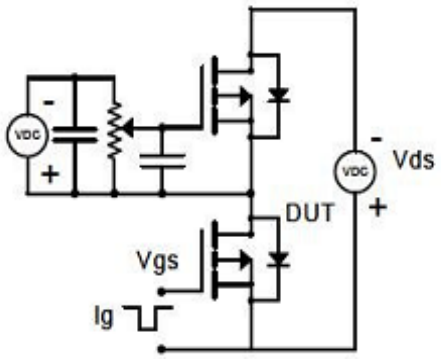
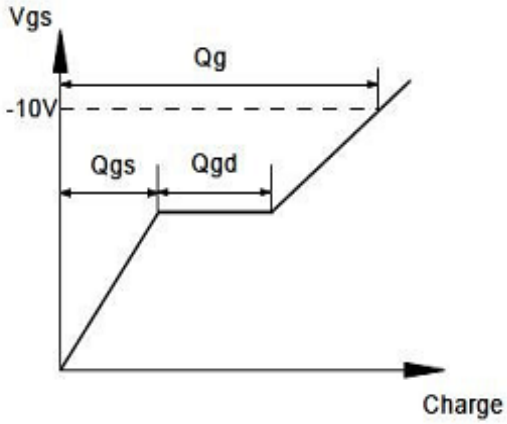


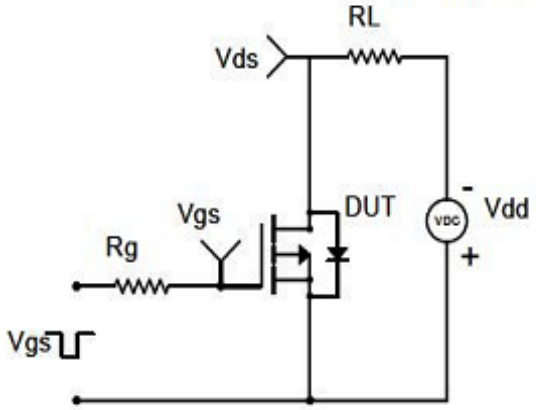
Fig.8 Maximum Safe Operation Area

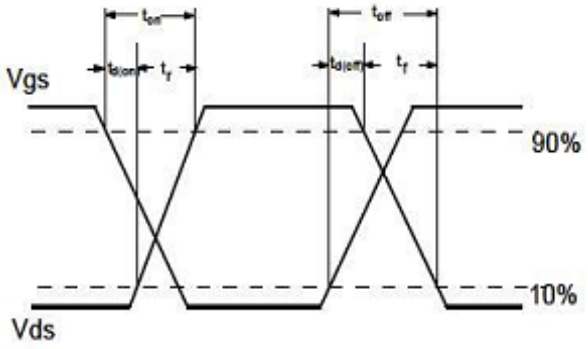
Gate Charge Test Circuit & Waveform





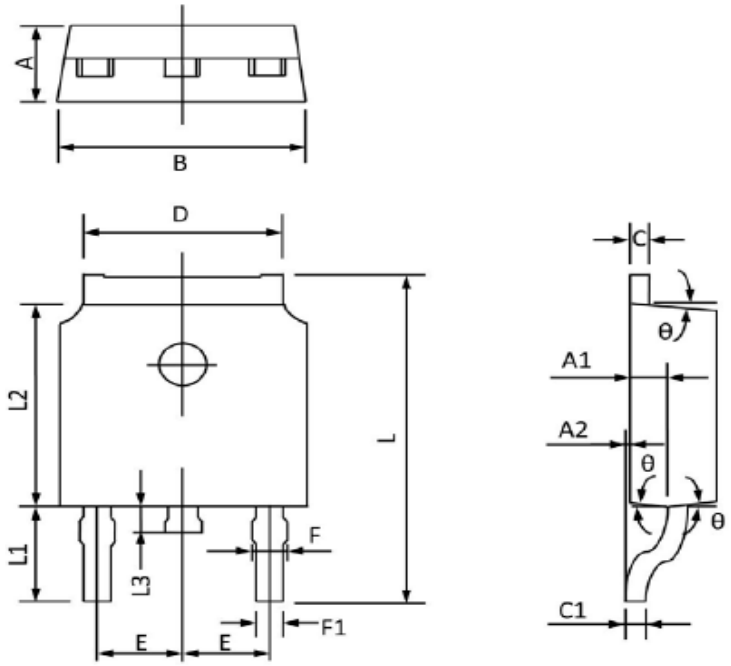
Resistive Switching Test Circuit & Waveforms





Package Dimension

TO-252-2L



Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	2.20	2.40	0.087	0.094
A1	0.91	1.11	0.036	0.044
A2	0.00	0.15	0.000	0.006
B	6.50	6.70	0.256	0.264
C	0.46	0.58	0.018	0.030
C1	0.46	0.58	0.018	0.030
D	5.10	5.46	0.201	0.215
E	2.186	2.386	0.086	0.094
F	0.74	0.94	0.029	0.037
F1	0.66	0.86	0.026	0.034
L	9.80	10.40	0.386	0.409
L1	2.9 (REF)		0.114 (REF)	
L2	6.00	6.20	0.236	0.244
L3	0.60	1.00	0.024	0.039
θ	3°	9°	3°	9°

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