

GSMDD4906

40V N-Channel MOSFETs

Product Description

These N-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.

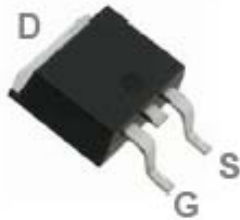
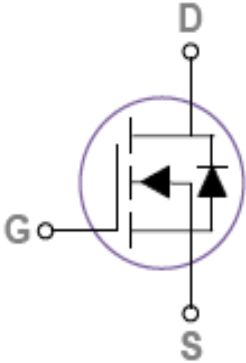
Features

- 40V, 50A, $R_{DS(ON)}=9.5m\Omega@V_{GS}=10V$
- Improved dv/dt capability
- Fast switching
- Green Device Available
- TO-252-2L package design

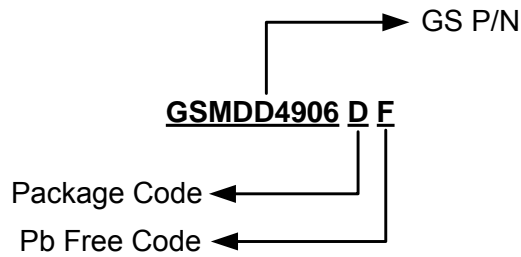
Applications

- Notebook
- Load Switch
- LED Applications
- Hand-Held Device

Packages & Pin Assignments

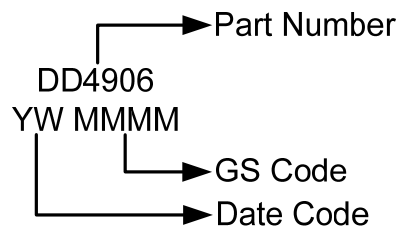
GSMDD4906DF (TO-252-2L)	
 <p>Top View</p>	
Description	
Gate	
Source	
Drain	

Ordering Information



Part Number	Package	Quantity Reel
GSMDD4906DF	TO-252-2L	2500 PCS

Marking Information



Absolute Maximum Ratings

T_A=25°C Unless otherwise noted

Symbol	Parameter	Typical	Unit
V _{DS}	Drain-Source Voltage	40	V
V _{GS}	Gate-Source Voltage	±20	V
I _D	Continuous Drain Current	T _A =25°C	50
		T _A =100°C	31.6
I _{DM}	Pulsed Drain Current	200	A
P _D	Power Dissipation (T _A =25°C)	54	W
	Power Dissipation (Derate above 25°C)	0.43	W/°C
T _J	Operating Junction Temperature Range	-55 to +150	°C
T _{STG}	Storage Temperature Range	-55 to +150	°C
R _{θJA}	Thermal Resistance-Junction to Ambient	62	°C/W
R _{θJC}	Thermal Resistance-Junction to Case	2.31	°C/W

Electrical Characteristics

T_A=25°C Unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	40			V
ΔBV _{DSS} /ΔT _J	BV _{DSS} Temperature Coefficient	Reference to 25°C, I _D =1mA		0.03		V/°C
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1.2	1.8	2.5	V
ΔV _{GS(th)}	V _{GS(th)} Temperature Coefficient			-5		mV/°C
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±20V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =40V, V _{GS} =0V			1	uA
		V _{DS} =32V, V _{GS} =0V, T _J =125°C			10	
I _S	Continuous Source Current	V _G =V _D =0V, Force Current			50	A
I _{SM}	Pulsed Source Current				100	
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =10V, I _D =8A		7.7	9.5	mΩ
		V _{GS} =4.5V, I _D =4A		11	13.5	mΩ
g _{FS}	Forward Transconductance	V _{DS} =10V, I _D =2A		6.5		S
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =1A			1	V
t _{rr}	Reverse Recovery Time	V _{GS} =0V, I _S =1A, di/dt=100A/us		17		ns
Q _{rr}	Reverse Recovery Charge			2.8		nC
Dynamic						
Q _g	Total Gate Charge	V _{DS} =20V, V _{GS} =4.5V, I _D =8A		12.2	24	nC
Q _{gs}	Gate-Source Charge			3.3	7	
Q _{gd}	Gate-Drain Charge			6.7	13	
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz		1220	2200	pF
C _{oss}	Output Capacitance			130	250	
C _{rss}	Reverse Transfer Capacitance			55	110	
t _{d(on)}	Turn-On Time	V _{DD} =15V, I _D =1A, V _{GS} =10V, R _G =3.3Ω		13.2	25	ns
t _r				2.2	5	
t _{d(off)}	Turn-Off Time			72	130	
t _f				4.5	10	
R _g	Gate Resistance		V _{DS} =0V, V _{GS} =0V, f=1MHz		2.2	

Typical Performance Characteristics

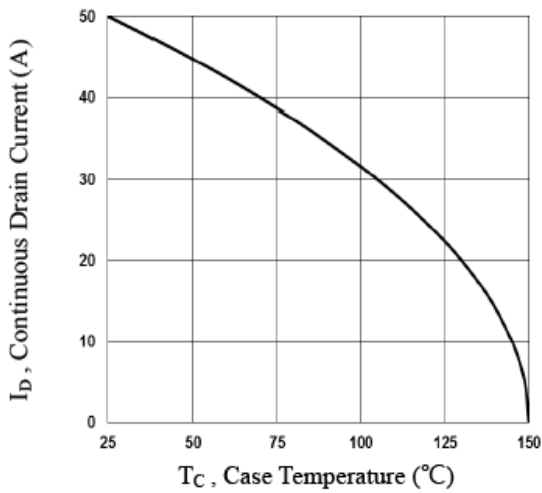


Fig.1 Continuous Drain Current vs. T_c

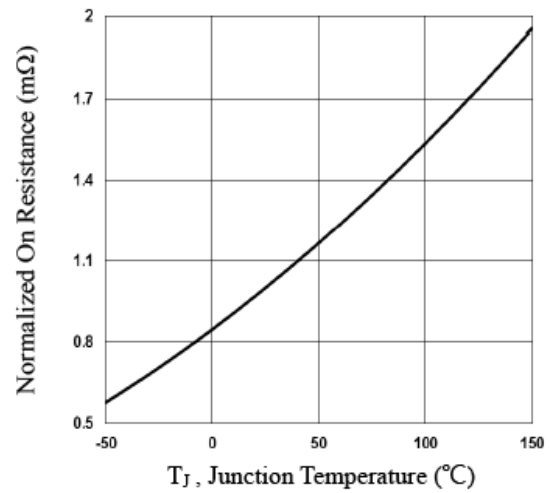


Fig.2 Normalized RDSON vs. T_j

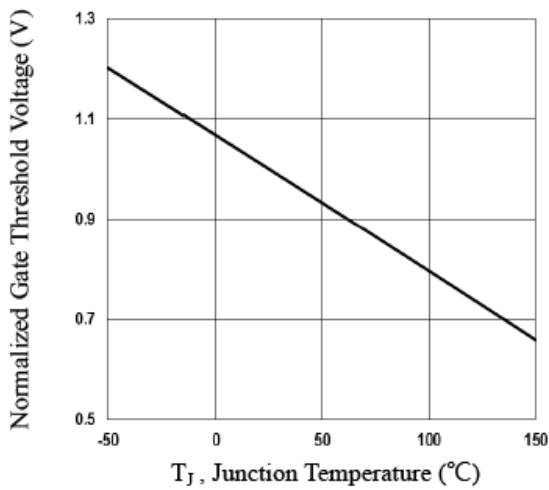


Fig.3 Normalized V_{th} vs. T_j

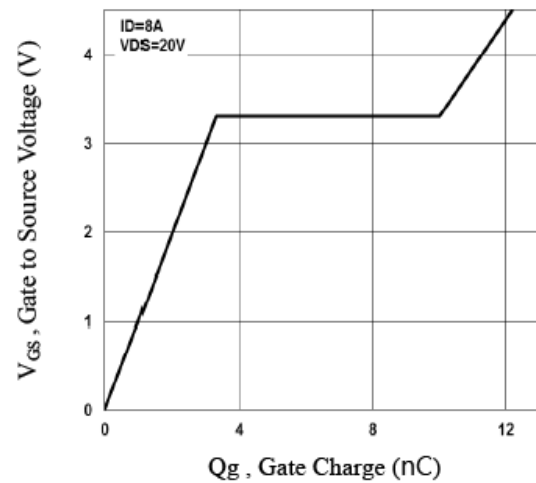


Fig.4 Gate Charge Waveform

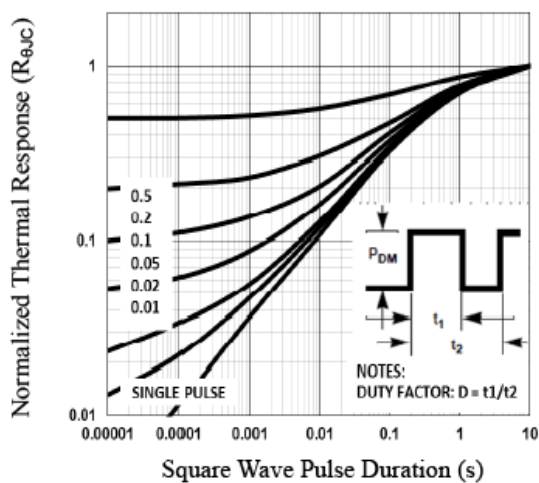


Fig.5 Normalized Transient Impedance

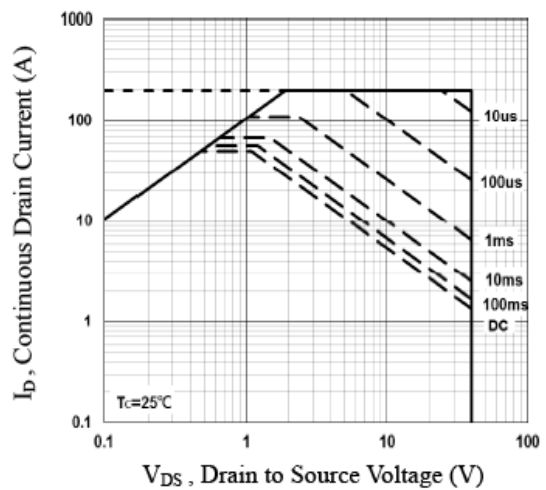
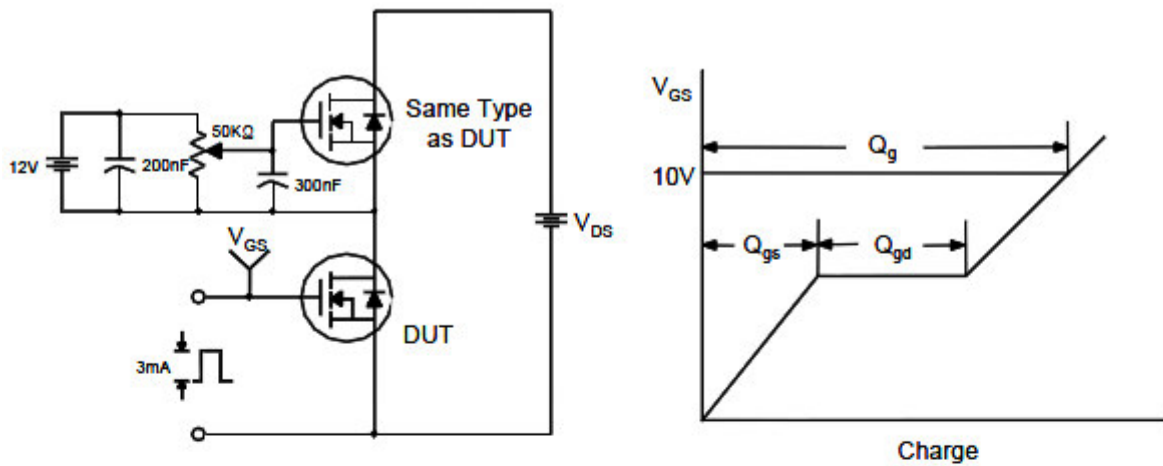


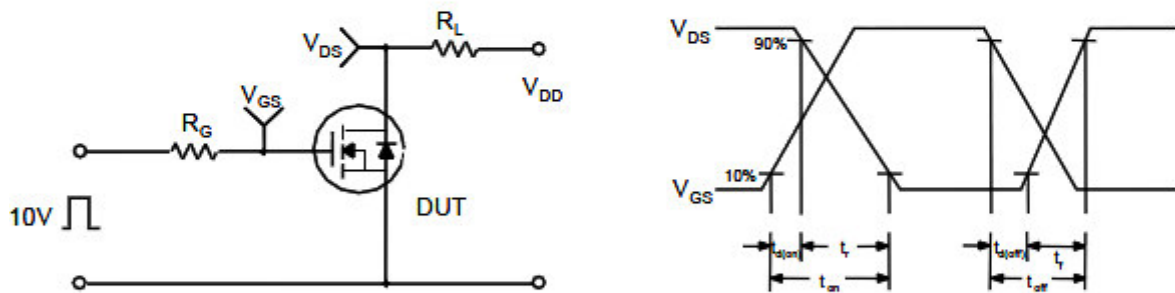
Fig.6 Maximum Safe Operation Area

Typical Performance Characteristics (Continue)

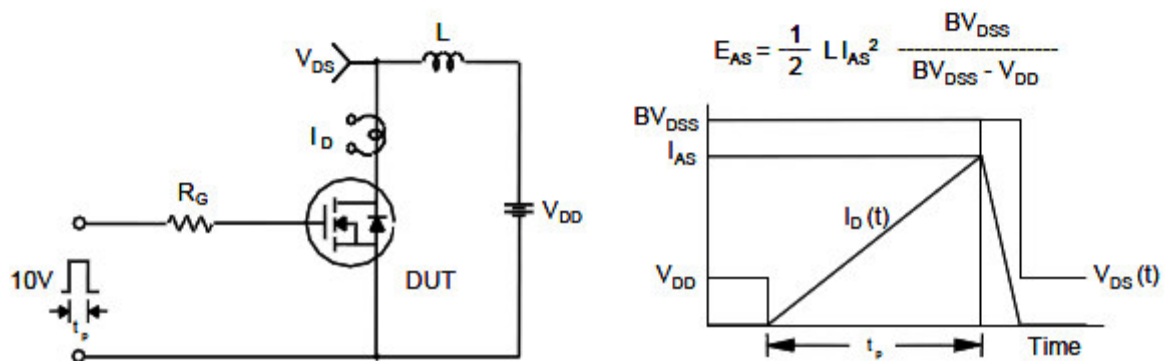
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

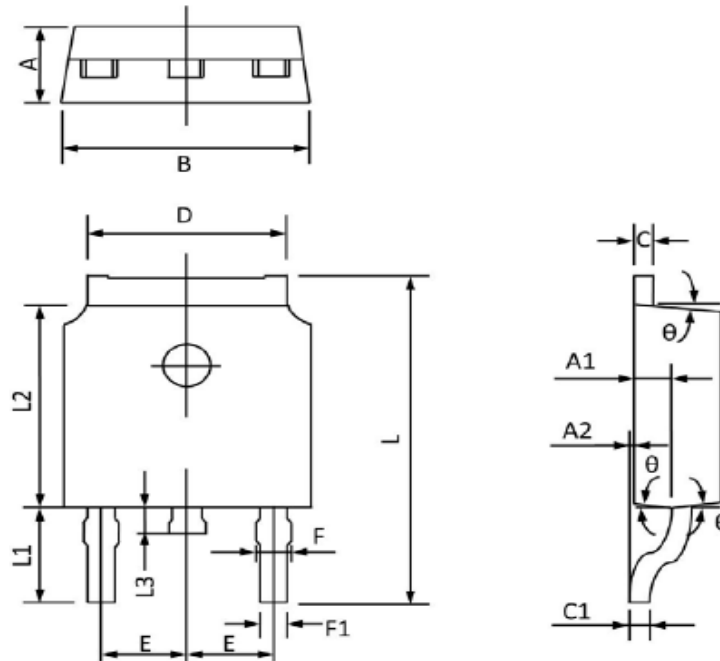


Unclamped Inductive Switching Test Circuit & Waveforms



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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