

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.

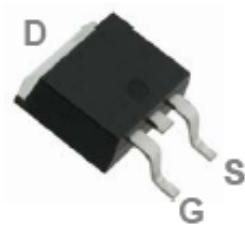
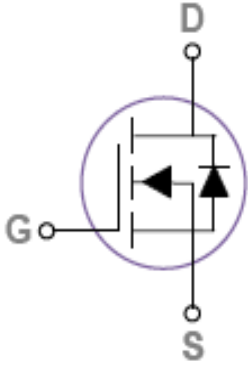
Features

- 40V, 50A, $R_{DS(ON)}=8.5m\Omega@V_{GS}=10V$
- Improved dv/dt capability
- Fast switching
- Green Device Available

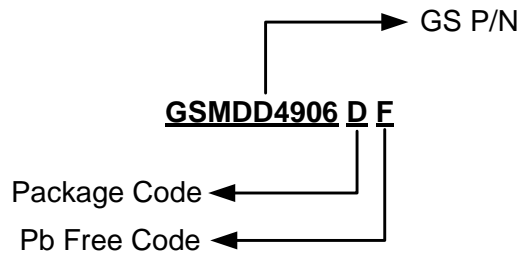
Applications

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

Packages & Pin Assignments

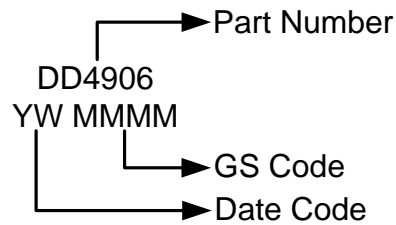
GSMDD4906DF (TO-252)	
 <p>Top View</p>	
Description	
Gate	
Source	
Drain	

Ordering Information



Part Number	Package	Quantity Reel
GSMDD4906DF	TO-252-	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 T _J =25°C	---	---	1	uA
		V _{DS} =32V, V _{GS} =0V, T _J =85°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	---	6.5	8.5	mΩ
		V _{GS} =4.5V, I _D =4A	---	9	12	mΩ
g _{FS}	Forward Transconductance	V _{DS} =10V, I _D =10A	---	13	---	S
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =1A T _J =25°C	---	---	1	V
t _{rr}	Reverse Recovery Time	V _{GS} =0V, I _S =1A, di/dt=100A/us T _J =25°C	---	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

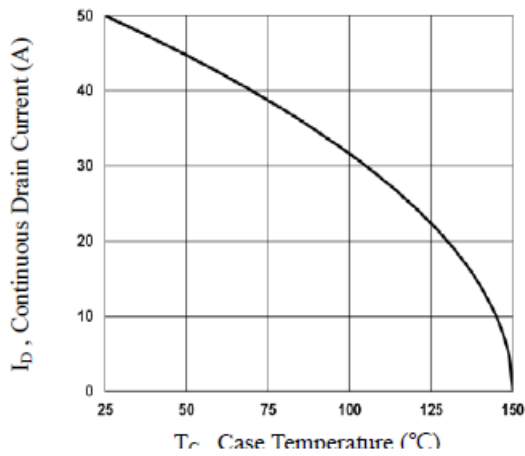


Fig.1 Continuous Drain Current vs. T_c

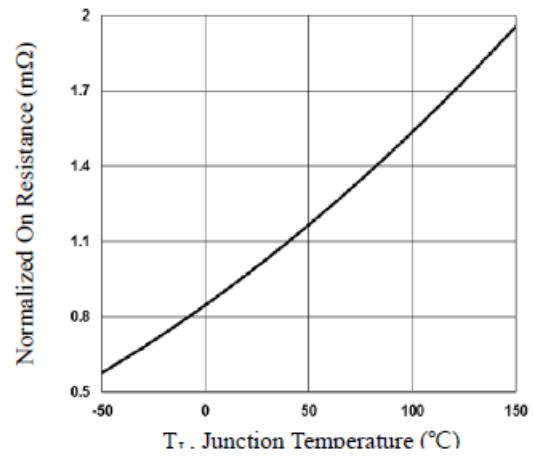


Fig.2 Normalized $R_{DS(on)}$ vs. T_j

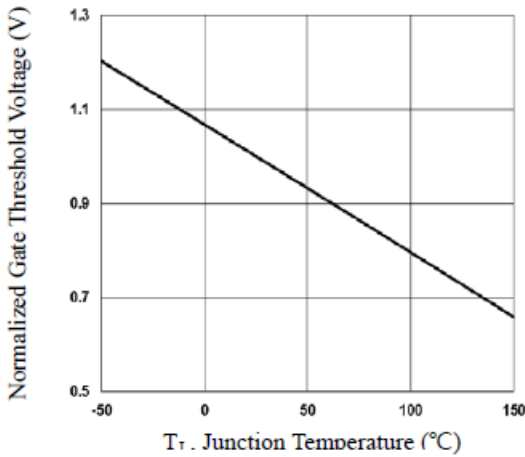


Fig.3 Normalized V_{th} vs. T_j

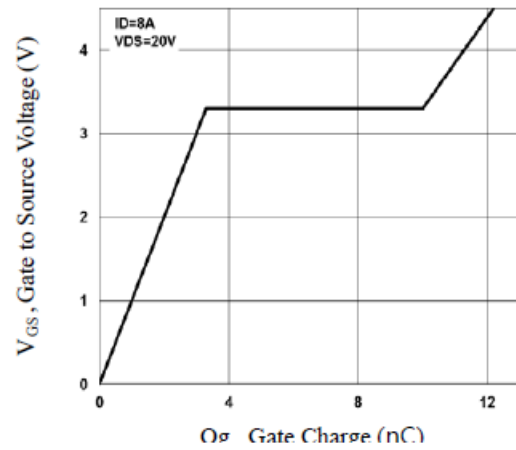


Fig.4 Gate Charge Waveform

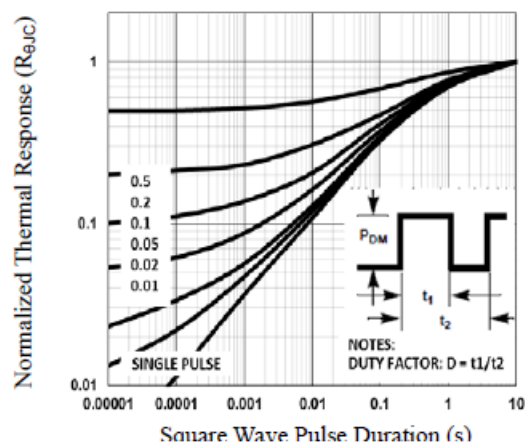


Fig.5 Normalized Transient Impedance

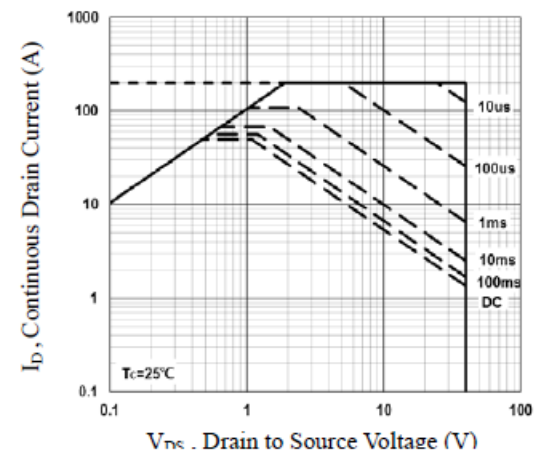


Fig.6 Maximum Safe Operation Area

Typical Performance Characteristics (Continue)

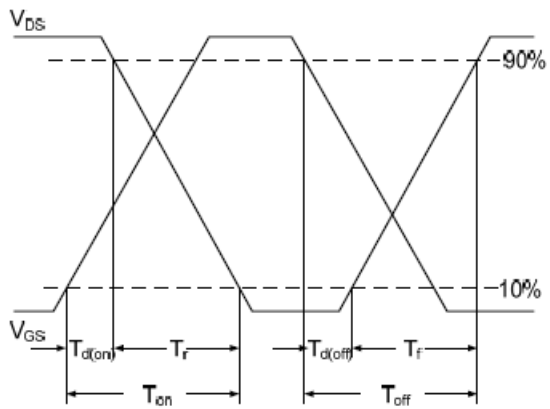


Fig.7 Switching Time Waveform

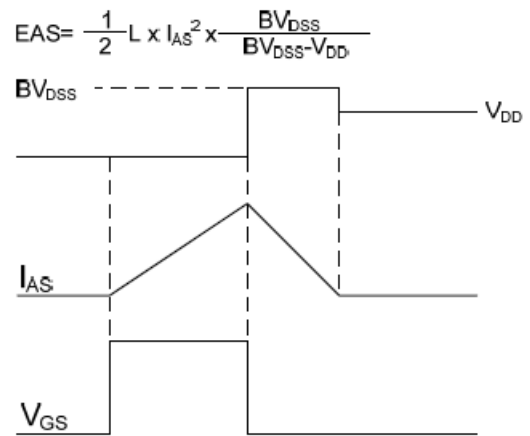
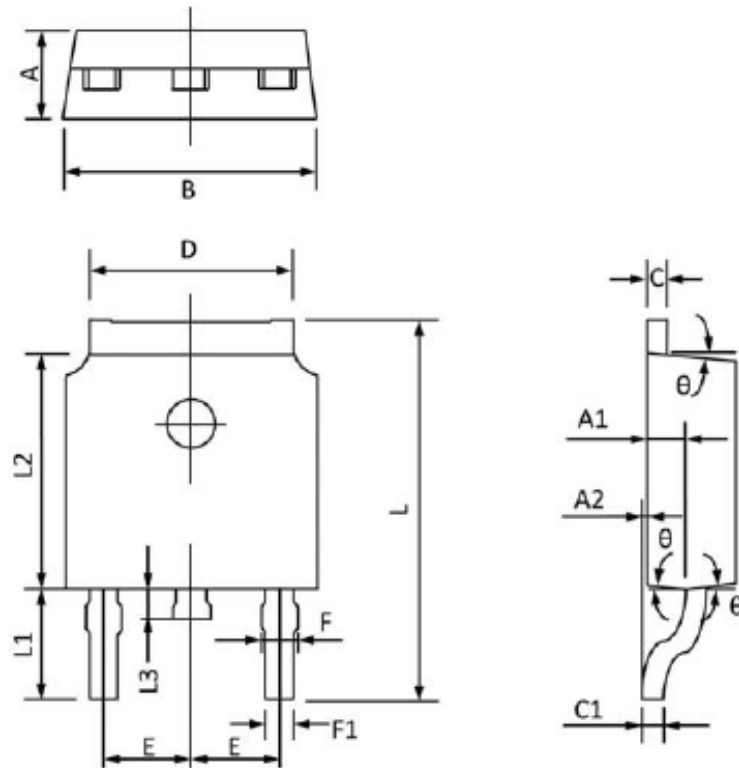


Fig.8 EAS Waveform

TO252 PACKAGE INFORMATION









Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	2.400	2.200	0.094	0.087
A1	1.110	0.910	0.044	0.036
A2	0.150	0.000	0.006	0.000
B	6.700	6.500	0.264	0.256
C	0.580	0.460	0.023	0.018
C1	0.580	0.460	0.023	0.018
D	5.460	5.100	0.215	0.201
E	2.386	2.186	0.094	0.086
F	0.940	0.740	0.037	0.029
F1	0.860	0.660	0.034	0.026
L	10.400	9.800	0.409	0.386
L1	2.9REF		0.114REF	
L2	6.200	6.000	0.244	0.236
L3	1.000	0.600	0.039	0.024
θ	9°	3°	9°	3°

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CONTACT US

GS Headquarter	
	4F.,No.43-1,Lane11,Sec.6,Minquan E.Rd Neihsu District Taipei City 114, Taiwan (R.O.C)
	886-2-2657-9980
	886-2-2657-3630
	sales_twn@gs-power.com

RD Division	
	824 Bolton Drive Milpitas. CA. 95035
	1-408-457-0587