GSMDS4906

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

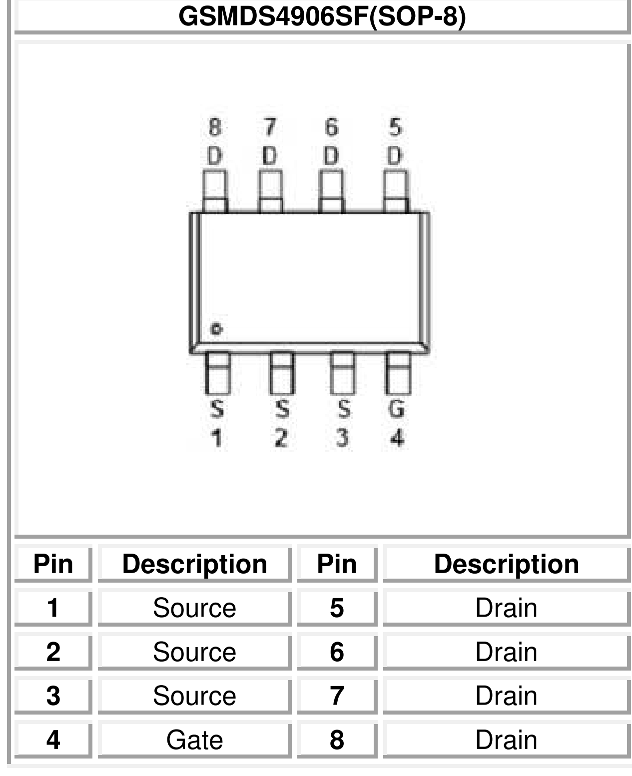
- 40V, 9A,$R_{DS(ON)}$=9mΩ@V_{GS}=-10V
- Improved dv/dt capability
- Fast switching
- Green Device Available
- SOP-8 package design

Applications

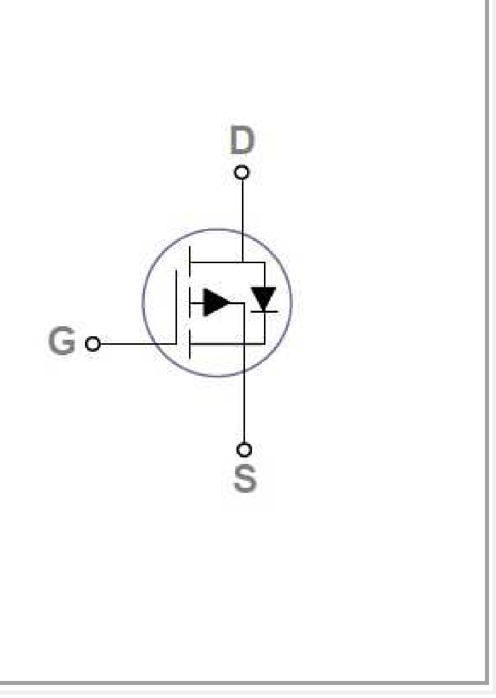
- Notebook
- Load Switch
- LED applications
- Hand-Held Device

Packages & Pin Assignments

GSMDS4906SF(SOP-8)

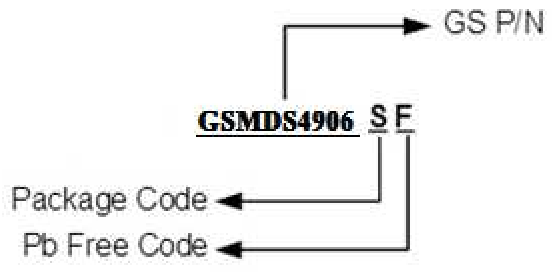


Pin	Description	Pin	Description
1	Source	5	Drain
2	Source	6	Drain
3	Source	7	Drain
4	Gate	8	Drain



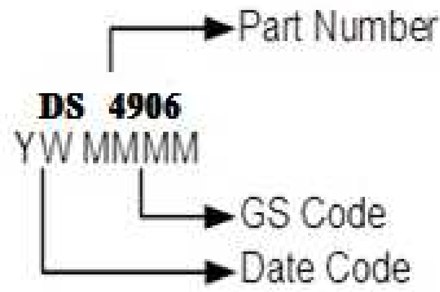
GSMDS4906

Ordering Information



Part Number	Package	QuantityReel
GSMDS4906SF	SOP-8	4000 PCS

Marking Information



Absolute Maximum Ratings

T_A=25ºC 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℃	9	A
		T_A=100℃	5.7	
I_{DM}	Pulsed Drain Current[1]		36	A
P_D	Power Dissipation (T_A=25℃)		1.47	W
	Power Dissipation (Derate above 25℃)		0.012	W/℃
T_J	Operating JunctionTemperatureRange		-55 to +150	℃
T_{STG}	StorageTemperatureRange		-55 to +150	℃
$R_{θJA}$	Thermal Resistance-Junction to Ambient		62.5	℃/W

Electrical Characteristics

T_J=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	40			V
$\triangle BV_{DSS}/\triangle T_J$	BV_{DSS} Temperature Coefficient	Reference to 25℃, I_D=1mA		0.03		V/℃
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}$,I_D=-250uA	1.2	1.8	2.5	V
$\triangle V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient	$V_{DS}=V_{GS}$,I_D=-250uA		5		mV/℃
I_{GSS}	Gate-Source Leakage Current	V_{DS}=0V,V_{GS}=±20V			±100	nA
I_{DSS}	Drain-Source Leakage Current	V_{DS}=40V,V_{GS}=0V			1	uA
		V_{DS}=32V,V_{GS}=0V, T_J=85℃			10	
I_S	Continuous Source Current	$V_G=V_D$=0V, Force Current			15	A
I_{SM}	Pulsed Source Current				30	
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=10V,I_D=8A		7	9	mΩ
		V_{GS}=4.5V,I_D=4A		9.5	13	
g_{FS}	Forward Transconductance	V_{DS}=-10V,I_D=10A		13		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/μs		17		nS
Q_{rr}	Reverse Recovery Charge			2.8		nC
R_g	Gate resistance	V_{GS}=0V, V_{DS}=0V, F=1MHz		2.2		Ω
Dynamic						
Q_g	Total Gate Charge[2,3]	V_{DS}=20V,V_{GS}=4.5V, I_D=8A		12.2	24	nC
Q_{gs}	Gate-Source Charge[2,3]			3.3	7	
Q_{gd}	Gate-Drain Charge[2,3]			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[2,3]	V_{DD}=15V,I_D=1A, V_{GS}=10V,R_G=2.2Ω		13.2	25	ns
t_r				2.2	5	
$t_{d(off)}$	Turn-Off Time[2,3]			72	130	
t_f				4.5	10	

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
3. Essentially independent of operating temperature.

Typical Performance Characteristics

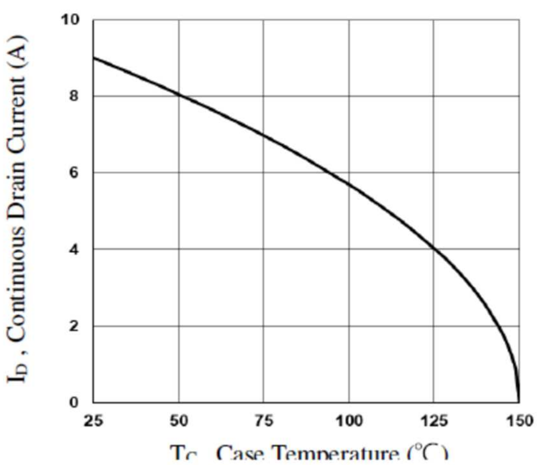


Fig.1 Continuous Drain Current vs. T_C

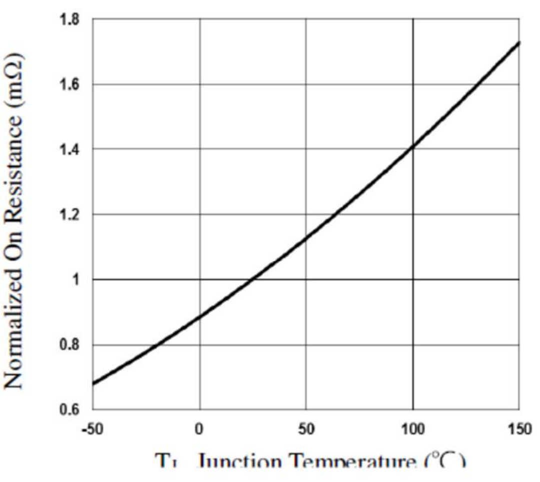


Fig.2 Normalized RDSON vs. T_J

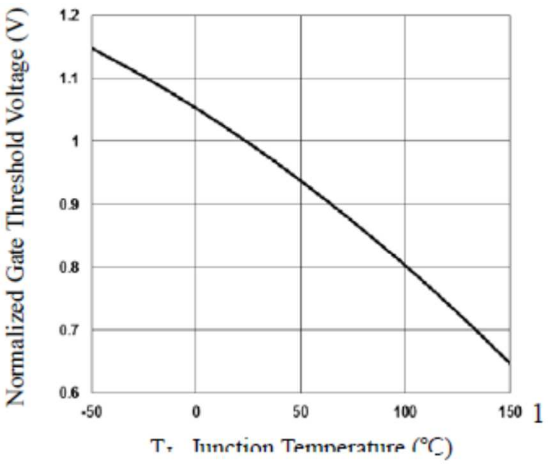


Fig.3 Normalized V_{th} vs. T_J

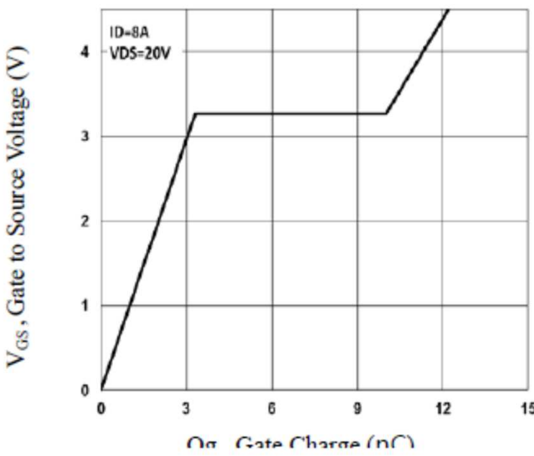


Fig.4 Gate Charge Waveform

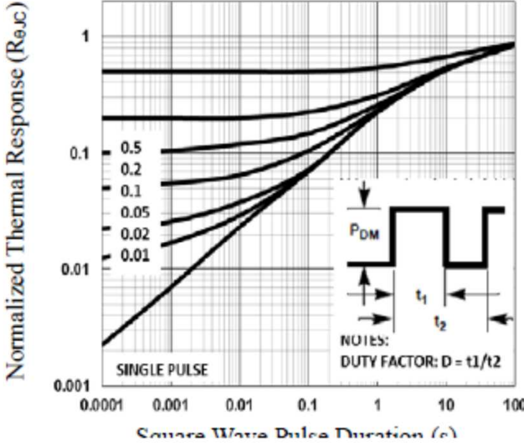


Fig.5 Normalized Transient Impedance

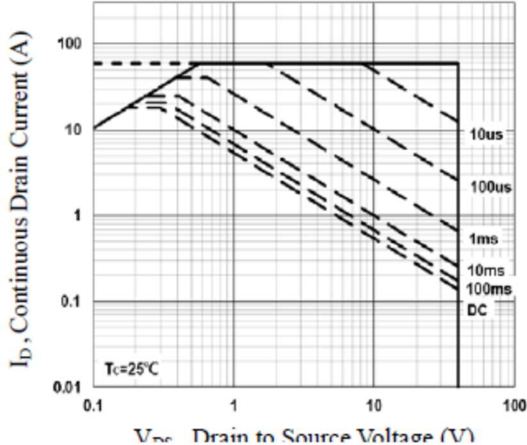


Fig.6 Maximum Safe Operation Area

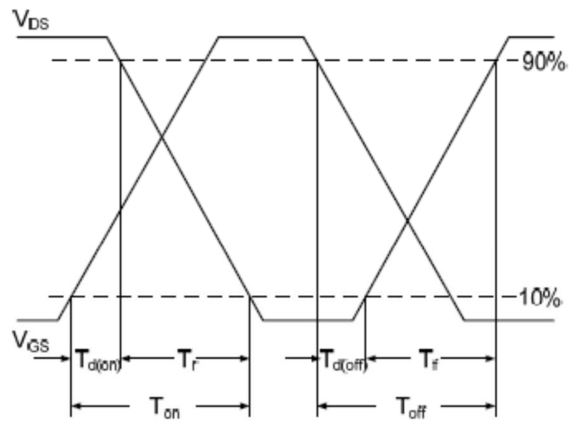


Fig.7 Switching Time Waveform

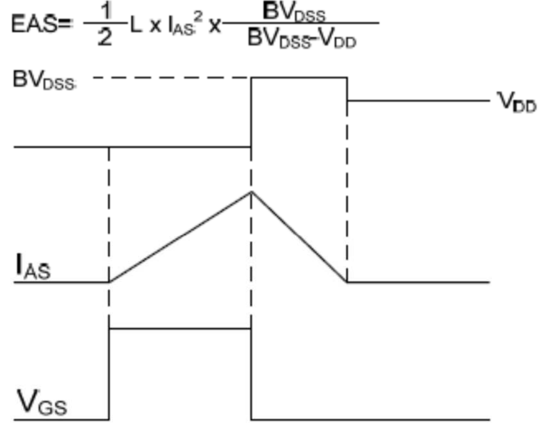
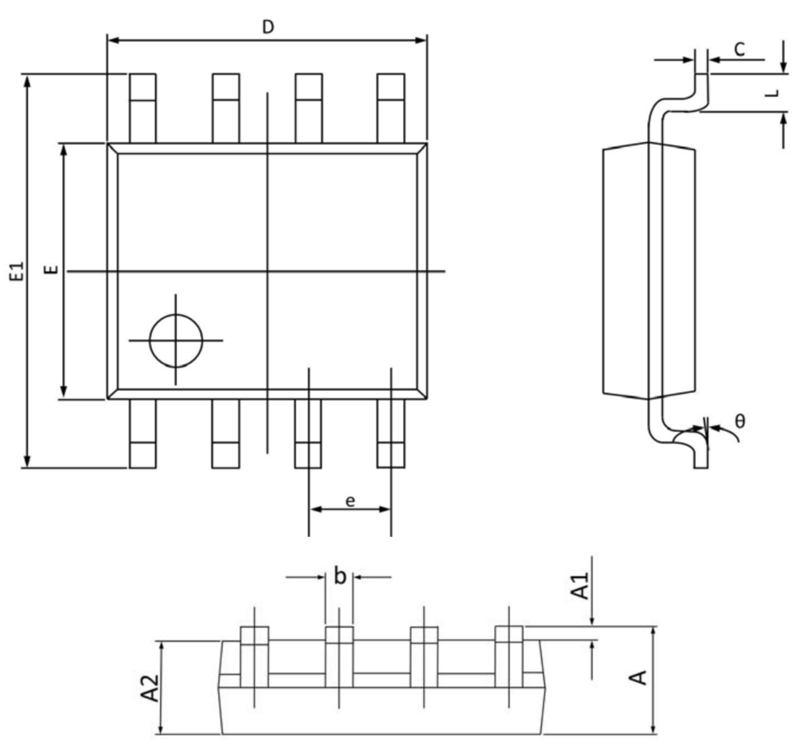


Fig.8 EAS Waveform

Package Dimension

SOP-8 PACKAGE



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	1.750	1.350	0.069	0.053
A1	0.250	0.100	0.010	0.004
A2	1.500	1.300	0.059	0.051
b	0.490	0.350	0.019	0.014
C	0.260	0.190	0.010	0.007
D	5.100	4.700	0.201	0.185
E	4.100	3.700	0.161	0.146
E1	6.200	5.800	0.244	0.228
e	1.27BSC		0.05BSC	
L	0.900	0.400	0.035	0.016
θ	8°	0°	8°	0°

NOTICE

Information furnished is believed to be accurate and reliable. However Globaltech Semiconductor assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties, which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of Globaltech Semiconductor. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information without express written approval of Globaltech Semiconductor.

CONTACT US

GS Headquarter	
Address	4F.,No.43-1,Lane11,Sec.6,MinquanE.RdNeihuDistrictTaipeiCity 114, Taiwan (R.O.C)
Tel	886-2-2657-9980
Fax	886-2-2657-3630
E-mail	sales_twn@gs-power.com

RD Division	
Address	824 Bolton DriveMilpitas. CA. 95035
Tel	1-408-457-0587