

GSMDS6904

60V 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.

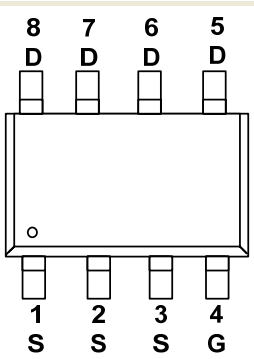
Features

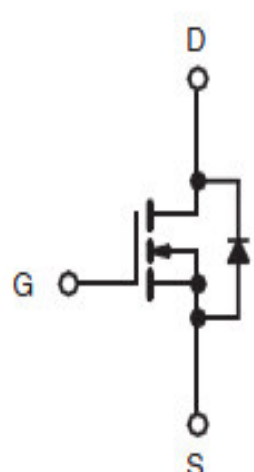
- 60V, 10A, $R_{DS(ON)}=12m\Omega@V_{GS}=10V$
- Improved dv/dt capability
- Fast switching
- 100% EAS Guaranteed
- Green Device Available
- SOP-8 package design

Applications

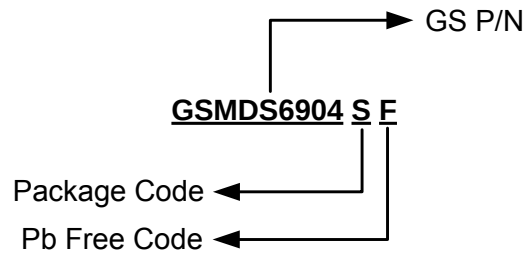
- Motor Drive
- Power Tools
- LED Lighting

Packages & Pin Assignments

GSMDS6904SF (SOP-8)	
 Top View	
Pin	Description
1	Source
2	Source
3	Source
4	Gate
5	Drain
6	Drain
7	Drain
8	Drain

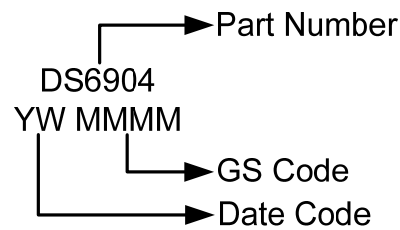


Ordering Information



Part Number	Package	Quantity Reel
GSMDS6904SF	SOP-8	4000 PCS

Marking Information



Absolute Maximum Ratings

T_C=25°C Unless otherwise noted

Symbol	Parameter		Typical	Unit
V _{DS}	Drain-Source Voltage		60	V
V _{GS}	Gate-Source Voltage		±20	V
I _D	Continuous Drain Current	T _C =25℃	10	A
		T _C =100℃	6.3	
I _{DM}	Pulsed Drain Current (*1)		40	A
EAS	Single Pulse Avalanche Energy (*2)		61	mJ
IAS	Single Pulse Avalanche Current (*2)		35	A
P _D	Power Dissipation (T _C =25℃)		2.5	W
	Power Dissipation (Derate above 25℃)		0.02	W/℃
T _J	Operating Junction Temperature Range		-55 to +150	℃
T _{STG}	Storage Temperature Range		-55 to +150	℃
R _{θJA}	Thermal Resistance-Junction to Ambient		50	℃/W

Note 1: Repetitive Rating: Pulsed width limited by maximum junction temperature.

Note 2: V_{DD}=25V, V_{GS}=10V, L=0.1mH, IAS=35A, R_G=25Ω, Starting T_J=25°C.

Electrical Characteristics

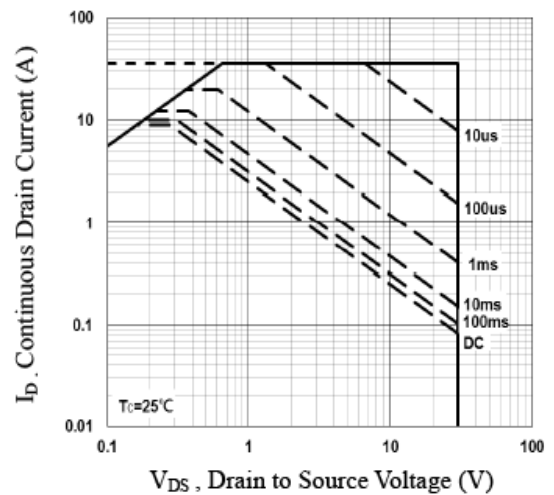
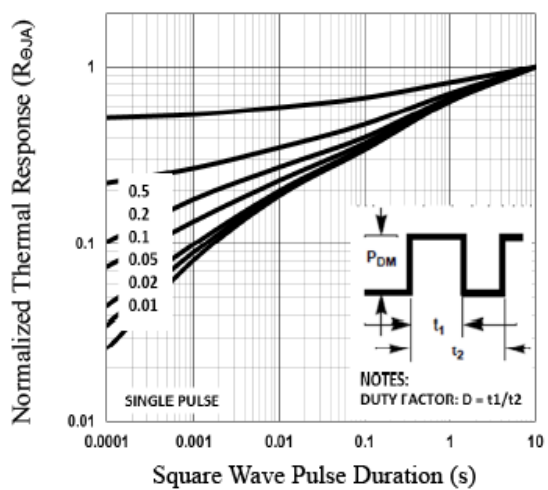
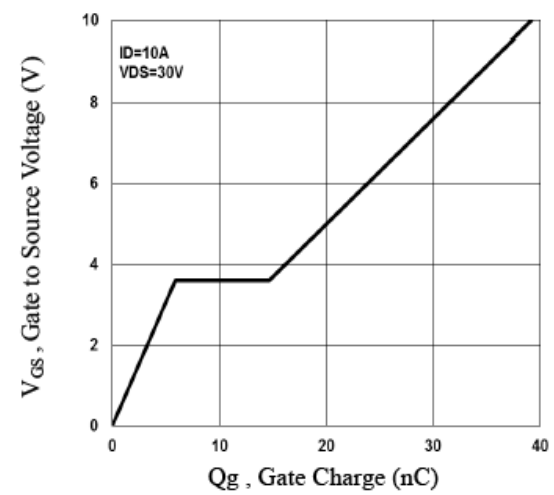
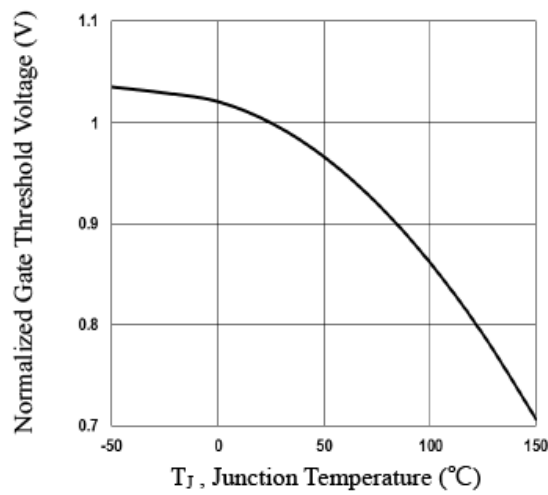
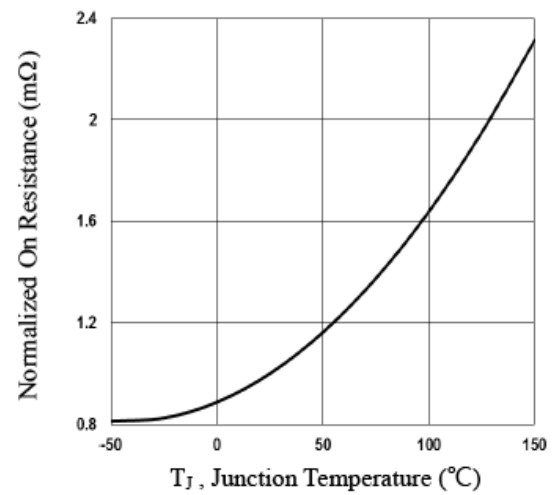
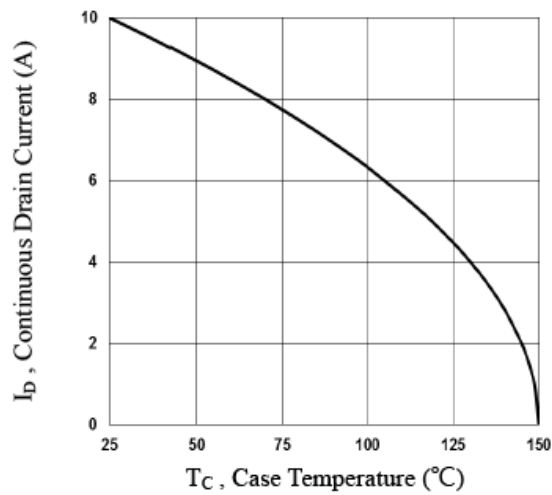
T_J=25°C Unless otherwise noted

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	60			V
ΔBV _{DSS} /ΔT _J	BV _{DSS} Temperature Coefficient	Reference to 25°C, I _D =1mA		0.07		V/°C
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} ,I _D =250uA	1.2	1.6	2.5	V
ΔV _{GS(th)}	V _{GS(th)} Temperature Coefficient			-4		mV/°C
I _{GSS}	Gate Leakage Current	V _{DS} =0V,V _{GS} =±20V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =60V,V _{GS} =0V			1	uA
		V _{DS} =48V,V _{GS} =0V, T _J =125°C			10	
I _S	Continuous Source Current	V _G =V _D =0V, Force Current			10	A
I _{SM}	Pulsed Source Current (*3)				40	
R _{DS(on)}	Drain-Source On-Resistance (*3)	V _{GS} =10V,I _D =10A		10	12	mΩ
		V _{GS} =4.5V,I _D =6A		12	15	
g _{FS}	Forward Transconductance	V _{DS} =10V,I _D =6A		11.7		S
V _{SD}	Diode Forward Voltage (*3)	V _{GS} =0V,I _S =1A			1	V
Dynamic						
Q _g	Total Gate Charge (*3,4)	V _{DS} =30V,V _{GS} =10V, I _D =10A		39.2	59	nC
Q _{gs}	Gate-Source Charge (*3,4)			5.9	9	
Q _{gd}	Gate-Drain Charge (*3,4)			8.8	14	
C _{iss}	Input Capacitance	V _{DS} =25V,V _{GS} =0V, f=1MHz		2100	3050	pF
C _{oss}	Output Capacitance			165	240	
C _{rss}	Reverse Transfer Capacitance			80	120	
t _{d(on)}	Turn-On Time (*3,4)	V _{DD} =30V,I _D =1A, V _{GS} =10V,R _G =6Ω		9.6	18	ns
t _r				28.2	54	
t _{d(off)}	Turn-Off Time (*3,4)			45.3	86	
t _f				10.9	21	
R _g	Gate Resistance	V _{DS} =0V,V _{GS} =0V, f=1MHz		1.6	3.2	Ω

Note 3: The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%.

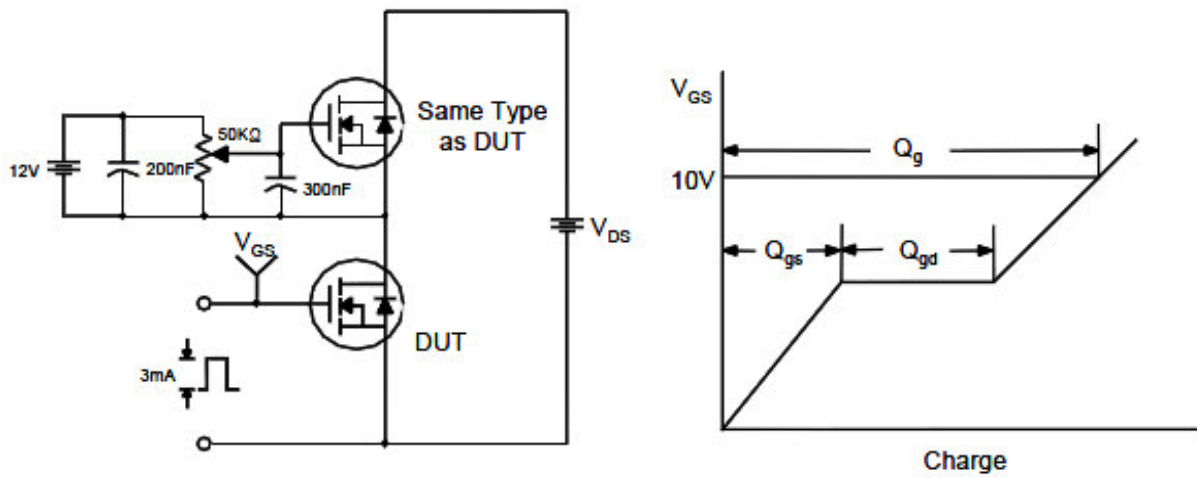
Note 4: Essentially independent of operating temperature.

Typical Performance Characteristics

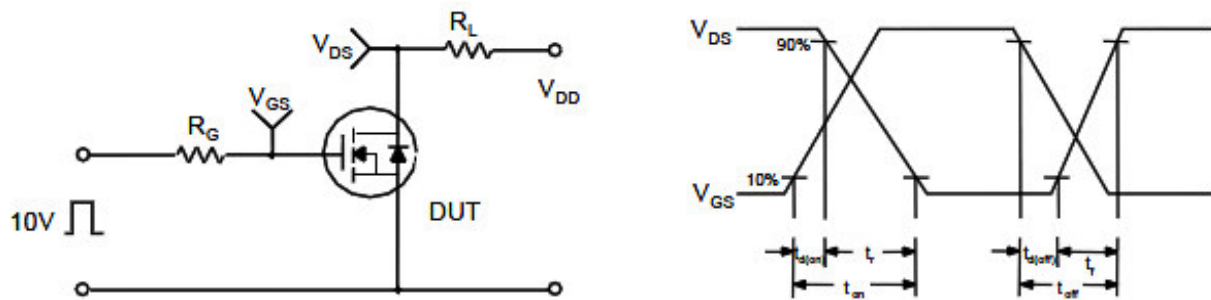


Typical Performance Characteristics (Continue)

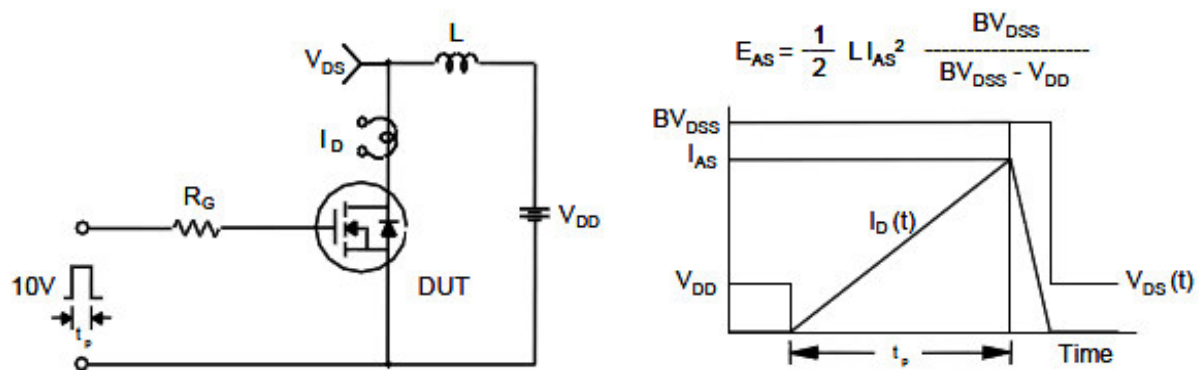
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

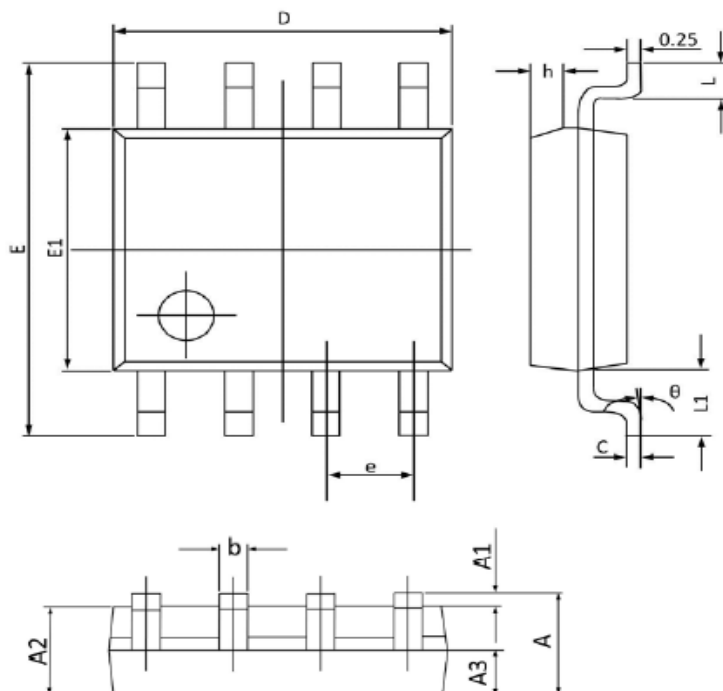


Unclamped Inductive Switching Test Circuit & Waveforms



Package Dimension

SOP-8



Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.068
A1	0.100	0.250	0.004	0.009
A2	1.300	1.500	0.052	0.059
A3	0.600	0.700	0.024	0.027
b	0.390	0.480	0.016	0.018
c	0.210	0.260	0.009	0.010
D	4.700	5.100	0.186	0.200
E	5.800	6.200	0.229	0.244
E1	3.700	4.100	0.146	0.161
e	1.270 (BSC)		0.050 (BSC)	
h	0.250	0.500	0.010	0.019
L	0.500	0.800	0.019	0.031
L1	1.050 (BSC)		0.041 (BSC)	
θ	0°	8°	0°	8°

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

Shenzhen Branch(China)	
	1113 B Building, Happiness Washington, Baoan Nan Road, Luohu District, Shenzhen City, China
	0755-22208941
	sales_cn@gs-power.com

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