GSMDS3810

30V Dual N-Channel MOSFETs

Product Description

These Dual 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

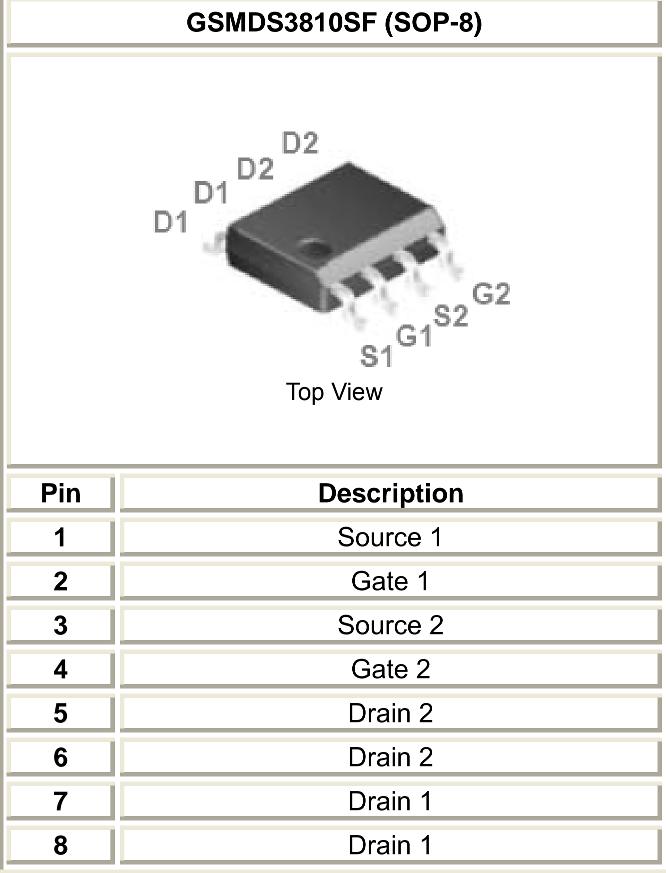
- 30V, 10A, $R_{DS(ON)}$=13mΩ@V_{GS}=10V
- Improved dv/dt capability
- Fast switching
- 100% EAS Guaranteed
- Green Device Available
- SOP-8 package design

Applications

- MB / VGA / Vcore
- POL Applications
- SMPS 2nd SR

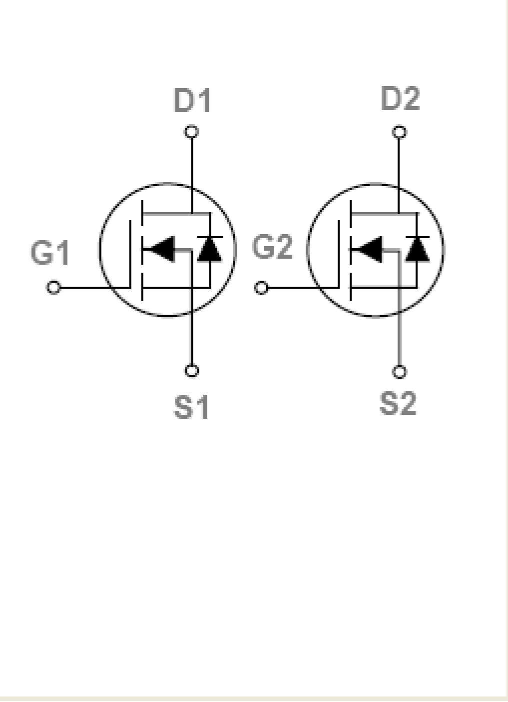
Packages & Pin Assignments

GSMDS3810SF (SOP-8)



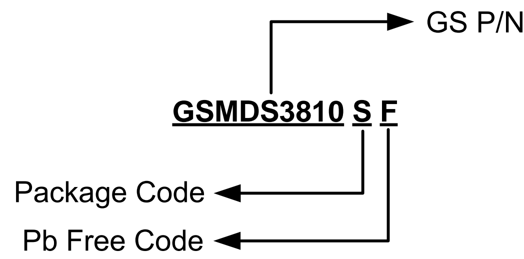
Top View

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



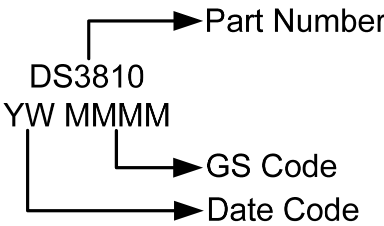
GSMDS3810

Ordering Information



Part Number	Package	Quantity Reel
GSMDS3810SF	SOP-8	4000 PCS

Marking Information



Absolute Maximum Ratings

T_A=25ºC Unless otherwise noted

Symbol	Parameter		Typical	Unit
V_{DS}	Drain-Source Voltage		30	V
V_{GS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	T_A=25℃	10	A
		T_A=100℃	6.3	
I_{DM}	Pulsed Drain Current		40	A
EAS	Single Pulse Avalanche Energy		13	mJ
IAS	Single Pulse Avalanche Current		16	A
P_D	Power Dissipation (T_A=25℃)		2.1	W
	Power Dissipation (Derate above 25℃)		0.017	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		60	℃/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	30			V
$\triangle BV_{DSS}/\triangle T_J$	BV_{DSS} Temperature Coefficient	Reference to 25℃, I_D=1mA		0.04		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		-4		mV/℃
I_{GSS}	Gate Leakage Current	V_{DS}=0V,V_{GS}=±20V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=30V,V_{GS}=0V			1	uA
		V_{DS}=30V,V_{GS}=0V, T_J=125℃			10	uA
I_S	Continuous Source Current	V_G=V_D=0V, Force Current			10	A
I_{SM}	Pulsed Source Current	V_G=V_D=0V, Force Current			40	A
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=10V,I_D=8A		10	13	mΩ
		V_{GS}=4.5V,I_D=4A		14	18	mΩ
g_{FS}	Forward Transconductance	V_{DS}=10V,I_D=3A		6		S
V_{SD}	Diode Forward Voltage	V_{GS}=0V,I_S=1A			1	V
Dynamic						
Q_g	Total Gate Charge	V_{DS}=15V,V_{GS}=4.5V, I_D=5A		7.4	12	nC
Q_{gs}	Gate-Source Charge	V_{DS}=15V,V_{GS}=4.5V, I_D=5A		2.3	5	nC
Q_{gd}	Gate-Drain Charge	V_{DS}=15V,V_{GS}=4.5V, I_D=5A		3	6	nC
C_{iss}	Input Capacitance	V_{DS}=25V,V_{GS}=0V, f=1MHz		620	900	pF
C_{oss}	Output Capacitance	V_{DS}=25V,V_{GS}=0V, f=1MHz		85	125	pF
C_{rss}	Reverse Transfer Capacitance	V_{DS}=25V,V_{GS}=0V, f=1MHz		60	90	pF
$t_{d(on)}$	Turn-On Time	V_{DD}=15V,I_D=1A, V_{GS}=10V,R_G=6Ω		3.8	7	ns
t_r	Turn-On Time	V_{DD}=15V,I_D=1A, V_{GS}=10V,R_G=6Ω		10	19	ns
$t_{d(off)}$	Turn-Off Time	V_{DD}=15V,I_D=1A, V_{GS}=10V,R_G=6Ω		22	42	ns
t_f	Turn-Off Time	V_{DD}=15V,I_D=1A, V_{GS}=10V,R_G=6Ω		6.6	13	ns
R_g	Gate Resistance	V_{DS}=0V,V_{GS}=0V, f=1MHz		2.8	5.6	Ω

Typical Performance Characteristics

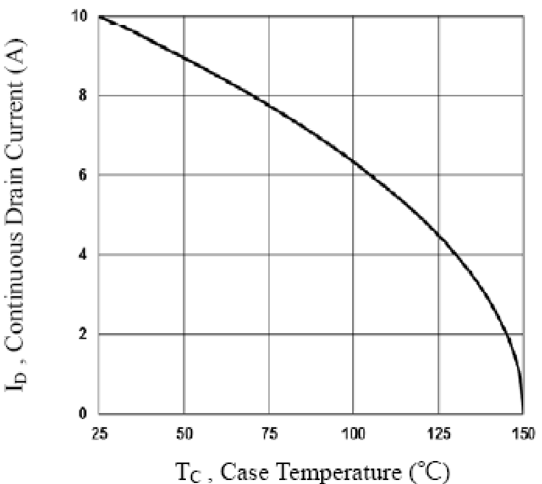


Fig.1 Continuous Drain Current vs. T_C

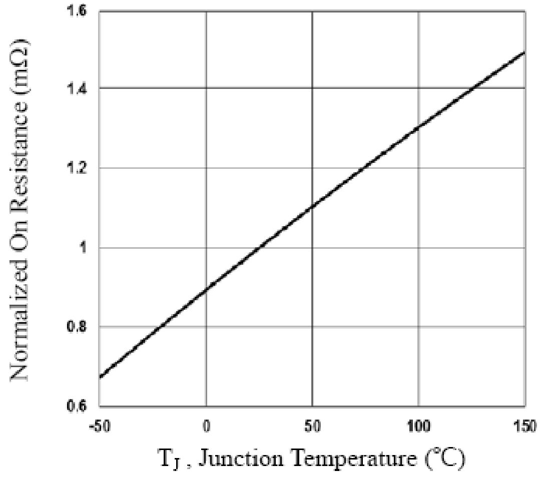


Fig.2 Normalized RDSON vs. T_J

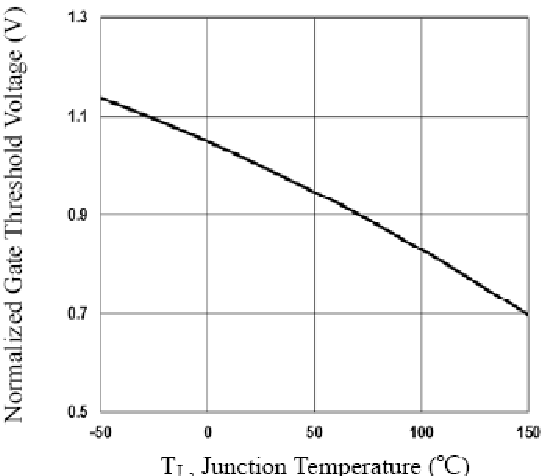


Fig.3 Normalized V_{th} vs. T_J

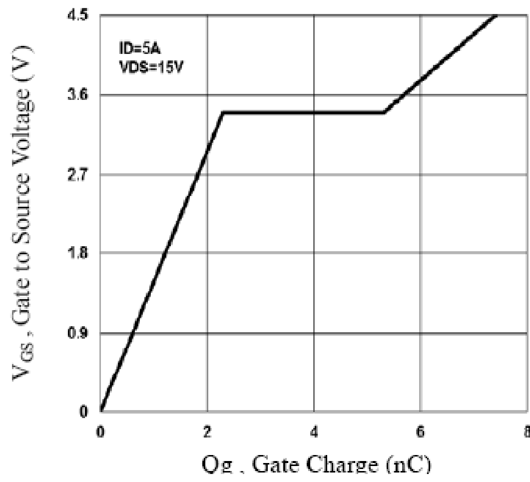


Fig.4 Gate Charge Waveform

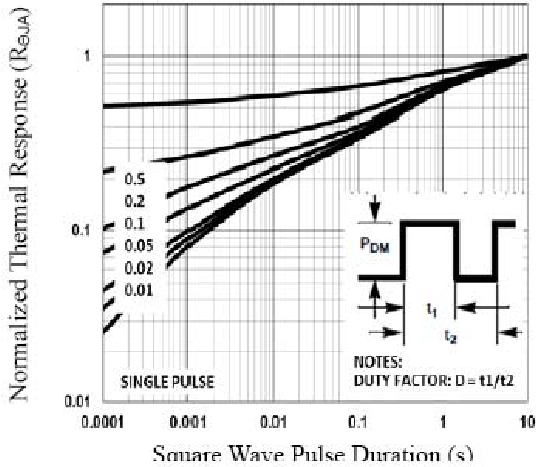


Fig.5 Normalized Transient Response

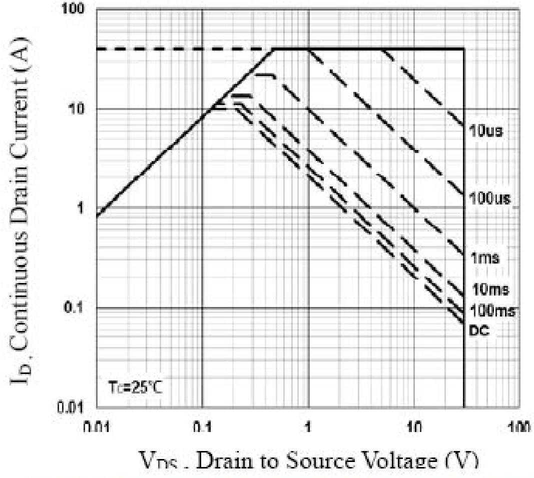
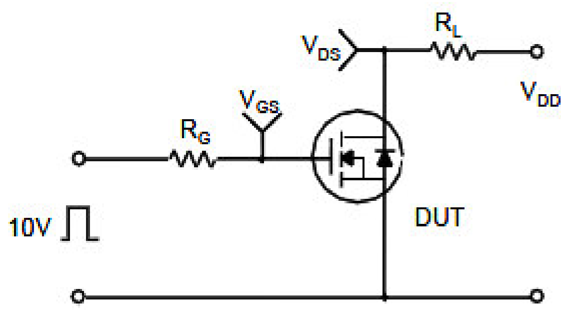
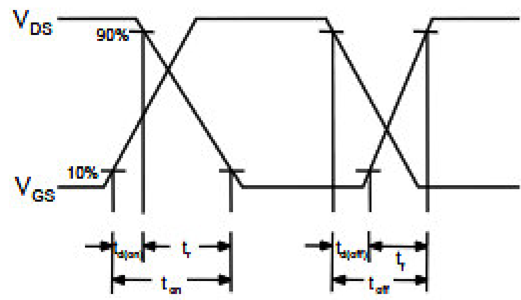


Fig.6 Maximum Safe Operation Area

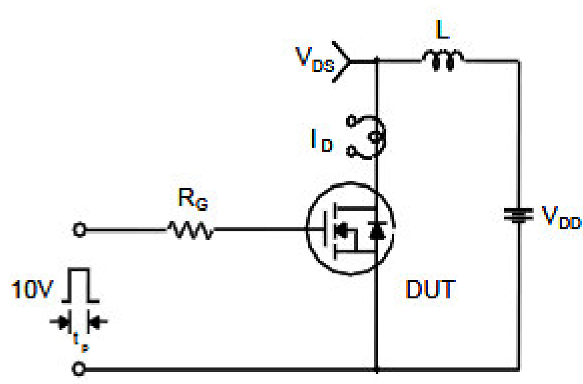
Typical Performance Characteristics **(Continue)**

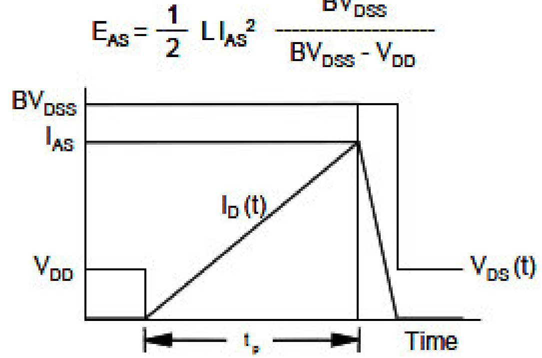
Resistive Switching Test Circuit & Waveforms





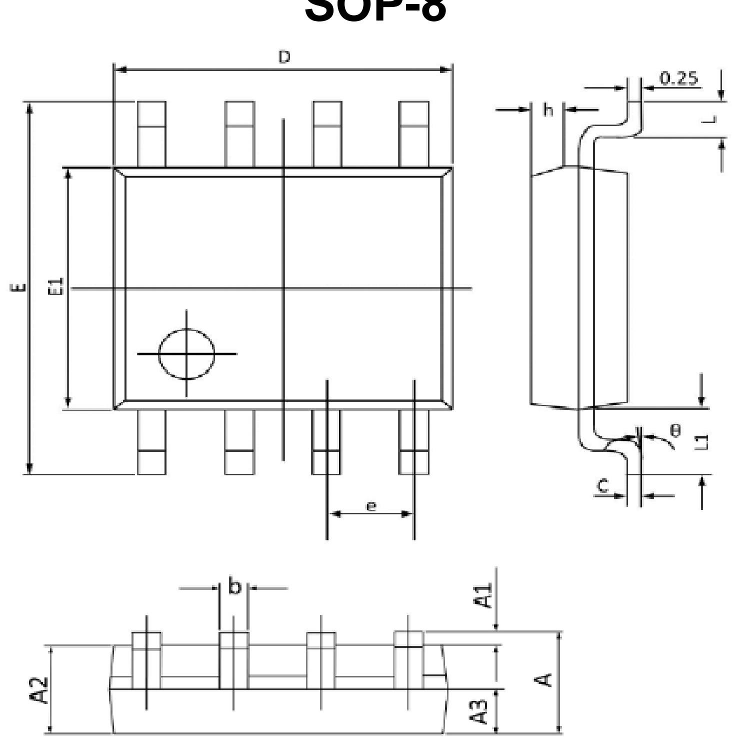
Unclamped Inductive Switching Test Circuit & Waveforms





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°

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