

GSMDS3810SF

30V Dual N-Channel MOSFETs

Product Description

The N-Channel enhancement mode power field effect transistor is 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.

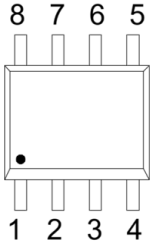
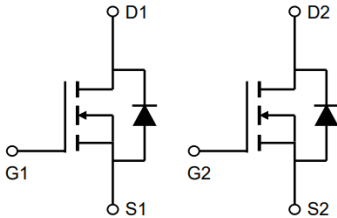
Features

- $R_{DS(ON)} = 13m\Omega$ @ $V_{GS}=10V$
- $R_{DS(ON)} = 18m\Omega$ @ $V_{GS}=4.5V$
- SOP-8L Package
- RoHS Compliant and Halogen Free

Applications

- POL Applications
- SMPS

Packages & Pin Assignments

SOP-8L			Equivalent Circuit		
					
Pin	Symbol	Description	Pin	Symbol	Description
1	S1	Source 1	8	D1	Drain 1
2	G1	Gate 1	7	D1	Drain 1
3	S2	Source 2	6	D2	Drain 2
4	G2	Gate 2	5	D2	Drain 2

Ordering and Marking Information

Ordering Information			
Part Number	Package	Part Marking	Quantity / Reel
GSMDS3810SF	SOP-8L	3333333 4444444	4,000 PCS
GSMDS3810 1 2 - Product Code: GSMDS3810 - Package Code: 1 is S for SOP-8L - Green Level: 2 is F for RoHS Compliant and Halogen Free			
Marking Information			
3333333 4444444 • - Product Code: 3333333 is DS3810 or 3212ASF - GS Code: 4444444 • The Dot denotes Pin 1			

Absolute Maximum Ratings (T_J=25°C Unless otherwise noted)

Symbol	Parameter		Value	Unit
V _{DS}	Drain-Source Voltage		30	V
V _{GS}	Gate-Source Voltage		±20	V
I _D	Continuous Drain Current ²	T _A =25°C	10	A
		T _A =100°C	6.3	
I _{DM}	Pulsed Drain Current ¹		40	A
I _{AS}	Single Pulse Avalanche Current, L = 0.1mH ¹		16	A
E _{AS}	Single Pulse Avalanche Energy, L = 0.1mH ¹		13	mJ
P _D	Power Dissipation ²	T _A =25°C	2.1	W
	Derate above 25°C		0.017	W/°C
R _{θJA}	Thermal Resistance-Junction to Ambient ²		60	°C/W
T _J	Operating Junction Temperature Range		-55 to +150	°C
T _{STG}	Storage Temperature Range		-55 to +150	°C

NOTE:

1. Pulsed width is limited by the maximum junction temperature.
2. Surface mounted on 1in² FR-4 board with 2oz. Copper.

Electrical Characteristics (T_J=25°C, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	30	-	-	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =30V, V _{GS} =0V	-	-	1	μA
I _{GSS}	Gate-Source Leakage Current	V _{DS} =0V, V _{GS} =±20V	-	-	±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1.2	-	2.5	V
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	
g _{fs}	Forward Transconductance	V _{DS} =10V, I _D =3A	-	6	-	S
Dynamic Characteristics						
R _g	Gate Resistance	f=1MHz	-	2.8	5.6	Ω
C _{iss}	Input Capacitance	V _{DS} =-25V, V _{GS} =0V, f=1MHz	-	620	900	pF
C _{oss}	Output Capacitance		-	85	125	
C _{rss}	Reverse Transfer Capacitance		-	60	90	
Q _g	Total Gate Charge	V _{DS} =15V, I _D =5A V _{GS} =4.5V	-	7.4	12	nC
Q _{gs}	Gate-Source Charge		-	2.3	5	
Q _{gd}	Gate-Drain Charge		-	3	6	
t _{d(on)}	Turn-On Delay Time	V _{DD} =15V, I _D =1A V _{GS} =10V, R _g =6Ω	-	3.8	7	ns
t _r	Turn-On Rise Time		-	10	19	
t _{d(off)}	Turn-Off Delay Time		-	22	42	
t _f	Turn-Off Fall Time		-	6.6	13	
Diode Characteristics						
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =1A	-	-	1	V

Typical Performance Characteristics

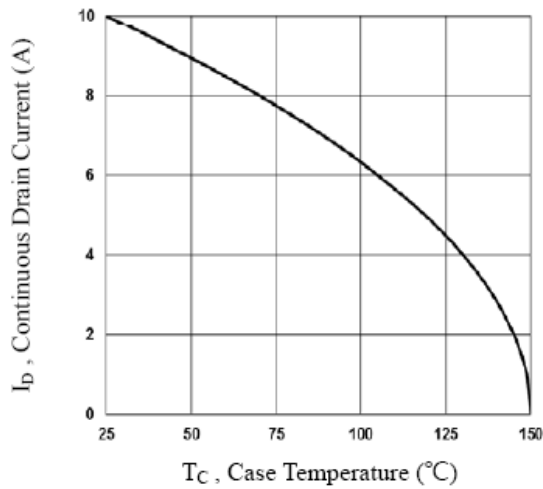


Fig.1 Continuous Drain Current vs. T_C

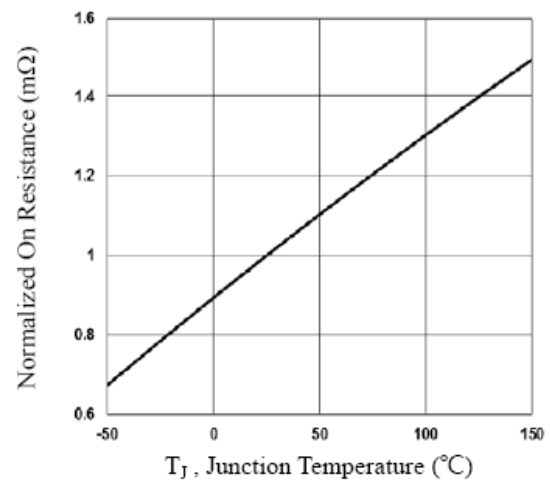


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

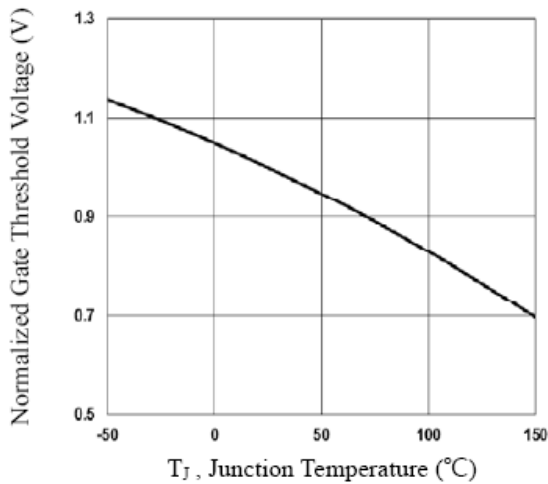


Fig.3 Normalized V_{th} vs. T_J

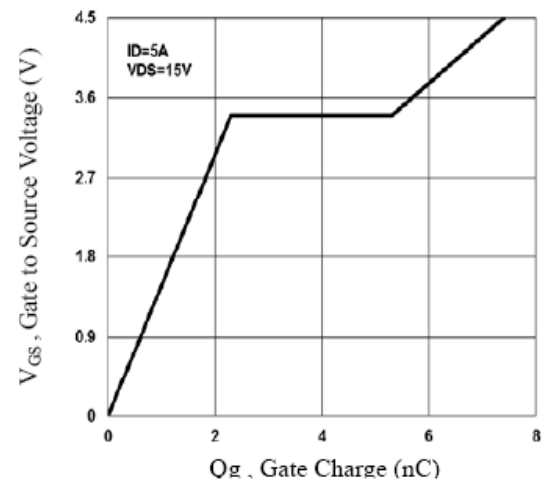


Fig.4 Gate Charge Waveform

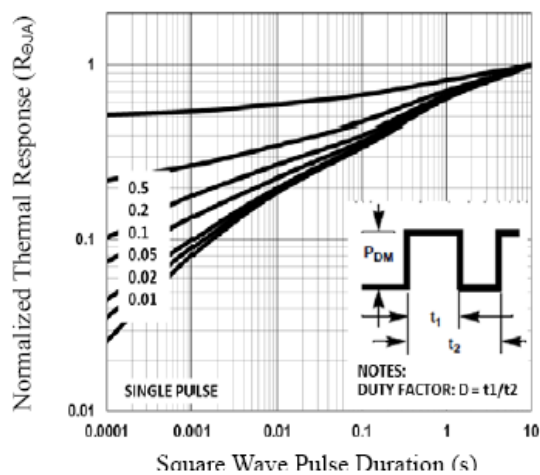


Fig.5 Normalized Transient Response

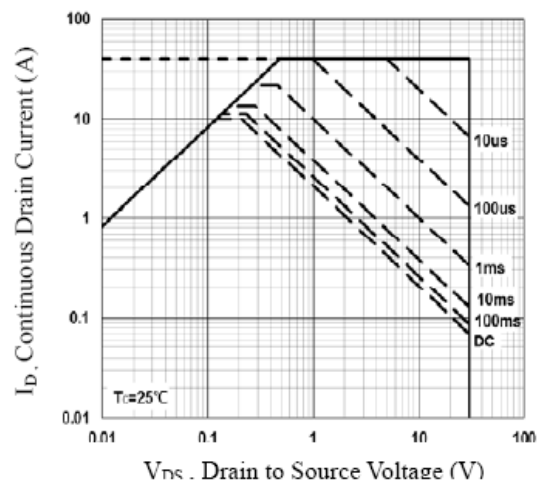
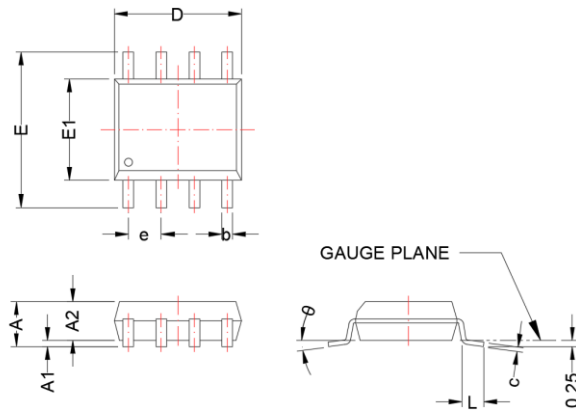


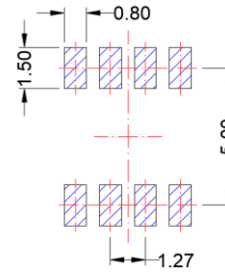
Fig.6 Maximum Safe Operation Area

SOP-8L

Package Dimension



Recommended Land Pattern



Unit:mm

Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	---	1.75	---	0.069
A1	0.10	0.25	0.004	0.010
A2	1.25	---	0.049	---
b	0.31	0.51	0.012	0.020
c	0.10	0.25	0.004	0.010
D	4.70	5.10	0.185	0.201
E	5.80	6.20	0.228	0.244
E1	3.80	4.00	0.150	0.157
e	1.27 BSC		0.050 BSC	
L	0.40	1.27	0.016	0.050
θ	0°	8°	0°	8°

NOTE:

Dimensions are exclusive of Burrs, Mold Flash and Tie Bar extrusions.

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