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.

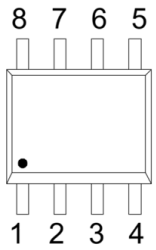
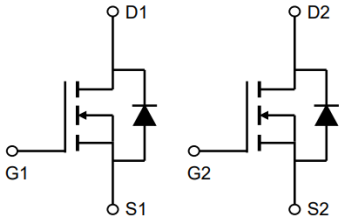
Features

- $R_{DS(ON)}$ = 13mΩ @ V_{GS}=10V
- $R_{DS(ON)}$ = 18mΩ @ 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

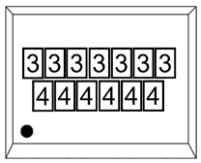
Ordering and Marking Information

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



- **Product Code:** 3333333 is DS3810 or 3212ASF
- **GS Code:** 444444
- The Dot denotes Pin 1

Absolute Maximum Ratings (T_J=25ºC 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℃	10	A
		T_A=100℃	6.3	
I_{DM}	Pulsed Drain Current [1]		40	A
I_{AS}	Single Pulse Avalanche Current, L = 0.5mH [1]		16	A
E_{AS}	Single Pulse Avalanche Energy, L = 0.5mH [1]		13	mJ
P_D	Power Dissipation [2]	T_A=25℃	2.1	W
	Derate above 25℃		0.017	W/℃
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient [2]		60	℃/W
T_J	Operating Junction Temperature Range		-55 to +150	℃
T_{STG}	Storage Temperature Range		-55 to +150	℃

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

Electrical Characteristics (T_J=25℃, 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	
gfs	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, Rg=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

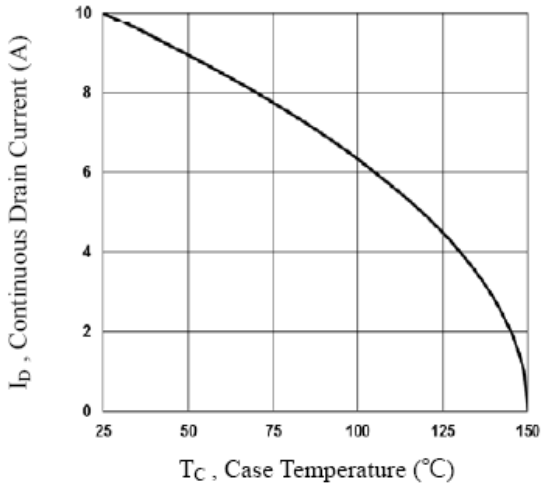


Fig.1 Continuous Drain Current vs. T_c

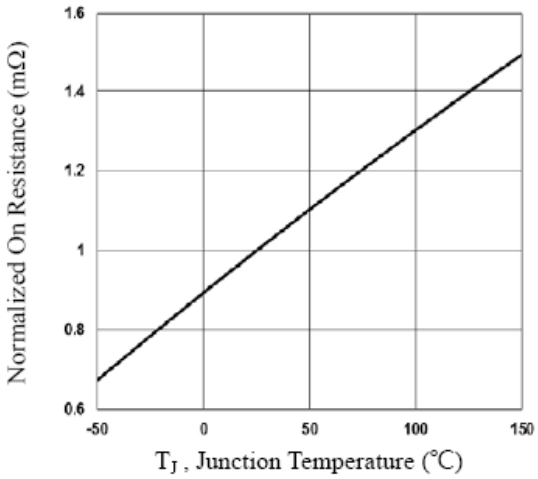


Fig.2 Normalized RDSON vs. T_J

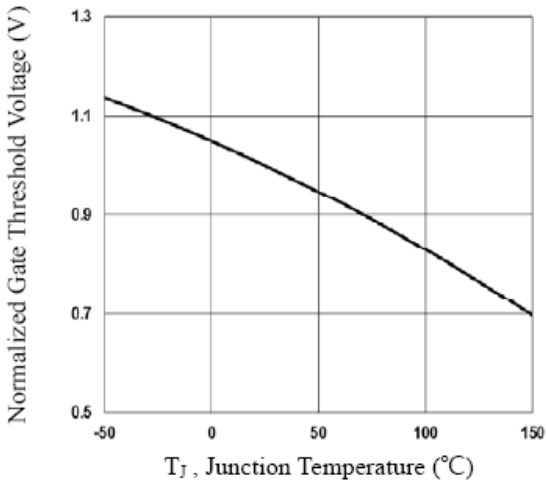


Fig.3 Normalized V_{th} vs. T_J

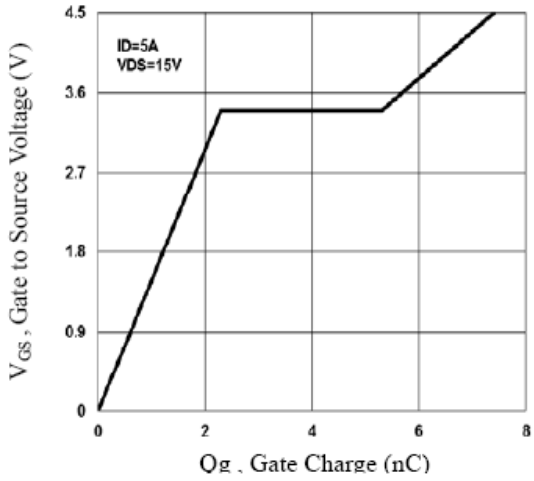


Fig.4 Gate Charge Waveform

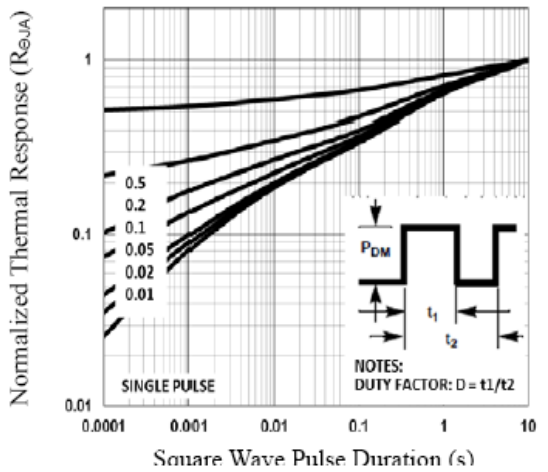


Fig.5 Normalized Transient Response

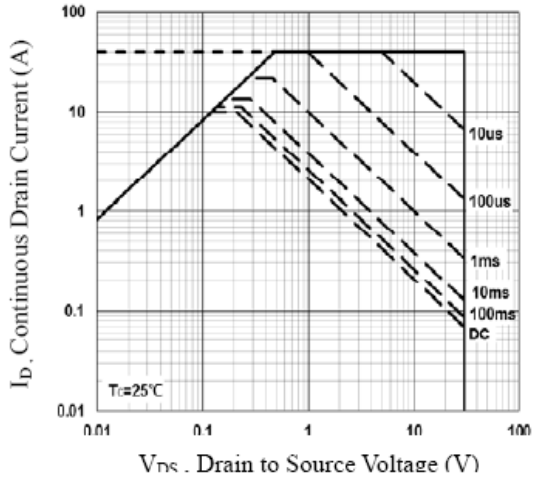
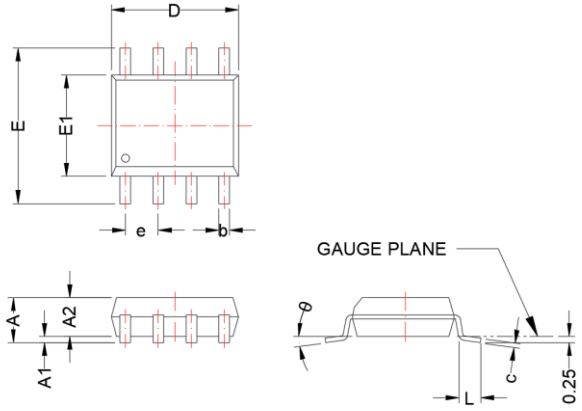


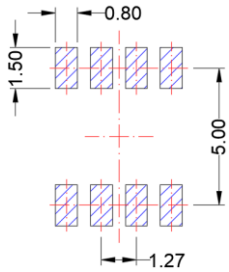
Fig.6 Maximum Safe Operation Area

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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