

GSM3816S

Dual N-Channel Enhancement Mode MOSFET

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

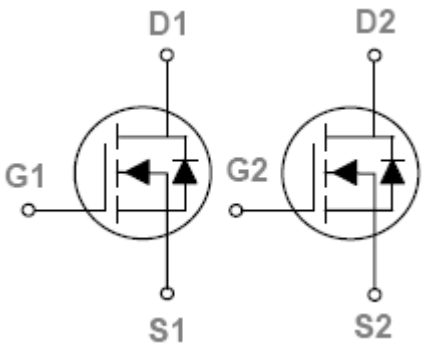
- 30V, 5.3A, $R_{DS(ON)} = 32m\Omega @ V_{GS} = 10V$
- Improved dv/dt capability
- Fast switching
- Green Device Available
- 100% EAS Guaranteed

Applications

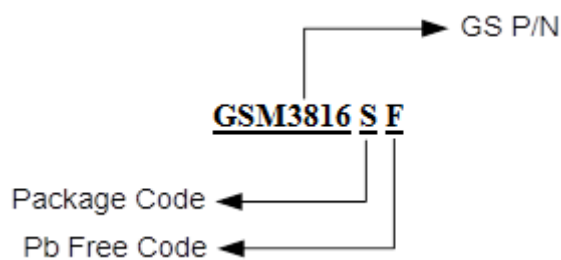
- MB / VGA / Vcore
- SMPS 2nd SR
- POL Applications

Packages & Pin Assignments

GSM3816SF (SOP-8)	
 <p>Top View</p>	
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

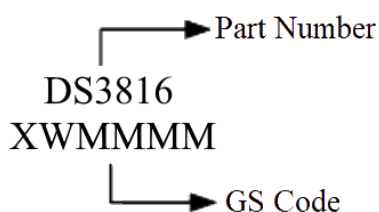


Ordering Information



Part Number	Package	Quantity
GSM3816SF	SOP-8	3000pcs

Marking Information



Absolute Maximum Ratings

T_c=25°C 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 _c =25°C	5.3
		T _c =100°C	4.2
I _{DM}	Pulsed Drain Current ¹	21.2	A
EAS	Single Pulse Avalanche Energy ²	5	mJ
IAS	Single Pulse Avalanched Current ²	10	A
P _D	Power Dissipation (T _c =25°C)	1.47	W
	Power Dissipation (Derate above 25°C)	0.012	W/°C
T _J	Operating Junction Temperature Range	-55 to +150	°C
T _{STG}	Storage Temperature Range	-55 to +150	°C
R _{θJA}	Thermal Resistance-Junction to Ambient	85	°C/W

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=10A., R_G=25Ω, Starting T_J=25°C.

Electrical Characteristics

T_J=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	30	---	---	V
ΔBV _{DSS} /ΔT _J	BV _{DSS} Temperature Coefficient	Reference to 25°C, I _D =-1mA	---	0.018	---	V/°C
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =-250uA	1	1.5	2.2	V
ΔV _{GS(th)}	V _{GS(th)} Temperature Coefficient		---	-3.2	---	mV/°C
I _{GSS}	Gate-Source Leakage Current	V _{DS} =0V, V _{GS} =±20V			±100	nA
I _{DSS}	Drain-Source Leakage Current	V _{DS} =30V, V _{GS} =0V T _J =25°C	---	---	1	uA
		V _{DS} =24V, V _{GS} =0V, T _J =125°C	---	---	10	
I _S	Continuous Source Current	V _G =V _D =0V, Force Current	---	---	5.3	A
I _{SM}	Pulsed Source Current		---	---	10.6	
R _{DS(on)}	Static Drain-Source On-Resistance	V _{GS} =10V, I _D =3A	---	25	32	mΩ
		V _{GS} =4.5V, I _D =2A	---	43	52	
g _{fs}	Forward Transconductance	V _{GS} =10V, I _D =3A	---	2.3	---	S
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =1A	---	---	1	V
Dynamic						
Q _g	Total Gate Charge ^{3,4}	V _{DS} =24V, V _{GS} =10V, I _D =2A	---	3.1	6.4	nC
Q _{gs}	Gate-Source Charge ^{3,4}		---	0.1	0.5	
Q _{gd}	Gate-Drain Charge ^{3,4}		---	1.7	3.4	
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, F=1MHz	---	245	490	pF
C _{oss}	Output Capacitance		---	40	80	
C _{rss}	Reverse Transfer Capacitance		---	78	158	
t _{d(on)}	Turn-On Delay Time ^{3,4}	V _{DD} =24V, I _D =1A, V _{GS} =10V, R _G =6Ω	---	2.2	4.5	ns
t _r	Rise Time ^{3,4}		---	6.9	13.8	
t _{d(off)}	Turn-Off Delay Time ^{3,4}		---	15.2	30.4	
t _f	Fall Time ^{3,4}		---	4.5	9	
R _g	Gate resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz		0.9	1.8	Ω

Note :

- The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
- Essentially independent of operating temperature.

Typical Performance Characteristics

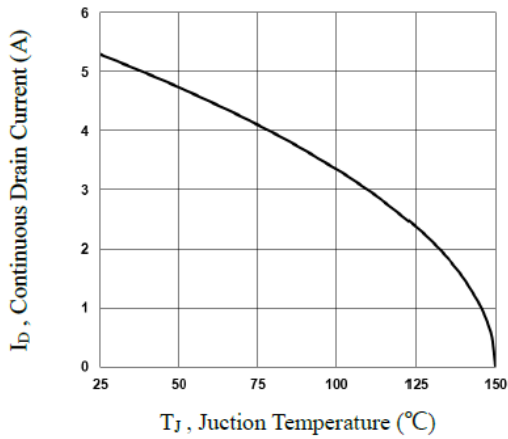


Fig.1 Continuous Drain Current vs. T_c

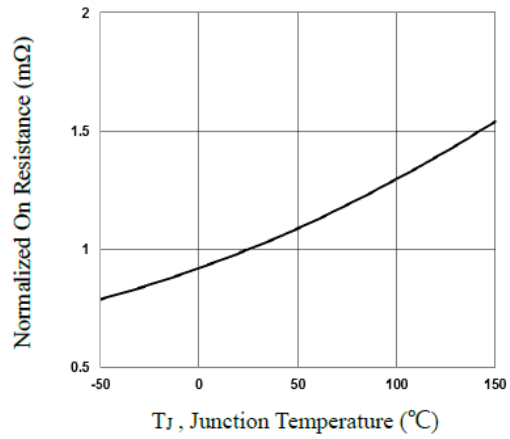


Fig.2 Normalized RDSON vs. T_J

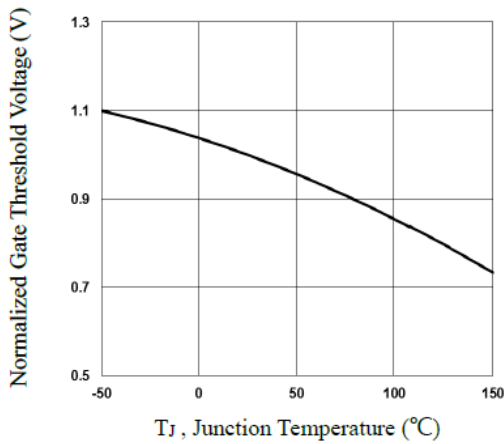


Fig.3 Normalized V_{th} vs. T_J

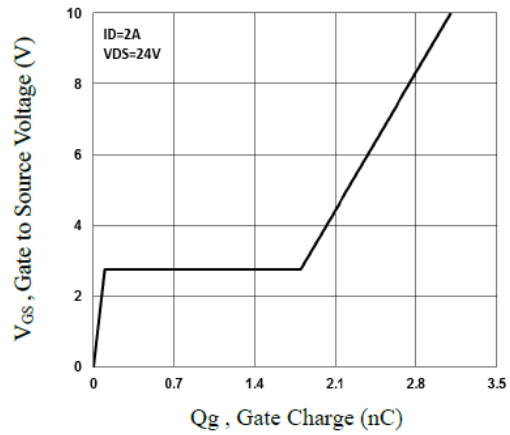


Fig.4 Gate Charge Waveform

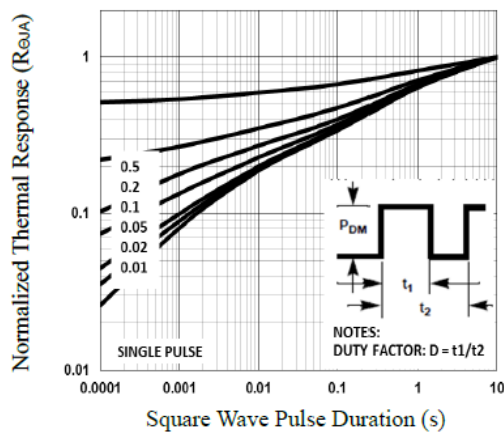


Fig.5 Normalized Transient Response

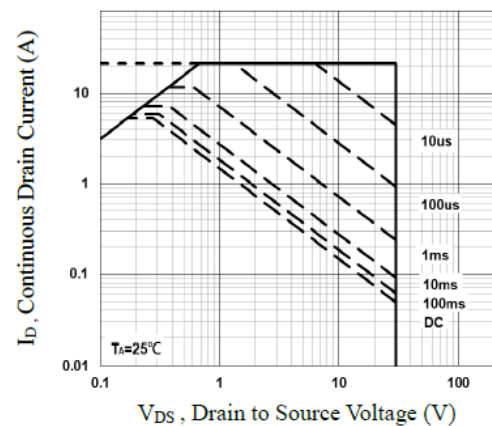


Fig.6 Maximum Safe Operation Area

Typical Performance Characteristics(Continue)

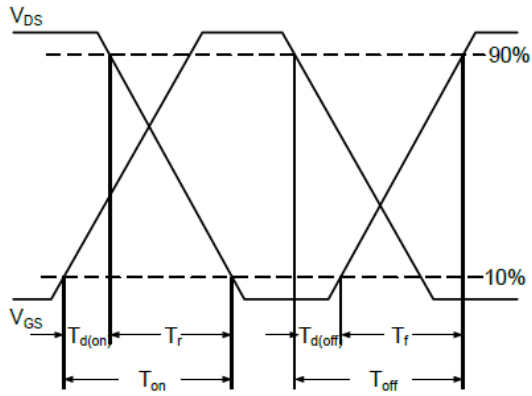


Fig.7 Switching Time Waveform

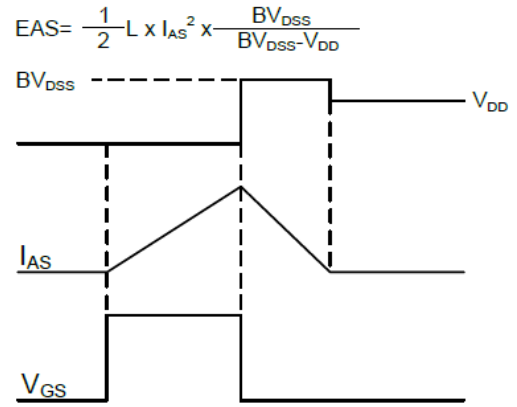
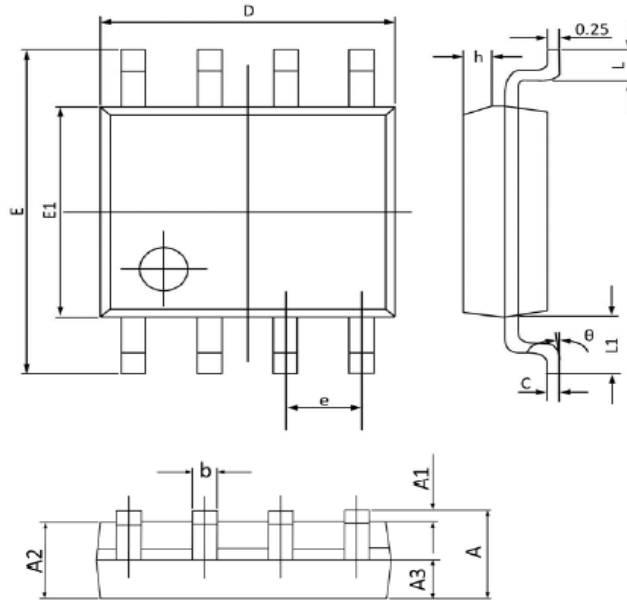


Fig.8 EAS Waveform

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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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

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