

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

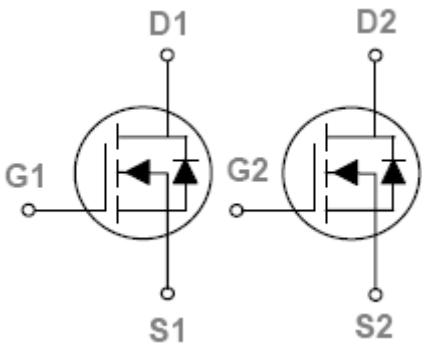
- 30V, 5.3A, $R_{DS(ON)} = 32m\Omega @ V_{GS} = 10V$
- Improved dv/dt capability
- Fast switching
- Green Device Available
- 100% EAS Guaranteed

Applications

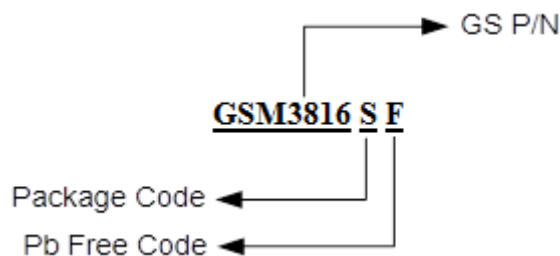
- MB / VGA / Vcore
- SMPS 2nd SR
- POL Applications

Packages & Pin Assignments

GSM3816SF (SOP-8)	
 <p style="text-align: center;">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

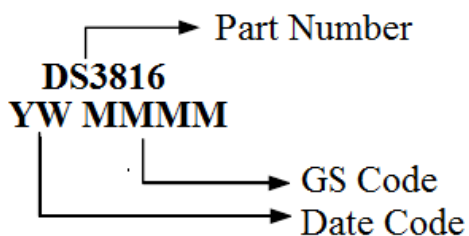


Ordering Information



Part Number	Package	Quantity
GSM3816SF	SOP-8	3000pcs

Marking Information



Absolute Maximum Ratings

$T_C=25^{\circ}\text{C}$ 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	$T_C=25^{\circ}\text{C}$	5.3
		$T_C=100^{\circ}\text{C}$	4.2
I_{DM}	Pulsed Drain Current ¹	21.2	A
EAS	Single Pulse Avalanche Energy ²	5	mJ
IAS	Single Pulse Avalanche Current ²	10	A
P_D	Power Dissipation ($T_C=25^{\circ}\text{C}$)	1.47	W
	Power Dissipation (Derate above 25°C)	0.012	W/ $^{\circ}\text{C}$
T_J	Operating Junction Temperature Range	-55 to +150	$^{\circ}\text{C}$
T_{STG}	Storage Temperature Range	-55 to +150	$^{\circ}\text{C}$
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	85	$^{\circ}\text{C}/\text{W}$

Note :

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

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

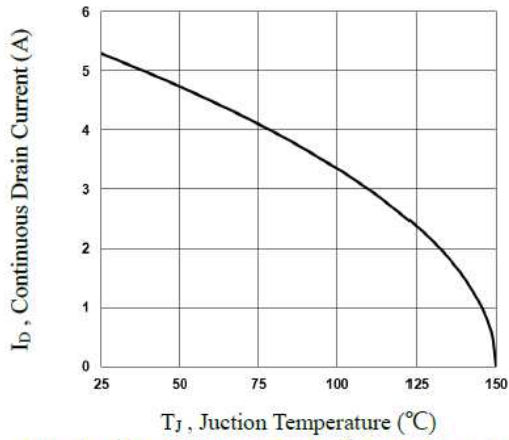


Fig.1 Continuous Drain Current vs. T_c

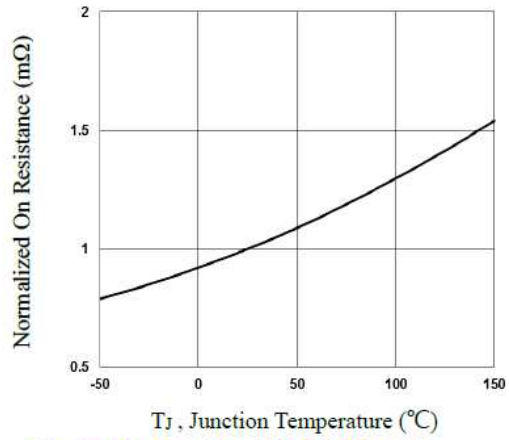


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

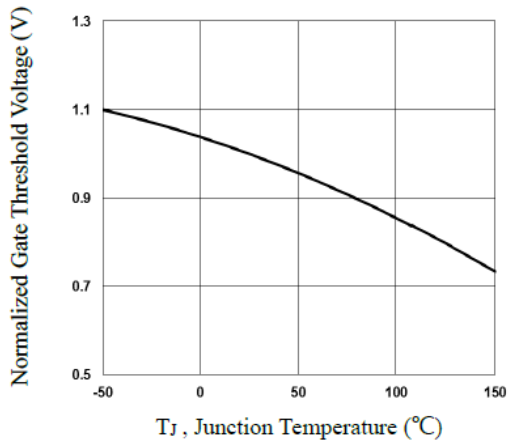


Fig.3 Normalized V_{th} vs. T_J

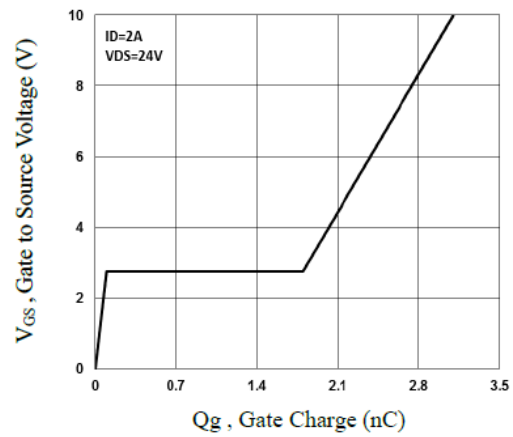


Fig.4 Gate Charge Waveform

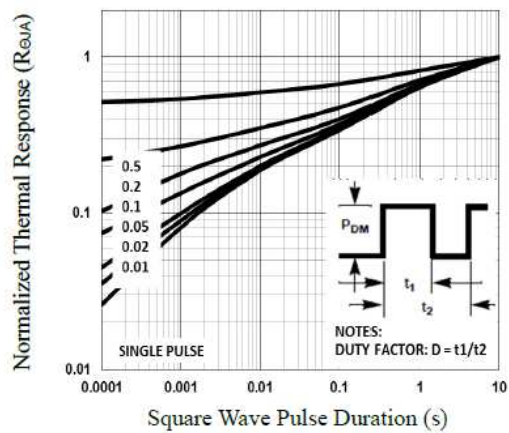


Fig.5 Normalized Transient Response

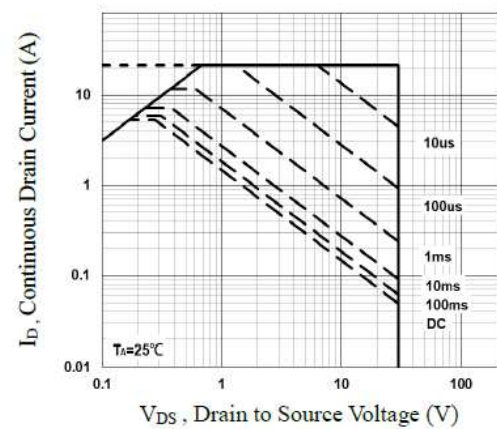


Fig.6 Maximum Safe Operation Area

Typical Performance Characteristics(Continue)

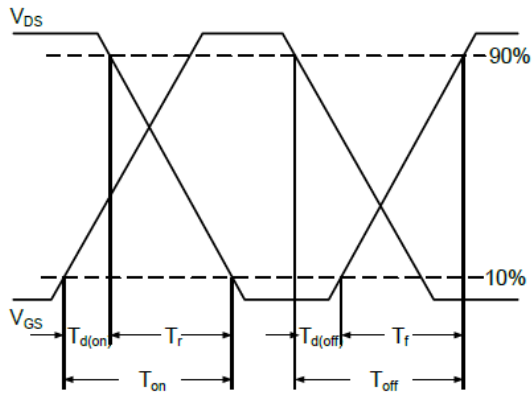


Fig.7 Switching Time Waveform

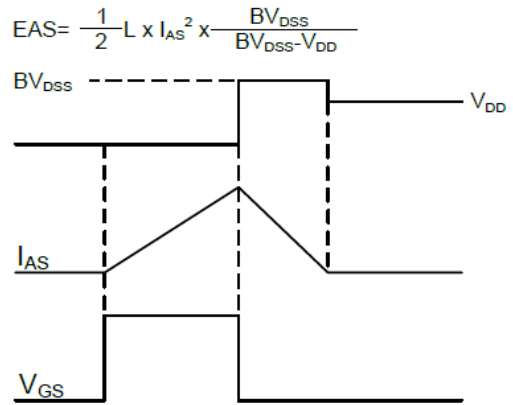
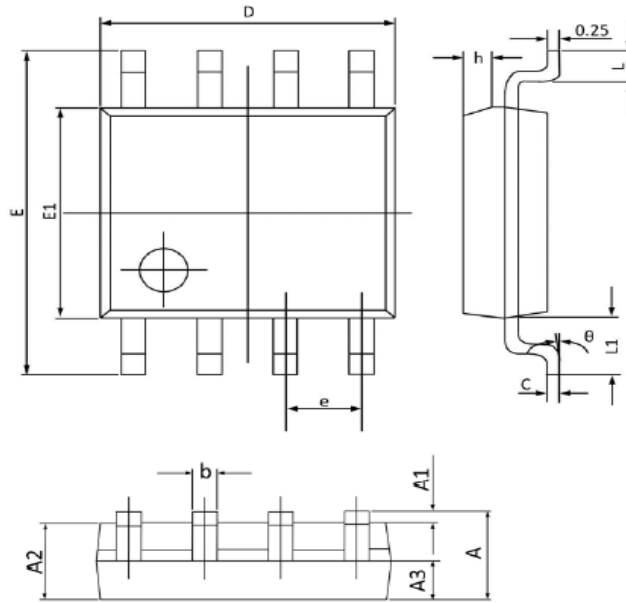


Fig.8 EAS Waveform

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°

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

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