

GSM3117S

30V P-Channel MOSFETs

Product Description

These P-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.

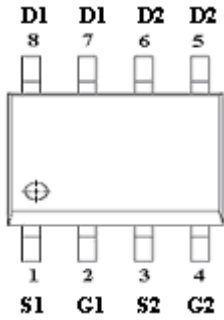
Features

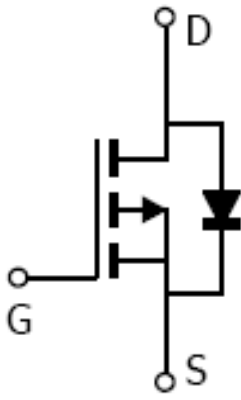
- -30V, -13.8A, $R_{DS(ON)} < 18m\Omega @ V_{GS} = -10V$
- Fast switching
- Suit for -4.5V Gate Drive Applications
- Green Device Available
- SOP-8 package design

Applications

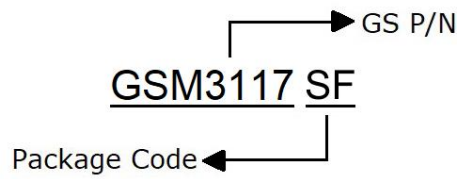
- MB / VGA / Vcore
- POL Applications
- Load Switch
- LED Application

Packages & Pin Assignments

GSM3117SF (SOP-8L)	
	
Pin	Description
1	Source
2	Source
3	Source
4	Gate
5	Drain
6	Drain
7	Drain
8	Drain

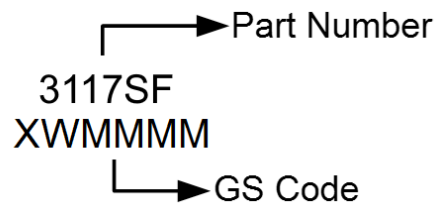


Ordering Information



Part Number	Package	Quantity Reel
GSM3117SF	SOP-8	4000 PCS

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	± 25	V
I_D	Continuous Drain Current	$T_C=25^\circ\text{C}$	-13.8
		$T_C=70^\circ\text{C}$	-11.1
		$T_A=25^\circ\text{C}$	-7.8
		$T_A=70^\circ\text{C}$	-6.2
I_{DM}	Pulsed Drain Current	-50	A
P_D	Power Dissipation	$T_C=25^\circ\text{C}$	5.3
		$T_C=70^\circ\text{C}$	3.4
		$T_A=25^\circ\text{C}$	1.7
		$T_A=70^\circ\text{C}$	1.1
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	75	$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Thermal Resistance-Junction to Case	24	$^\circ\text{C}/\text{W}$

Electrical Characteristics

T_J=25°C Unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static characteristics						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250uA	-30			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250uA	-1.2		-2.5	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±25V			±100	nA
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-30V, V _{GS} =0V			-1	uA
V _{SD}	Diode Forward Voltage ³	V _{GS} =0V, I _S =-1A			-1	V
R _{DS(on)}	Drain-Source On-Resistance ³	V _{GS} =-10V, I _D =-10A		12.3	18	mΩ
		V _{GS} =-4.5V, I _D =-6A		19.4	26	
Gate charge characteristics						
Q _g	Total Gate Charge ^{3,4}	V _{DD} =-15V, V _{GS} =-4.5V, I _D =-15A		22		nC
Q _{gs}	Gate-Source Charge ^{3,4}			8.7		
Q _{gd}	Gate-Drain Charge ^{3,4}			7.2		
Dynamic characteristics						
C _{iss}	Input Capacitance	V _{DS} =-15V, V _{GS} =0V, f=1.0MHz		2215		pF
C _{oss}	Output Capacitance			310		
C _{rss}	Reverse Transfer Capacitance			237		
t _{d(on)}	Turn-On Time	V _{DD} =-15V, V _{GS} =-10V, R _g =3.3Ω, I _D =-15A		8		ns
t _r	Rise Time			73.7		
t _{d(off)}	Turn-Off Time			61.8		
t _f	Fall Time			24.4		

Typical Performance Characteristics

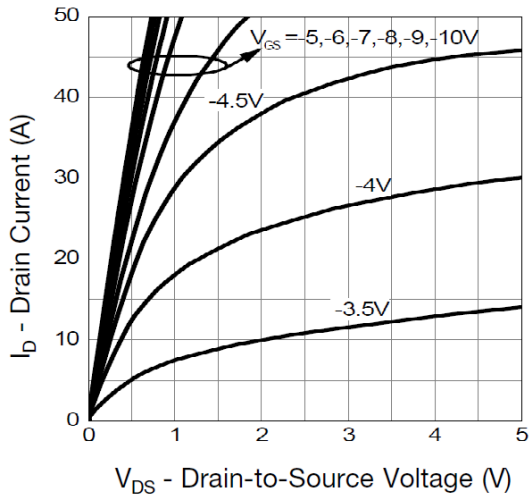


Figure 1. Output Characteristics

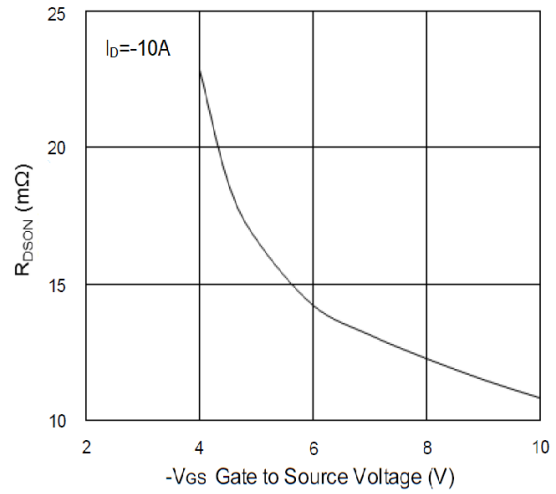


Figure 2. On-Resistance Variation with V_{GS}

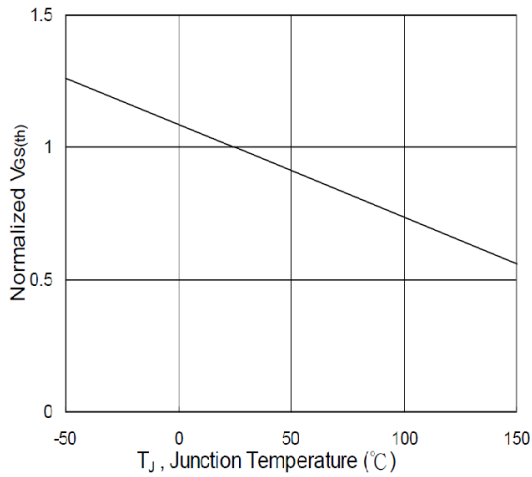


Figure 3. Normalized $V_{GS(th)}$ vs. T_J

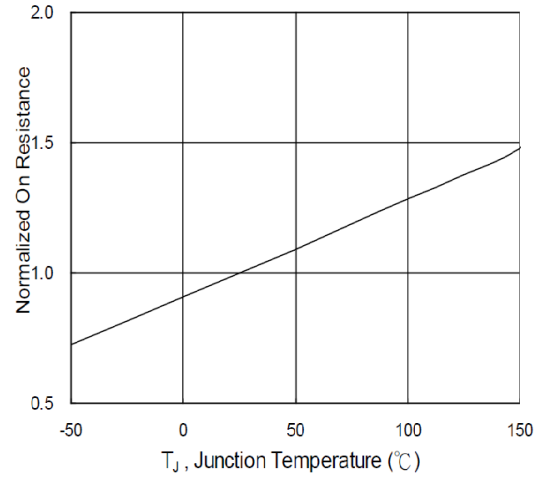


Figure 4. Normalized $R_{DS(on)}$ vs. T_J

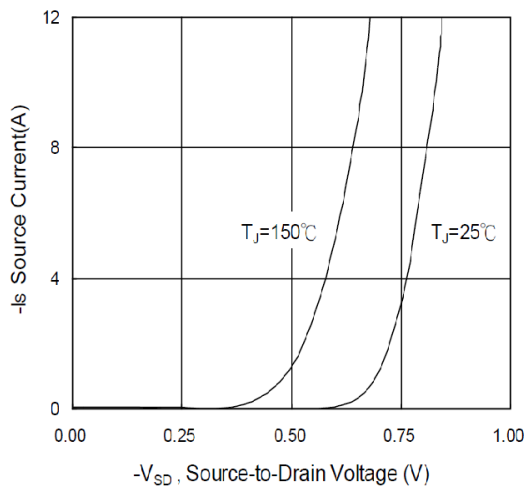


Figure 5. Diode Forward Voltage vs. Current

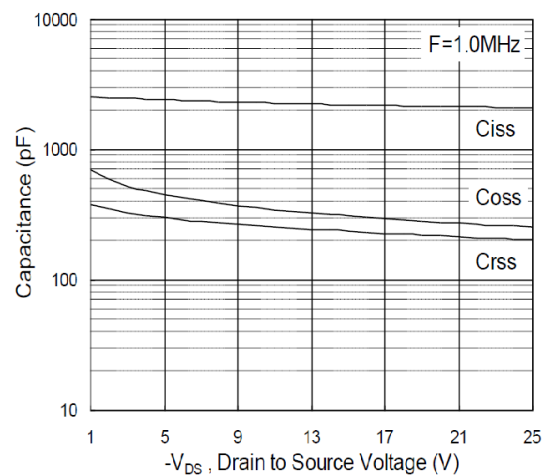


Figure 6. Capacitance

Typical Performance Characteristics (Continue)

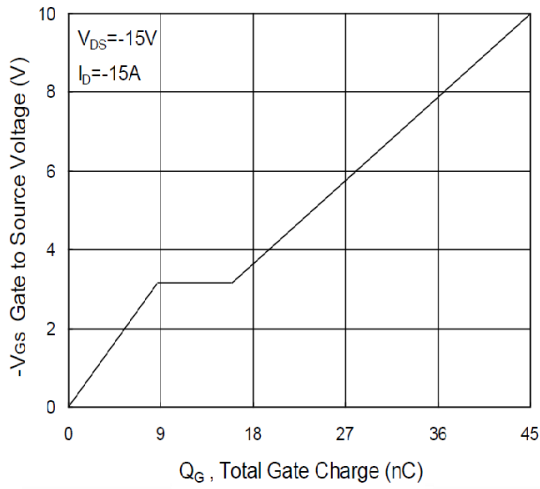


Figure 7. Gate Charge Waveform

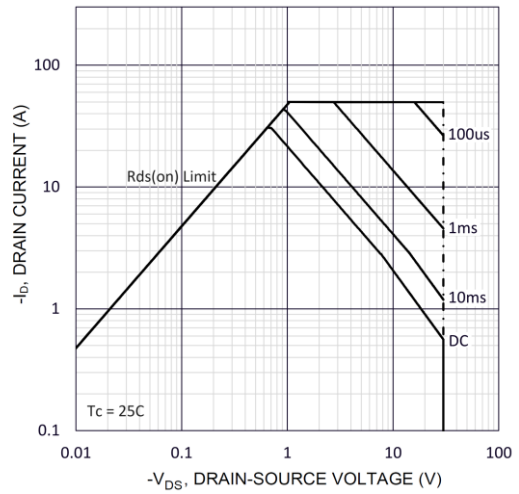


Figure 8. Maximum Safe Operating Area

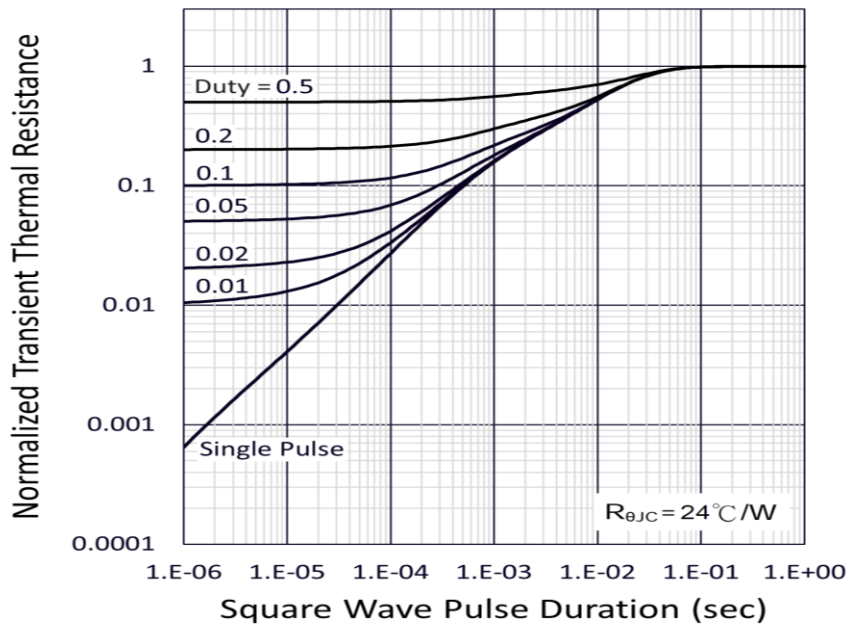
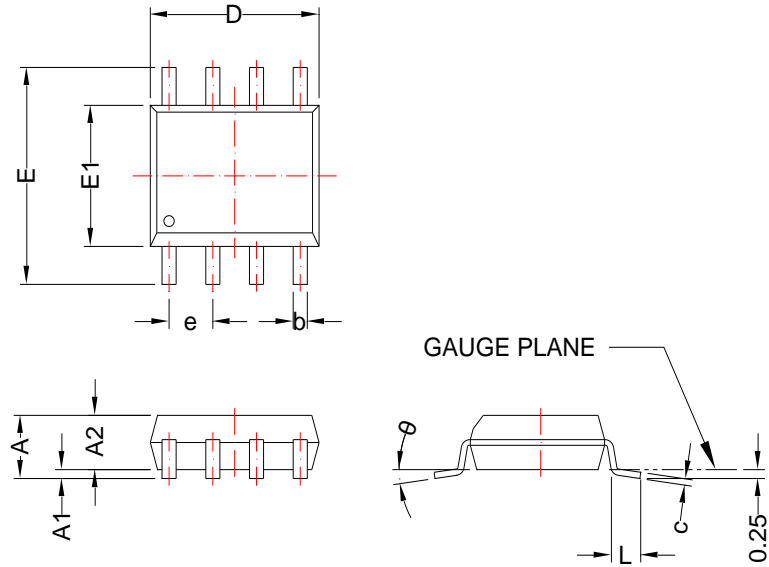


Figure 9. Normalized Transient Thermal Resistance

Package Dimension

SOP-8









Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	1.35	1.75	0.053	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	0.26	0.004	0.010
D	4.70	5.10	0.185	0.201
E	5.80	6.20	0.228	0.244
E1	3.70	4.10	0.146	0.161
e	1.27 BSC		0.050 BSC	
L	0.4	1.27	0.016	0.050
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