

GSM3117SF

30V P-Channel Enhancement Mode MOSFET

Product Description

The P-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.

This device is well suited for high efficiency fast switching applications.

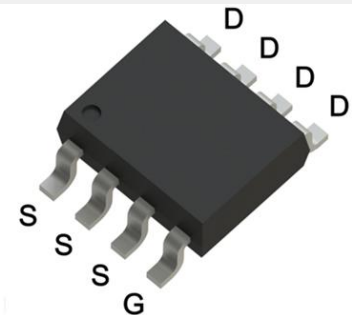
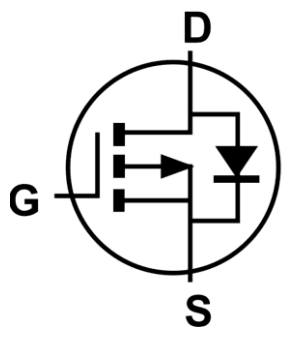
Features

- $R_{DS(ON)}=18m\Omega@V_{GS}=-10V$
- $R_{DS(ON)}=26m\Omega@V_{GS}=-4.5V$
- Fast switching
- Suit for -4.5V Gate Drive Applications
- Green Device Available
- SOP-8 package design

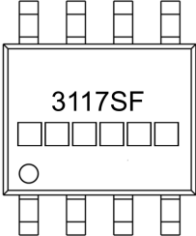
Applications

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

Packages & Pin Assignments

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

Ordering and Marking Information

Ordering Information			
Part Number	Package	Part Marking	Quantity / Reel
GSM3117SF	SOP-8	3117SF □□□□□□	4,000 PCS
GSM3117 1 2			
- Product Code: GSM3117		- Package Code: 1 is S for SOP-8	
		- Green Level: 2 is F for RoHS Compliant and Halogen Free	
Marking Information			
		- Product Code: 3117SF	
		- GS Code: □□□□□□	

Absolute Maximum Ratings

T_A=25°C, unless otherwise specified

Symbol	Parameter	Value	Unit
V _{DSS}	Drain-Source Voltage	-30	V
V _{GSS}	Gate-Source Voltage	±25	V
I _D	Continuous Drain Current	T _C =25°C	-13.8
		T _C =70°C	-11.1
		T _A =25°C	-7.8
		T _A =70°C	-6.2
I _{DM}	Pulsed Drain Current	-50	A
P _D	Power Dissipation	T _C =25°C	5.3
		T _C =70°C	3.4
		T _A =25°C	1.7
		T _A =70°C	1.1
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	75	°C/W
R _{θJC}	Thermal Resistance, Junction to Case	24	°C/W

Electrical Characteristics

T_A=25°C, unless otherwise specified

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static characteristics						
B _V 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	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	V _{DD} =-15V, V _{GS} =-4.5V, I _D =-15A	-	22	-	nC
Q _{gs}	Gate-Source Charge		-	8.7	-	
Q _{gd}	Gate-Drain Charge		-	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

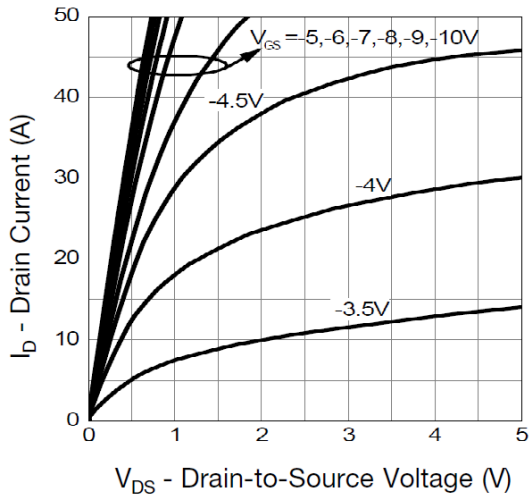


Figure 1. Output Characteristics

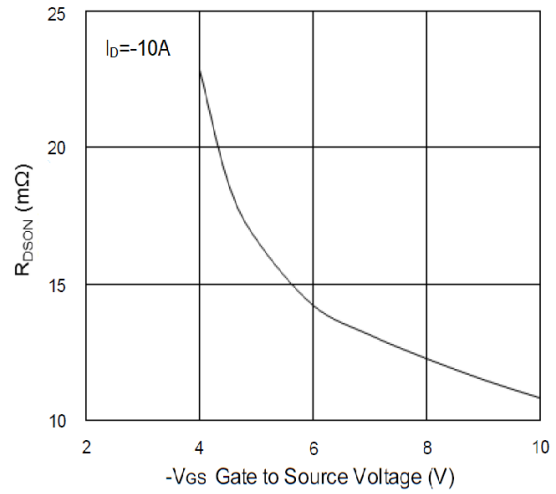


Figure 2. On-Resistance Variation with V_{GS}

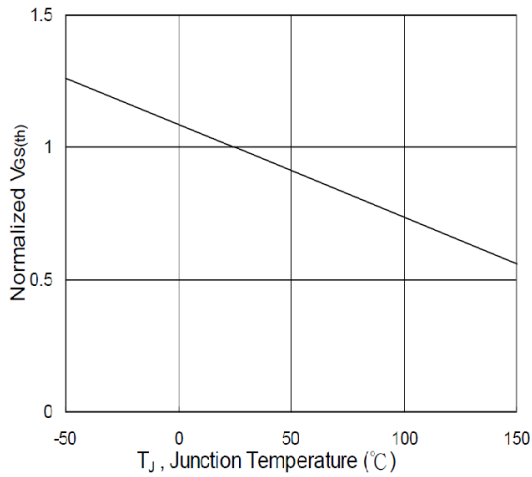


Figure 3. Normalized $V_{GS(th)}$ vs. T_J

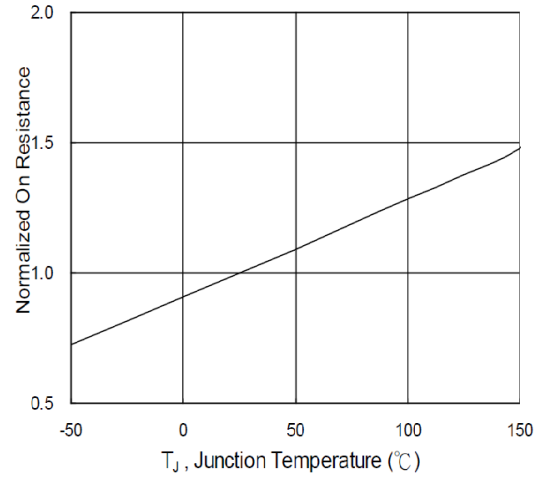


Figure 4. Normalized $R_{DS(on)}$ vs. T_J

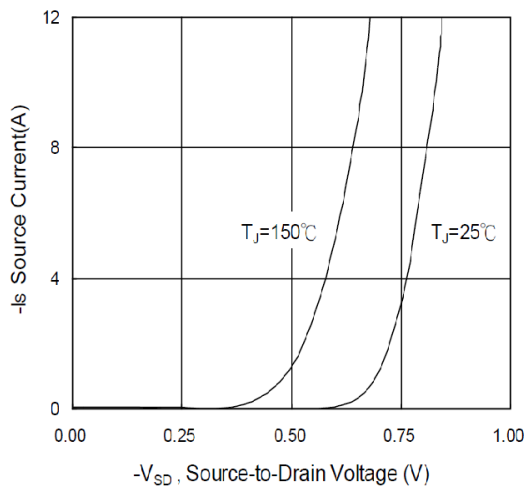


Figure 5. Diode Forward Voltage vs. Current

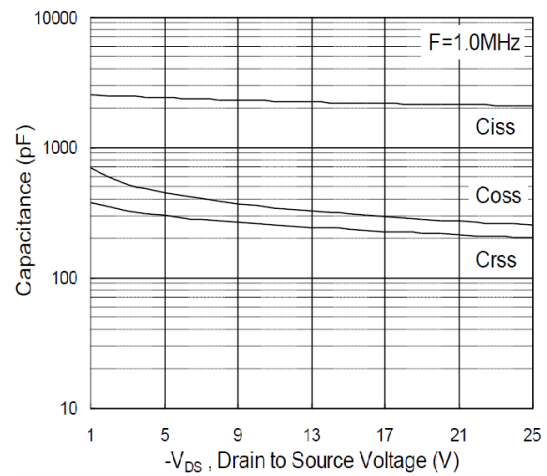


Figure 6. Capacitance

Typical Performance Characteristics

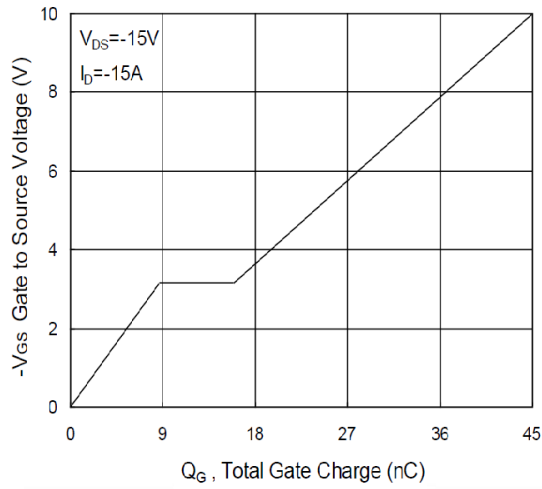


Figure 7. Gate Charge Waveform

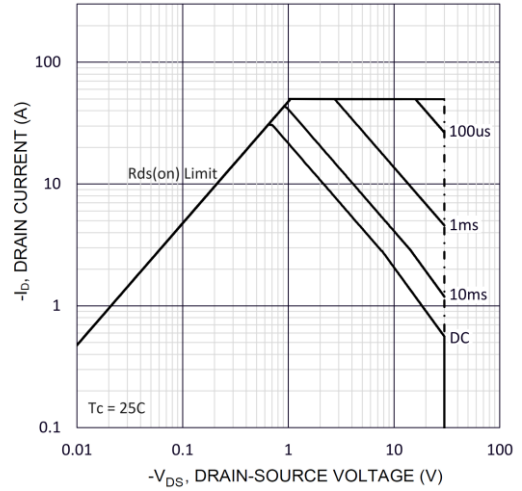


Figure 8. Maximum Safe Operating Area

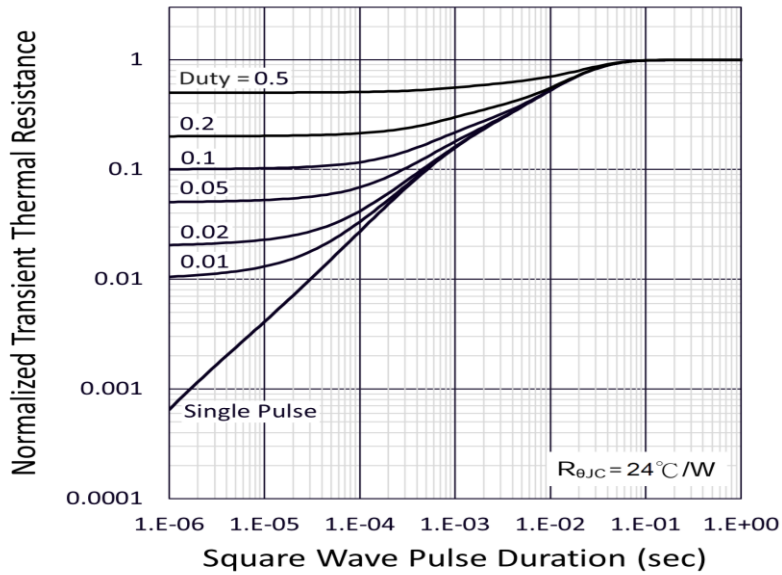
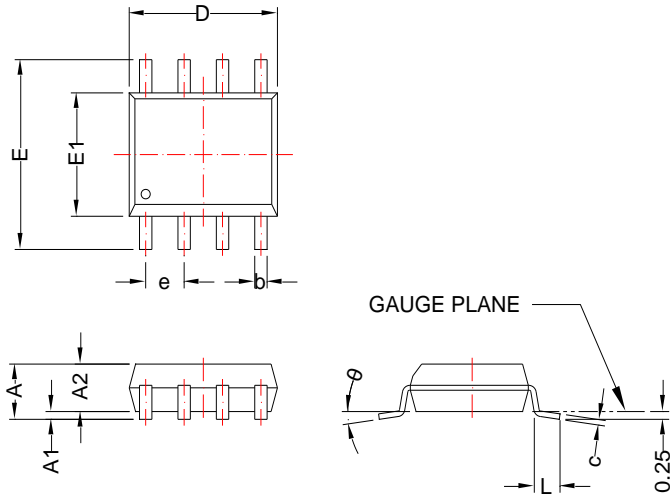


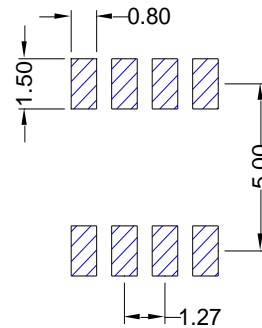
Figure 9. Normalized Transient Thermal Resistance

SOP-8

Package Dimension



Recommended Land Pattern







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	0.4	1.27	0.016	0.050
θ	0°	8°	0°	8°



NOTE:
Dimensions are exclusive of Burrs, Mold Flash & Tie Bar extrusions

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