GSM3112ASF

30V N-Channel MOSFET

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.

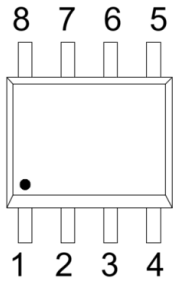
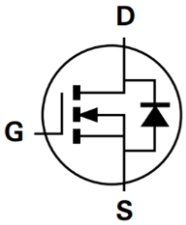
Features

- $R_{DS(ON)}$ = 11 mΩ @ V_{GS}=10V
- $R_{DS(ON)}$ = 16 mΩ @ V_{GS}=4.5V
- SOP-8L Package
- RoHS Compliant and Halogen Free

Applications

- Load Switch
- POL Applications
- SMPS

Packages & Pin Assignments

SOP-8L	Equivalent Circuit
	

Pin	Symbol	Description	Pin	Symbol	Description
1	S	Source	8	D	Drain
2	S	Source	7	D	Drain
3	S	Source	6	D	Drain
4	G	Gate	5	D	Drain

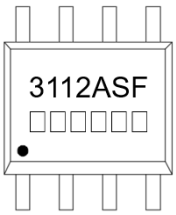
Ordering and Marking Information

Ordering Information			
Part Number	**Package**	**Part Marking**	**Quantity / Reel**
GSM3112ASF	SOP-8L	3112ASF □□□□□□	4,000 PCS

GSM3112A 1 2

- **Product Code:** GSM3112A
- **Package Code:** 1 is **S** for SOP-8L
- **Green Level:** 2 is **F** for RoHS Compliant and Halogen Free

Marking Information



- **Product Code:** 3112ASF
- **GS Code:** □□□□□□
- •The dot indicates pin1

Absolute Maximum Ratings (T_A = 25ºC unless otherwise specified)

Symbol	Parameter		Value	Unit
V_{DSS}	Drain-Source Voltage		30	V
V_{GSS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	T_A=25ºC	10	A
		T_A=70ºC	8	
I_{DM}	Pulsed Drain Current [1]		40	A
I_{AS}	Single Pulse Avalanche Current, L = 0.5mH [1]		8	A
E_{AS}	Single Pulse Avalanche Energy, L = 0.5mH [1]		32	mJ
P_D	Power Dissipation	T_A=25ºC	1.9	W
		T_A=70ºC	1.23	
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient [2]		65	ºC/W
T_J	Operating Junction Temperature Range		-55 to +150	ºC
T_{STG}	Storage Temperature Range		-55 to +150	ºC

NOTE:
1. Single pulse width is limited by max junction temperature.
2. The device was mounted on 1in^2 FR-4 board with 2oz.copper.

Electrical Characteristics (T_J = 25ºC 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=10A	-	8	11	mΩ
		V_{GS}=4.5V, I_D=5A	-	12	16	
gfs	Forward Transconductance	V_{DS}=10V, I_D=3A	-	7	-	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=15V, V_{GS}=0V, f=1MHz	-	1420	1700	pF
C_{oss}	Output Capacitance		-	150	180	
C_{rss}	Reverse Transfer Capacitance		-	95	115	
Q_g	Total Gate Charge	V_{DS}=15V, I_D=10A V_{GS}=10V	-	22	28	nC
Q_{gs}	Gate-Source Charge		-	4.7	6	
Q_{gd}	Gate-Drain Charge		-	4	5	
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=15V, I_D=10A V_{GS}=10V, Rg=6Ω	-	12	-	ns
t_r	Turn-On Rise Time		-	15	-	
$t_{d(off)}$	Turn-Off Delay Time		-	28	-	
t_f	Turn-Off Fall Time		-	15	-	
Diode Characteristics						
V_{SD}	Diode Forward Voltage	V_{GS}=0V, I_S=1A	-	-	1	V
t_{rr}	Reverse Recovery Time	I_F=10A , dI/dt=100A/μs	-	12	-	ns
Q_{rr}	Reverse Recovery Charge		-	5	-	nC

Typical Performance Characteristics

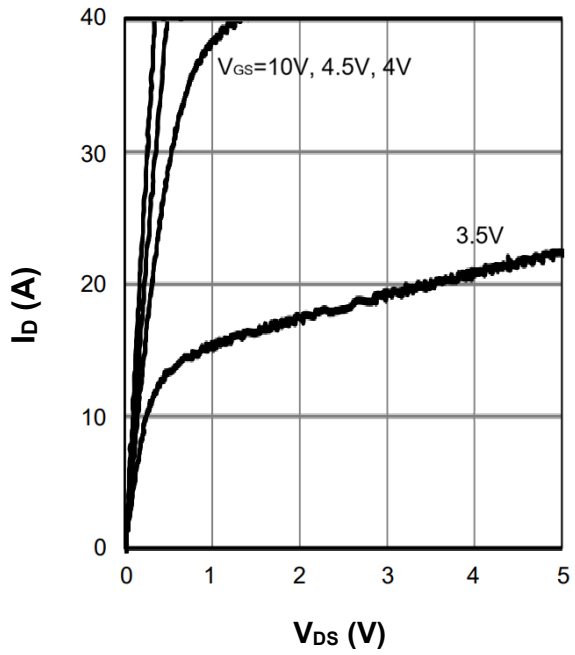


FIG.1 Output Characteristics

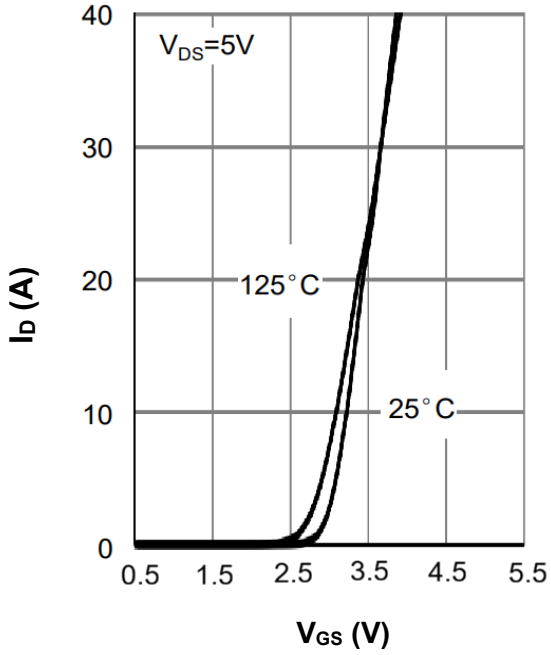


FIG.2 Transfer Characteristics

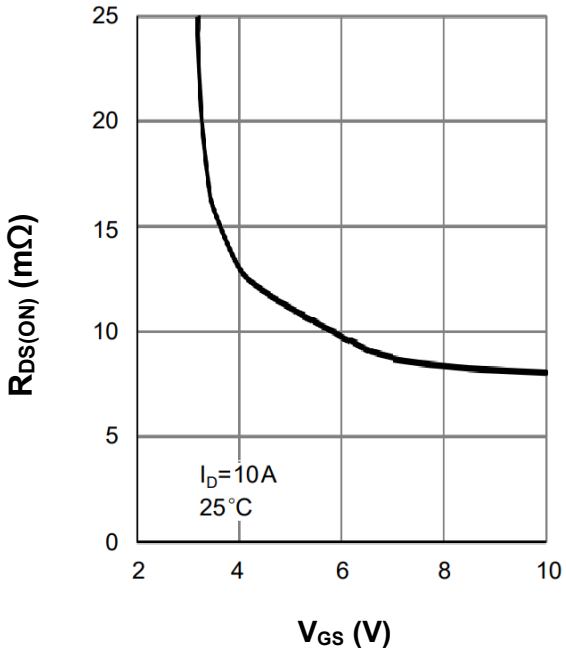


FIG.3 On-Resistance vs. Gate Voltage

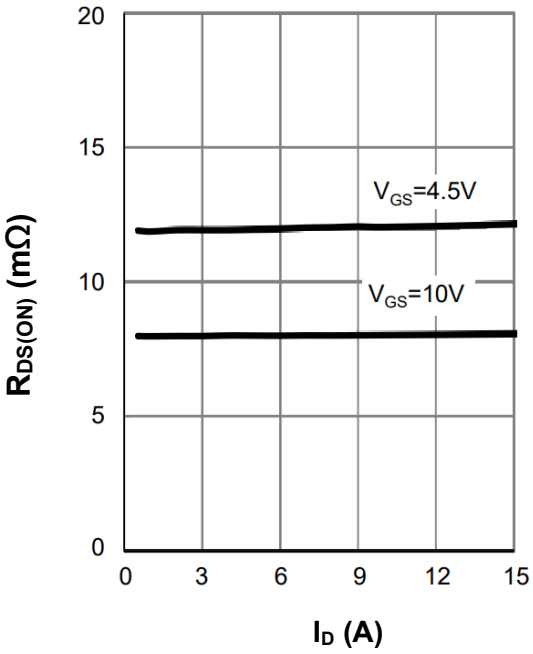


FIG.4 On-Resistance vs. Drain Current

Typical Performance Characteristics

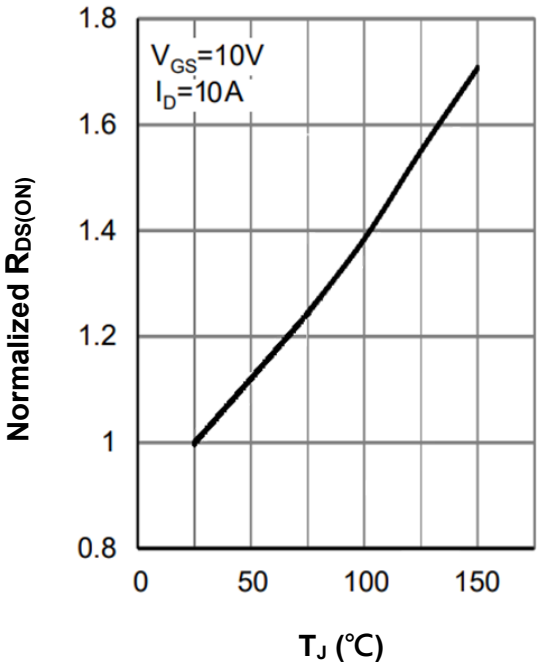


FIG.5 Normalized On-Resistance vs. T_J

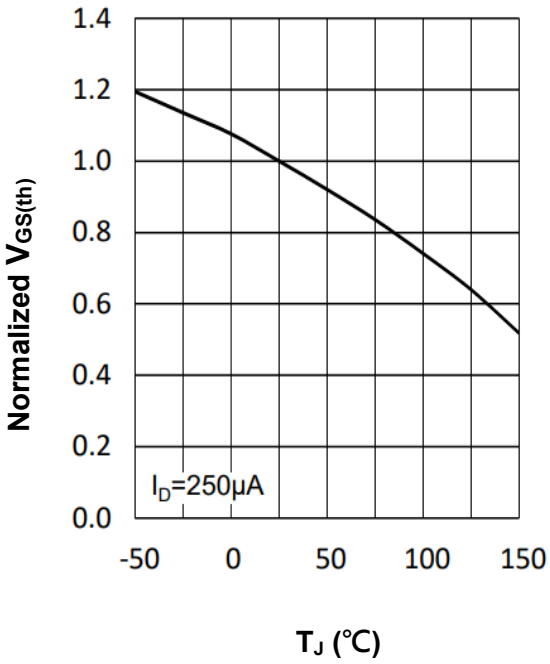


FIG.6 Normalized $V_{GS(th)}$ vs. T_J

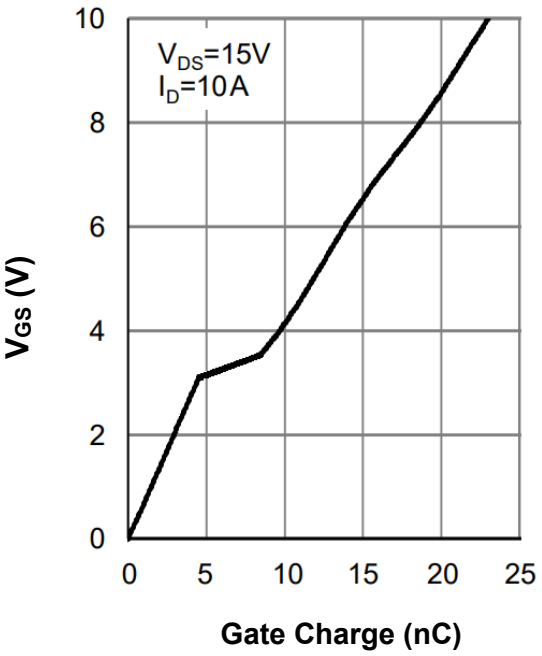


FIG.7 Gate Charge Characteristics

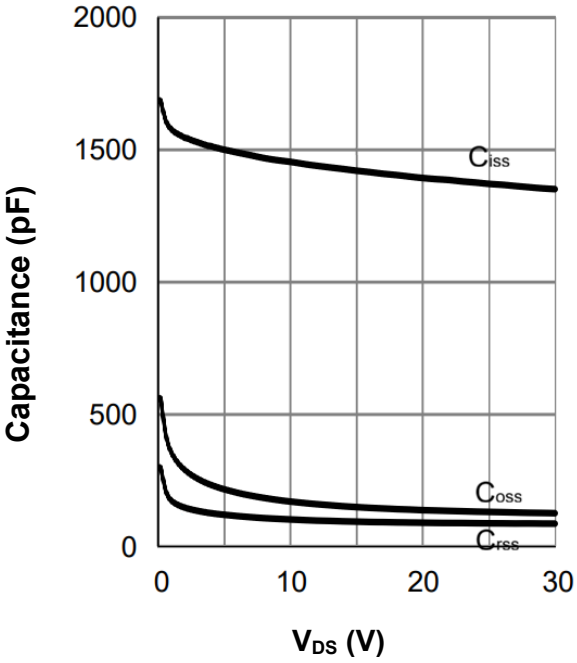


FIG.8 Capacitance Characteristics

Typical Performance Characteristics

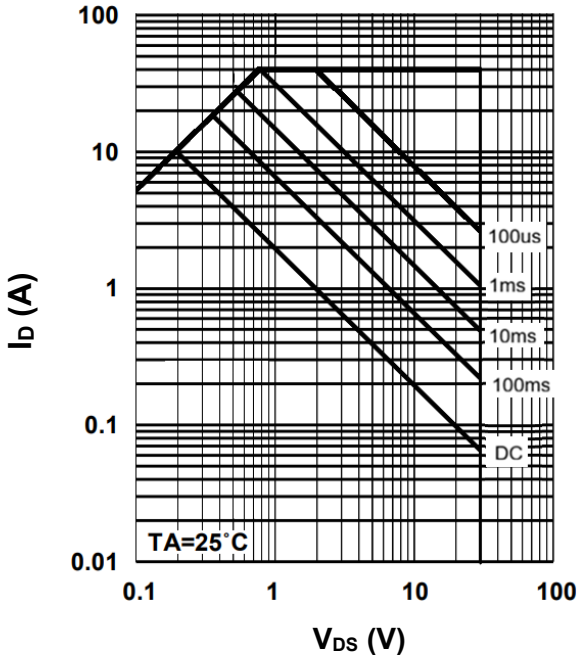


FIG.9 Maximum Safe Operation Area

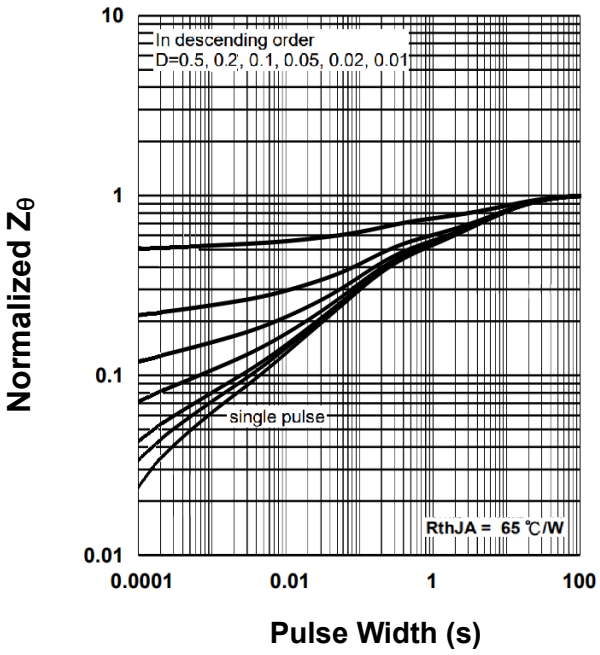
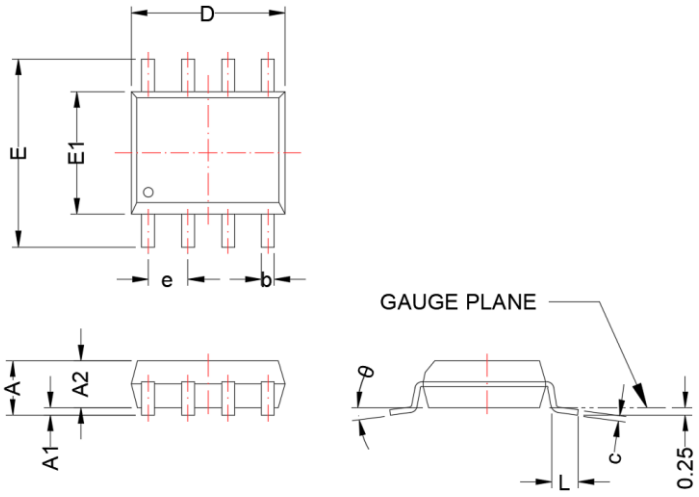


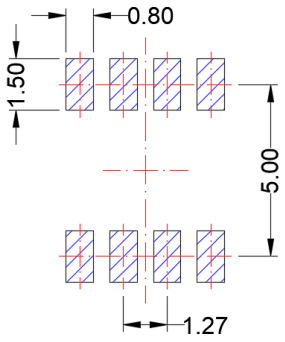
FIG.10 Normalized Transient Impedance

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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