

GSM3112ARF

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.

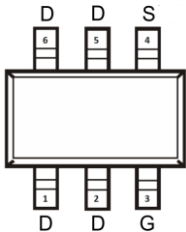
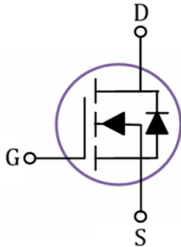
Features

- $R_{DS(ON)} = 12.6 \text{ m}\Omega @ V_{GS}=10\text{V}$
- $R_{DS(ON)} = 18 \text{ m}\Omega @ V_{GS}=4.5\text{V}$
- SOT-23-6L Package
- RoHS Compliant and Halogen Free

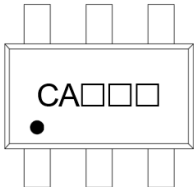
Applications

- Load Switch
- POL Applications
- SMPS

Packages & Pin Assignments

SOT-23-6L			Equivalent Circuit		
 Top View					
Pin	Symbol	Description	Pin	Symbol	Description
1	D	Drain	6	D	Drain
2	D	Drain	5	D	Drain
3	G	Gate	4	S	Source

Ordering and Marking Information

Ordering Information			
Part Number	Package	Part Marking	Quantity / Reel
GSM3112ARF	SOT-23-6L	CA□□□	3,000 PCS
GSM3112A ① ② - Product Code: GSM3112A - Package Code: ① is R for SOT-23-6L - Green Level: ② is F for RoHS Compliant and Halogen Free			
Marking Information			
 - Product Code: CA - GS Code: □□□ •The dot indicates pin1			

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		±20	V
I _D	Continuous Drain Current	T _A =25°C	8.4	A
		T _A =70°C	6.7	
I _{DM}	Pulsed Drain Current ¹		32	A
P _D	Power Dissipation	T _A =25°C	1.52	W
		T _A =70°C	0.97	
R _{θJA}	Thermal Resistance-Junction to Ambient ²		82	°C/W
T _J	Operating Junction Temperature Range		-55 to +150	°C
T _{STG}	Storage Temperature Range		-55 to +150	°C

NOTE:

- Single pulse width is limited by max junction temperature.
- The device was mounted on 1in² FR-4 board with 2oz.copper.

Electrical Characteristics (T_J = 25°C 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 =6A	-	8.6	12.6	mΩ
		V _{GS} =4.5V, I _D =4A	-	12.5	18	
g _{fs}	Forward Transconductance	V _{DS} =10V, I _D =3A	-	5	-	S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz	-	1420	1700	pF
C _{oss}	Output Capacitance		-	150	-	
C _{rss}	Reverse Transfer Capacitance		-	95	-	
Q _g	Total Gate Charge	V _{DS} =15V, I _D =6A V _{GS} =10V	-	22	28	nC
Q _{gs}	Gate-Source Charge		-	4.7	-	
Q _{gd}	Gate-Drain Charge		-	4	-	
t _{d(on)}	Turn-On Delay Time	V _{DD} =15V, I _D =6A V _{GS} =10V, R _g =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 =6A , dI/dt=100A/μs	-	12	-	ns
Q _{rr}	Reverse Recovery Charge		-	5	-	nC

Typical Performance Characteristics

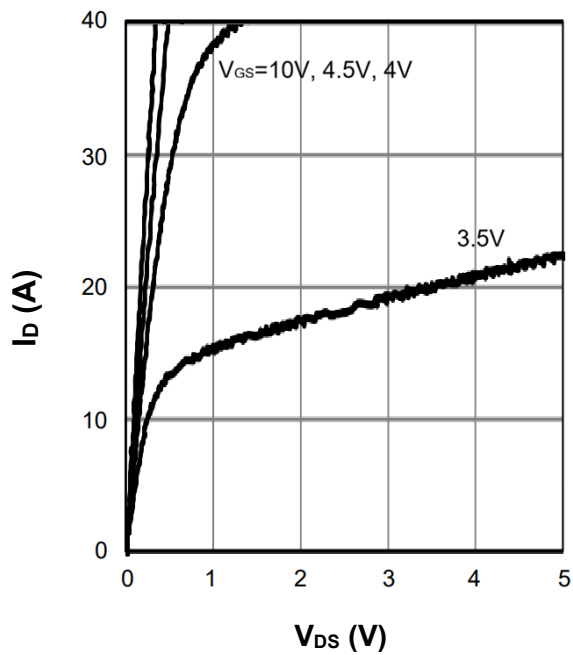


FIG.1 Output Characteristics

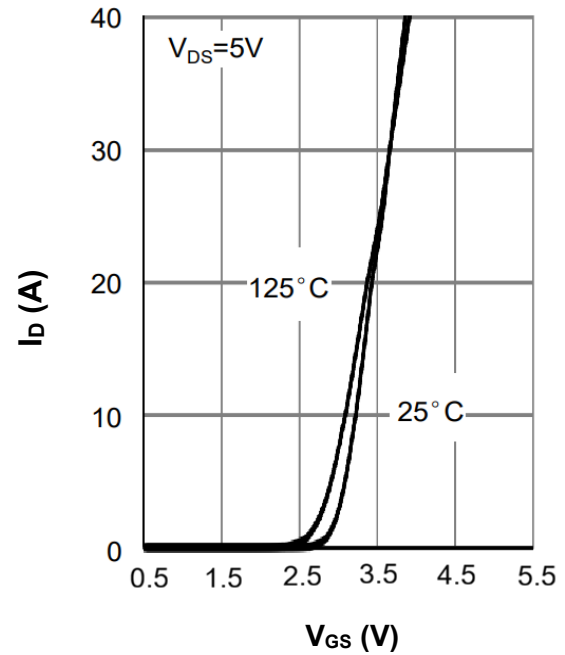


FIG.2 Transfer Characteristics

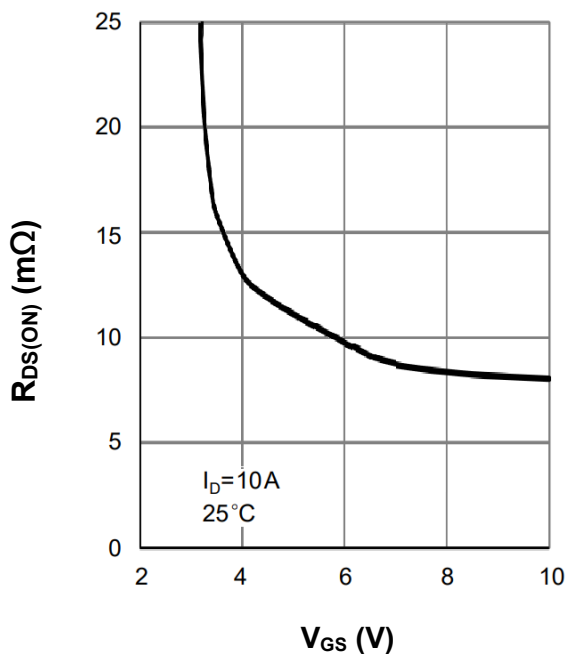


FIG.3 On-Resistance vs. Gate Voltage

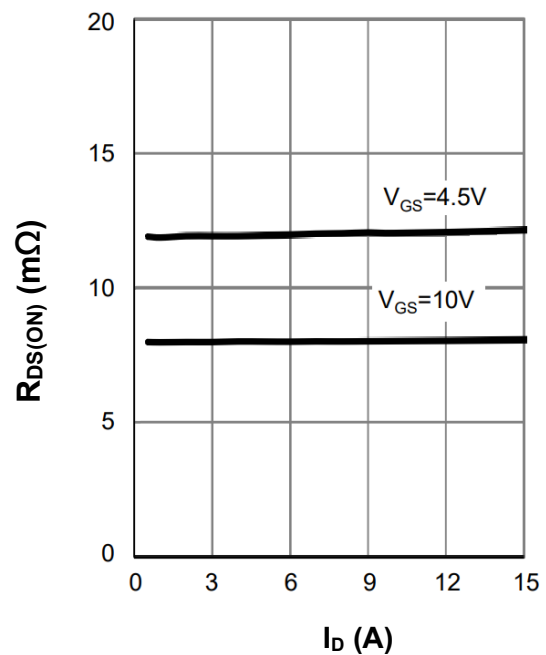


FIG.4 On-Resistance vs. Drain Current

Typical Performance Characteristics

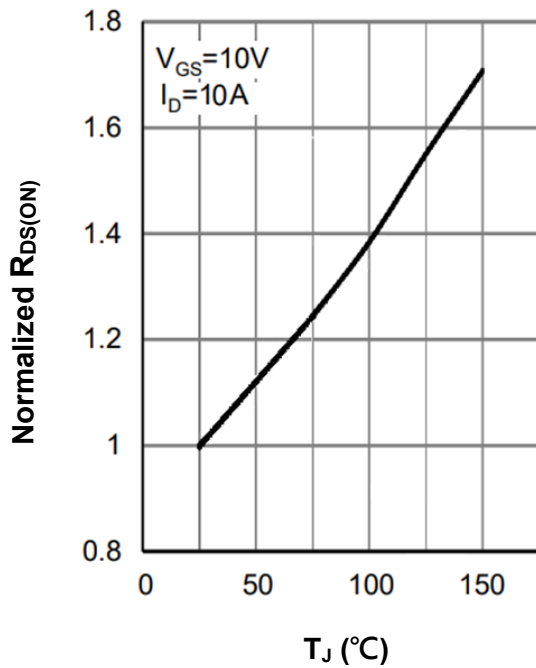


FIG.5 Normalized On-Resistance vs. T_J

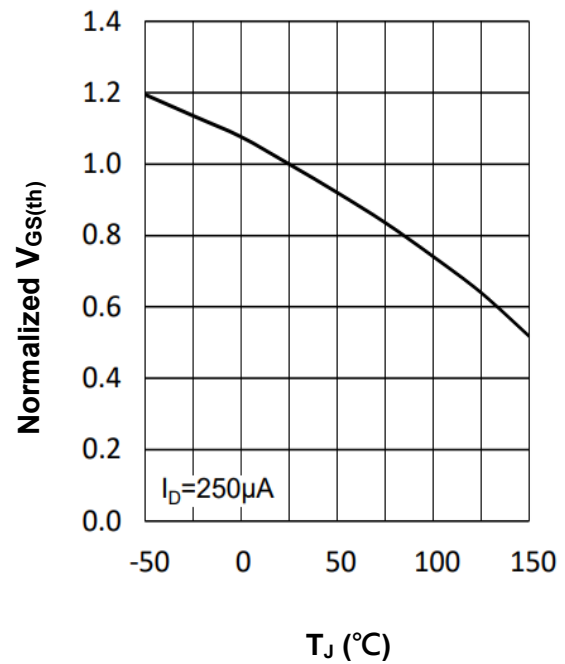


FIG.6 Normalized $V_{GS(th)}$ vs. T_J

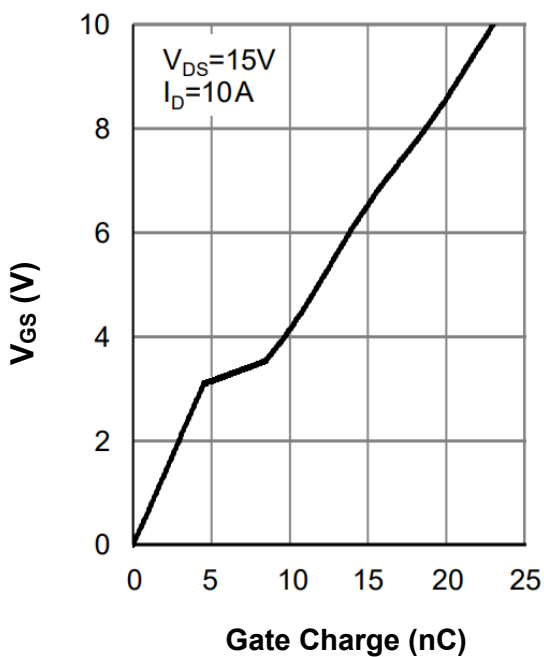


FIG.7 Gate Charge Characteristics

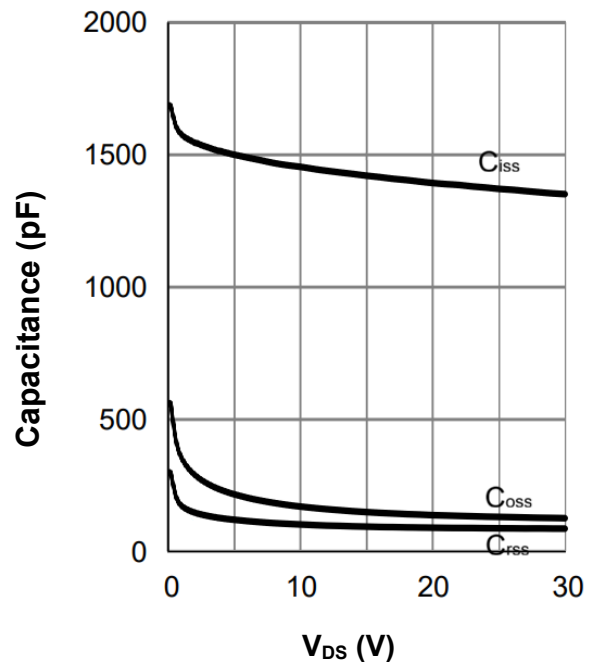


FIG.8 Capacitance Characteristics

Typical Performance Characteristics

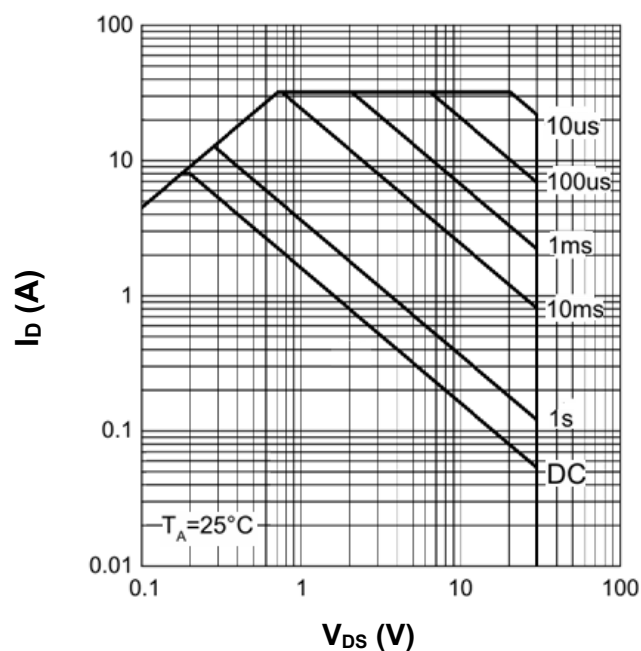


FIG.9 Maximum Safe Operation Area

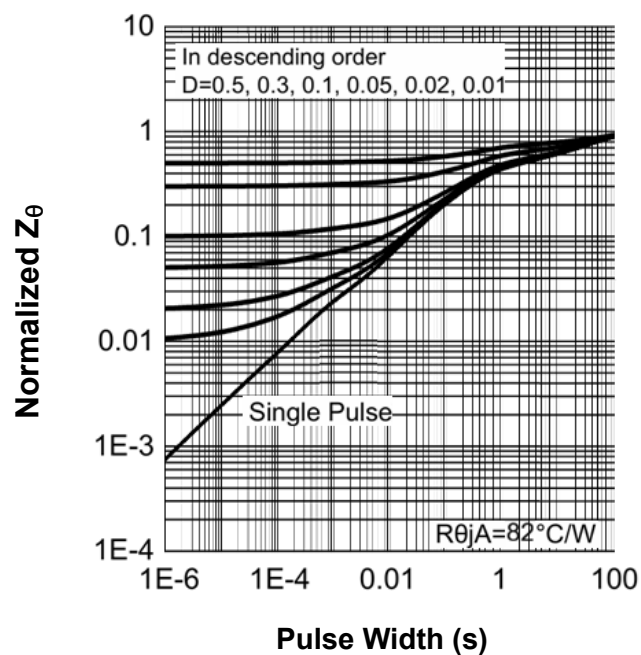
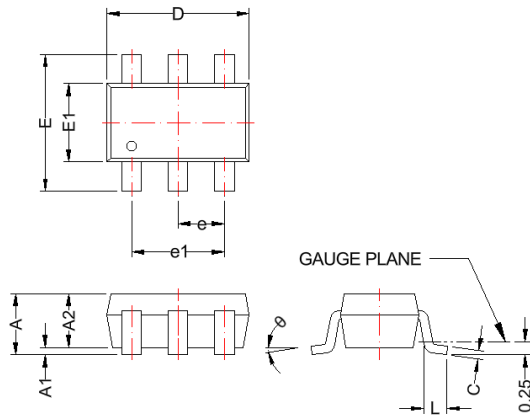


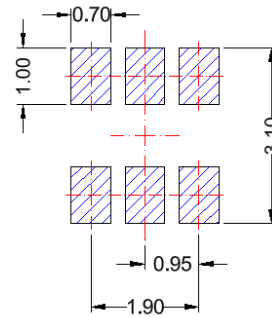
FIG.10 Normalized Transient Impedance

SOT-23-6L

Package Dimension



Recommended Land Pattern



Unit:mm

Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.90	1.45	0.035	0.057
A1	0.00	0.15	0.000	0.006
A2	0.90	1.30	0.035	0.051
b	0.30	0.50	0.012	0.020
c	0.08	0.26	0.003	0.010
D	2.70	3.10	0.106	0.122
E	2.20	3.00	0.087	0.118
E1	1.30	1.75	0.051	0.069
e	0.95 BSC		0.037 BSC	
e1	1.90 BSC		0.075 BSC	
L	0.30	0.60	0.012	0.024
θ	0°	8°	0°	8°

NOTE:

Dimensions are exclusive of Burrs, Mold Flash and Tie Bar extrusions.

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CONTACT US

GS Headquarter	
	4F, NO.43-1, Lane 11, Sec. 6, Minquan E. Rd Neihs District, Taipei City 114761, 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