GSM3112AZF

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.

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

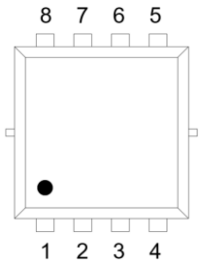
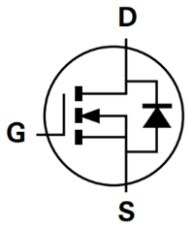
Features

- $R_{DS(ON)}$ = 12mΩ @ V_{GS}=10V
- $R_{DS(ON)}$ = 18mΩ @ V_{GS}=4.5V
- DFN3X3-8L Package
- RoHS Compliant and Halogen Free

Applications

- POL Applications
- SMPS

Packages & Pin Assignments

DFN3X3-8L	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

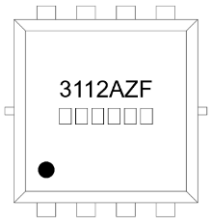
Ordering and Marking Information

Ordering Information			
Part Number	**Package**	**Part Marking**	**Quantity / Reel**
GSM3112AZF	DFN3X3-8L	3112AZF □□□□□□	5,000 PCS

GSM3112A 1 2

- **Product Code:** GSM3112A
- **Package Code:** 1 is **Z** for DFN3X3-8L
- **Green Level:** 2 is **F** for RoHS Compliant and Halogen Free

Marking Information



- **Product Code:** 3112AZF
- **GS Code:** □□□□□□
  - The Dot denotes 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 (Silicon Limited)	T_C=25ºC	35	A
		T_C=100ºC	22	
I_{DM}	Pulsed Drain Current [1]		80	A
I_{AS}	Single Pulse Avalanche Current, L = 0.1mH [1]		15	A
E_{AS}	Single Pulse Avalanche Energy, L = 0.1mH [1]		22.5	mJ
P_D	Power Dissipation	T_C=25ºC	24	W
		T_C=100ºC	9.6	
$R_{\theta JC}$	Thermal Resistance-Junction to Case		5.2	ºC/W
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient [2]		62	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 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=20A	-	8	12	mΩ
		V_{GS}=4.5V, I_D=10A	-	12	18	
gfs	Forward Transconductance	V_{DS}=5V, I_D=10A	-	10	-	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=15V, V_{GS}=0V, f=1MHz	-	1150	-	pF
C_{oss}	Output Capacitance		-	120	-	
C_{rss}	Reverse Transfer Capacitance		-	85	-	
Q_g	Total Gate Charge	V_{DS}=15V, I_D=10A V_{GS}=10V	-	19	-	nC
Q_{gs}	Gate-Source Charge		-	4.2	-	
Q_{gd}	Gate-Drain Charge		-	3.6	-	
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=15V, I_D=10A V_{GS}=10V, Rg=6Ω	-	10	-	ns
t_r	Turn-On Rise Time		-	9	-	
$t_{d(off)}$	Turn-Off Delay Time		-	24	-	
t_f	Turn-Off Fall Time		-	8	-	
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		-	8.3	-	nC

Typical Performance Characteristics

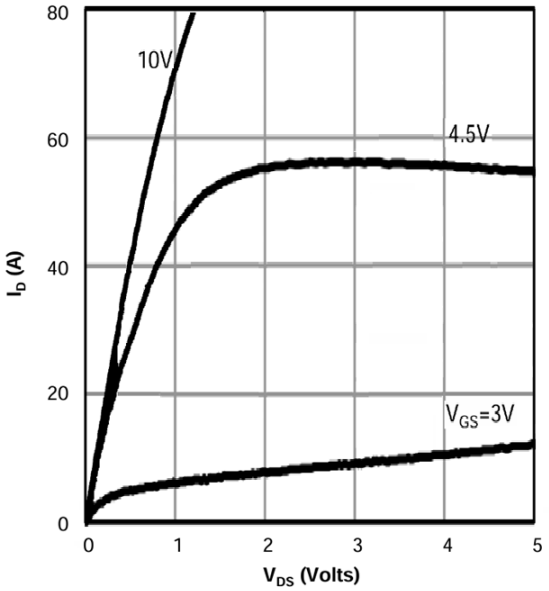


FIG.1 Output Characteristics

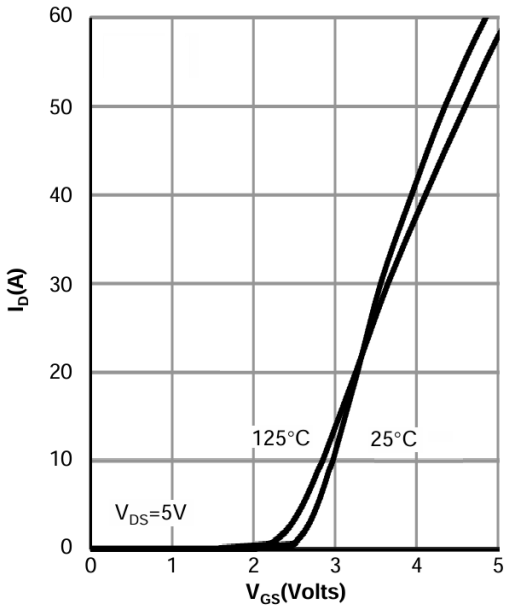


FIG.2 Transfer Characteristics

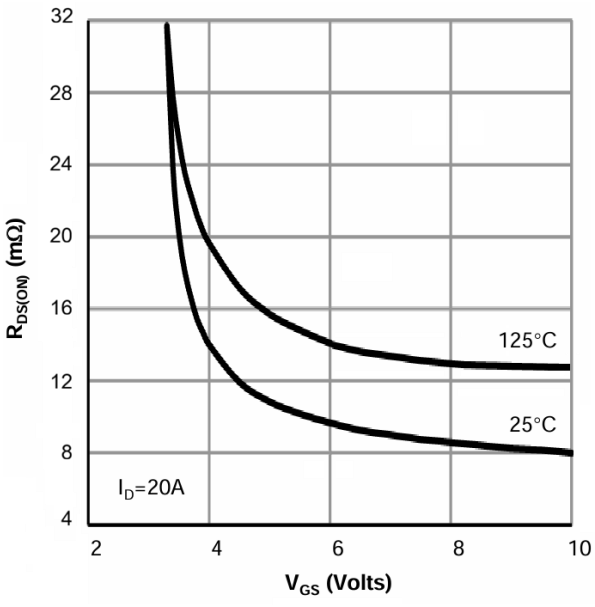


FIG.3 On-Resistance vs. Gate Voltage

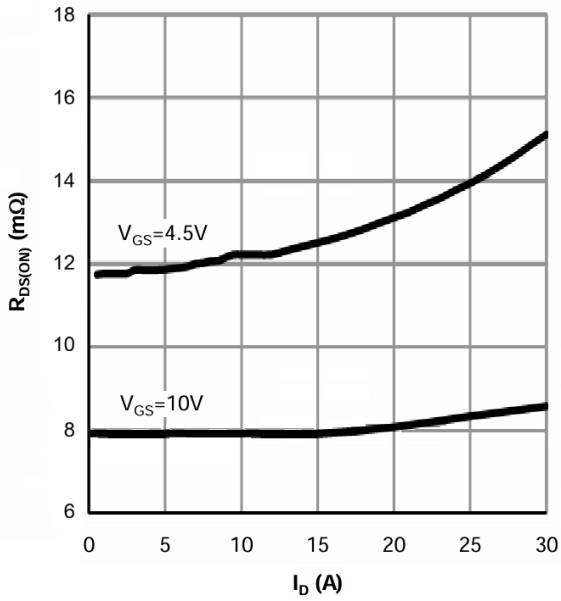


FIG.4 On-Resistance vs. Drain Current

Typical Performance Characteristics

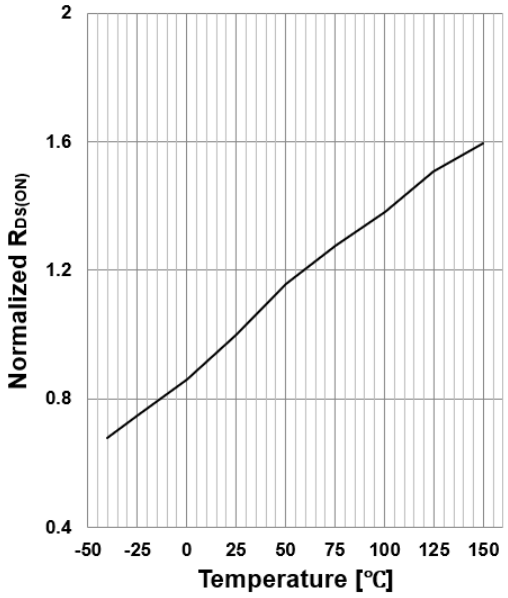


FIG.5 Normalized On-Resistance vs. T_J

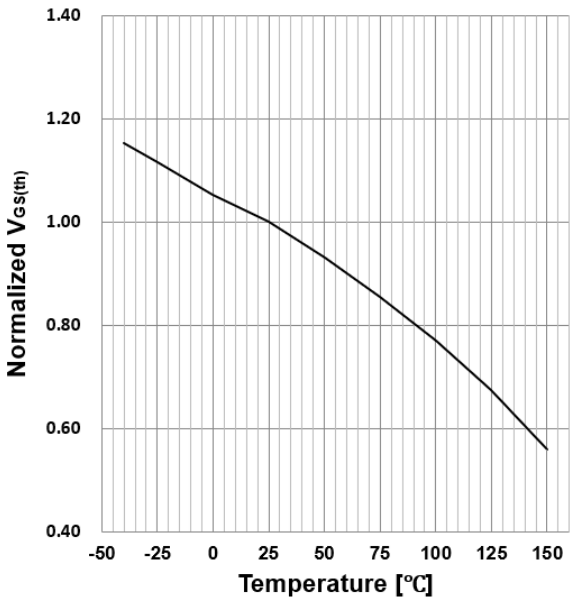


FIG.6 Normalized $V_{GS(th)}$ vs. T_J

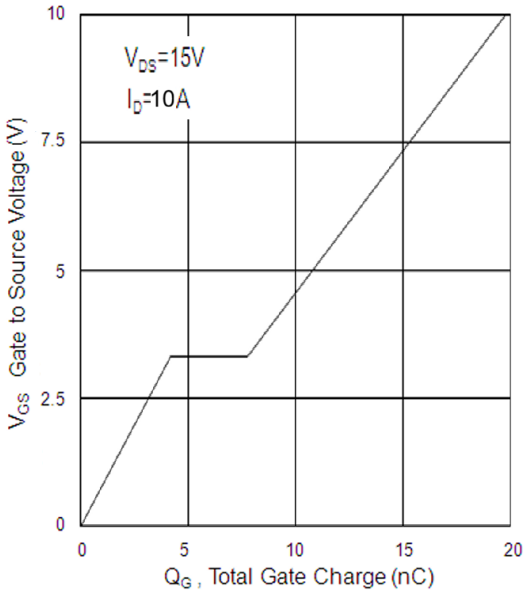


FIG.7 Gate Charge Characteristics

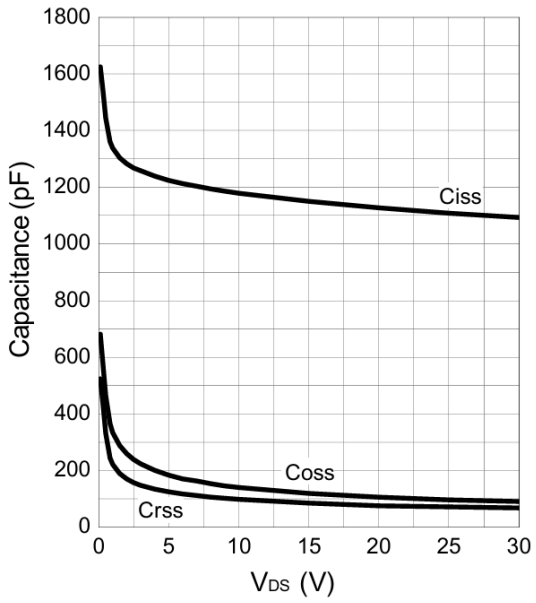


FIG.8 Capacitance Characteristics

Typical Performance Characteristics

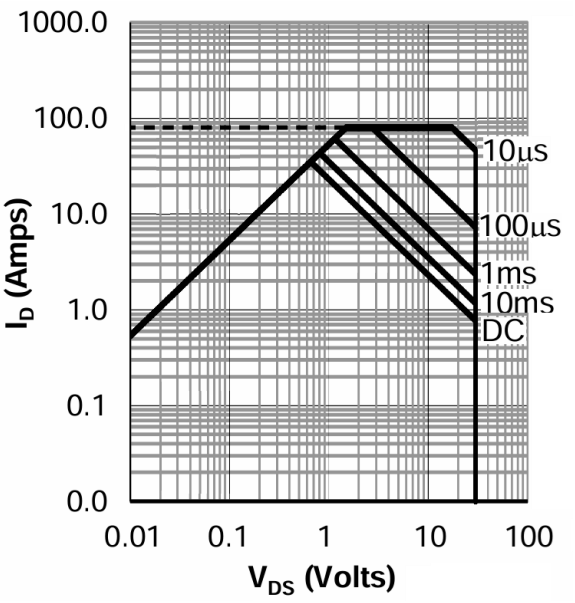


FIG.9 Maximum Safe Operation Area

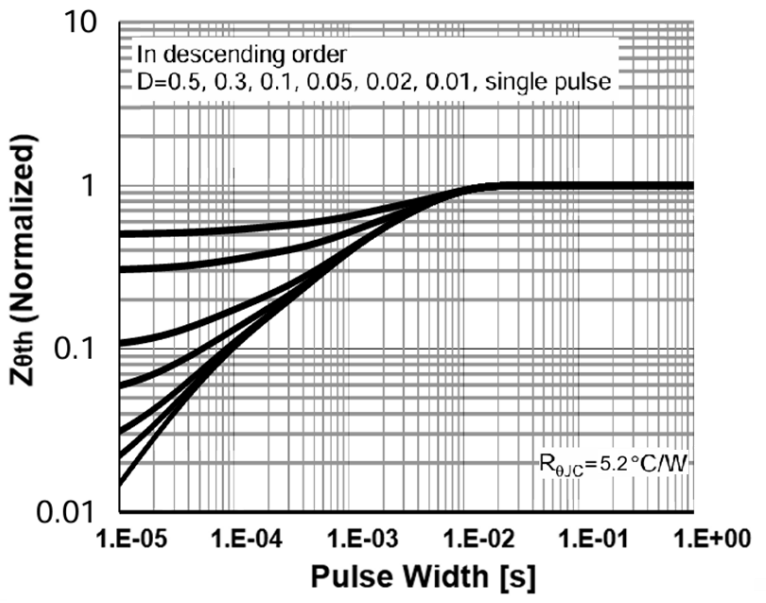


FIG.10 Normalized Transient Impedance

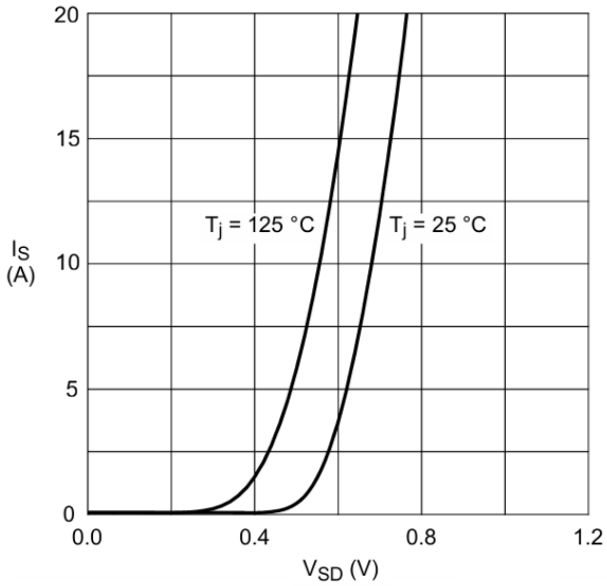
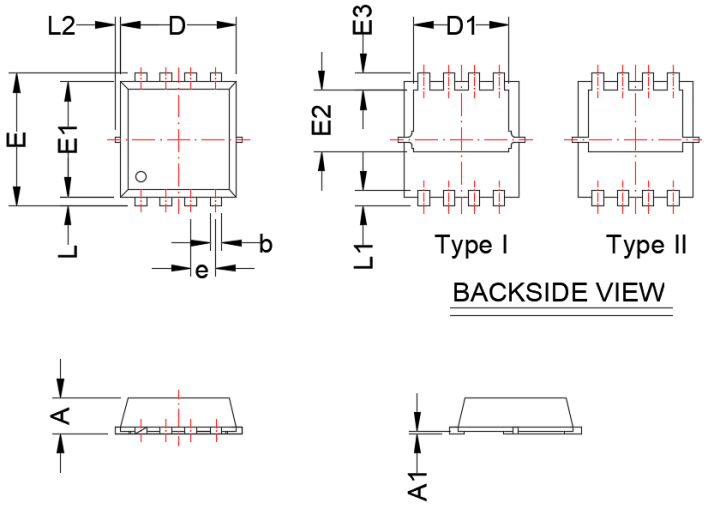


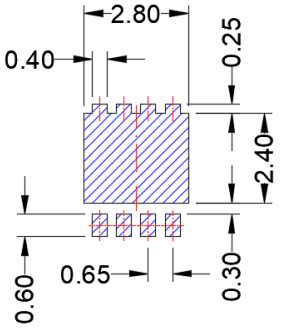
FIG.11 Body-Diode Characteristics

DFN3X3-8L

Package Dimension



Recommended Land Pattern



Unit: mm

Dimensions				
Symbol	**Millimeters**		**Inches**	
	Min	**Max**	**Min**	**Max**
A	0.70	0.90	0.028	0.035
A1	0.00	0.05	0.000	0.002
b	0.24	0.37	0.009	0.015
c	0.10	0.25	0.004	0.010
D	2.90	3.25	0.114	0.128
D1	2.35	2.60	0.093	0.102
E	3.05	3.45	0.120	0.136
E1	2.90	3.20	0.114	0.126
E2	1.35	2.00	0.053	0.079
E3	0.30	0.60	0.012	0.024
e	0.65 BSC		0.026 BSC	
L	0.02	0.2	0.001	0.008
L1	0.28	0.5	0.011	0.020
L2	---	0.15	---	0.006

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

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