

GSM3106ZF

30V N-Channel MOSFET

Product Description

The device uses 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.

It is well suited for high efficiency fast switching applications.

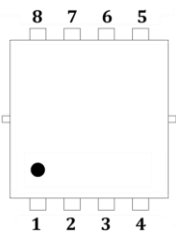
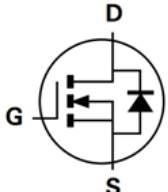
Features

- 30V, $R_{DS(ON)}$ 6m Ω max @ $V_{GS}=10V$
- DFN3x3-8L Package
- RoHS Compliant and Halogen Free

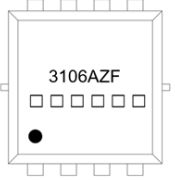
Applications

- Power Management in NB
- POL Applications
- DC-DC Switching Applications

Packages & Pin Assignments

GSM3106ZF (DFN3x3-8L)			Equivalent Circuit		
 <p>Top View</p>					
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
GSM3106ZF	DFN3x3-8L	3106AZF □□□□□□	5,000 PCS
GSM3106 1 2 - Product Code: GSM3106 - Package Code: 1 is Z for DFN3x3-8L - Green Level: 2 is F for RoHS Compliant and Halogen Free			
Marking Information			
<div>  </div> <div> - Product Code: 3106AZF - GS Code: □□□□□□ </div>			

Absolute Maximum Ratings (T_J=25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
V _{DS}	Drain-Source Voltage	30	V
V _{GS}	Gate-Source Voltage	±20	V
I _D	Continuous Drain Current	T _C =25°C	A
		T _C =70°C	
I _{DM}	Pulsed Drain Current ¹	80	A
E _{AS}	Single Pulse Avalanche Energy ^{1, 2}	40	mJ
P _D	Power Dissipation T _C =25°C	26.6	W
	Power Dissipation T _C =70°C	17.1	W
R _{θJC}	Thermal Resistance-Junction to Case	4.7	°C/W
T _J	Operating Junction Temperature Range	-55 to +150	°C
T _{STG}	Storage Temperature Range	-55 to +150	°C

NOTE:

1. Pulsed width is limited by the maximum junction temperature.
2. V_{DD}=15V, V_{GS}=10V, L=0.1mH, I_{AS}=20A.
3. Surface Mounted on 1in² pad area.

Electrical Characteristics (T_A=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
I _{DSS}	Drain-Source Leakage Current	V _{DS} =30V, V _{GS} =0V			1	uA
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±20V			±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1.0		2.5	V
R _{DS(on)}	Drain-Source On-Resistance ⁴	V _{GS} =10V, I _D =20A		4.8	6	mΩ
		V _{GS} =4.5V, I _D =10A		6.9	9	
V _{SD}	Diode Forward Voltage ⁴	V _{GS} =0V, I _S =2A			1	V
Gate Charge Characteristics						
Q _g	Total Gate Charge	V _{DD} =15V, I _D =12A V _{GS} =10V		22.3		nC
Q _{gs}	Gate-Source Charge			2.2		
Q _{gd}	Gate-Drain Charge			3.5		
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =15V,V _{GS} =0V, f=1.0MHz		1155		pF
C _{oss}	Output Capacitance			456		
C _{rss}	Reverse Transfer Capacitance			72		
t _{d(on)}	Turn-On Time	V _{DD} =15V, V _{GS} =10V, R _g =3Ω, I _D =9A		3.5		ns
t _r	Rise Time			5.5		
t _{d(off)}	Turn-Off Time			13.5		
t _f	Fall Time			4.6		

NOTE:

4. Pulse width ≤ 300us, duty cycle ≤ 2%.

Typical Performance Characteristics

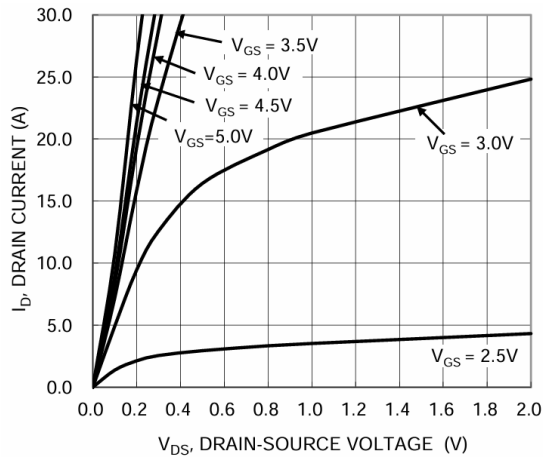


Fig 1. Output Characteristics

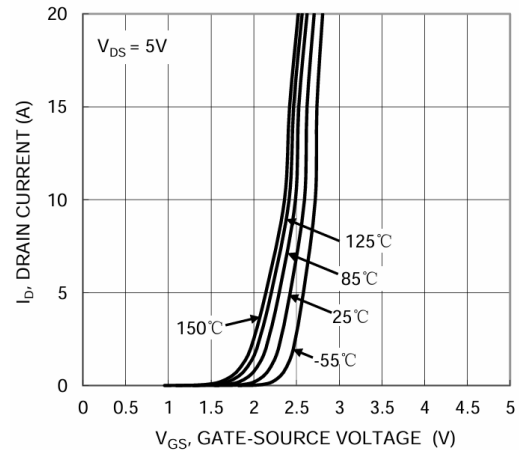


Fig 2. Transfer Characteristics

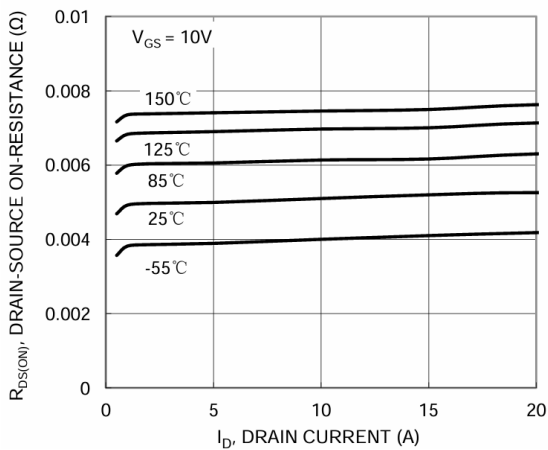


Fig 3. $R_{DS(on)}$ vs. I_D

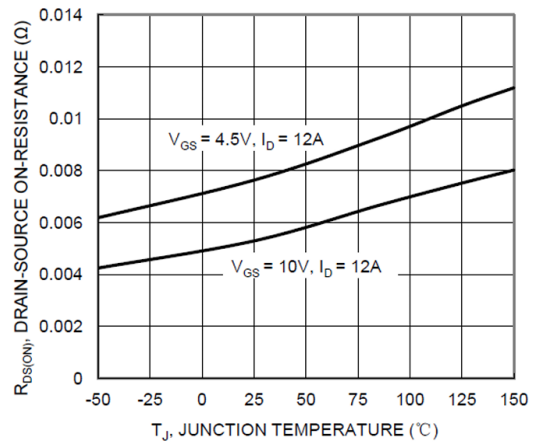


Fig 4. $R_{DS(on)}$ vs. T_J

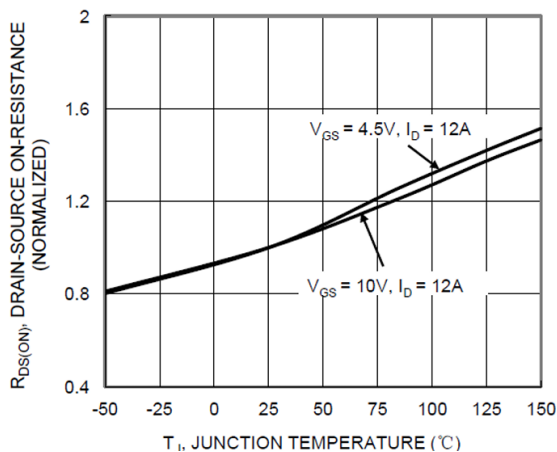


Fig 5. Normalized $R_{DS(on)}$ vs. T_J

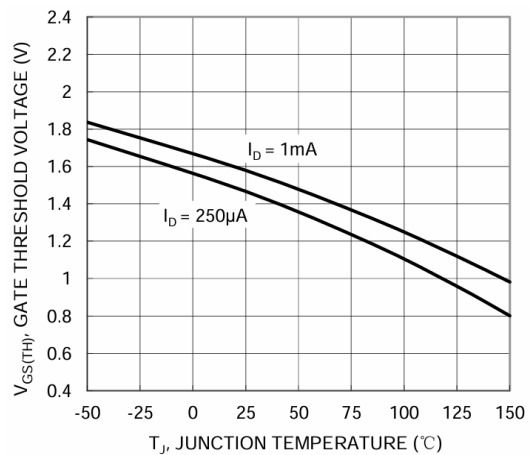


Fig 6. V_{th} vs. T_J

Typical Performance Characteristics (Continued)

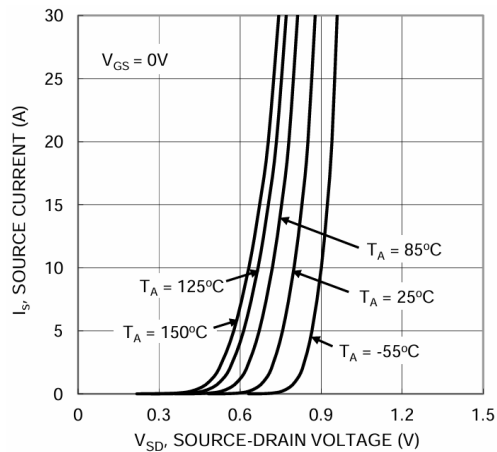


Fig 7. V_{SD} vs. I_D

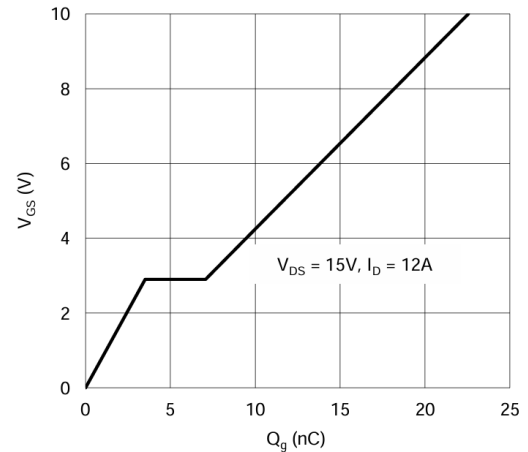


Fig 8. Gate Charge Characteristics

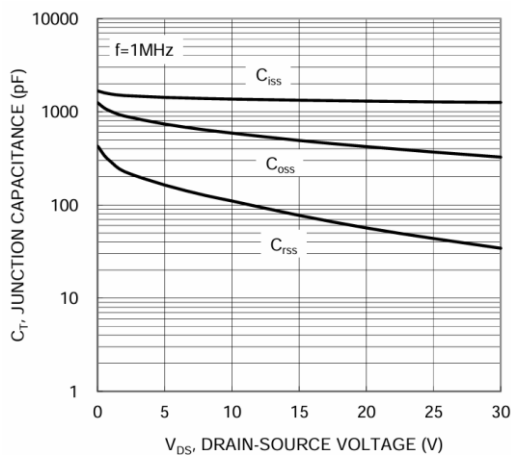


Fig 9. Capacitance Characteristics

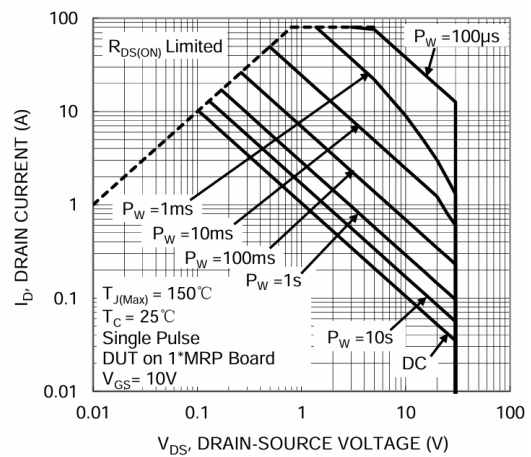


Fig 10. Safe Operating Area

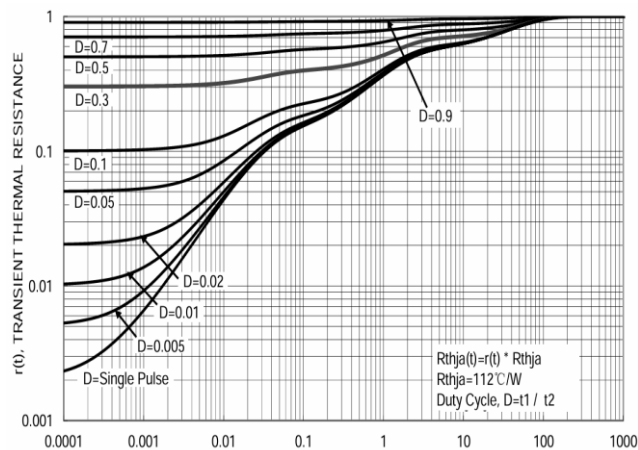
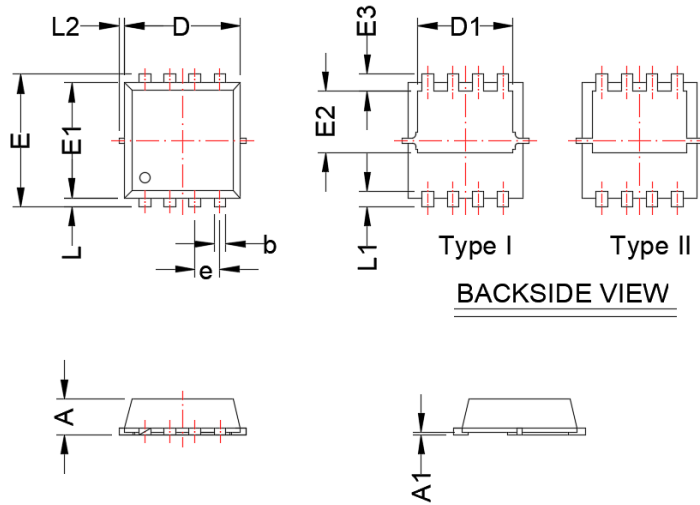


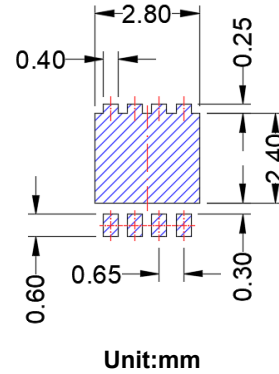
Fig 11. Normalized Transient Thermal Resistance

DFN3X3-8L

Package Dimension



Recommended Land Pattern



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 & Tie Bar extrusions.

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