

GSM3118ZF

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.

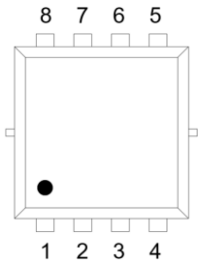
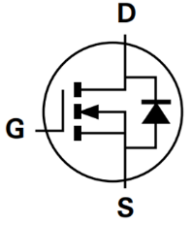
Features

- $R_{DS(ON)} = 21m\Omega$ @ $V_{GS}=10V$
- $R_{DS(ON)} = 28m\Omega$ @ $V_{GS}=4.5V$
- DFN3X3-8L Package
- RoHS Compliant and Halogen Free

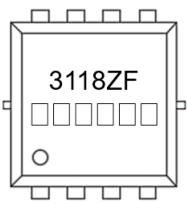
Applications

- 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
GSM3118ZF	DFN3X3-8L	3118ZF □□□□□□	5,000 PCS
GSM3118 1 2			
- Product Code: GSM3118 - Package Code: 1 is Z for DFN3X3-8L - Green Level: 2 is F for RoHS Compliant and Halogen Free			
Marking Information			
 - Product Code: 3118ZF - GS Code: □□□□□□ •The dot denotes 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 (Silicon Limited)	T _C =25°C	17	A
		T _C =100°C	10	
	Continuous Drain Current (Package Limited)		12	
	Continuous Drain Current ³	T _A =25°C	9.3	
		T _A =70°C	7.4	
I _{DM}	Pulsed Drain Current ¹		36	A
I _{AS}	Single Pulse Avalanche Current, L = 0.1mH ¹		12.8	A
E _{AS}	Single Pulse Avalanche Energy, L = 0.1mH ¹		8.1	mJ
P _D	Power Dissipation ²	T _C =25°C	11.3	W
		T _C =100°C	4.5	
		T _A =25°C	1.6	
		T _A =70°C	1	
R _{θJC}	Thermal Resistance-Junction to Case		11	°C/W
R _{θJA}	Thermal Resistance-Junction to Ambient ²		78	°C/W

T _J	Operating Junction Temperature Range	-55 to +150	°C
T _{STG}	Storage Temperature Range	-55 to +150	°C

NOTE:

1. Single pulse width is limited by max junction temperature.
2. The device mounted on 1in² FR-4 board with 2oz. Copper
3. The current was calculated based on power dissipation with t_s ≤ 10s which max R_{θJA} 40 °C/W.

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	1.6	2.5	V
R _{DS(ON)}	Drain-Source On-Resistance	V _{GS} =10V, I _D =7A	-	17	21	mΩ
		V _{GS} =4.5V, I _D =5A	-	23	28	
g _{fs}	Forward Transconductance	V _{DS} =10V, I _D =6A	-	6.5	-	S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz	-	420	560	pF
C _{oss}	Output Capacitance		-	75	105	
C _{rss}	Reverse Transfer Capacitance		-	45	65	
Q _g	Total Gate Charge	V _{DS} =15V, I _D =6A V _{GS} =4.5V	-	4.1	8	nC
Q _{gs}	Gate-Source Charge		-	1.0	2.1	
Q _{gd}	Gate-Drain Charge		-	2.1	3	
t _{d(on)}	Turn-On Delay Time	V _{DD} =15V, I _D =1A V _{GS} =10V, R _g =6Ω	-	6	10	ns
t _r	Turn-On Rise Time		-	10	19	
t _{d(off)}	Turn-Off Delay Time		-	15.8	30	
t _f	Turn-Off Fall Time		-	4.6	9	
Diode Characteristics						
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =1A	-	-	1	V

Typical Performance Characteristics

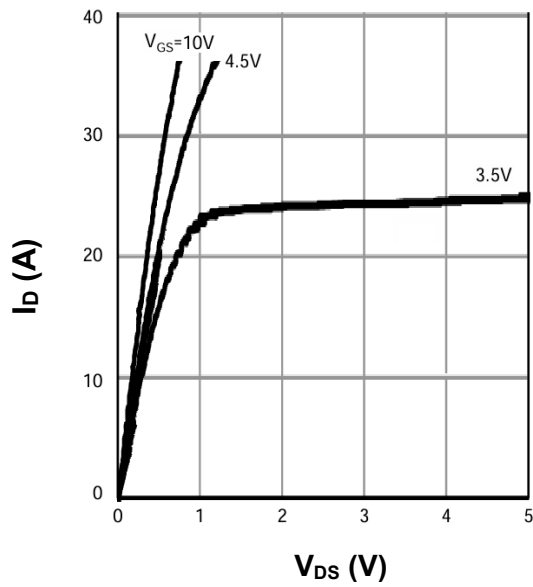


FIG.1 Output Characteristics

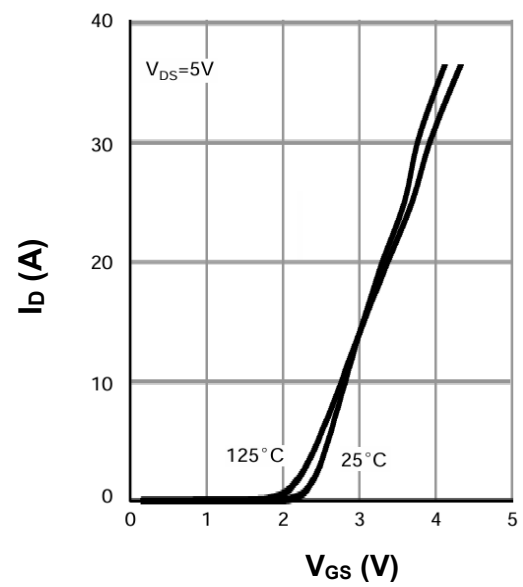


FIG.2 Transfer Characteristics

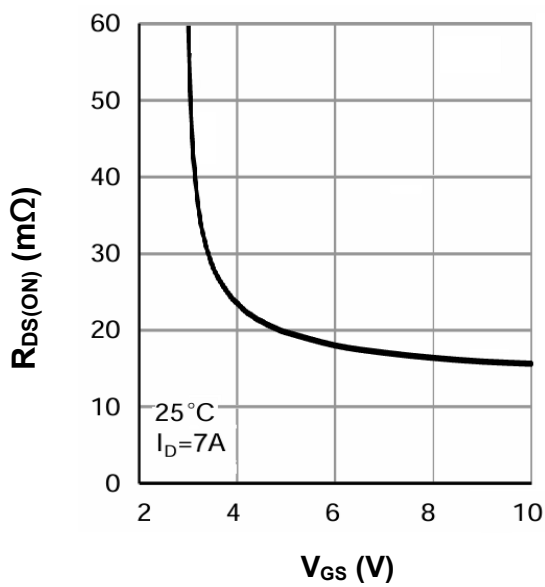


FIG.3 On-Resistance vs. Gate Voltage

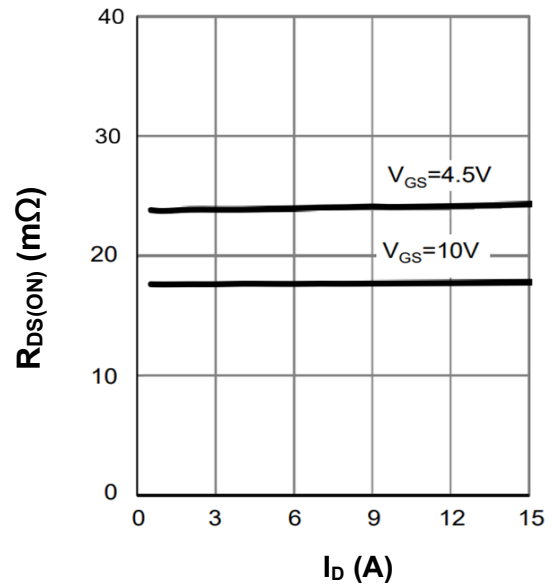


FIG.4 On-Resistance vs. Drain Current

Typical Performance Characteristics

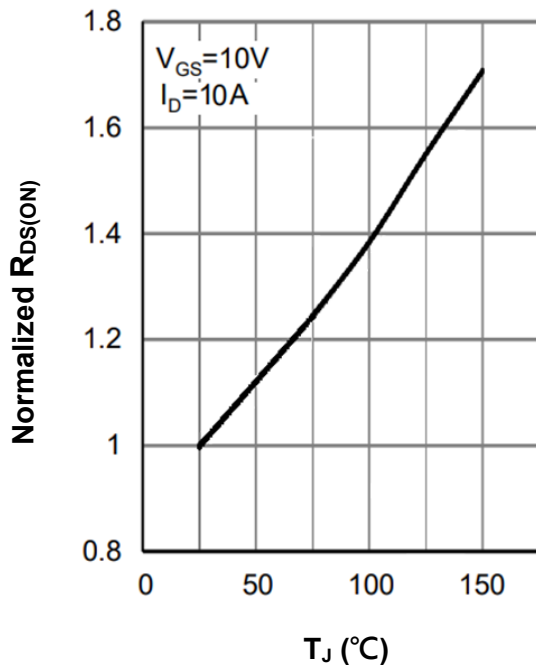


FIG.5 Normalized On-Resistance vs. T_J

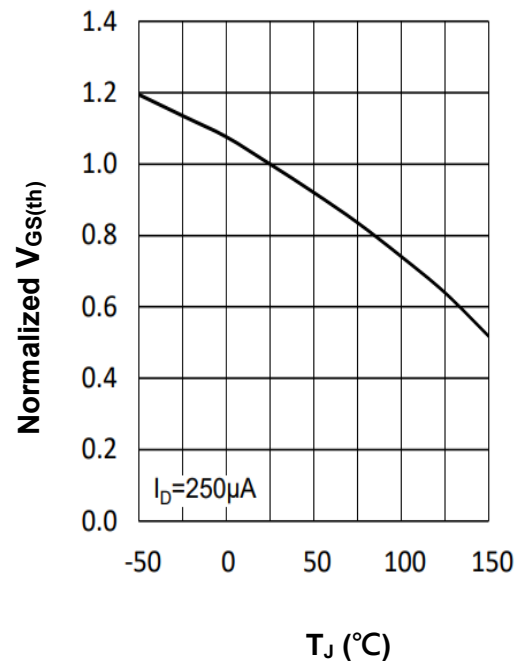


FIG.6 Normalized $V_{GS(th)}$ vs. T_J

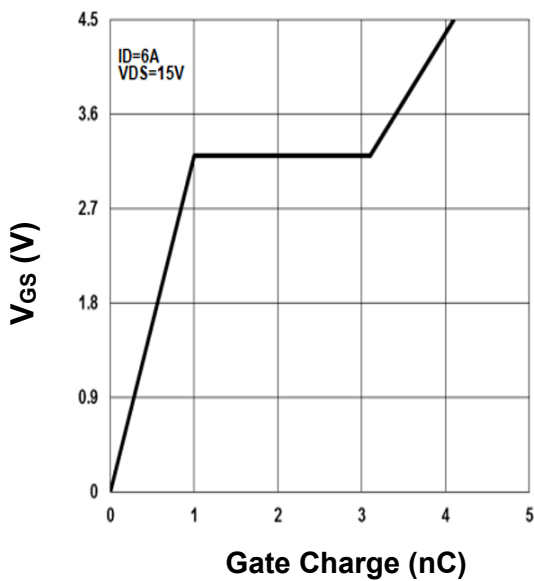


FIG.7 Gate Charge Characteristics

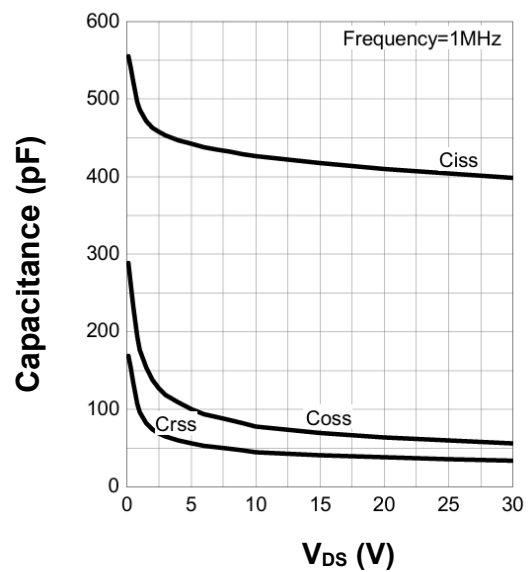
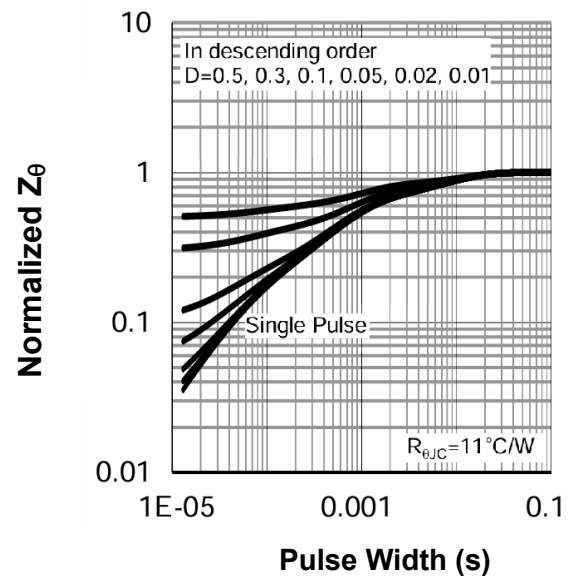
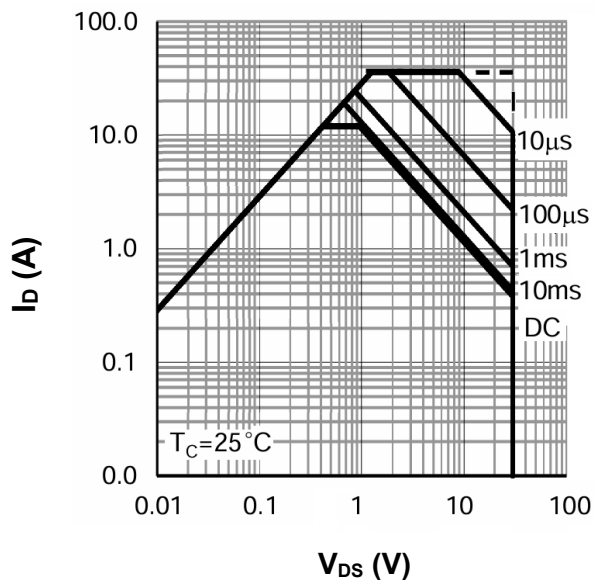


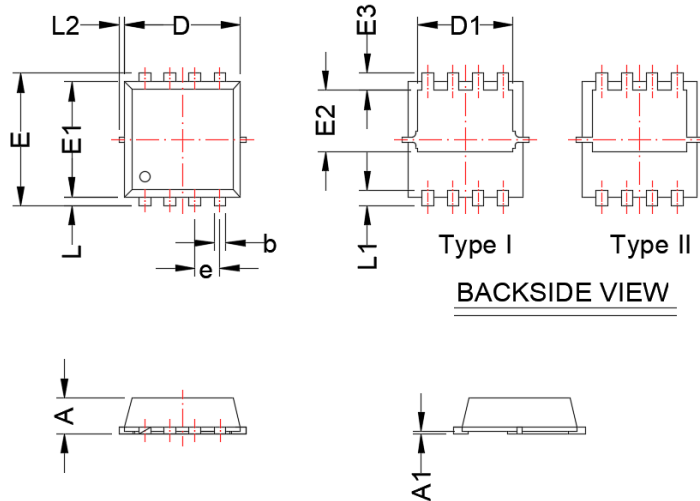
FIG.8 Capacitance Characteristics

Typical Performance Characteristics

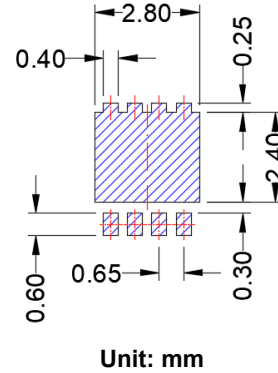


DFN3X3-8L

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 and Tie Bar extrusions.

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