

GSM3118ZF

30V N-Channel MOSFETs

Product Description

These N-Channel enhancement mode power field effect transistors are 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.

These devices are well suited for high efficiency fast switching applications.

Features

- 30V, 7.1A, $R_{DS(ON)}=21m\Omega@V_{GS}=10V$
- Improved dv/dt capability
- Fast switching
- 100% EAS guaranteed
- Green Device Available
- DFN3X3-8L package design

Applications

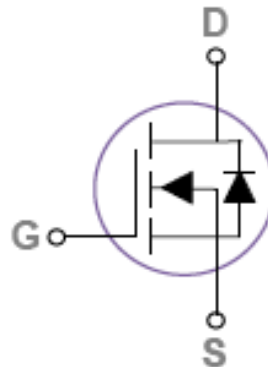
- MB / VGA / Vcore
- Load Switch
- Hand-Held Instrument

Packages & Pin Assignments

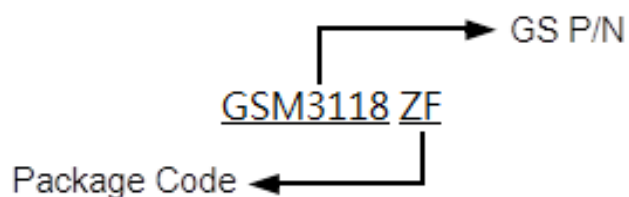
GSM3118ZF (DFN3X3-8L)



Pin	Description
1	Source
2	Source
3	Source
4	Gate
5	Drain
6	Drain
7	Drain
8	Drain

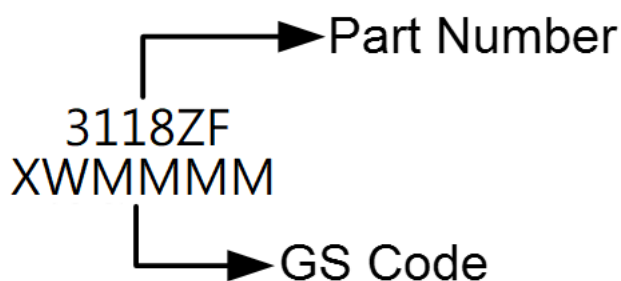


Ordering Information



Part Number	Package	Quantity
GSM3118ZF	DFN3X3-8L	5000PCS

Marking Information



Absolute Maximum Ratings

T_C=25°C Unless otherwise noted

Symbol	Parameter		Typical	Unit
V _{DS}	Drain-Source Voltage		30	V
V _{GS}	Gate-Source Voltage		±20	V
I _D	Continuous Drain Current	T _A =25°C	7.1	A
		T _A =100°C	4.4	
I _{DM}	Pulsed Drain Current ¹		30	A
EAS	Single Pulse Avalanche Energy ²		8.1	mJ
IAS	Single Pulse Avalanche Current ²		12.8	A
P _D	Power Dissipation	T _A =25°C	1.6	W
		T _A =100°C	0.63	
T _J	Operating Junction Temperature Range		-55 to +150	°C
T _{STG}	Storage Temperature Range		-55 to +150	°C
R _{θJA}	Thermal Resistance-Junction to Ambient		80	°C/W

Electrical Characteristics

T_J=25°C Unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	30			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1.2	1.6	2.5	V
I _{GSS}	Gate-Source Leakage Current	V _{DS} =0V, V _{GS} =±20V			±100	nA
I _{DSS}	Drain-Source Leakage Current	V _{DS} =30V, V _{GS} =0V			1	uA
		V _{DS} =24V, V _{GS} =0V, T _J =55°C			10	
I _S	Continuous Source Current	V _G =V _D =0V, Force Current			25	A
I _{SM}	Pulsed Source Current				100	
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
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =1A			1	V
Dynamic						
Q _g	Total Gate Charge ^{3,4}	V _{DS} =15V, V _{GS} =4.5V, I _D =6A		4.1	8	nC
Q _{gs}	Gate-Source Charge ^{3,4}			1.3	2.1	
Q _{gd}	Gate-Drain Charge ^{3,4}			2.1	3	
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	
t _{d(on)}	Turn-On Time ^{3,4}	V _{DD} =15V, I _D =1A, V _{GS} =10V, R _G =6Ω		6	10	ns
t _r				10	19	
t _{d(off)}	Turn-Off Time ^{3,4}			15.8	30	
t _f				4.6	9	
R _g	Gate Resistance	V _{GS} =0V, V _{DS} =0V, f=1MHz		3.2	6.4	Ω

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=12A, R_G=25 Ω, Starting T_J=25°C.
3. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
4. Essentially independent of operating temperature.

Typical Performance Characteristics

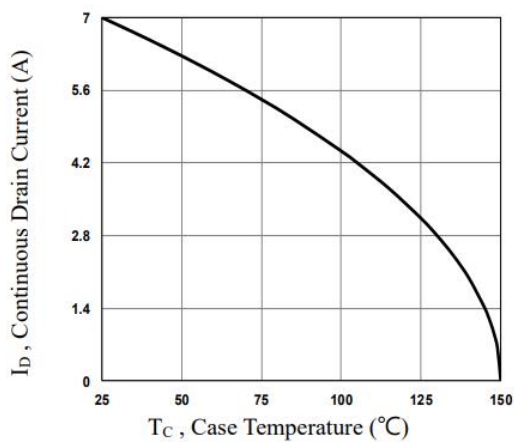


Fig.1 Continuous Drain Current vs. T_C

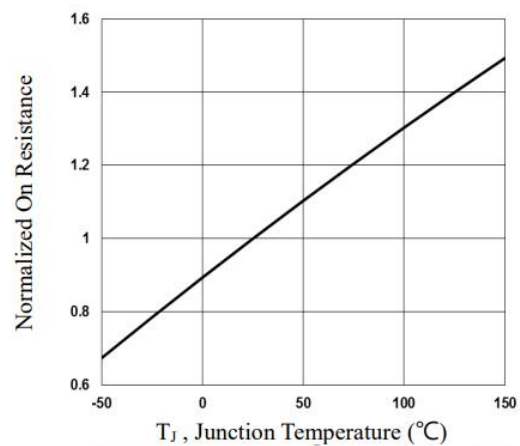


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

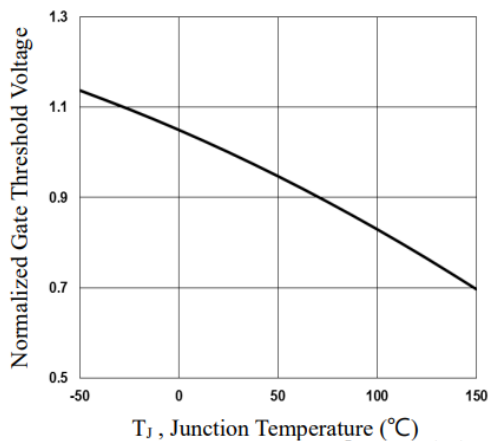


Fig.3 Normalized V_{th} vs. T_J

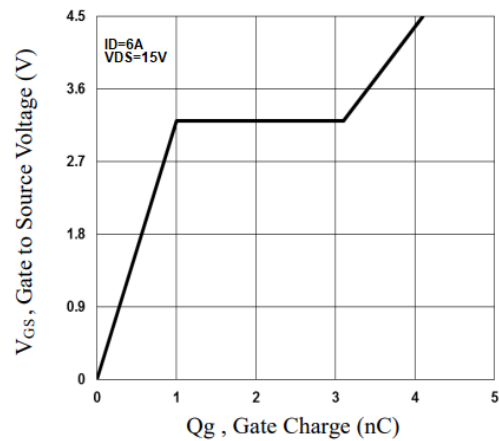


Fig.4 Gate Charge Waveform

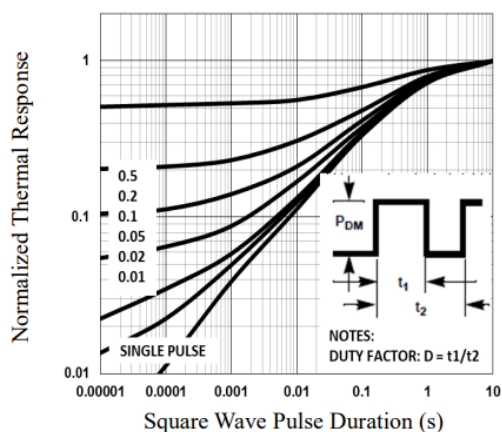


Fig.5 Normalized Transient Response

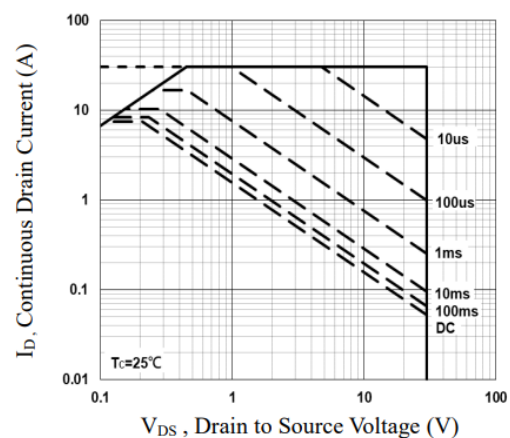
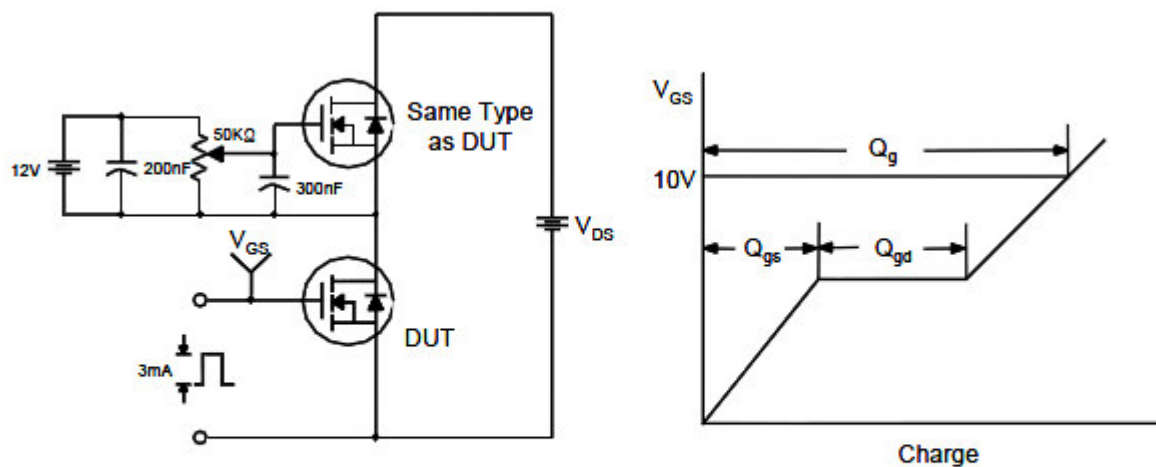


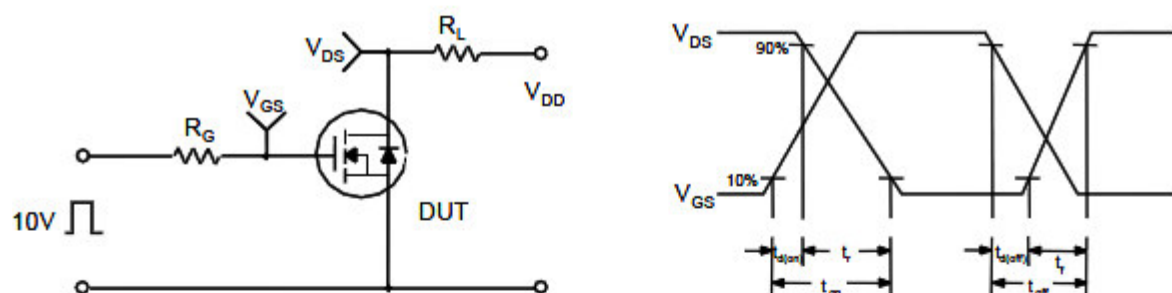
Fig.6 Maximum Safe Operation Area

Typical Performance Characteristics (Continue)

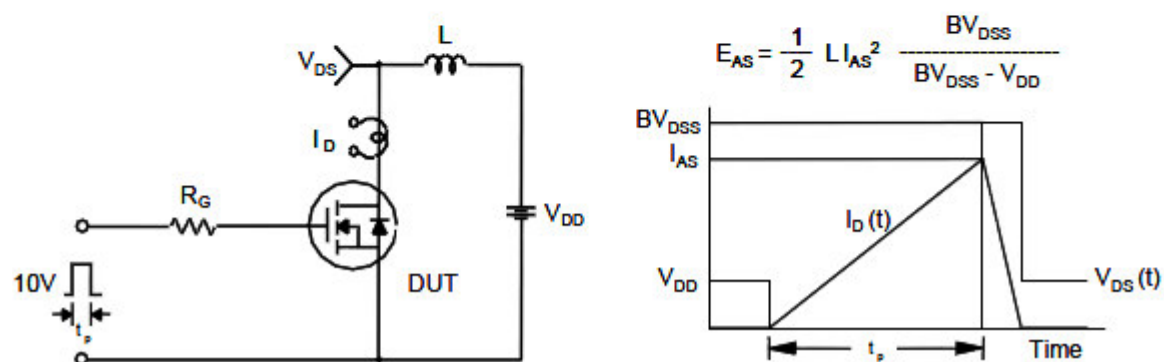
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

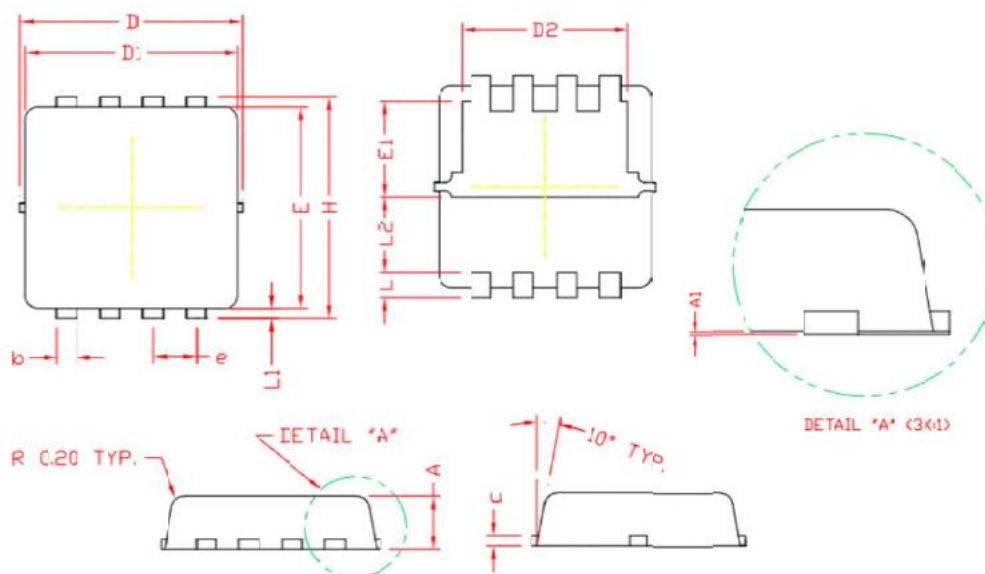


Unclamped Inductive Switching Test Circuit & Waveforms



Package Dimension

DFN3x3-8L



Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.700	0.900	0.028	0.035
A1	0.000	0.050	0.000	0.002
b	0.240	0.350	0.010	0.014
c	0.100	0.200	0.004	0.008
D	3.250	3.400	0.128	0.134
D1	3.050	3.250	0.120	0.020
D2	2.400	2.600	0.095	0.102
E	3.000	3.200	0.118	0.126
E1	1.350	1.550	0.053	0.061
e	0.650 BSC		0.026 BSC	
H	3.200	3.400	0.126	0.134
L	0.300	0.500	0.012	0.020
L1	0.100	0.200	0.004	0.008
L2	1.130 REF		0.045 REF	

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