

GSM3118JZF

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.

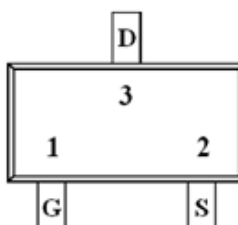
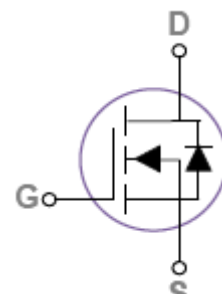
Features

- 30V, 5.9A, $R_{DS(ON)}=24m\Omega@V_{GS}=10V$
- Improved dv/dt capability
- Fast switching
- Green Device Available
- SOT-23 package design

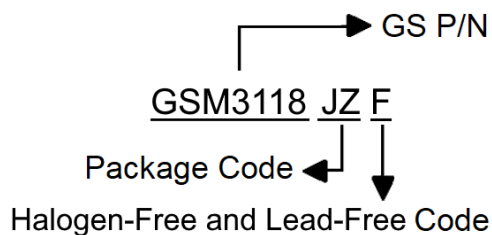
Applications

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

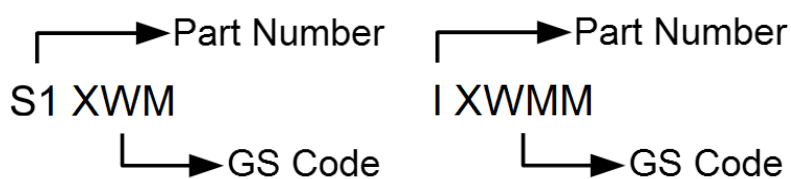
Packages & Pin Assignments

GSM3118JZF (SOT-23)	
 <p>Top Views</p>	
	
Pin	Description
1	Gate
2	Source
3	Drain

Ordering Information



Marking Information



Part Number	Package	Part Marking	Quantity
GSM3118JZF	SOT-23	S1XWM/ IXWMM	3000pcs

Absolute Maximum Ratings

$T_A=25^{\circ}\text{C}$ 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	$T_A=25^{\circ}\text{C}$	5.9
		$T_A=100^{\circ}\text{C}$	3.7
I_{DM}	Pulsed Drain Current	23	A
EAS	Single Pulse Avalanched Energy	3.2	mJ
IAS	Single Pulse Avalanched Current	8	A
P_D	Power Dissipation	$T_A=25^{\circ}\text{C}$	1.25
	Power Dissipation	$T_A=100^{\circ}\text{C}$	0.5
T_J	Operating Junction Temperature Range	-55 to +150	$^{\circ}\text{C}$
T_{STG}	Storage Temperature Range	-55 to +150	$^{\circ}\text{C}$
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	100	$^{\circ}\text{C}/\text{W}$

Electrical Characteristics

T_A=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 =250μA	30			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1.2	1.6	2.5	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±20V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =30V, V _{GS} =0V			1	μA
		V _{DS} =24V, V _{GS} =0V, T _J =125°C			10	
I _S	Continuous Source Current	V _G =V _D =0V, Force Current			6.5	A
I _{SM}	Pulsed Source Current				26	
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =10V, I _D =5A		21	24	mΩ
		V _{GS} =4.5V, I _D =4A		26	30	
g _{FS}	Forward Transconductance	V _{DS} =10V, I _D =4A		6.5		S
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =1A			1	V
Dynamic						
Q _g	Total Gate Charge	V _{DS} =15V, V _{GS} =4.5V, I _D =5.9A		4.1	8	nC
Q _{gs}	Gate-Source Charge			1	2	
Q _{gd}	Gate-Drain Charge			2.1	4	
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz		345	500	pF
C _{oss}	Output Capacitance			55	80	
C _{rss}	Reverse Transfer Capacitance			32	45	
t _{d(on)}	Turn-On Time	V _{DD} =15V, I _D =1A, V _{GS} =10V, R _G =6Ω		2.8	5	ns
t _r				7.2	14	
t _{d(off)}	Turn-Off Time			15.8	30	
t _f				4.6	9	
R _g	Gate Resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz		3.2	6.4	Ω

Typical Performance Characteristics

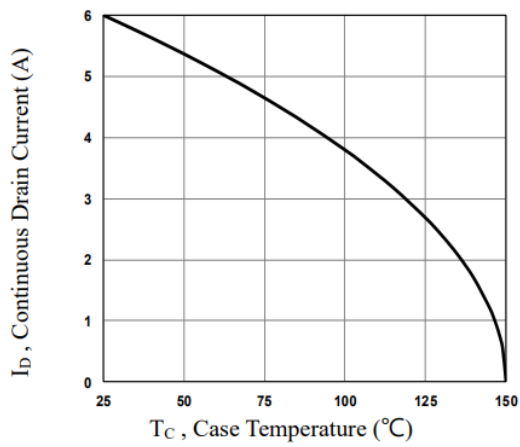


Fig. 1 Continuous Drain Current vs. T_C

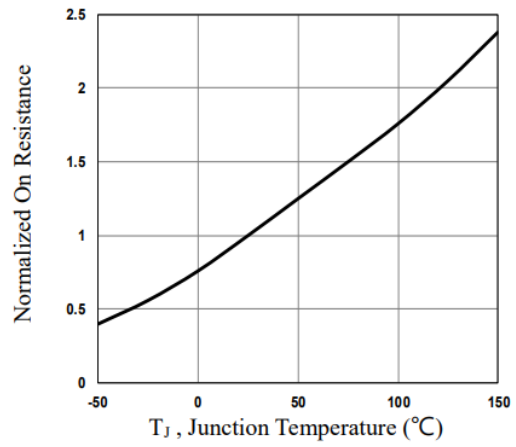


Fig. 2 Normalized $R_{DS(ON)}$ vs. T_J

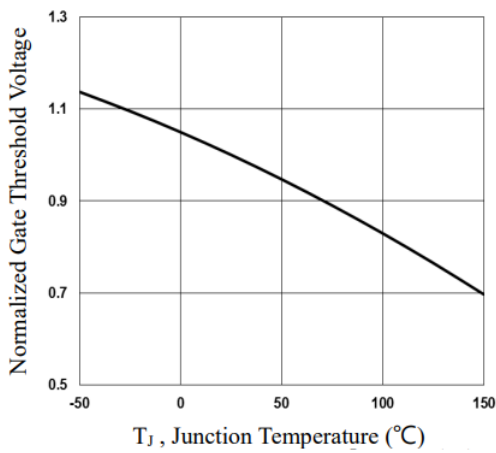


Fig. 3 Normalized V_{TH} vs. T_J

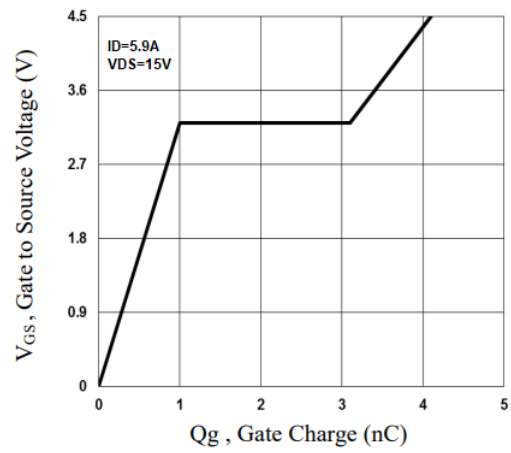


Fig. 4 Gate Charge Waveform

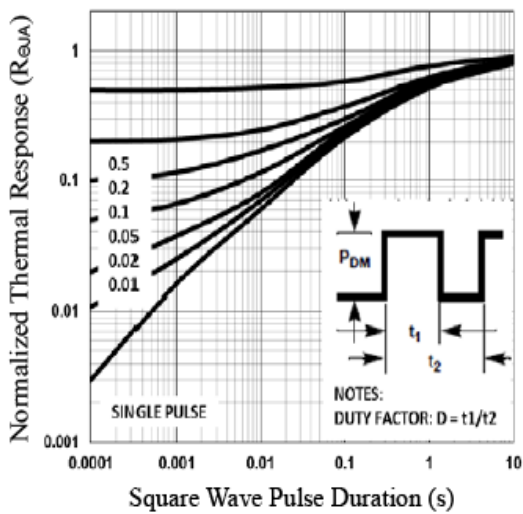


Fig. 5 Normalized Transient Response

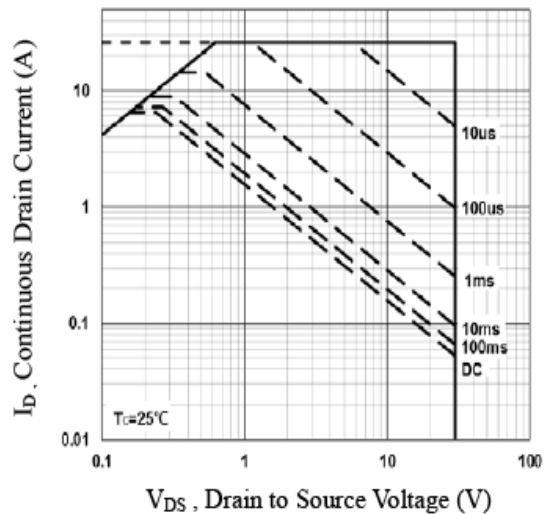
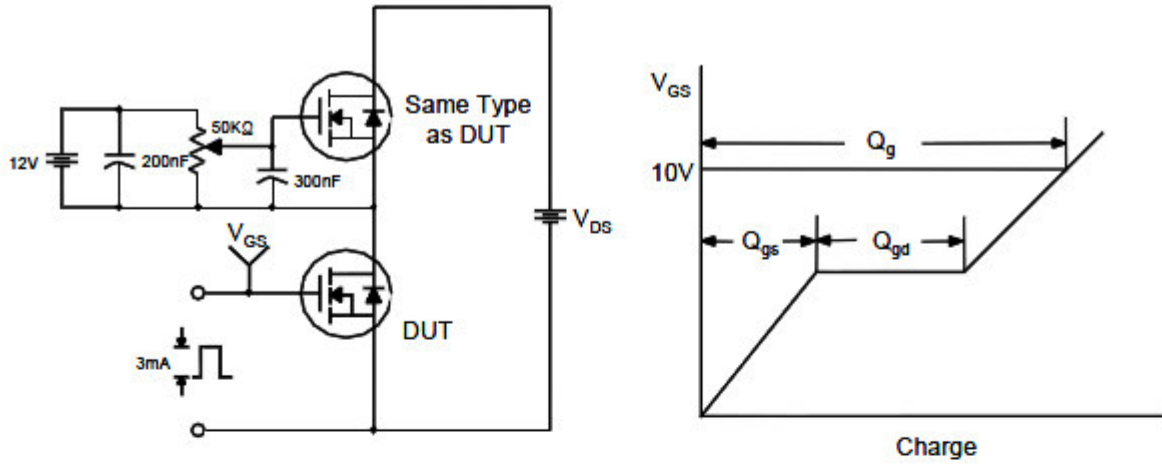


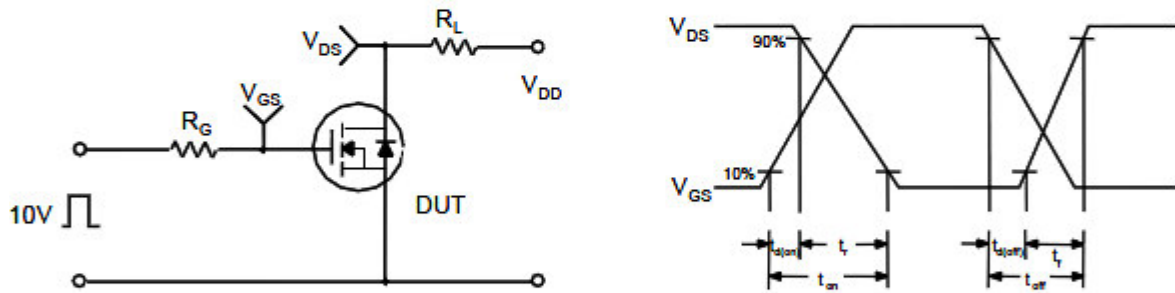
Fig. 6 Maximum Safe Operation Area

Typical Performance Characteristics (Continue)

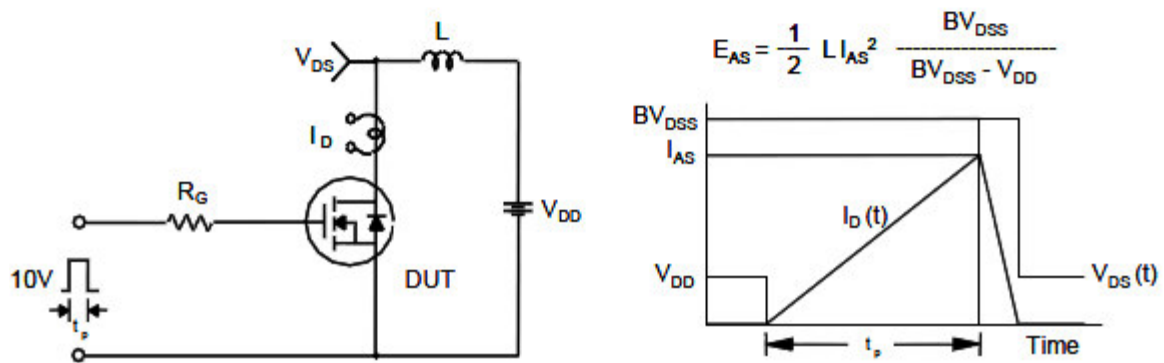
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

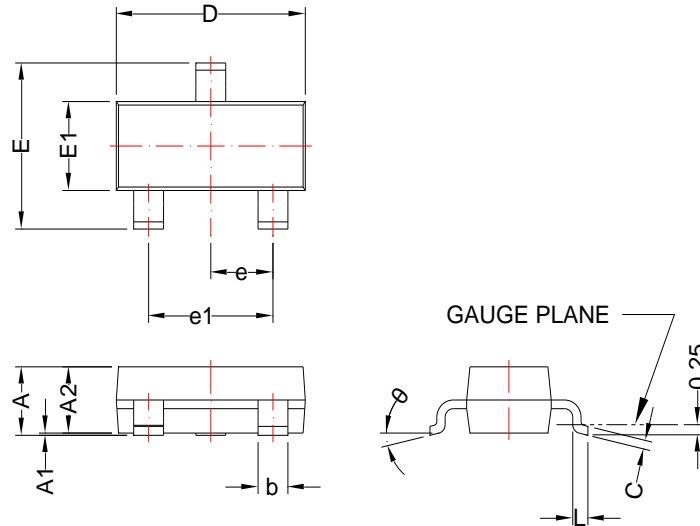


Unclamped Inductive Switching Test Circuit & Waveforms



Package Dimension

SOT-23



DIMENSION D DOES NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS. MOLD FLASH, PROTRUSIONS OR GATE BURRS SHALL NOT EXCEED 0.25mm PER INTERLEAD FLASH OR PROTRUSION SHALL NOT EXCEED 0.25mm PER SIDE.

Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.75	1.17	0.030	0.046
A1	0.01	0.15	0.000	0.006
A2	0.70	1.02	0.028	0.040
b	0.30	0.50	0.012	0.020
c	0.08	0.20	0.003	0.008
D	2.80	3.04	0.110	0.120
E	2.10	2.64	0.083	0.104
E1	1.20	1.40	0.047	0.055
e	0.95 BSC		0.037 BSC	
e1	1.90 BSC		0.075 BSC	
L	0.3	0.6	0.012	0.024
θ	0°	8°	0°	8°





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