

# 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.

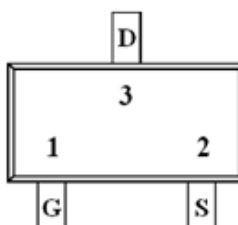
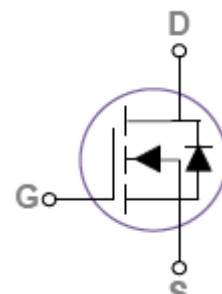
### Features

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

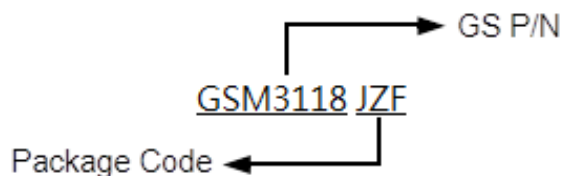
### Applications

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

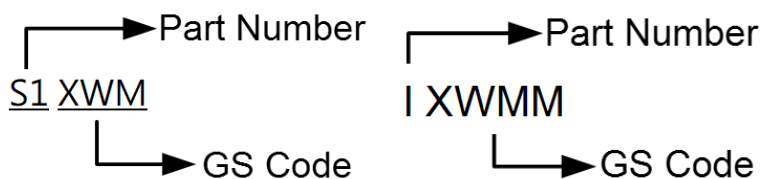
### Packages & Pin Assignments

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

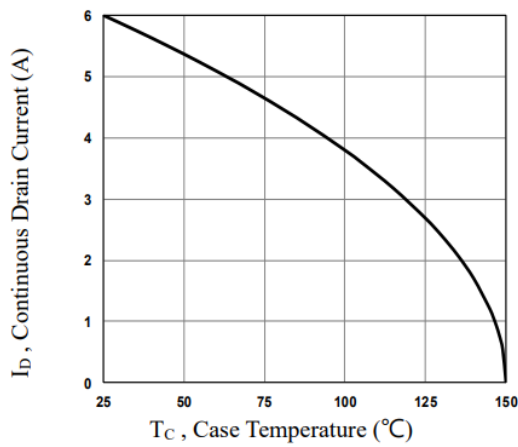
Symbol	Parameter	Typical	Unit
$V_{DS}$	Drain-Source Voltage	30	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D$	Continuous Drain Current	$T_A=25^{\circ}\text{C}$	5.9
		$T_A=100^{\circ}\text{C}$	3.7
$I_{DM}$	Pulsed Drain Current	23	A
EAS	Single Pulse Avalanched Energy	3.2	mJ
IAS	Single Pulse Avalanched 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

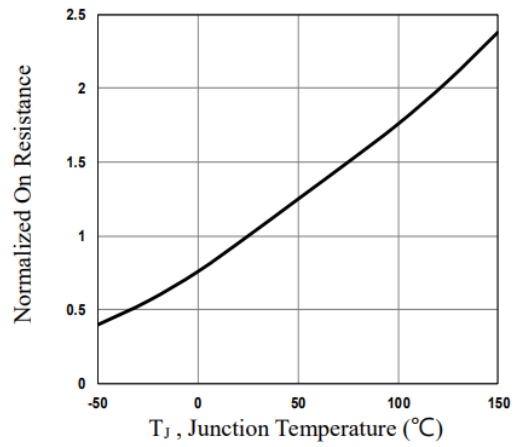
T<sub>A</sub>=25°C Unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static</b>						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	30			V
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA	1.2	1.6	2.5	V
I <sub>GSS</sub>	Gate Leakage Current	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V			±100	nA
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V			1	uA
		V <sub>DS</sub> =24V, V <sub>GS</sub> =0V, T <sub>J</sub> =125°C			10	
I <sub>S</sub>	Continuous Source Current	V <sub>G</sub> =V <sub>D</sub> =0V, Force Current			6.5	A
I <sub>SM</sub>	Pulsed Source Current				26	
R <sub>DS(on)</sub>	Drain-Source On-Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =5A		21	24	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =4A		26	30	
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =10V, I <sub>D</sub> =4A		6.5		S
V <sub>SD</sub>	Diode Forward Voltage	V <sub>GS</sub> =0V, I <sub>S</sub> =1A			1	V
<b>Dynamic</b>						
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =15V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =5.9A		4.1	8	nC
Q <sub>gs</sub>	Gate-Source Charge			1	2	
Q <sub>gd</sub>	Gate-Drain Charge			2.1	4	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, f=1MHz		345	500	pF
C <sub>oss</sub>	Output Capacitance			55	80	
C <sub>rss</sub>	Reverse Transfer Capacitance			32	45	
t <sub>d(on)</sub>	Turn-On Time	V <sub>DD</sub> =15V, I <sub>D</sub> =1A, V <sub>GS</sub> =10V, R <sub>G</sub> =6Ω		2.8	5	ns
t <sub>r</sub>				7.2	14	
t <sub>d(off)</sub>	Turn-Off Time			15.8	30	
t <sub>f</sub>				4.6	9	
R <sub>g</sub>	Gate Resistance		V <sub>DS</sub> =0V, V <sub>GS</sub> =0V, f=1MHz		3.2	

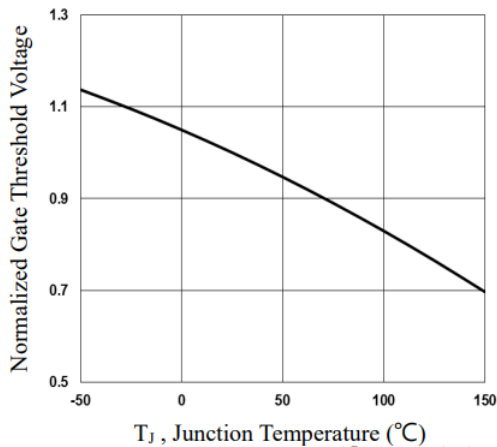
## Typical Performance Characteristics



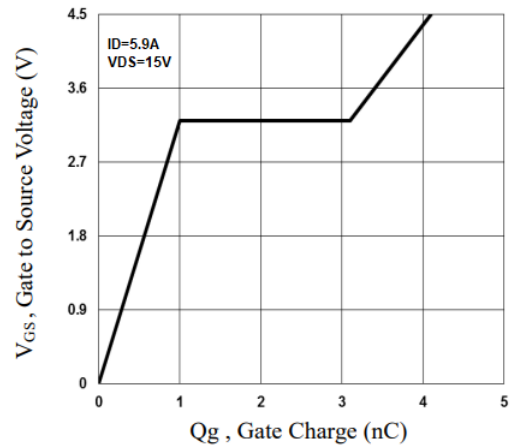
**Fig.1 Continuous Drain Current vs.  $T_c$**



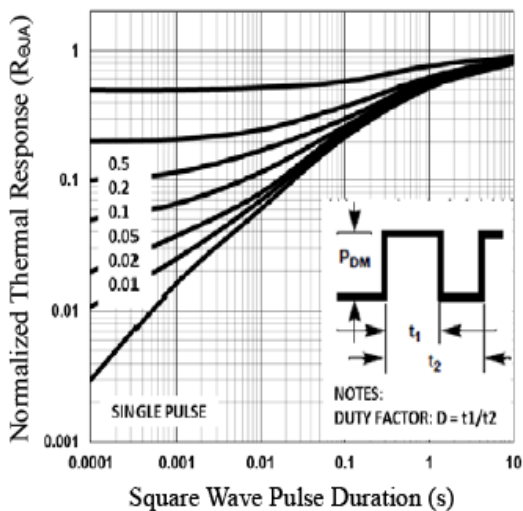
**Fig.2 Normalized  $R_{DS(on)}$  vs.  $T_j$**



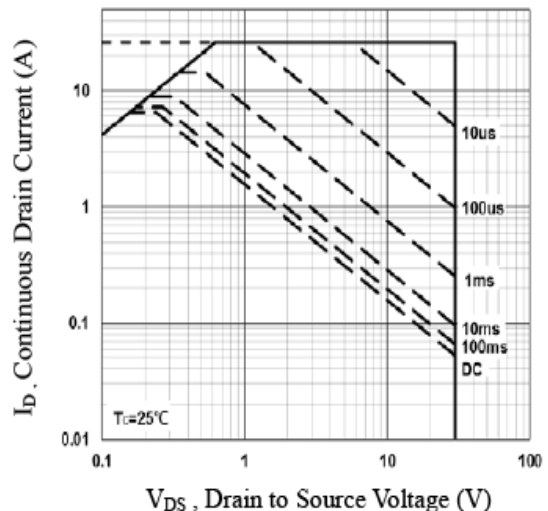
**Fig.3 Normalized  $V_{th}$  vs.  $T_j$**



**Fig.4 Gate Charge Waveform**



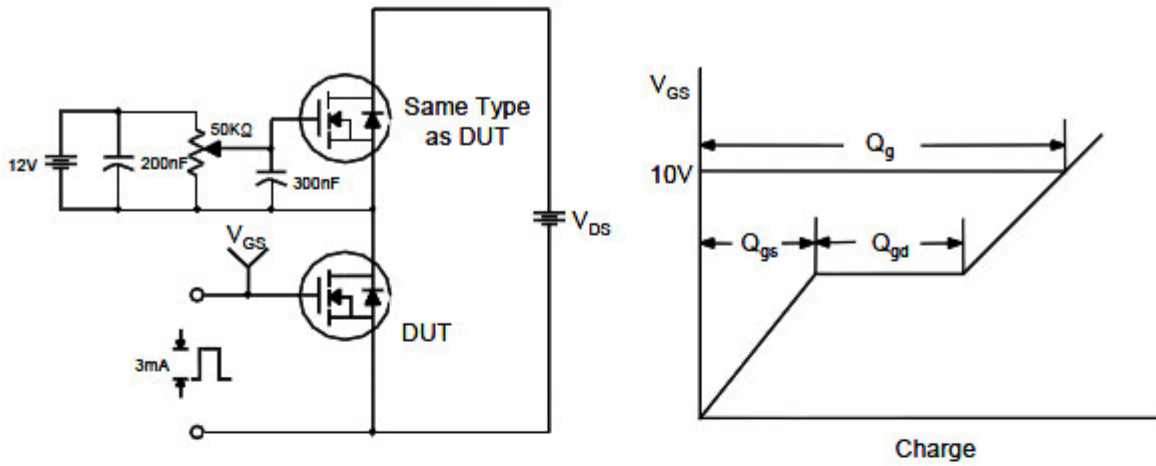
**Fig.5 Normalized Transient Response**



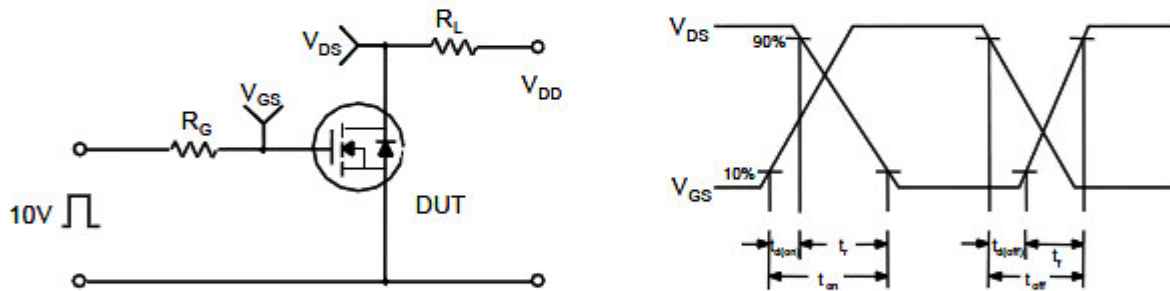
**Fig.6 Maximum Safe Operation Area**

## Typical Performance Characteristics (Continue)

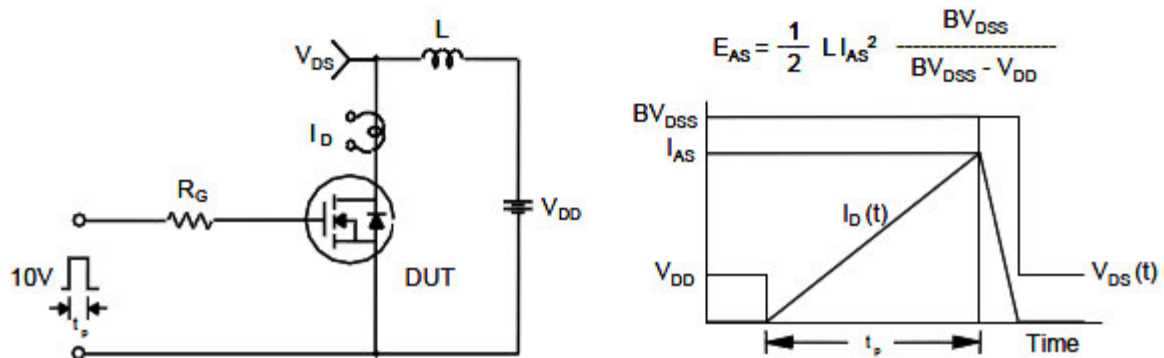
### Gate Charge Test Circuit & Waveform



### Resistive Switching Test Circuit & Waveforms

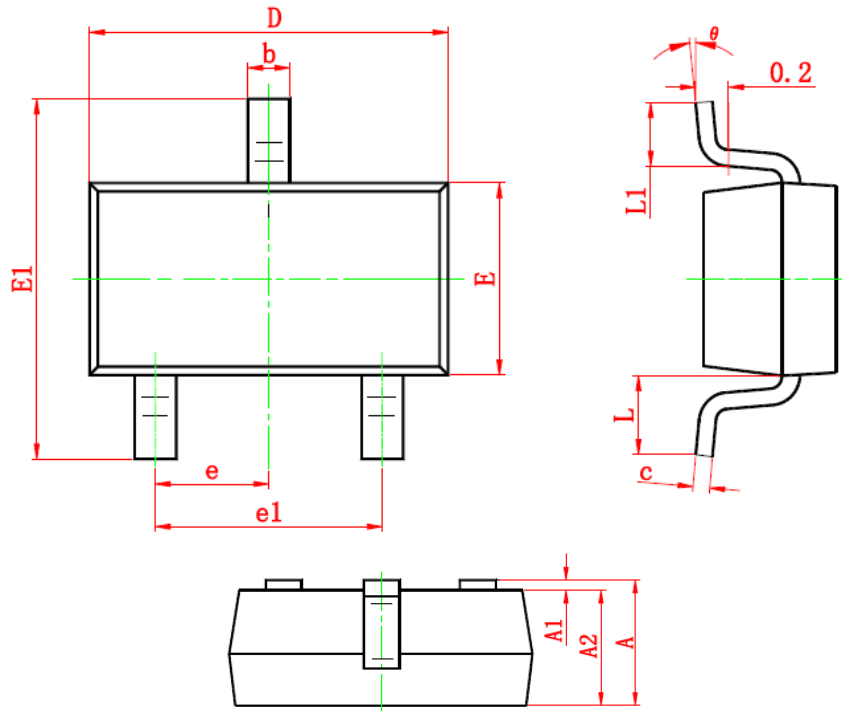


### Unclamped Inductive Switching Test Circuit & Waveforms



## Package Dimension

### SOT-23









Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
<b>A</b>	0.900	1.200	0.035	0.043
<b>A1</b>	0.000	0.100	0.000	0.004
<b>A2</b>	0.900	1.100	0.035	0.039
<b>b</b>	0.300	0.500	0.012	0.020
<b>c</b>	0.080	0.150	0.003	0.006
<b>D</b>	2.800	3.000	0.110	0.118
<b>E</b>	1.200	1.400	0.047	0.055
<b>E1</b>	2.250	2.550	0.089	0.100
<b>e</b>	0.950 TYP		0.037 TYP	
<b>e1</b>	1.800	2.000	0.071	0.079
<b>L</b>	0.550 REF		0.022 REF	
<b>L1</b>	0.300	0.500	0.012	0.020
<b>θ</b>	0°	8°	0°	6°

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