

# GSM3218SF

## 30V Dual 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, 7.3A,  $R_{DS(ON)}=22m\Omega@V_{GS}=10V$
- Improved dv/dt capability
- Fast switching
- 100% EAS Guaranteed
- Green Device Available
- SOP-8 package design

### Applications

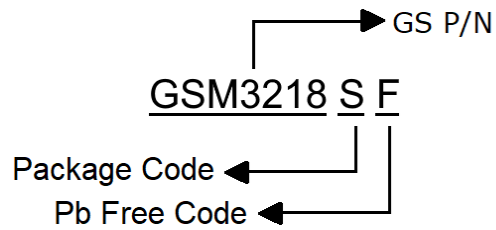
- MB / VGA / Vcore
- POL Applications
- SMPS 2nd SR

### Packages & Pin Assignments

**GSMS3218SF (SOP-8)**

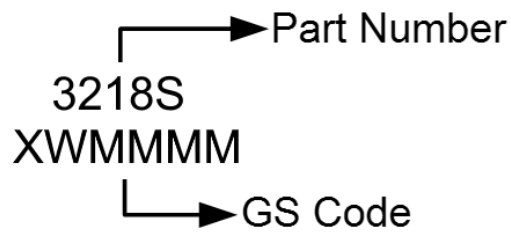
Pin No	Description	Pin No	Description
1	Source 1	5	Drain 2
2	Gate 1	6	Drain 2
3	Source 2	7	Drain 1
4	Gate 2	8	Drain 1

## Ordering Information



Part Number	Package	Quantity Reel
GSMS3218SF	SOP-8	4000 PCS

## Marking Information



## Absolute Maximum Ratings

$T_A=25^{\circ}\text{C}$  Unless otherwise noted

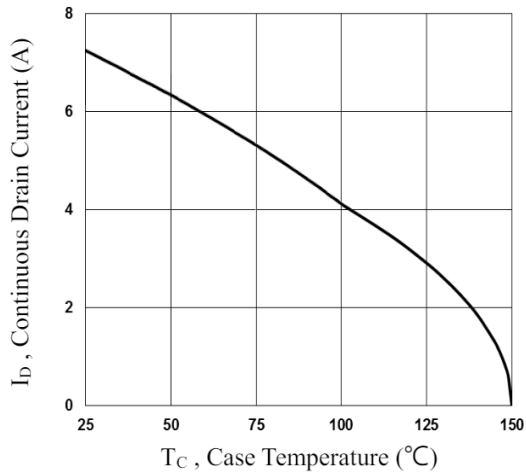
Symbol	Parameter	Typical	Unit
$V_{DS}$	Drain-Source Voltage	30	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D$	Continuous Drain Current	$T_A=25^{\circ}\text{C}$	7.3
		$T_A=100^{\circ}\text{C}$	3.3
$I_{DM}$	Pulsed Drain Current	29	A
EAS	Single Pulse Avalanche Energy	32	mJ
IAS	Single Pulse Avalanche Current	8	A
$P_D$	Power Dissipation	$T_A=25^{\circ}\text{C}$	1.8
		$T_A=100^{\circ}\text{C}$	0.4
$T_J$	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	70	$^{\circ}\text{C}/\text{W}$

## Electrical Characteristics

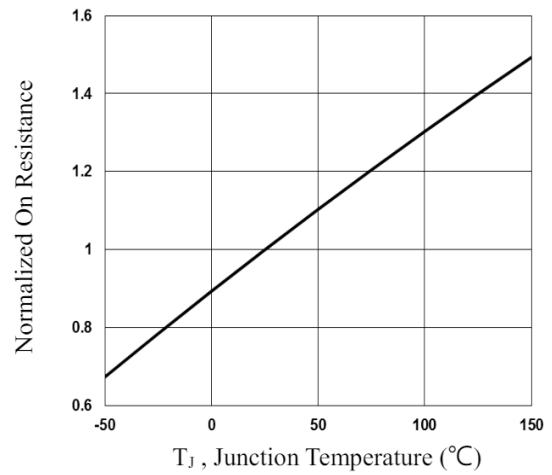
T<sub>A</sub>=25°C Unless otherwise noted

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	
R <sub>DS(on)</sub>	Drain-Source On-Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =7A		19	22	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =5A		24	28	
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> =7A		4.1	6	nC
Q <sub>gs</sub>	Gate-Source Charge			1	1.4	
Q <sub>gd</sub>	Gate-Drain Charge			2.1	4	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =15V, 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	

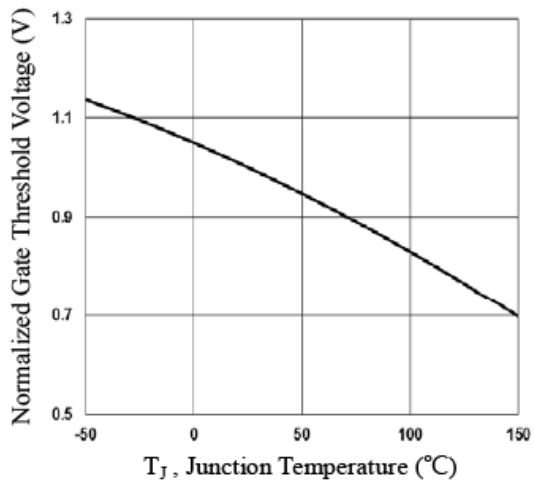
## Typical Performance Characteristics



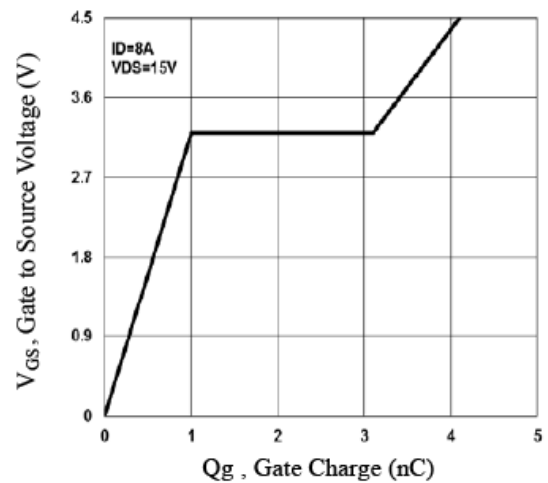
**Fig.1 Continuous Drain Current vs.  $T_C$**



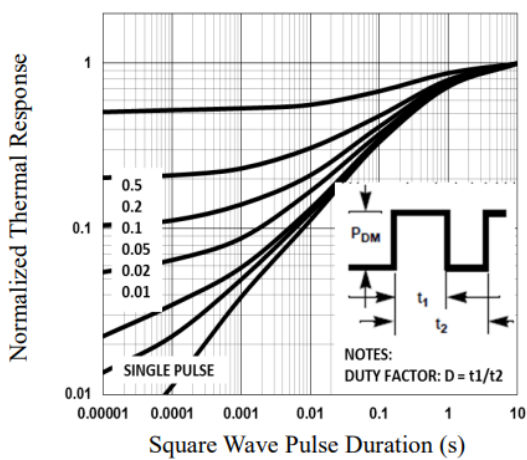
**Fig.2 Normalized  $R_{DS(on)}$  vs.  $T_J$**



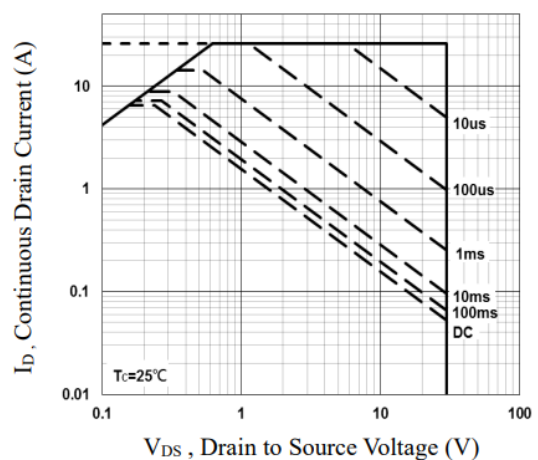
**Fig.3 Normalized  $V_{th}$  vs.  $T_J$**



**Fig.4 Gate Charge Waveform**



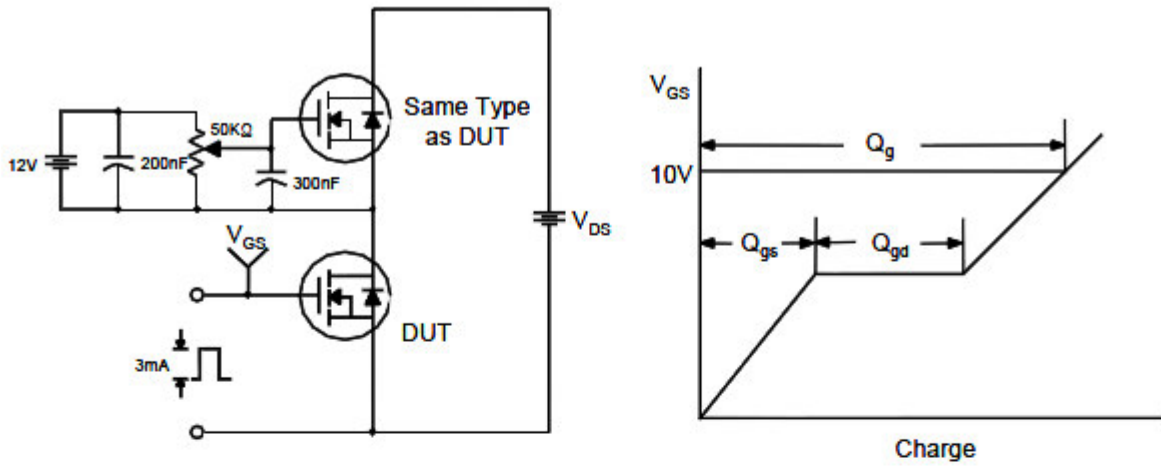
**Fig.5 Normalized Transient Response**



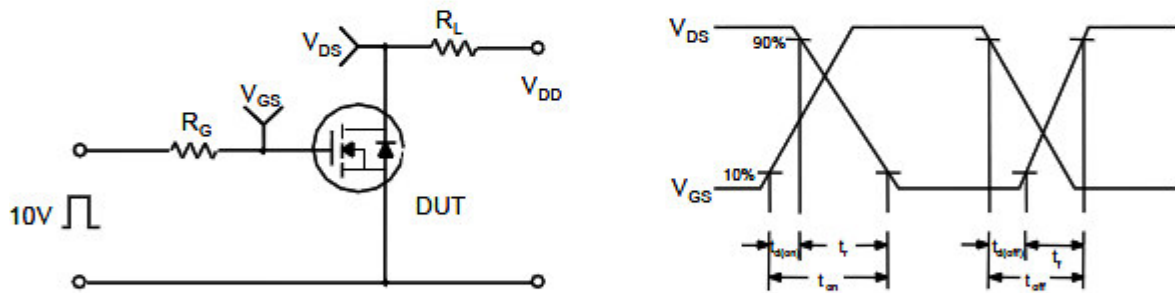
**Fig.6 Maximum Safe Operation Area**

## Typical Performance Characteristics (Continue)

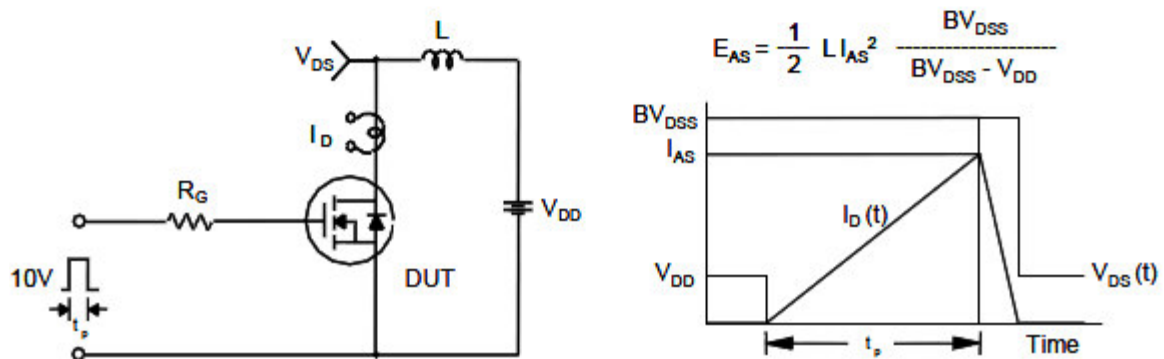
### Gate Charge Test Circuit & Waveform



### Resistive Switching Test Circuit & Waveforms

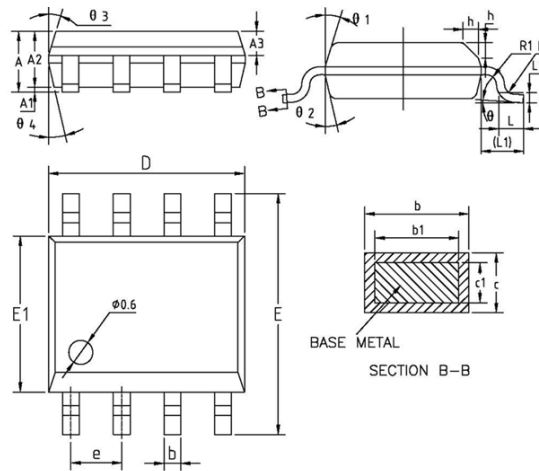


### Unclamped Inductive Switching Test Circuit & Waveforms



## Package Dimension

### SOP-8







### Dimensions



Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.531	0.689
A1	0.100	0.250	0.039	0.098
A2	1.250	1.650	0.492	0.650
A3	0.500	0.700	0.197	0.276
b	0.380	0.510	0.150	0.201
b1	0.370	0.470	0.146	0.185
c	0.180	0.250	0.071	0.098
c1	0.170	0.230	0.067	0.091
D	4.800	5.000	1.890	1.969
E	5.800	6.200	2.283	2.441
E1	3.800	4.000	1.496	1.575
e	1.170	1.370	0.461	0.539
L	0.450	0.800	0.177	0.315
L1	1.040 (BSC)		0.409 (BSC)	
L2	0.250 (BSC)		0.098 (BSC)	
R/ R1	0.070	-	0.028	-
h	0.300	0.500	0.118	0.197
$\theta$	0°	8°	0°	8°

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