

GSM2218R

20V Dual N-Channel MOSFETs

Product Description

These dual 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.

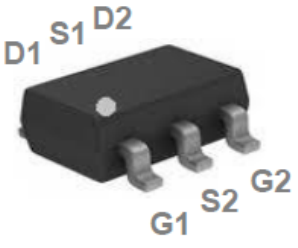
Features

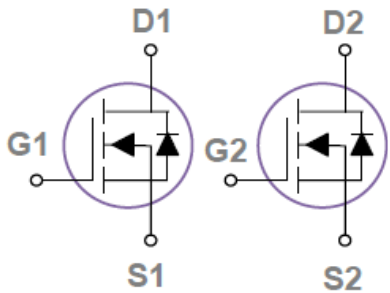
- 20V, 3.6A, $R_{DS(ON)}=53m\Omega@V_{GS}=4.5V$
- Improved dv/dt capability
- Fast switching
- Suit for 1.8V Gate Drive Applications
- Green Device Available

Applications

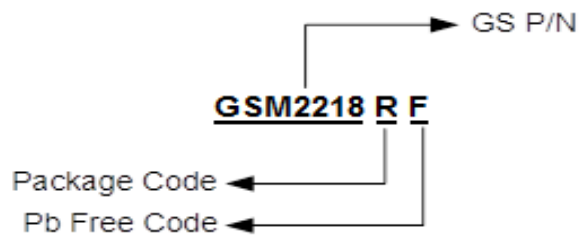
- Notebook
- Load Switch
- Hand-Held instruments

Packages & Pin Assignments

GSM2218RF (SOT-23-6L)			
 <p>Top Views</p>			
Pin	Description	Pin	Description
1	Gate 1	4	Drain 2
2	Source 2	5	Source 1
3	Gate 2	6	Drain 1

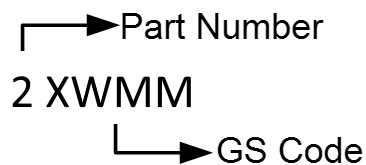


Ordering Information



Part Number	Package	Part Marking	Quantity
GSM2218RF	SOT-23-6L	2XWMM	3000pcs

Marking Information



Absolute Maximum Ratings

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

Symbol	Parameter	Typical	Unit
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	± 10	V
I_D	Continuous Drain Current	$T_C=25^\circ\text{C}$	3.6
		$T_C=70^\circ\text{C}$	2.9
I_{DM}	Pulsed Drain Current ¹	14.4	A
P_D	Power Dissipation ($T_C=25^\circ\text{C}$)	1.25	W
	Power Dissipation (Derate above 25°C)	0.01	W/ $^\circ\text{C}$
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	$^\circ\text{C}/\text{W}$

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.

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	20			V
ΔBV _{DSS} /ΔT _J	BV _{DSS} Temperature Coefficient	Reference to 25°C, I _D =1mA		0.02		V/°C
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	0.3	0.5	1.0	V
ΔV _{GS(th)}	V _{GS(th)} Temperature Coefficient			2		mV/°C
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±10V			±100	uA
I _{DSS}	Drain Current Leakage Current	V _{DS} =20V, V _{GS} =0V T _J =25°C			1	uA
		V _{DS} =16V, V _{GS} =0V, T _J =125°C			10	
I _S	Continuous Source Current	V _G =V _D =0V, Force Current			3.6	A
I _{SM}	Pulsed Source Current				7.2	
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =4.5V, I _D =3A		44	53	mΩ
		V _{GS} =2.5V, I _D =2A		60	75	
		V _{GS} =1.8V, I _D =1A		85	110	
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =1A			1	V

Electrical Characteristics (Continue)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Dynamic						
Q _g	Total Gate Charge ^{2,3}	V _{DS} =10V, V _{GS} =4.5V, I _D =1A		3.6	7.2	nC
Q _{gs}	Gate-Source Charge ^{2,3}			0.38	0.76	
Q _{gd}	Gate-Drain Charge ^{2,3}			0.6	1.2	
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, F=1MHz		180	360	pF
C _{oss}	Output Capacitance			32	64	
C _{rss}	Reverse Transfer Capacitance			26	52	
t _{d(on)}	Turn-On Delay Time ^{2,3}	V _{DD} =10V, I _D =1A, V _{GS} =4.5V, R _G =25Ω		1.8	5	ns
t _r	Rise Time ^{2,3}			5.6	12	
t _{d(off)}	Turn-Off Delay Time ^{2,3}			11.3	24	
t _f	Fall Time ^{2,3}			3.2	7	

Note :

- The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
- Essentially independent of operating temperature.

Typical Performance Characteristics

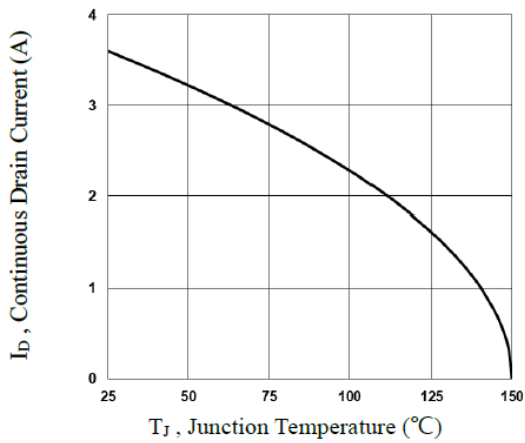


Fig.1 Continuous Drain Current vs. T_J

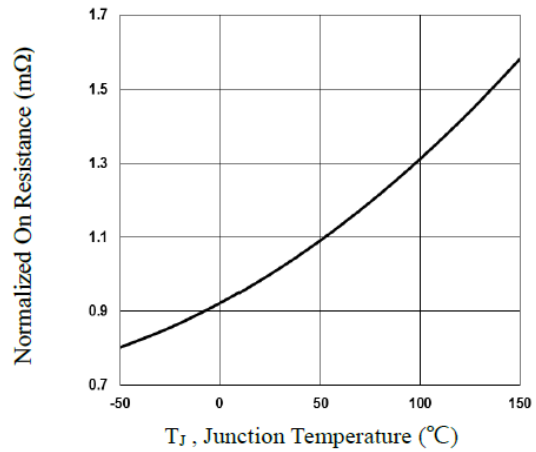


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

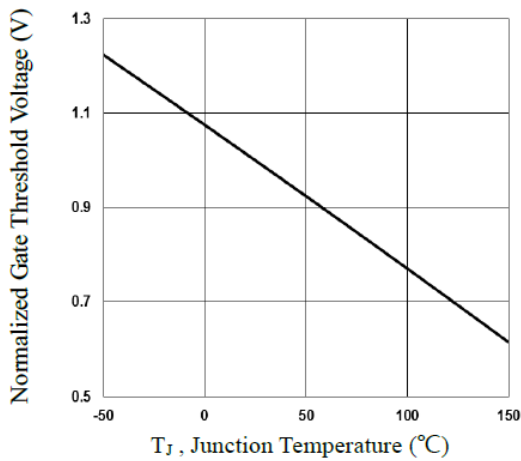


Fig.3 Normalized V_{th} vs. T_J

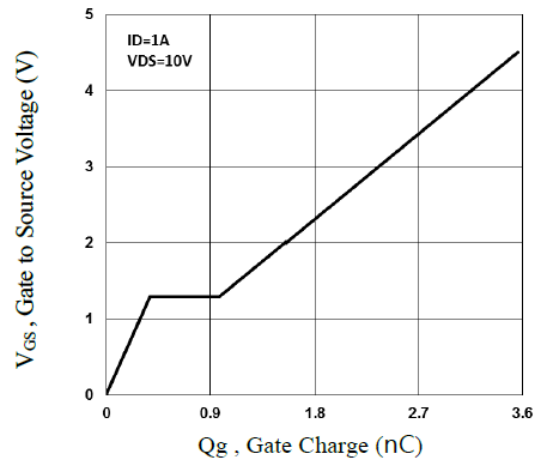


Fig.4 Gate Charge Waveform

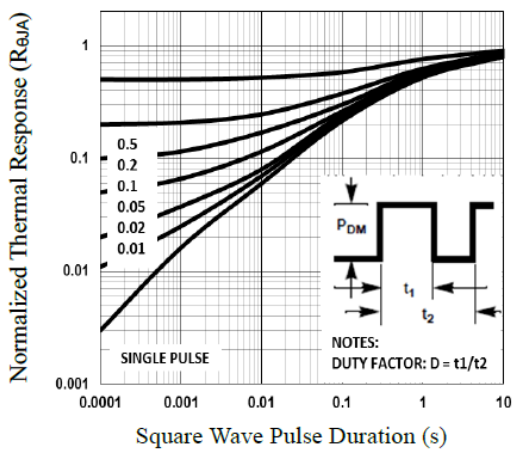


Fig.5 Normalized Transient Impedance

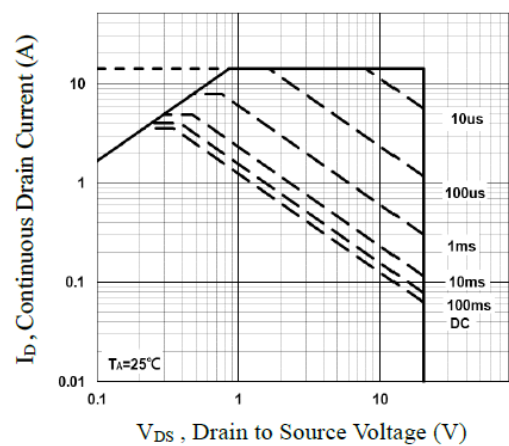


Fig.6 Maximum Safe Operation Area

Typical Performance Characteristics (Continue)

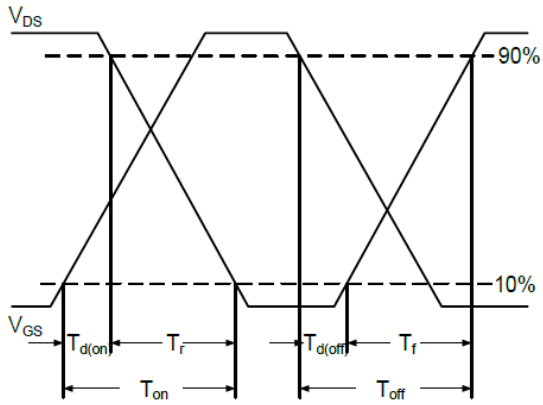


Fig.7 Switching Time Waveform

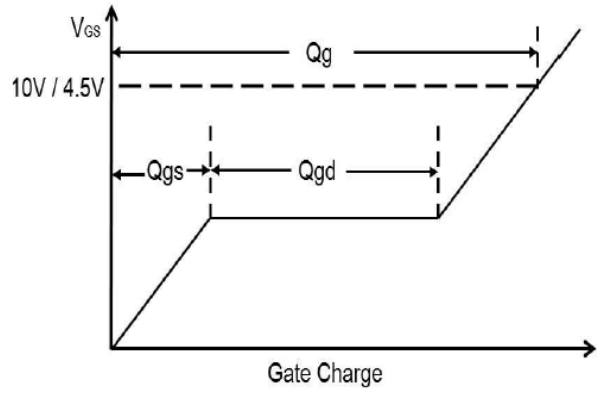
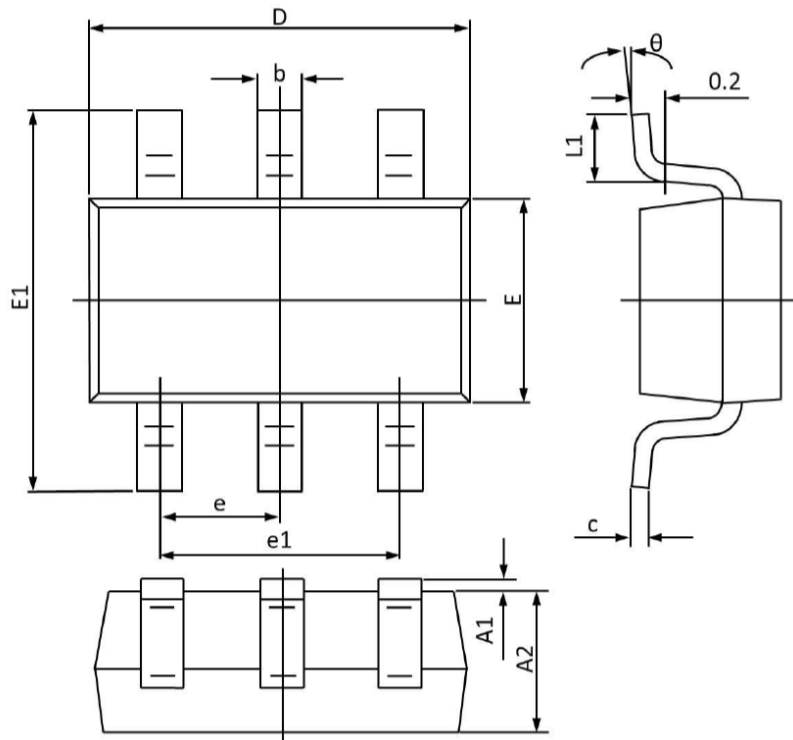


Fig.8 Gate Charge Waveform

Package Dimension

SOT-23-6L







Dimensions



Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A1	0.000	0.100	0.000	0.004
A2	1.000	1.200	0.040	0.047
b	0.300	0.500	0.012	0.019
c	0.047	0.207	0.002	0.008
D	2.800	3.000	0.110	0.118
E	1.500	1.800	0.059	0.070
E1	2.600	3.000	0.103	0.118
e	0.950 TYP		0.037 TYP	
e1	1.900 TYP		0.075 TYP	
L1	0.250	0.550	0.010	0.021
θ	0°	8°	0°	8°

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