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

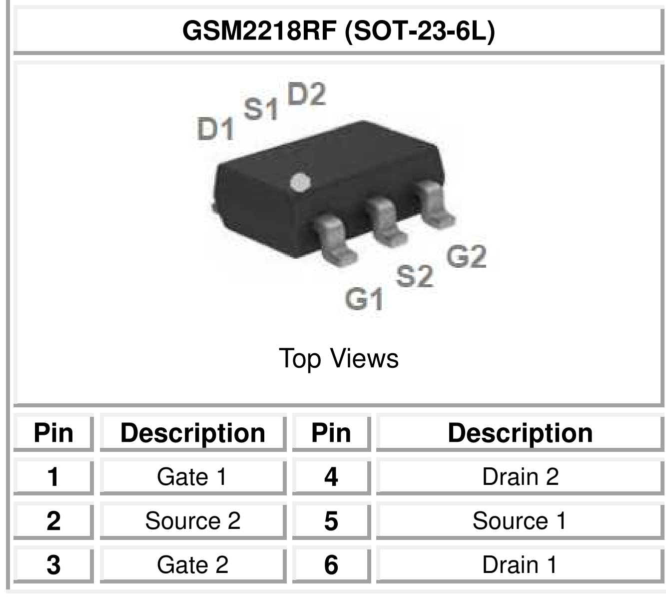
- 20V, 3.6A, $R_{DS(ON)}$=53mΩ@V_{GS}=4.5V
- Improved dv/dt capability
- Fast switching
- Suit for 1.8V Gate Drive Applications
- Green Device Available

Applications

- Notebook
- Load Switch
- Hend-Held instruments

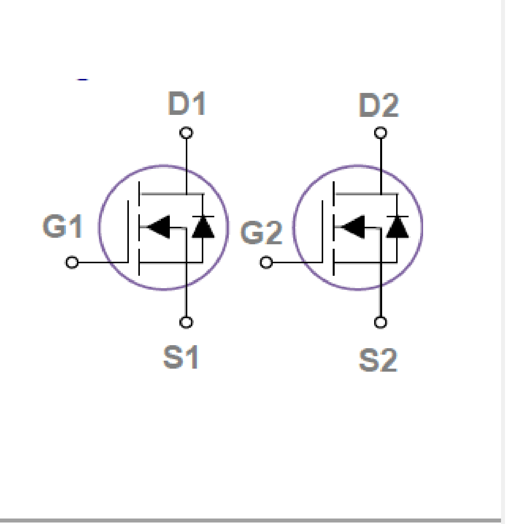
Packages & Pin Assignments

GSM2218RF (SOT-23-6L)

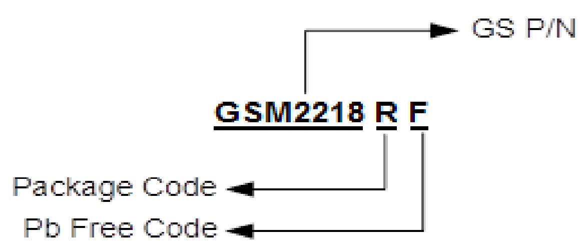


Top Views

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

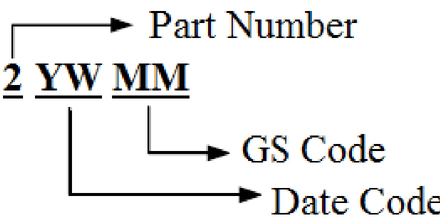


Ordering Information



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

Marking Information



Absolute Maximum Ratings

T_C=25ºC 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℃	3.6	A
		T_C=70℃	2.9	
I_{DM}	Pulsed Drain Current[1]		14.4	A
P_D	Power Dissipation (T_C=25℃)		1.25	W
	Power Dissipation (Derate above 25℃)		0.01	W/℃
T_J	Operating Junction Temperature Range		-55 to +150	℃
T_{STG}	Storage Temperature Range		-55 to +150	℃
$R_{θJA}$	Thermal Resistance-Junction to Ambient		100	℃/W

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

Electrical Characteristics

T_J=25℃ 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
$\triangle BV_{DSS}/\triangle T_J$	BV_{DSS} Temperature Coefficient	Reference to 25℃, I_D=1mA		0.02		V/℃
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250uA	0.3	0.5	1.0	V
$\triangle V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient			2		mV/℃
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℃			1	uA
		V_{DS}=16V,V_{GS}=0V, T_J=125℃			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 :

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

Typical Performance Characteristics

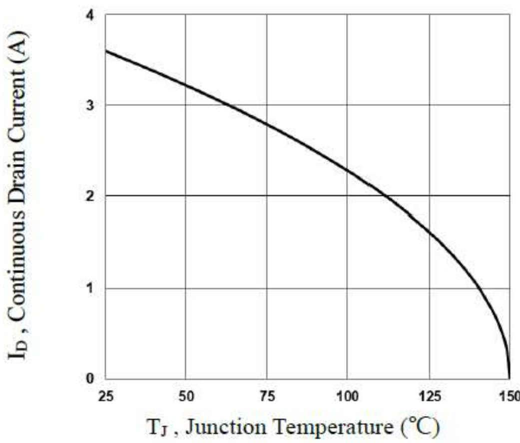


Fig.1 Continuous Drain Current vs. T_J

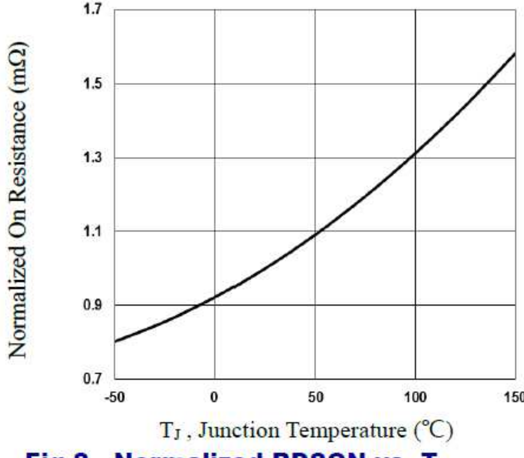


Fig.2 Normalized RDSON vs. T_J

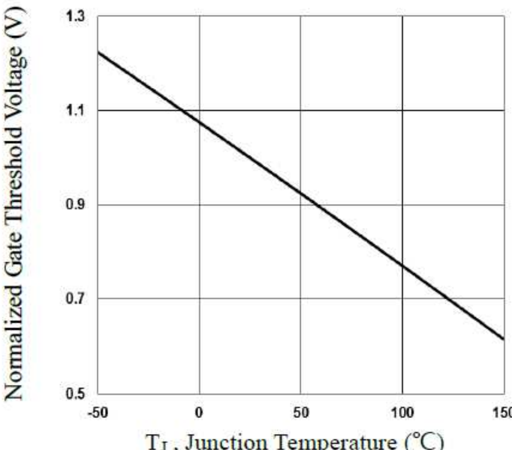


Fig.3 Normalized V_{th} vs. T_J

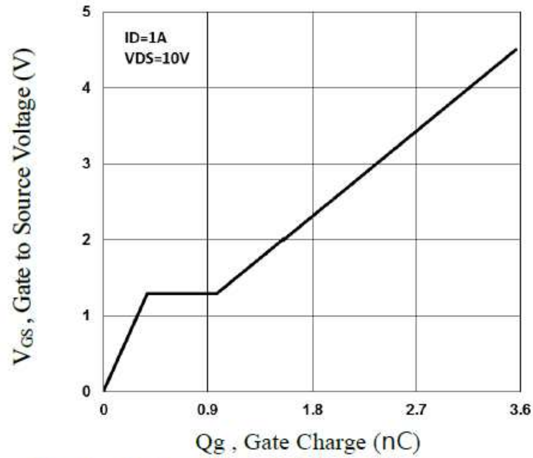


Fig.4 Gate Charge Waveform

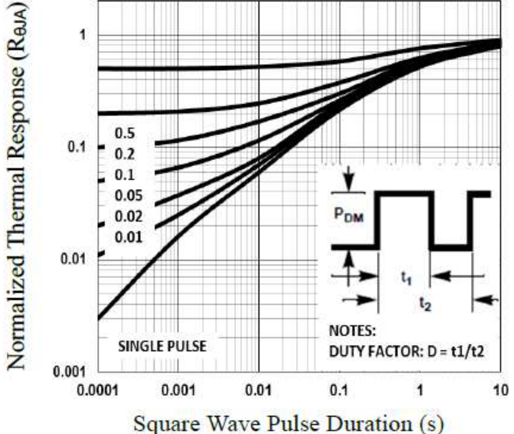


Fig.5 Normalized Transient Impedance

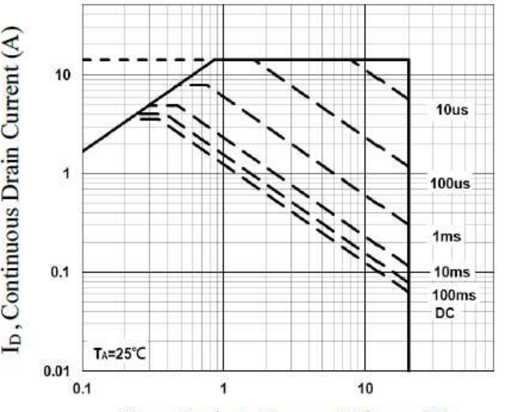


Fig.6 Maximum Safe Operation Area

Typical Performance Characteristics (Continue)

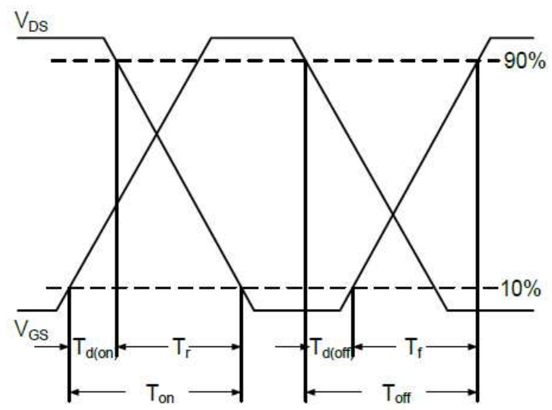


Fig.7 Switching Time Waveform

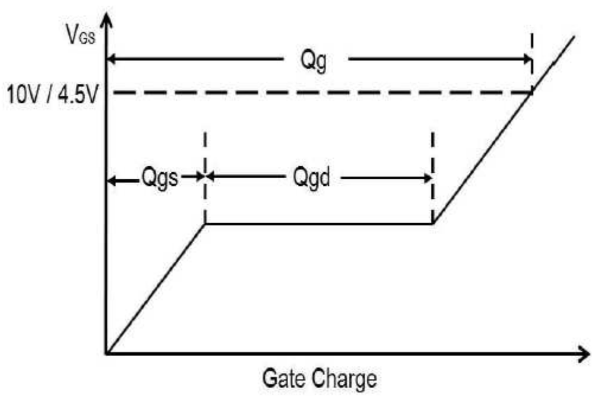
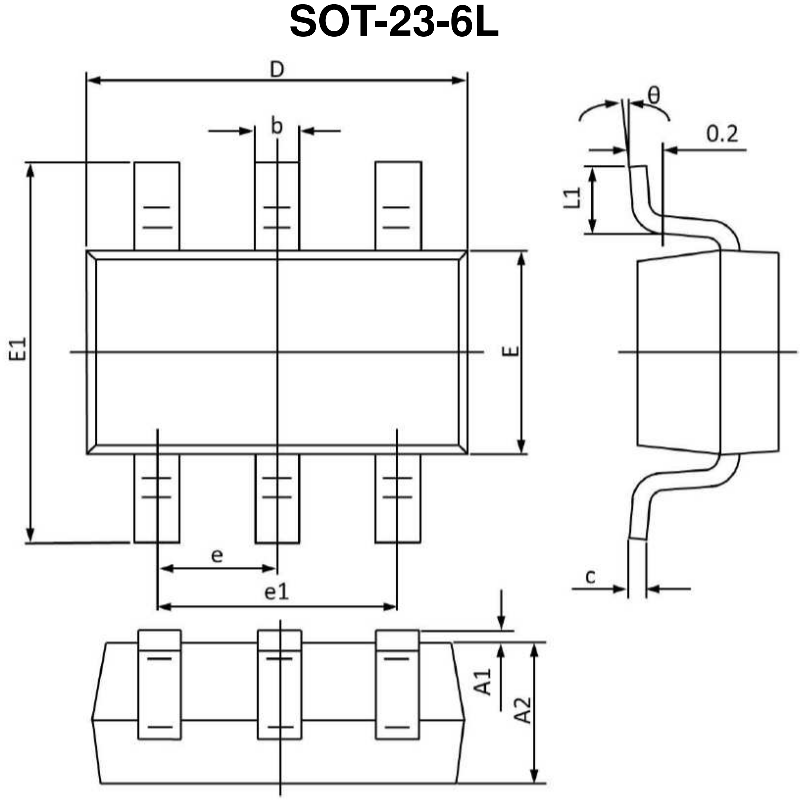


Fig.8 Gate Charge Waveform

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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