

GSM2219Y

20V Dual P-Channel MOSFETs

Product Description

These Dual P-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, -400mA, $R_{DS(ON)}=600m\Omega@V_{GS}=-4.5V$
- Fast switching
- Suit for -1.5V Gate Drive Applications
- Green Device Available
- SOT-563 package design

Applications

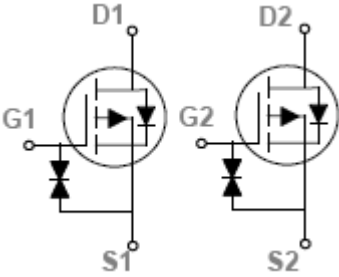
- Notebook
- Load Switch
- Networking
- Hand-Held Instruments

Packages & Pin Assignments

GSM2219YX7F (SOT-563)

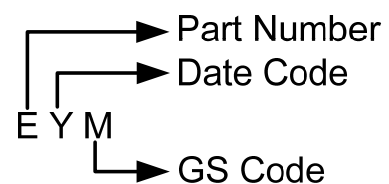
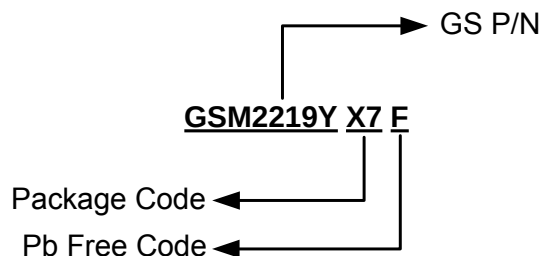


Top Views



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

Ordering Information



Part Number	Package	Part Marking	Quantity
GSM2219YX7F	SOT-563	EYM	3000pcs

Absolute Maximum Ratings

T_c=25°C Unless otherwise noted

Symbol	Parameter		Typical	Unit
V _{DS}	Drain-Source Voltage		-20	V
V _{GS}	Gate-Source Voltage		±8	V
I _D	Continuous Drain Current	T _c =25°C	-400	mA
		T _c =100°C	-250	
I _{DM}	Pulsed Drain Current		-1.6	A
P _D	Power Dissipation (T _c =25°C)		312	mW
	Power Dissipation (Derate above 25°C)		2.5	mW/°C
T _J	Operating Junction Temperature Range		-55 to +150	°C
T _{STG}	Storage Temperature Range		-55 to +150	°C
R _{θJA}	Thermal Resistance-Junction to Ambient		400	°C/W

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		-0.01		V/°C
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =-250uA	-0.3	-0.6	-1.0	V
ΔV _{GS(th)}	V _{GS(th)} Temperature Coefficient			3		mV/°C
I _{GSS}	Gate-Source Leakage Current	V _{DS} =0V, V _{GS} =±8V			±20	uA
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-20V, V _{GS} =0V			-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			-0.4	A
I _{SM}	Pulsed Source Current				-0.8	
R _{DS(on)}	Static Drain-Source On-Resistance	V _{GS} =-4.5V, I _D =-0.3A		440	600	mΩ
		V _{GS} =-2.5V, I _D =-0.2A		610	850	
		V _{GS} =-1.8V, I _D =-0.1A		810	1200	
		V _{GS} =-1.5V, I _D =-0.1A		1020	1600	
		V _{GS} =-1.2V, I _D =-0.1A		1800	3000	
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =-0.2A			-1	V
Dynamic						
Q _g	Total Gate Charge	V _{DS} =-10V, V _{GS} =-4.5V, I _D =-0.2A		1	2	nC
Q _{gs}	Gate-Source Charge			0.28	0.5	
Q _{gd}	Gate-Drain Charge			0.18	0.4	
C _{iss}	Input Capacitance	V _{DS} =-10V, V _{GS} =0V, F=1MHz		40	78	pF
C _{oss}	Output Capacitance			15	30	
C _{rss}	Reverse Transfer Capacitance			6.5	13	
t _{d(on)}	Turn-On Delay Time	V _{DD} =-10V, I _D =-0.2A, V _{GS} =-4.5V, R _G =10Ω		8	16	ns
t _r	Rise Time			5.2	10	
t _{d(off)}	Turn-Off Delay Time			30	60	
t _f	Fall Time			18	36	

Typical Performance Characteristics

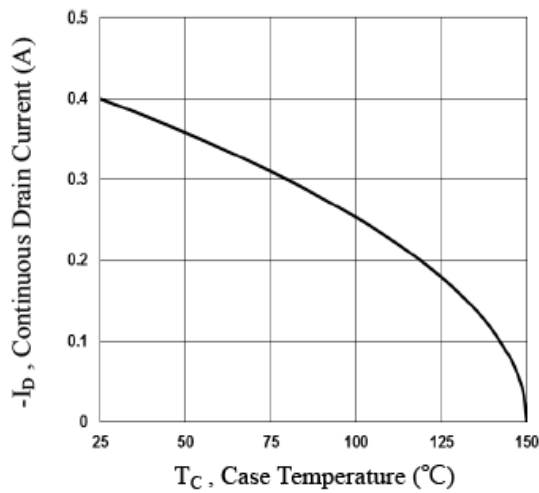


Fig.7 Continuous Drain Current vs. T_C

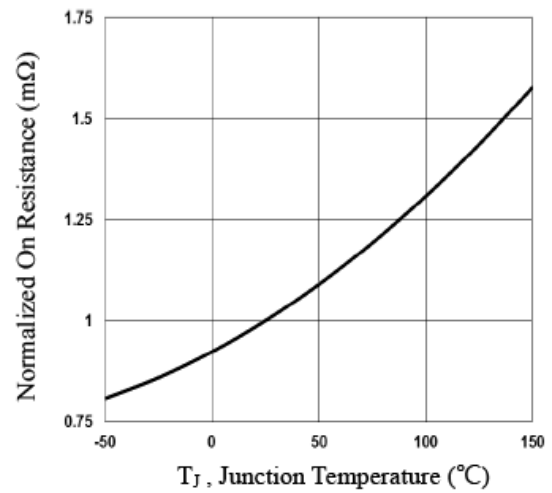


Fig.8 Normalized $R_{DS(on)}$ vs. T_J

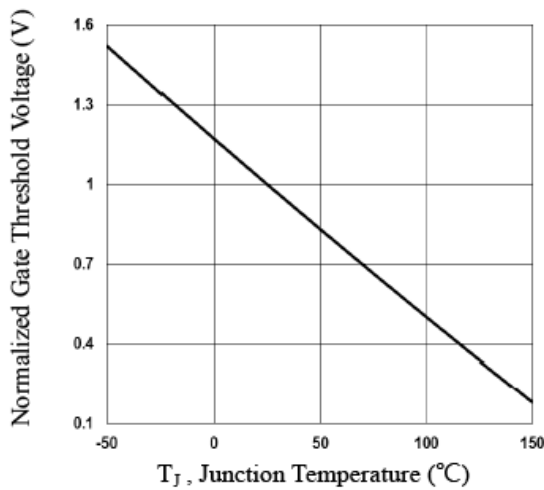


Fig.9 Normalized V_{th} vs. T_J

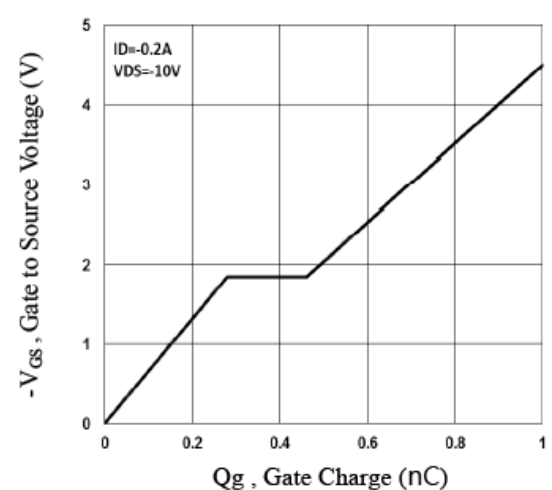


Fig.10 Gate Charge Waveform

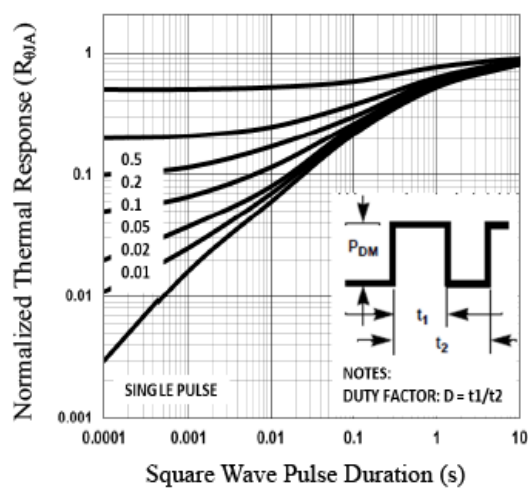


Fig.11 Normalized Transient Impedance

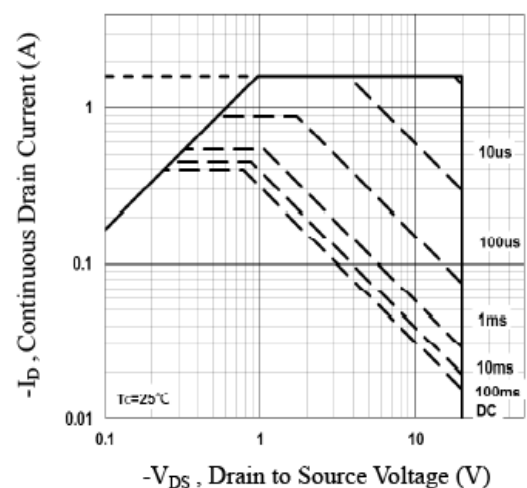
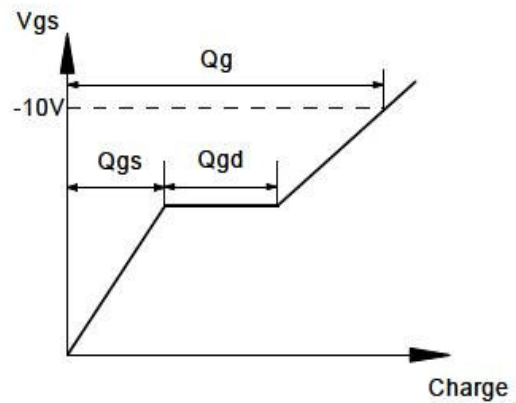
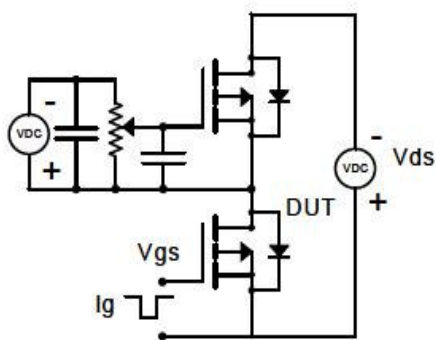


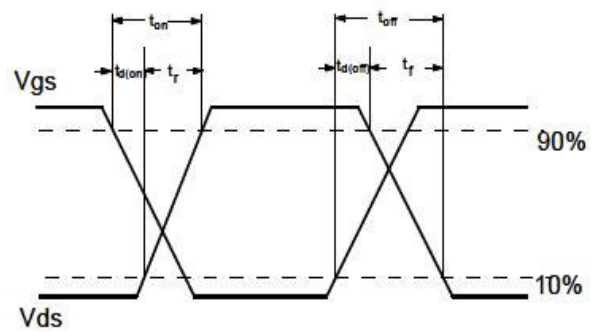
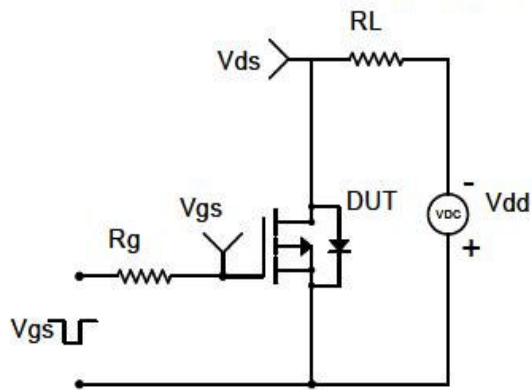
Fig.12 Maximum Safe Operation Area

Typical Performance Characteristics (Continue)

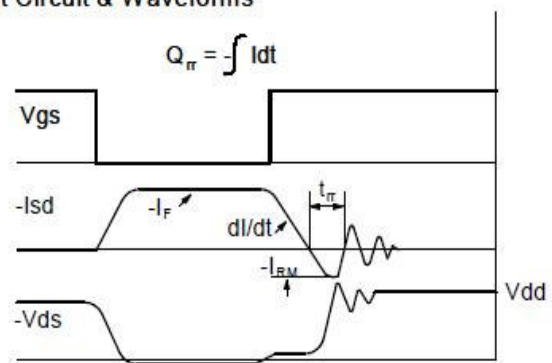
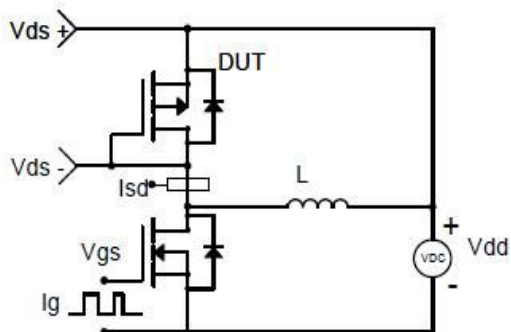
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

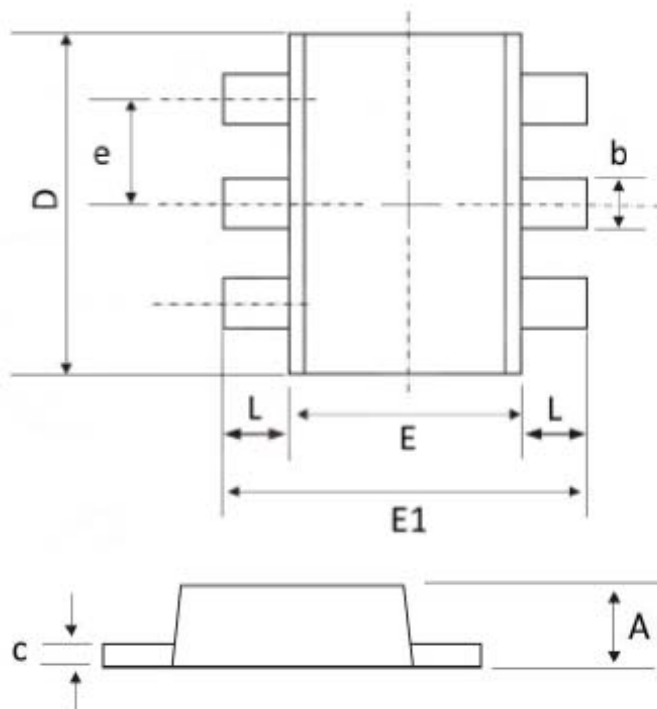


Diode Recovery Test Circuit & Waveforms



Package Dimension

SOT-563



Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.500	0.600	0.020	0.024
b	0.150	0.300	0.006	0.012
c	0.100	0.180	0.004	0.007
D	1.500	1.700	0.059	0.067
E	1.100	1.250	0.043	0.049
E1	1.550	1.700	0.061	0.067
e	0.5(BSC)		0.02(BSC)	
L	0.100	0.300	0.004	0.012

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