

GSM2319P

20V P-Channel MOSFETs

Product Description

These 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.

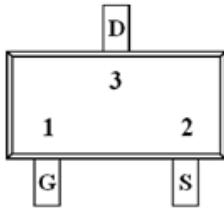
Features

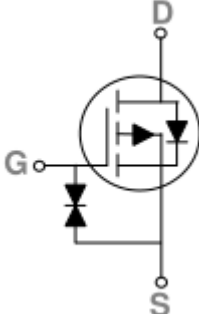
- -20V, -0.4A, $R_{DS(ON)}=600m\Omega@V_{GS}=-4.5V$
- Improved dv/dt capability
- Fast switching
- Suit for -1.5V Gate Drive Applications
- Green Device Available
- SOT-323 package design

Applications

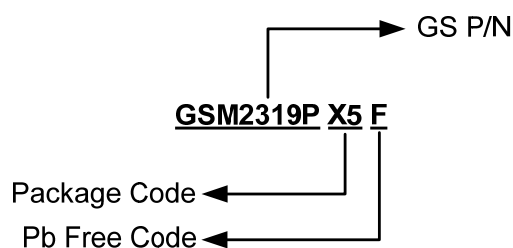
- Notebook
- Load Switch
- Hand-held Instruments
- Battery Protection

Packages & Pin Assignments

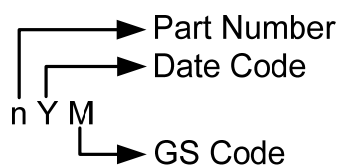
GSM2319PX5F (SOT-323)	
	
Top Views	
Pin	Description
1	Gate
2	Source
3	Drain



Ordering Information



Marking Information



Part Number	Package	Part Marking	Quantity
GSM2319PX5F	SOT-323	nYM	3000pcs

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	± 8	V
I_D	Continuous Drain Current	$T_C=25^{\circ}\text{C}$	A
		$T_C=100^{\circ}\text{C}$	
I_{DM}	Pulsed Drain Current	-1.6	A
P_D	Power Dissipation ($T_C=25^{\circ}\text{C}$)	0.275	W
	Power Dissipation (Derate above 25°C)	0.0022	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	450	$^{\circ}\text{C}/\text{W}$

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 =-250μA	-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 =-250μA	-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	μA
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-20V, V _{GS} =0V			-1	μA
		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

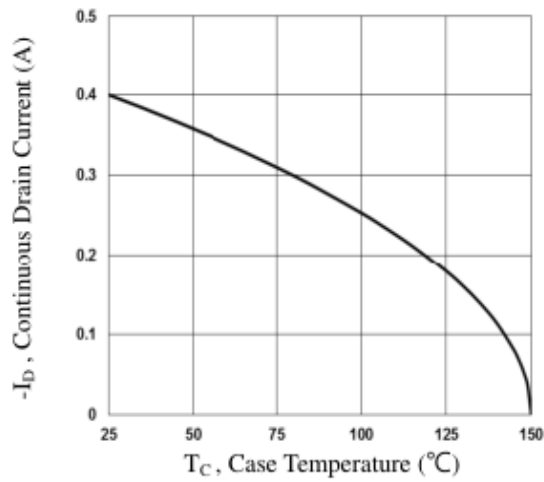


Fig.1 Continuous Drain Current vs. T_C

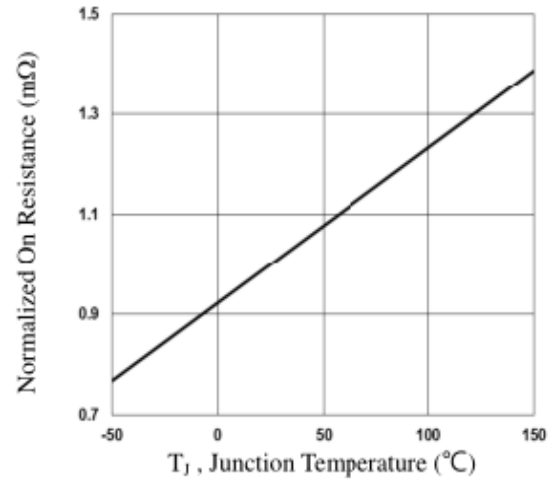


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

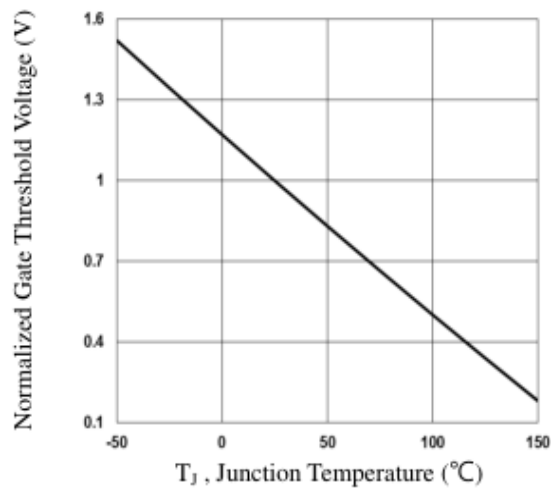


Fig.3 Normalized V_{th} vs. T_J

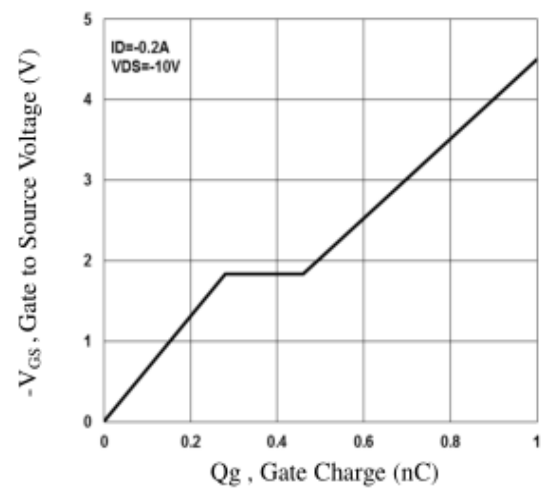


Fig.4 Gate Charge Waveform

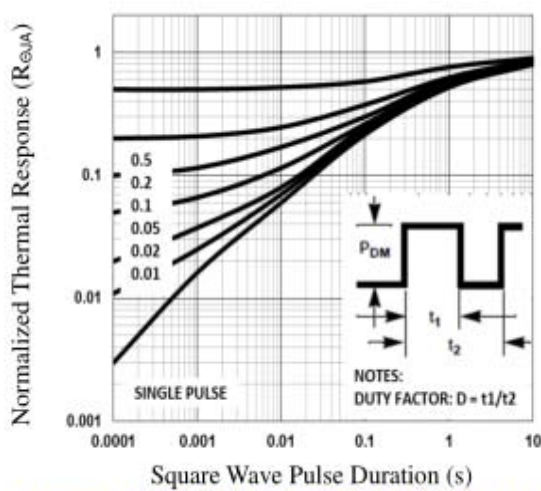


Fig.5 Normalized Transient Response

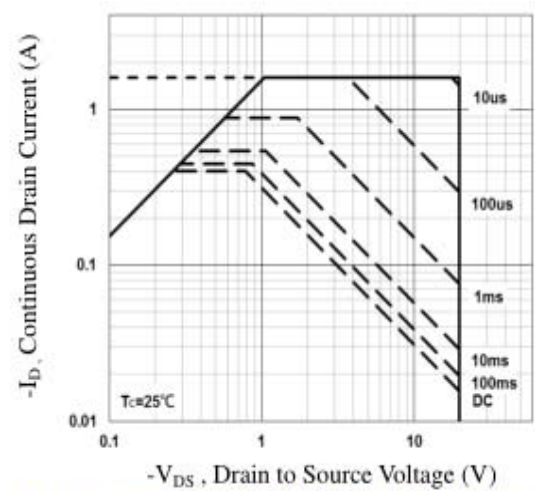
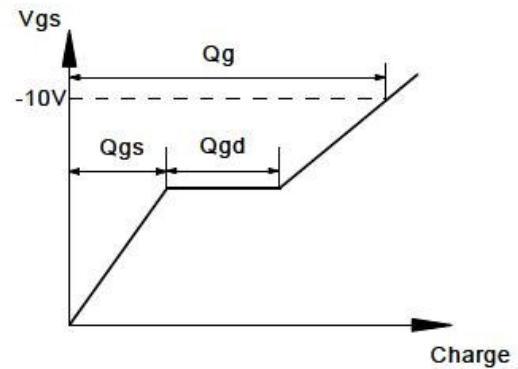
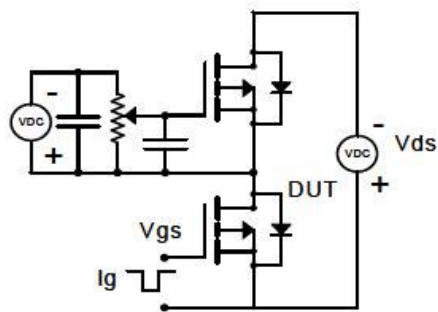


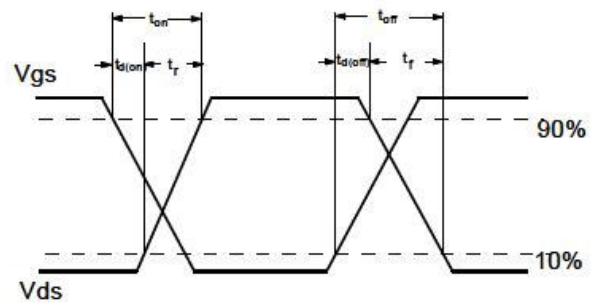
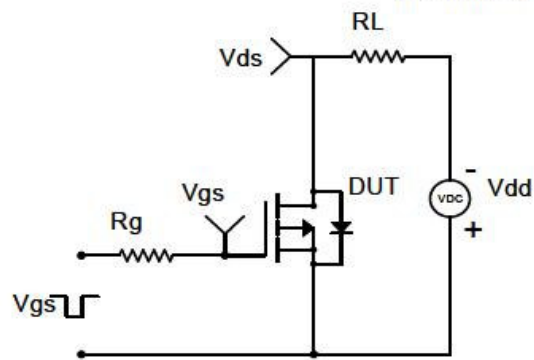
Fig.6 Maximum Safe Operation Area

Typical Performance Characteristics (Continue)

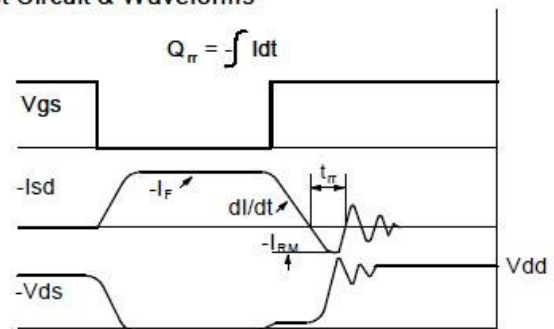
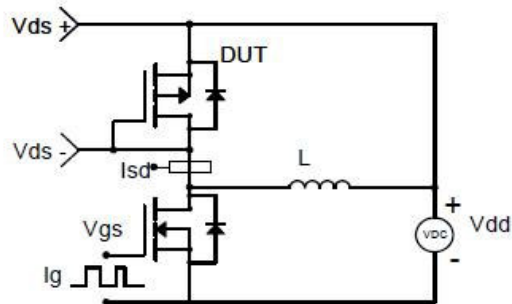
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

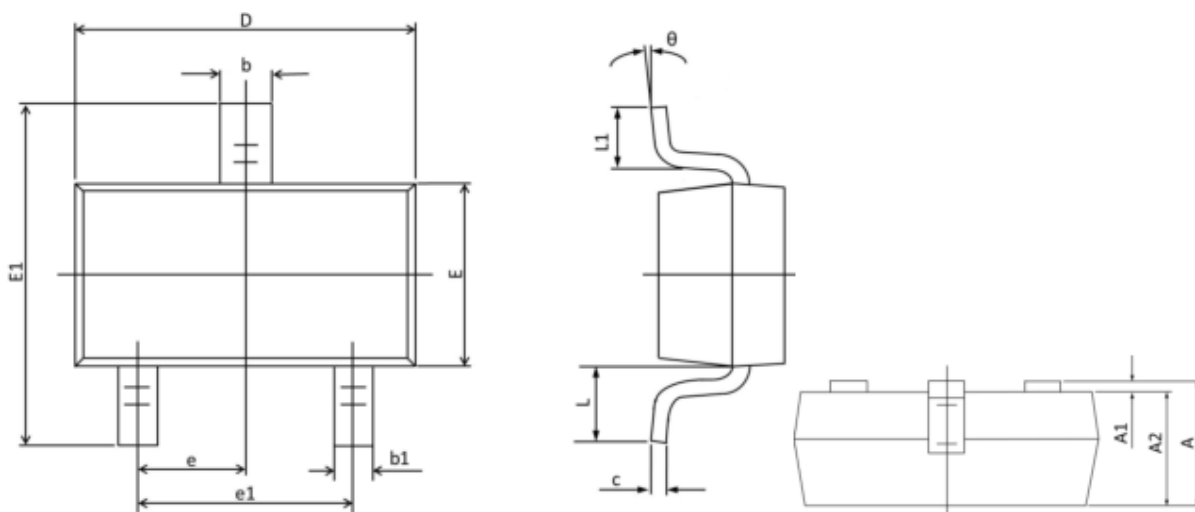


Diode Recovery Test Circuit & Waveforms



Package Dimension

SOT-323



Dimensions

Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.800	1.100	0.031	0.043
A1	0.000	0.100	0.000	0.004
A2	0.800	1.000	0.031	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.250	0.003	0.010
D	1.800	2.200	0.071	0.087
E	1.150	1.350	0.045	0.053
E1	1.800	2.450	0.071	0.096
e	0.65BSC		0.026BSC	
e1	1.200	1.400	0.047	0.055
L	0.525REF		0.02TYP	
L1	0.150	0.460	0.006	0.018
L2	0.000	0.200	0.000	0.008
θ	0°	8°	0°	8

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