

GSM2320P

20V 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.

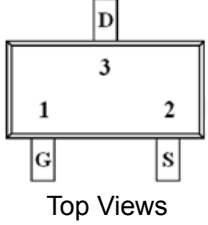
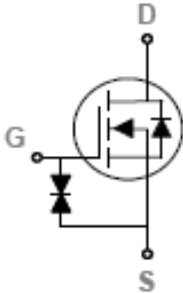
Features

- 20V, 0.8A, $R_{DS(ON)}=300m\Omega@V_{GS}=4.5V$
- Improved dv/dt capability
- Fast switching
- Suit for 1.2V Gate Drive Applications
- Green Device Available
- SOT-323 package design

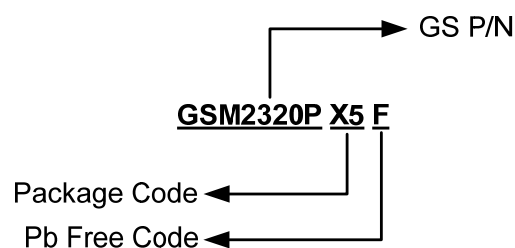
Applications

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

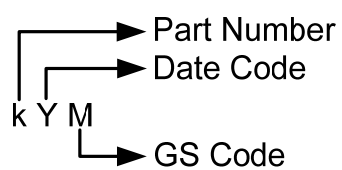
Packages & Pin Assignments

GSM2320PX5F (SOT-323)	
 Top Views	
	
Pin	Description
1	Gate
2	Source
3	Drain

Ordering Information



Marking Information



Part Number	Package	Part Marking	Quantity
GSM2320PX5F	SOT-323	kYM	3000pcs

Absolute Maximum Ratings

$T_A=25^{\circ}\text{C}$ 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	$T_A=25^{\circ}\text{C}$	A
		$T_A=100^{\circ}\text{C}$	
I_{DM}	Pulsed Drain Current	3.2	A
P_D	Power Dissipation ($T_A=25^{\circ}\text{C}$)	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_A=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℃, I _D =1mA		0.01		V/℃
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} ,I _D =250uA	0.45	0.6	1.0	V
ΔV _{GS(th)}	V _{GS(th)} Temperature Coefficient			-3		mV/℃
I _{GSS}	Gate Leakage Current	V _{DS} =0V,V _{GS} =±6V			±20	uA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =20V,V _{GS} =0V			1	uA
		V _{DS} =16V,V _{GS} =0V, T _J =125℃			10	
I _S	Continuous Source Current	V _G =V _D =0V, Force Current			0.8	A
I _{SM}	Pulsed Source Current				1.6	
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =4.5V,I _D =0.5A		200	300	mΩ
		V _{GS} =2.5V,I _D =0.4A		235	400	
		V _{GS} =1.8V,I _D =0.2A		295	550	
		V _{GS} =1.5V,I _D =0.1A		365	800	
		V _{GS} =1.2V,I _D =0.1A		600	1500	
V _{SD}	Diode Forward Voltage	V _{GS} =0V,I _S =0.2A			1	V
Dynamic						
Q _q	Total Gate Charge	V _{DS} =10V,V _{GS} =4.5V, I _D =0.5A		1	2	nC
Q _{gs}	Gate-Source Charge			0.26	0.5	
Q _{gd}	Gate-Drain Charge			0.2	0.4	
C _{iss}	Input Capacitance	V _{DS} =10V,V _{GS} =0V, f=1MHz		38.2	75	pF
C _{Oss}	Output Capacitance			14.4	28	
C _{rss}	Reverse Transfer Capacitance			6	12	
t _{d(on)}	Turn-On Time	V _{DD} =10V,I _D =0.5A, V _{GS} =4.5V,R _G =10Ω		5	10	ns
t _r				3.5	7	
t _{d(off)}	Turn-Off Time			14	28	
t _f				6	12	

Typical Performance Characteristics

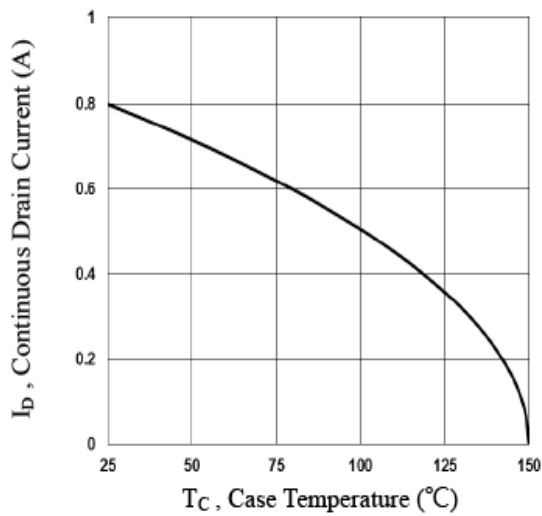


Fig.1 Continuous Drain Current vs. T_c

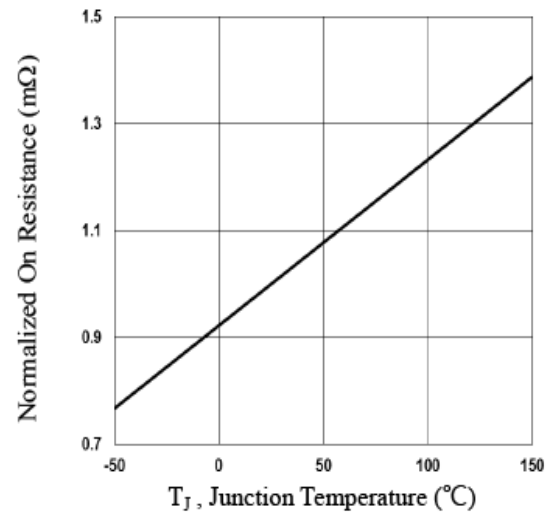


Fig.2 Normalized $R_{DS(on)}$ vs. T_j

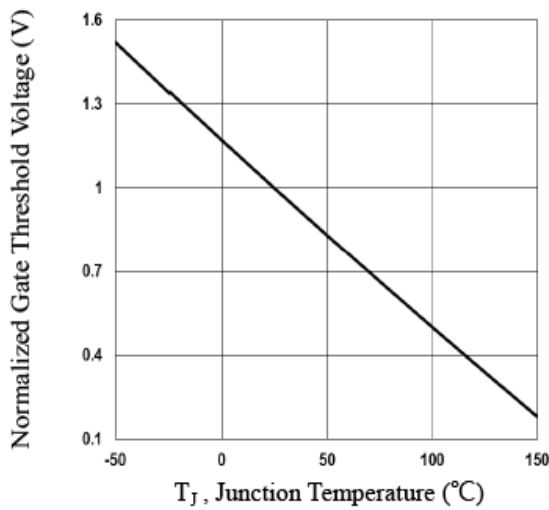


Fig.3 Normalized V_{th} vs. T_j

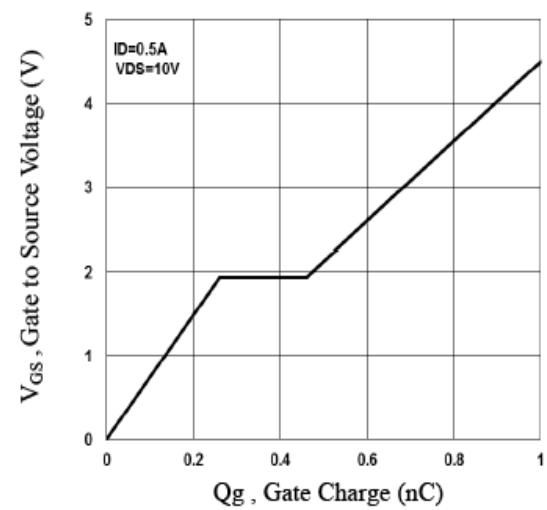


Fig.4 Gate Charge Waveform

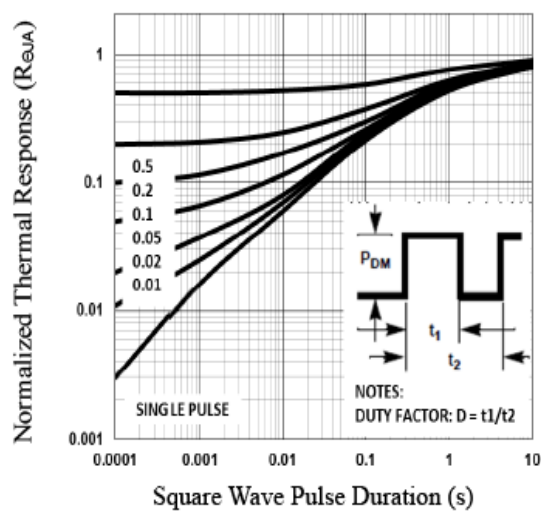


Fig.5 Normalized Transient Response

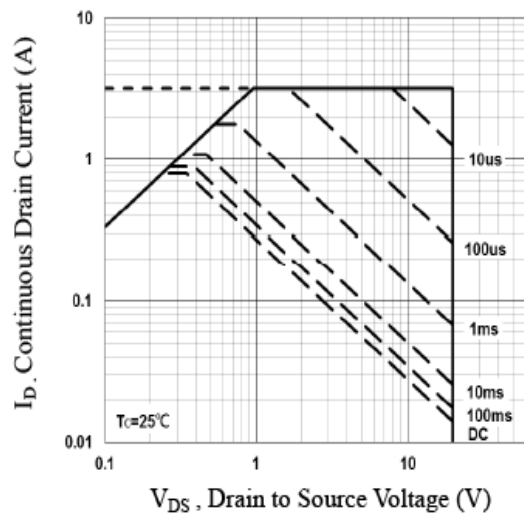
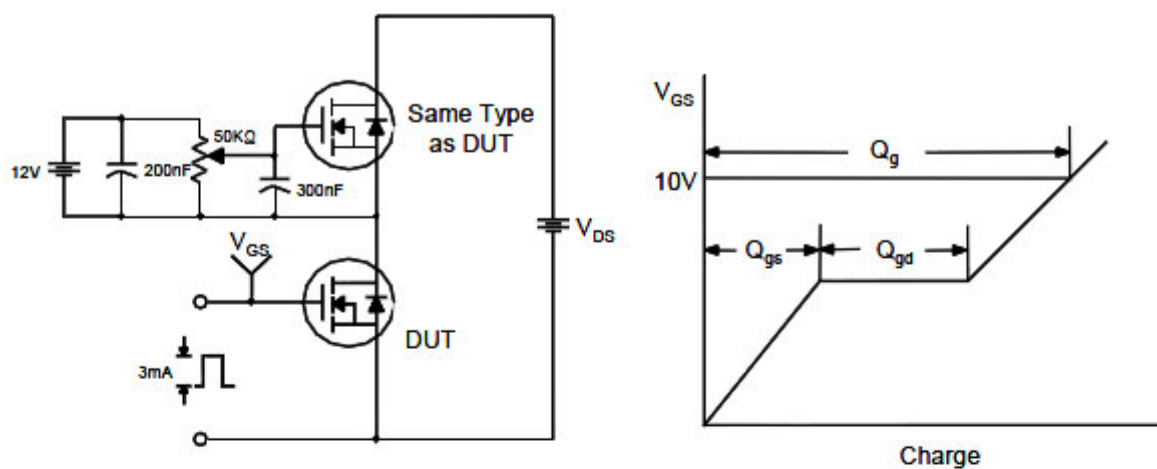


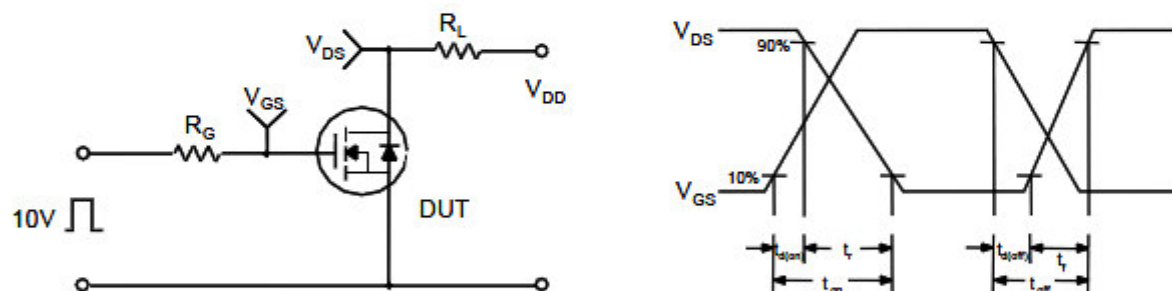
Fig.6 Maximum Safe Operation Area

Typical Performance Characteristics (Continue)

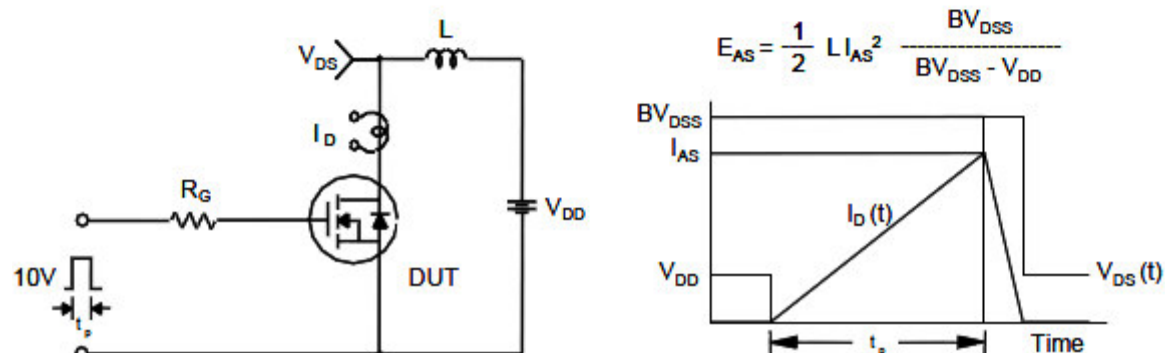
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

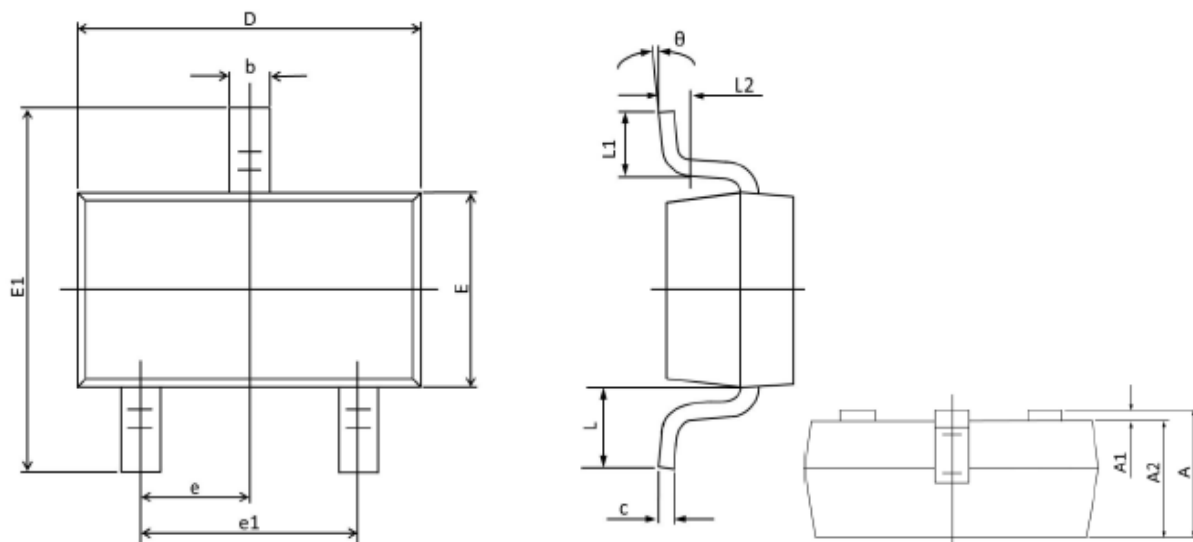


Unclamped Inductive Switching Test Circuit & Waveforms



Package Dimension

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	0.650 (BSC)		0.026 (BSC)	
e1	1.200	1.40	0.047	0.055
L	0.525 (REF)		0.021 (REF)	
L1	0.150	0.460	0.006	0.018
L2	0.000	0.200	0.000	0.008
θ	0°	8°	0°	8°

NOTICE

Information furnished is believed to be accurate and reliable. However Globaltech Semiconductor assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties, which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of Globaltech Semiconductor. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information without express written approval of Globaltech Semiconductor.

CONTACT US

GS Headquarter	
	4F.,No.43-1,Lane11,Sec.6,Minquan E.Rd NeiHu District Taipei City 114, Taiwan (R.O.C)
	886-2-2657-9980
	886-2-2657-3630
	sales_twn@gs-power.com

Shenzhen Branch(China)	
	1113 B Building, Happiness Washington, Baoan Nan Road, Luohu District, Shenzhen City, China
	0755-22208941
	sales_cn@gs-power.com

RD Division	
	824 Bolton Drive Milpitas. CA. 95035
	1-408-457-0587