

GSM2320K

20V N-Channel Enhancement Mode MOSFET

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.

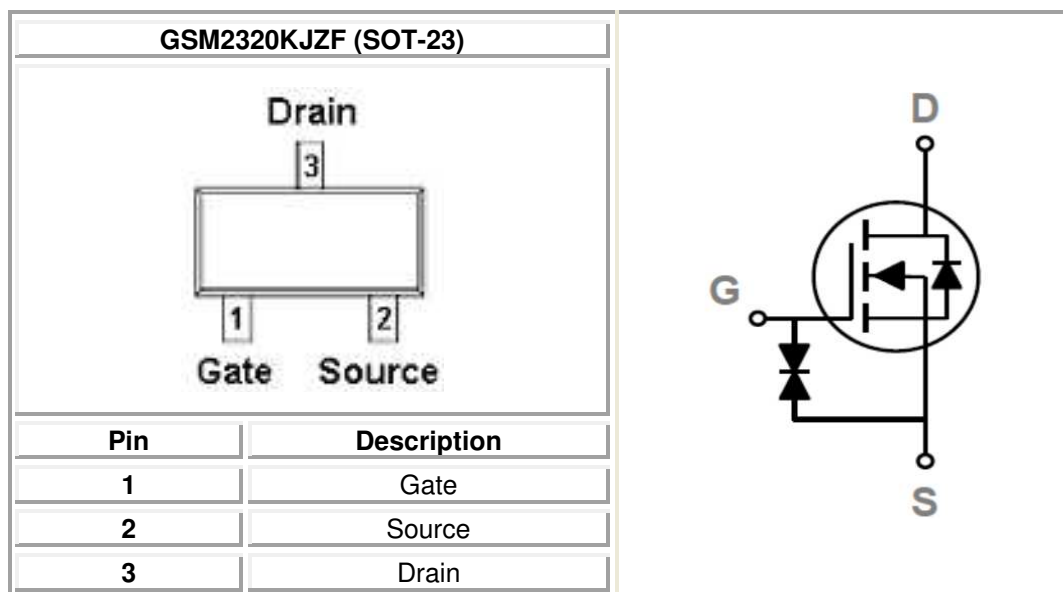
Features

- 20V/1.45A , $R_{DS(ON)}=300m\Omega@V_{GS}=4.5V$
- Fast switching
- improved dv/dt capability
- Green Device Available
- Suit for 1.5V Gate Drive Applications

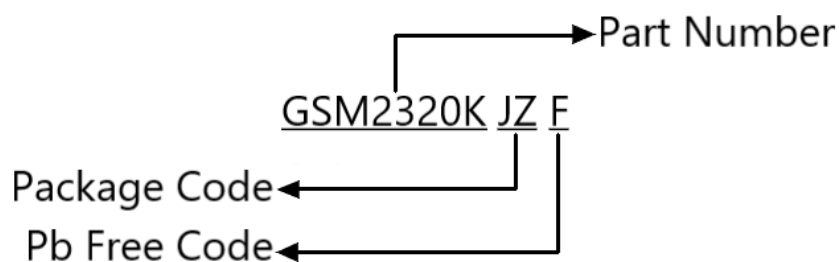
Applications

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

Packages & Pin Assignments

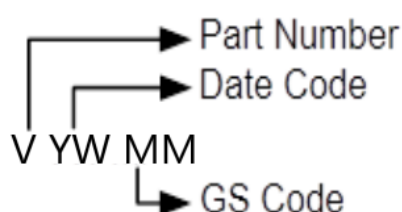


Ordering Information



Part Number	Package	Quantity
GSM2320KJZF	SOT-23	3000 PCS

Marking Information



Part Number	Package	Part Marking
GSM2320KJZF	SOT-23	VYWMM

Absolute Maximum Ratings

T_C=25°C Unless otherwise noted

Symbol	Parameter		Typical	Unit
V _{DSS}	Drain-Source Voltage		20	V
V _{GSS}	Gate-Source Voltage - Continuous		±8	V
I _D	Drain Current - Continuous	T _A =25°C	1.45	A
		T _A =70°C	1.15	
I _{DM}	Pulsed Drain Current ¹		5.8	A
P _D	Power Dissipation	T _A =25°C	1	W
	Power Dissipation – Derate above 25°C		8	mW/ °C
T _J	Operating Junction Temperature		-55 to 150	°C
T _{STG}	Storage Temperature Range		-55 to 150	°C
R _{θJA}	Thermal Resistance-Junction to Ambient		125	°C/W

Electrical Characteristics

$T_J=25^{\circ}\text{C}$ 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
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	0.3	0.6	1.0	
I _{GSS}	Gate-Source Leakage Current	V _{DS} =0V, V _{GS} =±6V			±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	
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =4.5V, I _D =0.5A		215	300	mΩ
		V _{GS} =2.5V, I _D =0.4A		255	400	
		V _{GS} =1.8V, I _D =0.2A		315	550	
		V _{GS} =1.5V, I _D =0.1A		390	800	
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =0.2A			1	V
I _S	Continuous Source Current	V _G =V _D =0V, Force Current			1.45	A
I _{SM}	Pulsed Source Current				2.9	A
Dynamic						
Q _g	Total Gate Charge ^{2,3}	V _{DS} =10V, I _D =0.5A, V _{GS} =4.5V		1	2	nC
Q _{gs}	Gate-Source Charge ^{2,3}			0.26	0.5	
Q _{gd}	Gate-Drain Charge ^{2,3}			0.2	0.4	
C _{iss}	Input Capacitance	V _{DS} = 10V, f =1MHz, V _{GS} =0V		38.2	75	pF
C _{oss}	Output Capacitance			14.4	28	
C _{rss}	Reverse Transfer Capacitance			6	12	
t _{d(on)}	Turn-On Time ^{2,3}	V _{DD} =10V, I _D =0.5A, R _G =10Ω, V _{GS} =4.5V,		5	10	ns
t _r				3.5	7	
t _{d(off)}	Turn-Off Time ^{2,3}			14	28	
t _f				6	12	

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. Essentially independent of operating temperature.

Typical Performance Characteristics

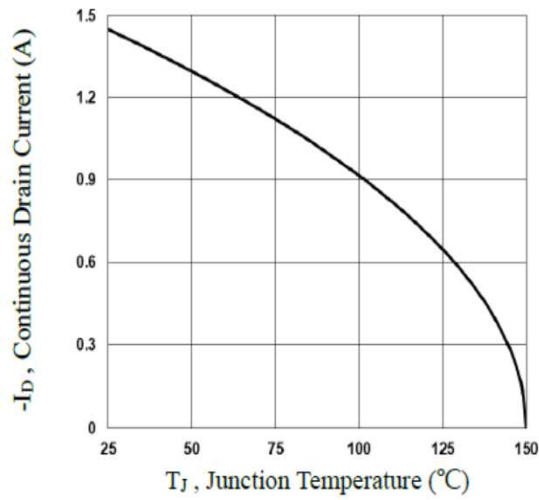


Fig.1 Continuous Drain Current vs. T_c

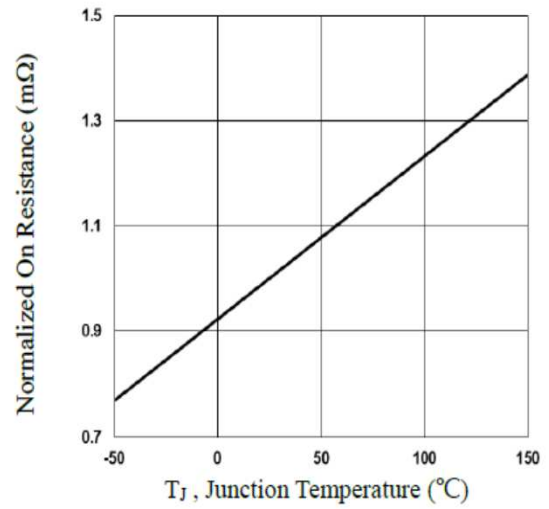


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

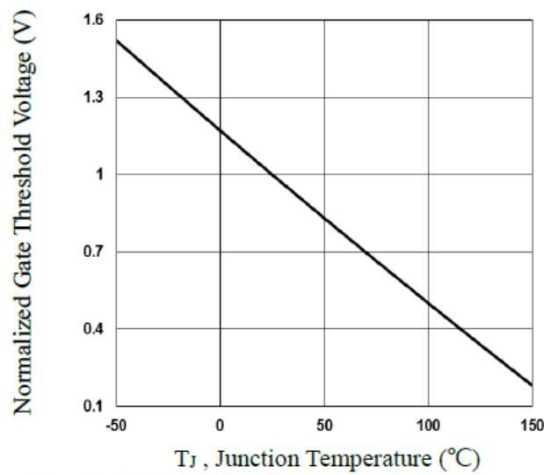


Fig.3 Normalized V_{th} vs. T_J

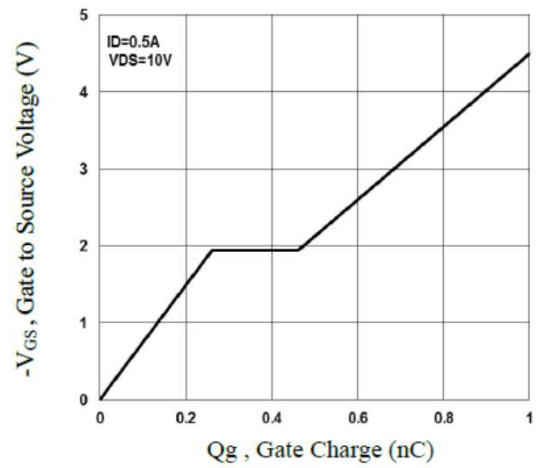


Fig.4 Gate Charge Waveform

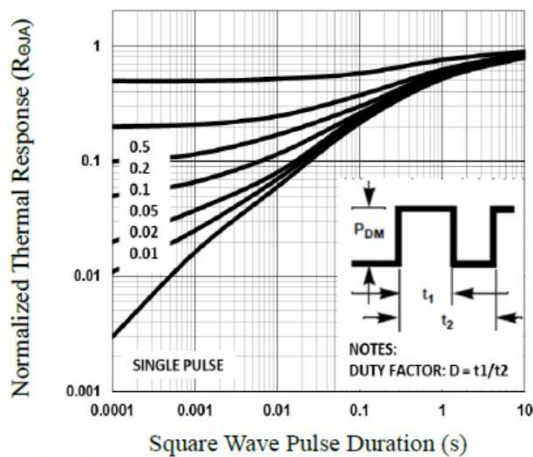


Fig.5 Normalized Transient Response

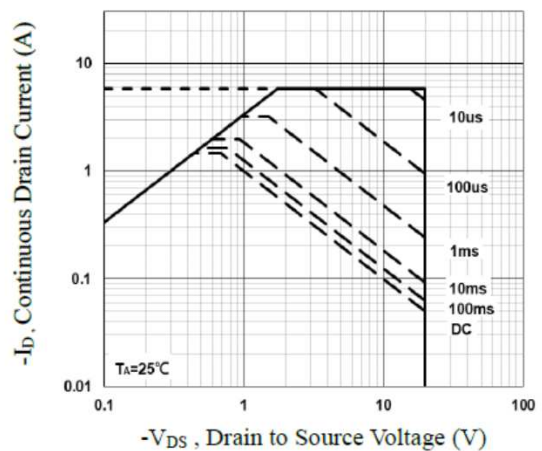
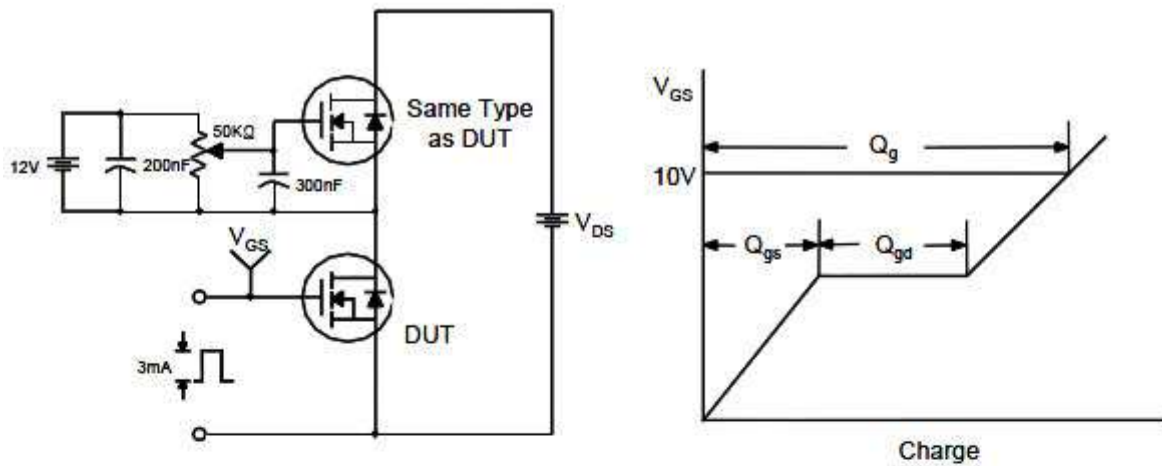


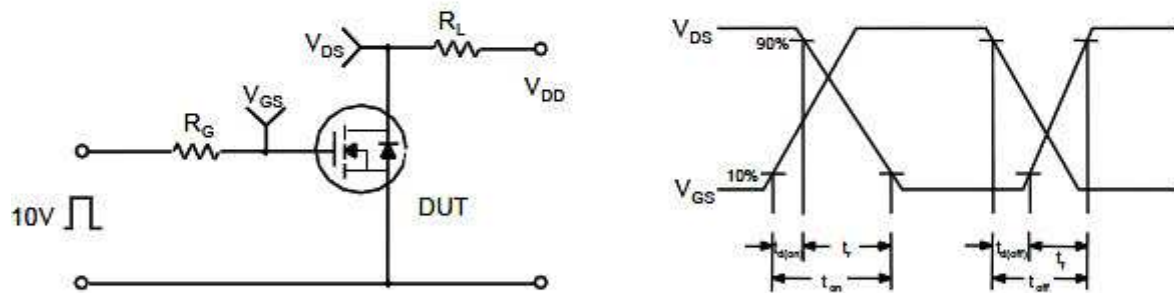
Fig.6 Maximum Safe Operation Area

Typical Characteristics

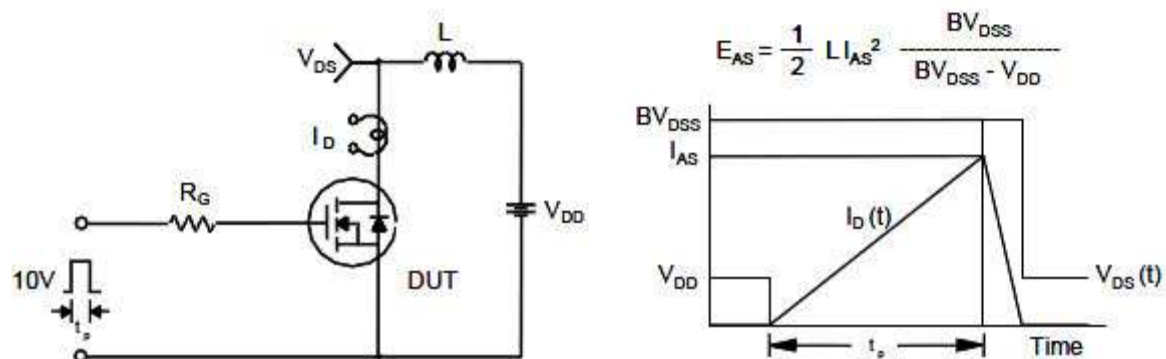
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

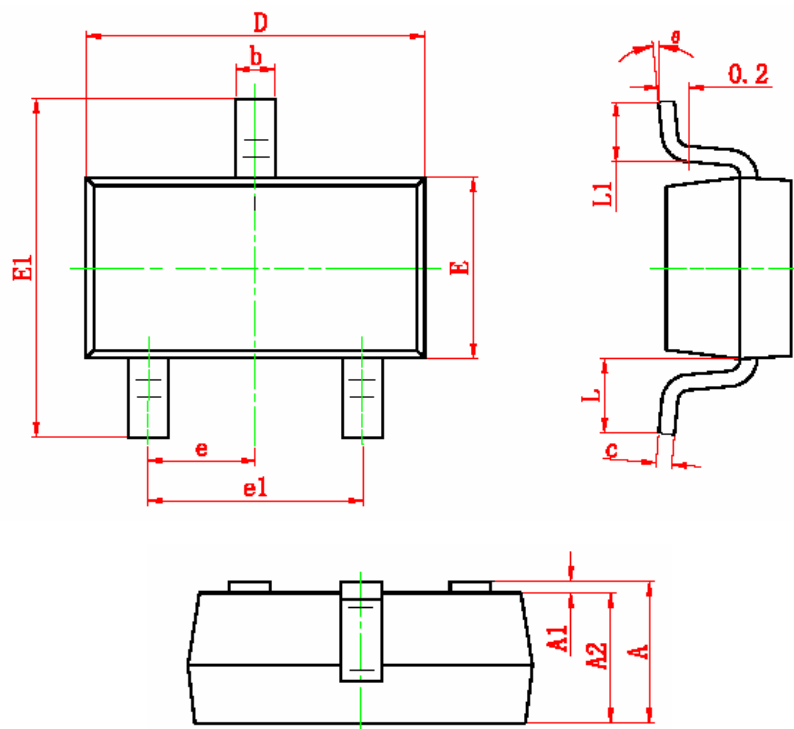


Unclamped Inductive Switching Test Circuit & Waveforms



Package Dimension

SOT-23



Dimensions

SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.900	1.200	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.100	0.035	0.039
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
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

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