

GSM2220Y

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, 800mA, $R_{DS(ON)}=300m\Omega@V_{GS}=4.5V$
- Fast switching
- Suit for 1.5V Gate Drive Applications
- Green Device Available
- SOT-563 package design

Applications

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

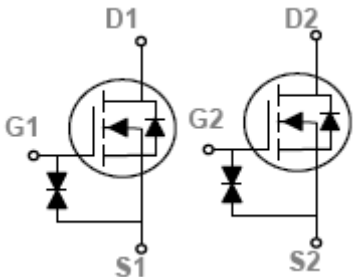
Packages & Pin Assignments

GSM2220YX7F (SOT-563)

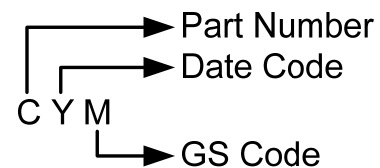
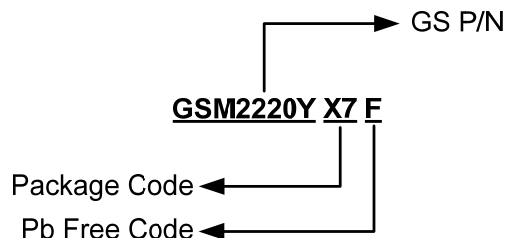


Top Views

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



Ordering & Marking Information



Part Number	Package	Part Marking	Quantity
GSM2220YX7F	SOT-563	CYM	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℃	800	mA
		T _C =100℃	510	
I _{DM}	Pulsed Drain Current		3.2	A
P _D	Power Dissipation (T _C =25℃)		312	mW
	Power Dissipation (Derate above 25℃)		2.5	mW/℃
T _J	Operating Junction Temperature Range		-55 to +150	℃
T _{STG}	Storage Temperature Range		-55 to +150	℃
R _{θJA}	Thermal Resistance-Junction to Ambient		400	℃/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 _{DS} =V _{GS} , I _D =250uA	0.3	0.6	1.0	V
ΔV _{GS(th)}	V _{GS(th)} Temperature Coefficient			3		mV/°C
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±6V			±20	uA
I _{DSS}	Drain Current 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			0.8	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 _g	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 Delay Time	V _{DD} =10V, I _D =0.5A, V _{GS} =4.5V, R _G =10Ω		5	10	ns
t _r	Rise Time			3.5	7	
t _{d(off)}	Turn-Off Delay Time			14	28	
t _f	Fall Time			6	12	

Typical Performance Characteristics

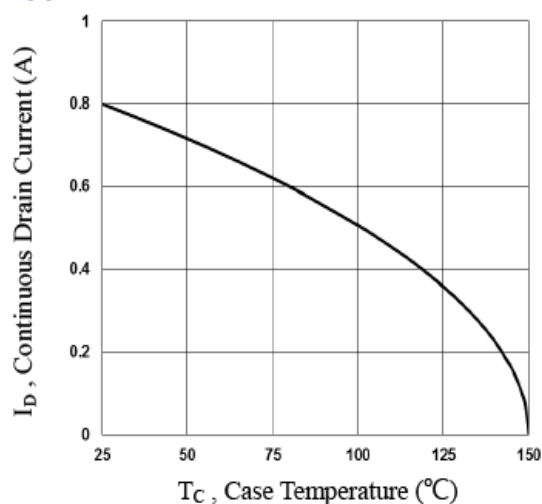


Fig.1 Continuous Drain Current vs. T_C

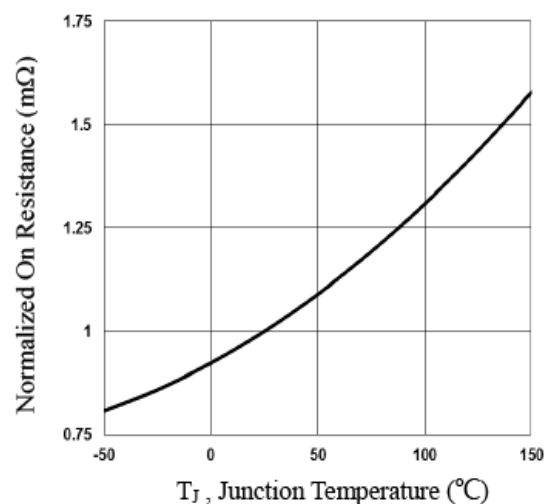


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

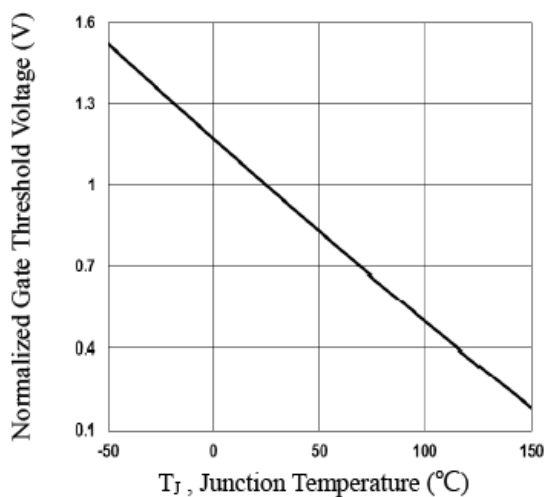


Fig.3 Normalized V_{th} vs. T_J

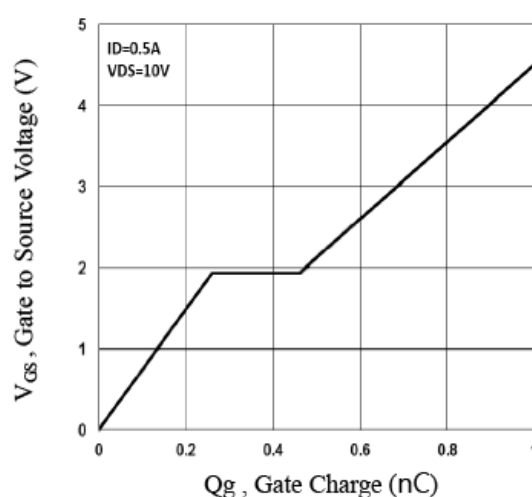


Fig.4 Gate Charge Waveform

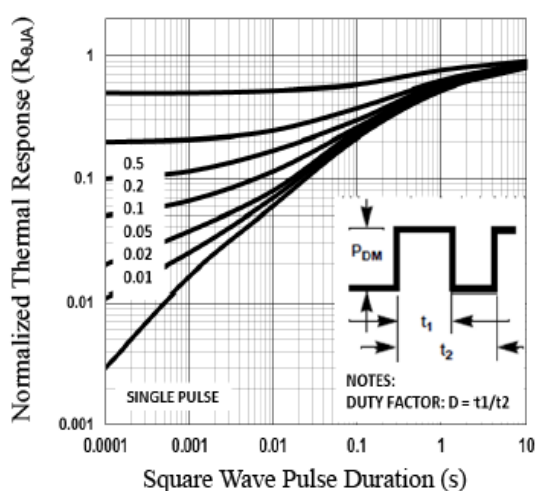


Fig.5 Normalized Transient Impedance

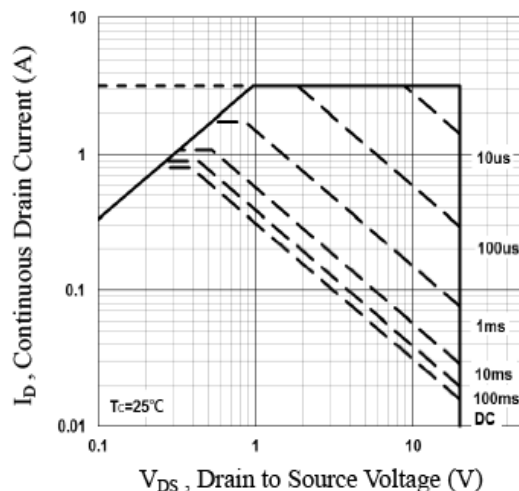
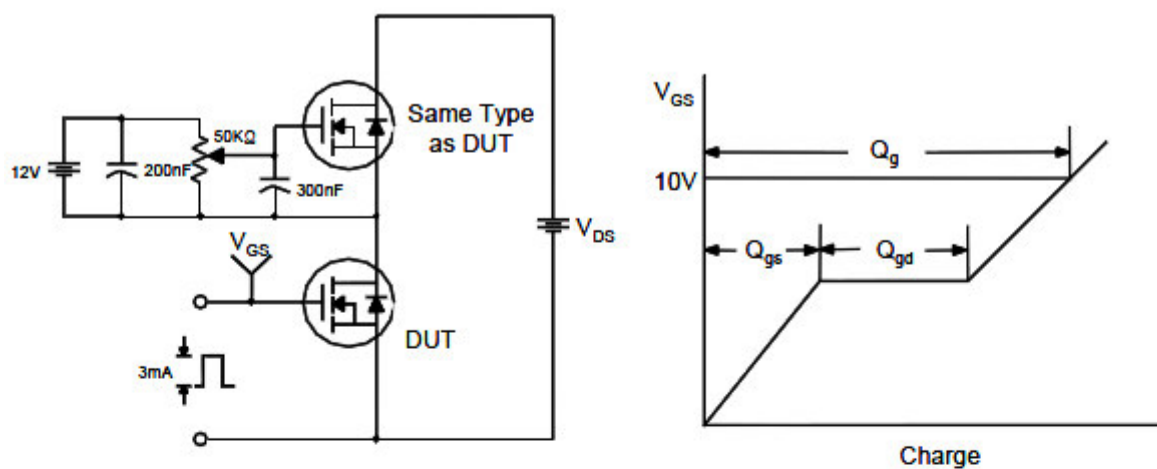


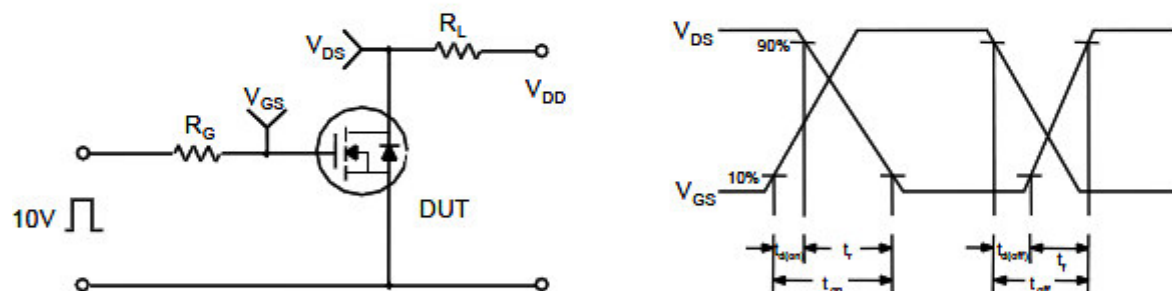
Fig.6 Maximum Safe Operation Area

Typical Performance Characteristics (Continue)

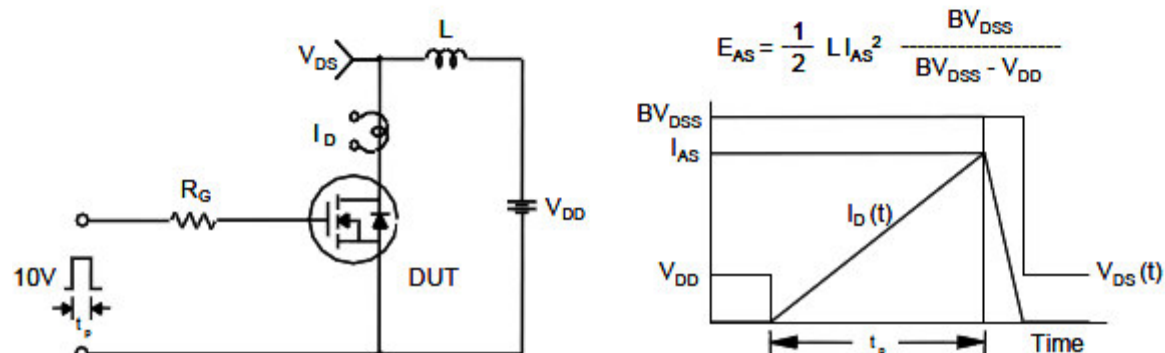
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

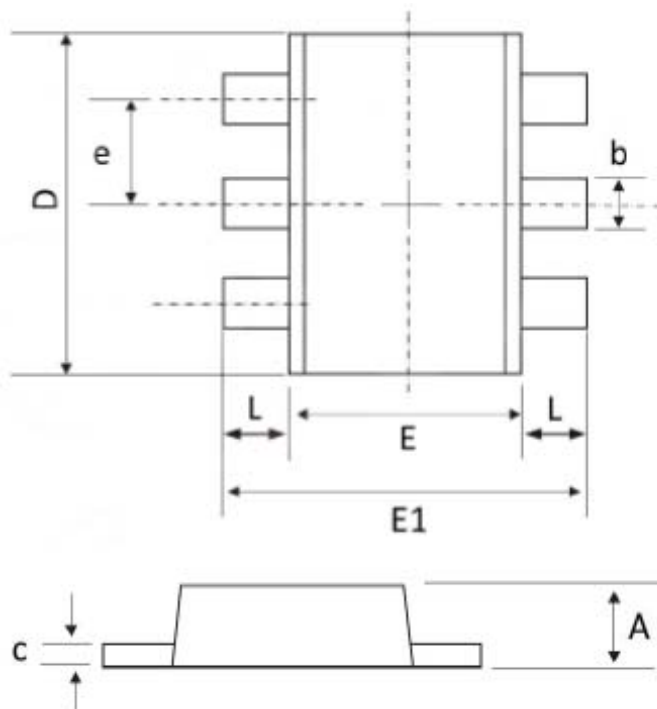


Unclamped Inductive Switching Test Circuit & Waveforms



Package Dimension

SOT-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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