GSM2165JZF

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

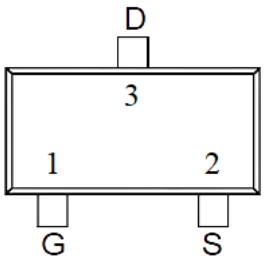
- -20V, -4.1A, $R_{DS(ON)}$=65mΩ@V_{GS}=-4.5V
- Improved dv/dt capability
- Fast switching
- Suit for -1.8V Gate Drive Applications
- Green Device Available
- SOT-23 package design

Applications

- Notebook
- Load Switch
- Hand-held Instruments
-

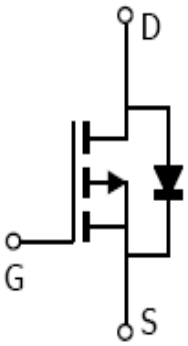
Packages & Pin Assignments

GSM2165JZF (SOT-23)

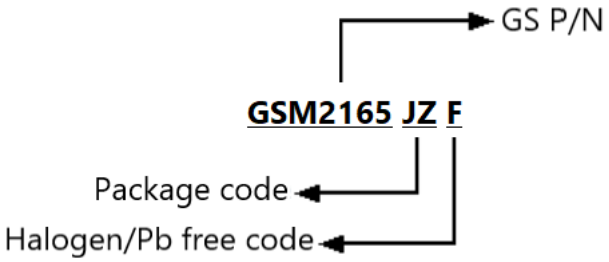


Top Views

Pin	Description
1	Gate
2	Source
3	Drain

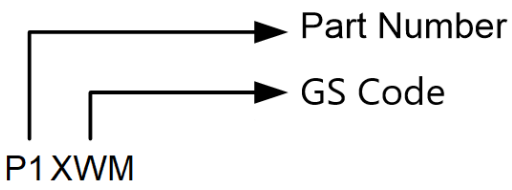


Ordering Information



Part Number	Package	Quantity Reel
GSM2165JZF	SOT-23	3000 PCS

Marking Information



Absolute Maximum Ratings

T_C=25ºC Unless otherwise noted

Symbol	Parameter		Typical	Unit
V_{DS}	Drain-Source Voltage		-20	V
V_{GS}	Gate-Source Voltage		±12	V
I_D	Continuous Drain Current	T_A=25℃	-4.1	A
		T_A=70℃	-3.6	
I_{DM}	Pulsed Drain Current[1]		-16.4	A
P_D	Power Dissipation (T_A=25℃)		1.56	W
	Power Dissipation (Derate above 25℃)		0.012	W/℃
T_J	Operating Junction Temperature Range		-55 to +150	℃
T_{STG}	Storage Temperature Range		-55 to +150	℃
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		80	℃/W

Electrical Characteristics

T_J=25ºC 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	-0.4		-0.9	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V, V_{GS}=±12V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-20V, V_{GS}=0V			-1	uA
I_S	Continuous Source Current	V_G=V_D=0V, Force Current			-4.1	A
I_{SM}	Pulsed Source Current				-8.2	
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=-4.5V, I_D=-4.5A		52	65	mΩ
		V_{GS}=-2.5V, I_D=-3A		73	85	
		V_{GS}=-1.8V, I_D=-1.5A		100	130	
g_{FS}	Forward Transconductance	V_{DS}=-10V, I_D=-4.5A		10		S
V_{SD}	Diode Forward Voltage	V_{GS}=0V, I_S=-1A			-1	V
Dynamic						
Q_g	Total Gate Charge[2,3]	V_{DS}=-10V, V_{GS}=-4.5V, I_D=-3A		6.4	9	nC
Q_{gs}	Gate-Source Charge[2,3]			0.9	1	
Q_{gd}	Gate-Drain Charge[2,3]			1.6	3	
C_{iss}	Input Capacitance	V_{DS}=-10V,V_{GS}=0V, f=1MHz		515	745	pF
C_{oss}	Output Capacitance			55	80	
C_{rss}	Reverse Transfer Capacitance			20	30	
$t_{d(on)}$	Turn-On Time[2,3]	V_{DD}=-10V, I_D=-1A, V_{GS}=-4.5V, R_G=25Ω		5	9	ns
t_r				17.4	33	
$t_{d(off)}$	Turn-Off Time[2,3]			40.7	80	
t_f				11.4	23	

Note :

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

Typical Performance Characteristics

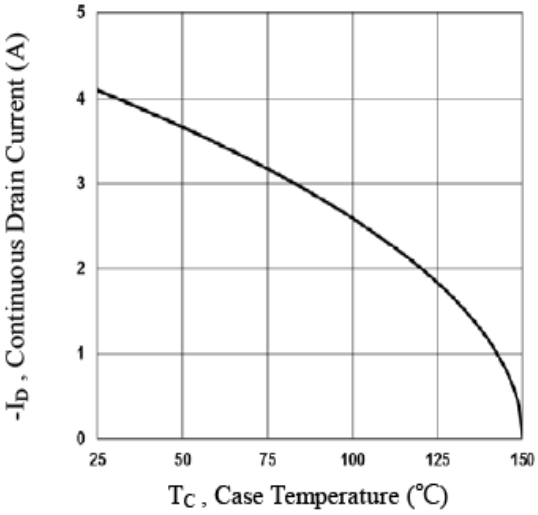


Fig.1 Continuous Drain Current vs T_C

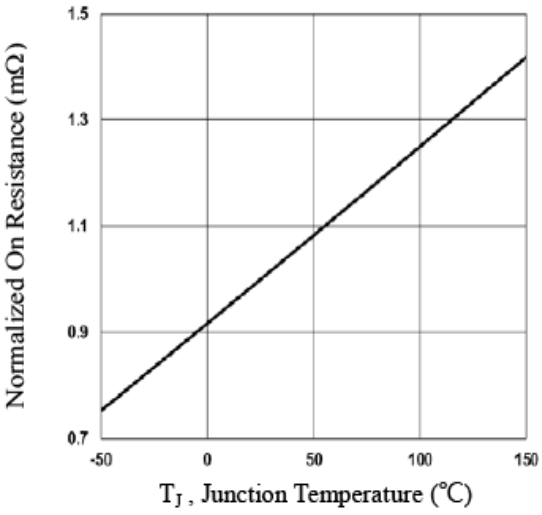


Fig.2 Normalized R_{DSON} vs T_J

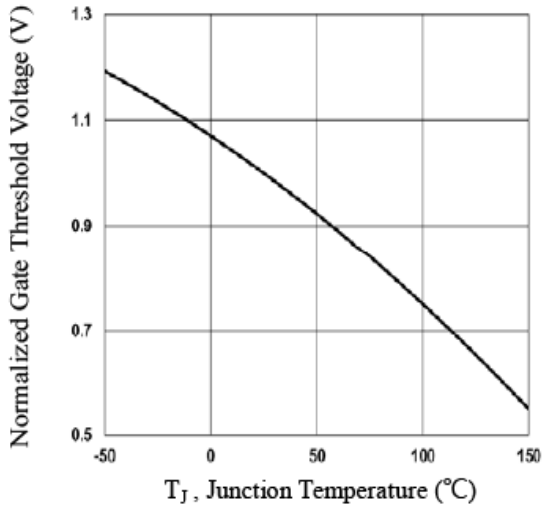


Fig.3 Normalized V_{TH} vs T_J

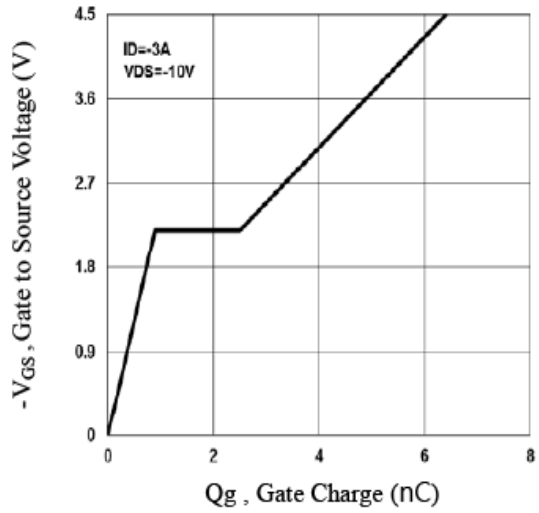


Fig.4 Gate Charge Waveform

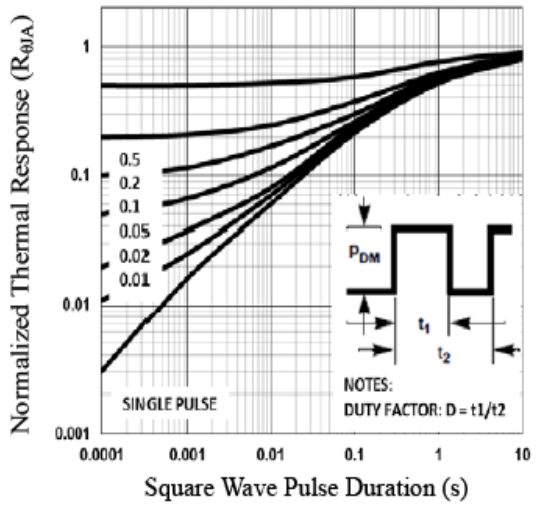


Fig.5 Normalized Transient Impedance

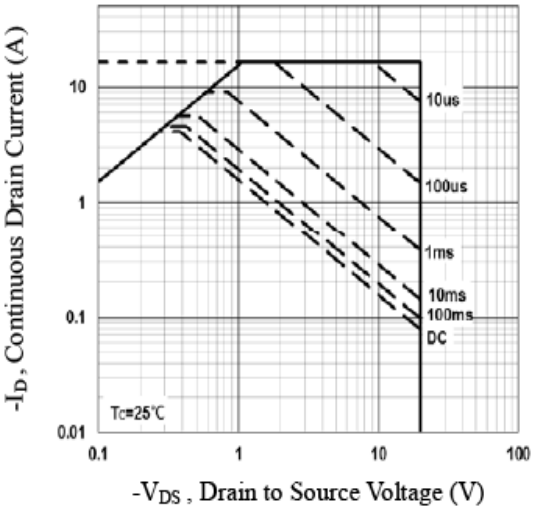
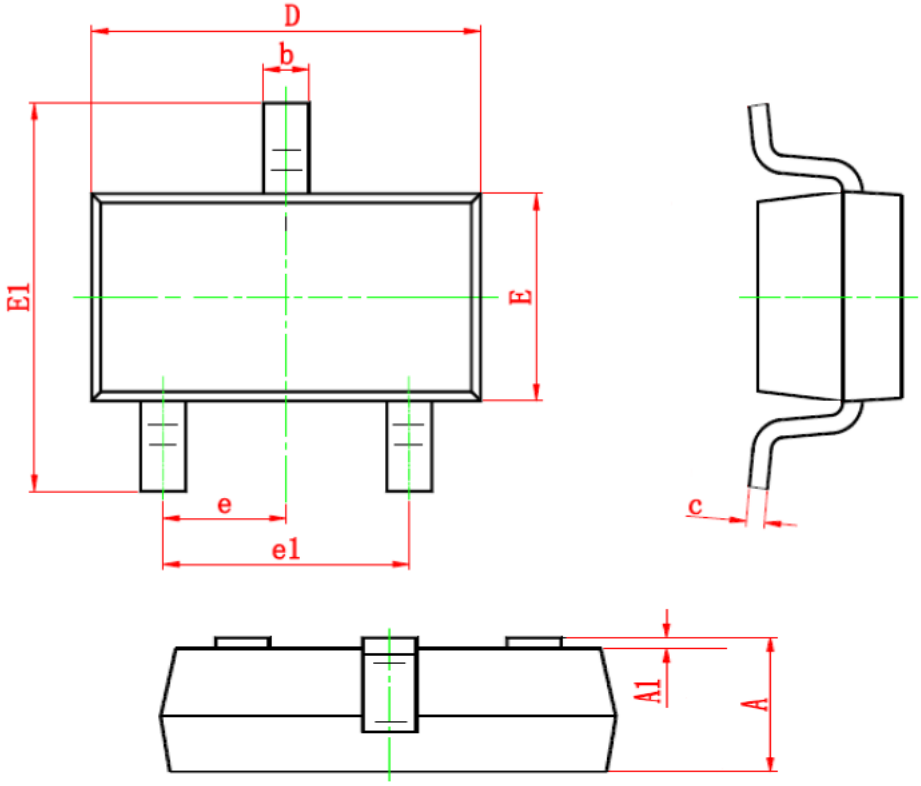


Fig.8 Maximum Safe Operating Area

Package Dimension

SOT-23



Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.9	1.14	0.035	0.045
A1	0	0.14	0	0.006
b	0.3	0.51	0.012	0.020
c	0.07	0.18	0.003	0.007
D	2.8	3.04	0.110	0.120
E	1.2	1.4	0.047	0.055
E1	2.1	2.64	0.083	0.104
e	0.95 Typ		0.037	
e1	1.78	2.05	0.070	0.081

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