

GSM2165JZF

20V P-Channel Enhancement Mode MOSFET

Product Description

The P-Channel enhancement mode power field effect transistor is 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.

This device is well suited for high efficiency fast switching applications.

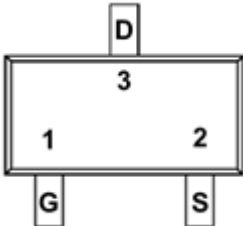
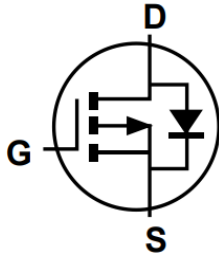
Features

- $R_{DS(ON)}=65m\Omega@V_{GS}=-4.5V$
- $R_{DS(ON)}=85m\Omega@V_{GS}=-2.5V$
- $R_{DS(ON)}=130m\Omega@V_{GS}=-1.8V$
- Fast switching
- SOT-23 package design

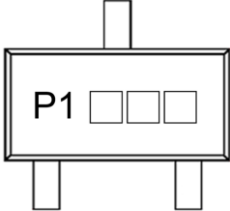
Applications

- Notebook
- Load Switch
- Hand-held Instruments

Packages & Pin Assignments

GSM2165JZF (SOT-23)		Equivalent Circuit
		
Pin	Description	
1	Gate	
2	Source	
3	Drain	

Ordering and Marking Information

Ordering Information			
Part Number	Package	Part Marking	Quantity / Reel
GSM2165JZF	SOT-23	P1□□□	3,000 PCS
GSM2165 1 2			
- Product Code: GSM2165		- Package Code: 1 is JZ for SOT-23	
		- Green Level: 2 is F for RoHS Compliant and Halogen Free	
Marking Information			
		- Product Code: P1	
		- GS Code: □□□	

Absolute Maximum Ratings

T_A=25°C, unless otherwise specified

Symbol	Parameter	Value	Unit
V _{DSS}	Drain-Source Voltage	-20	V
V _{GSS}	Gate-Source Voltage	±12	V
I _D	Continuous Drain Current	T _A =25°C	-4.1
		T _A =70°C	-3.6
I _{DM}	Pulsed Drain Current ¹	-16.4	A
P _D	Power Dissipation	T _A =25°C	1.56
		T _A =70°C	1
T _J	Operating Junction Temperature Range	-55 to +150	°C
T _{STG}	Storage Temperature Range	-55 to +150	°C
R _{θJA}	Thermal Resistance, Junction to Ambient	80	°C/W

Electrical Characteristics

T_A=25°C, unless otherwise specified

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Static characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250μA	-20	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250μA	-0.4	-	-0.9	V
I _{GSS}	Gate-Source Leakage Current	V _{DS} =0V, V _{GS} =±12V	-	-	±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-20V, V _{GS} =0V	-	-	-1	μA
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	-	-	-1.2	V
Dynamic characteristics						
Q _g	Total Gate Charge ^{2,3}	V _{DS} =-10V, V _{GS} =-4.5V, I _D =-3A	-	6.4	-	nC
Q _{gs}	Gate-Source Charge ^{2,3}		-	0.9	-	
Q _{gd}	Gate-Drain Charge ^{2,3}		-	1.6	-	
C _{iss}	Input Capacitance	V _{DS} =-10V, V _{GS} =0V, f=1MHz	-	515	-	pF
C _{oss}	Output Capacitance		-	55	-	
C _{rss}	Reverse Transfer Capacitance		-	20	-	
t _{d(on)}	Turn-On Delay Time ^{2,3}	V _{DS} =-10V, I _D =-1A, V _{GS} =-4.5V, R _G =25Ω	-	5	-	ns
t _r	Turn-On Rise Time		-	17.4	-	
t _{d(off)}	Turn-Off Delay Time ^{2,3}		-	40.7	-	
t _f	Turn-Off Fall Time		-	11.4	-	

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

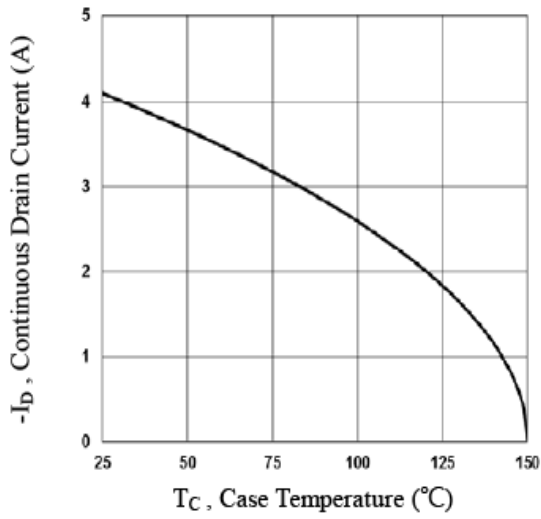


Fig.1 Continuous Drain Current vs T_C

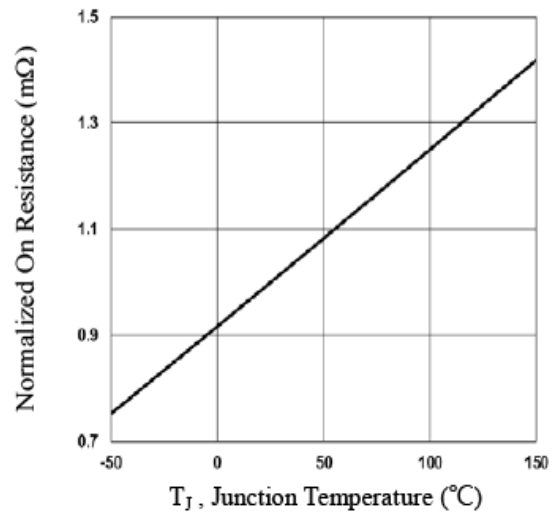


Fig.2 Normalized $R_{DS(on)}$ vs T_J

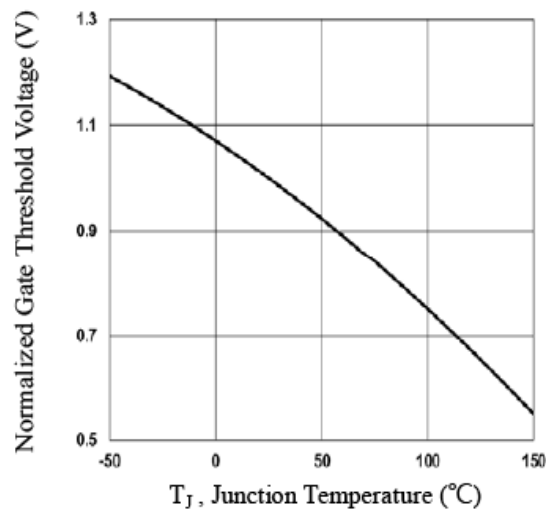


Fig.3 Normalized V_{TH} vs T_J

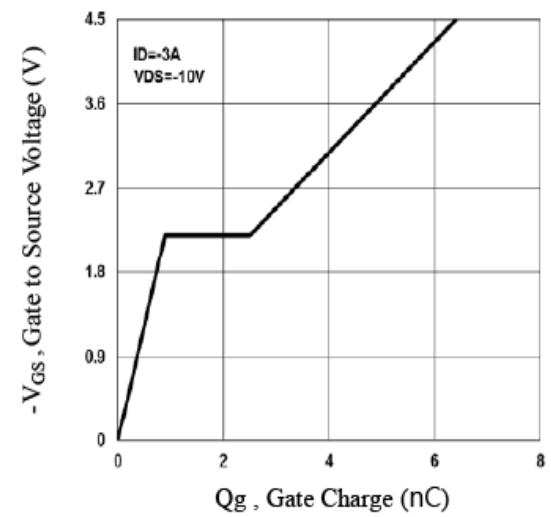


Fig.4 Gate Charge Waveform

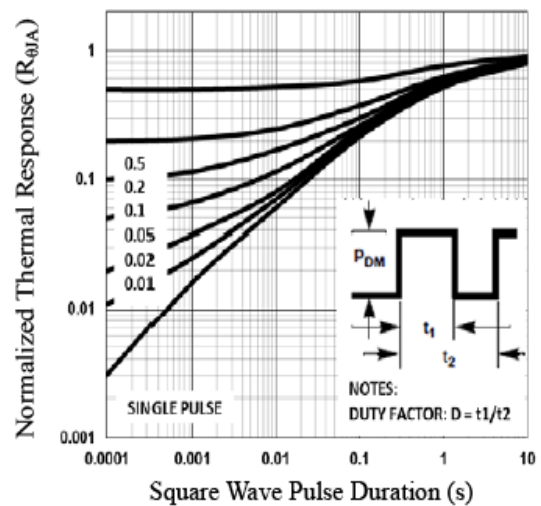


Fig.5 Normalized Transient Impedance

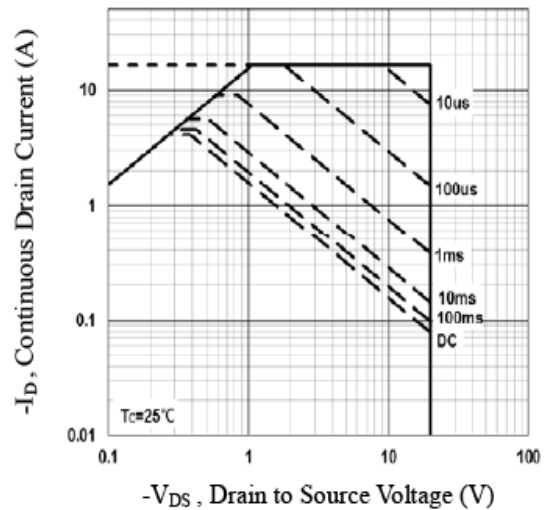
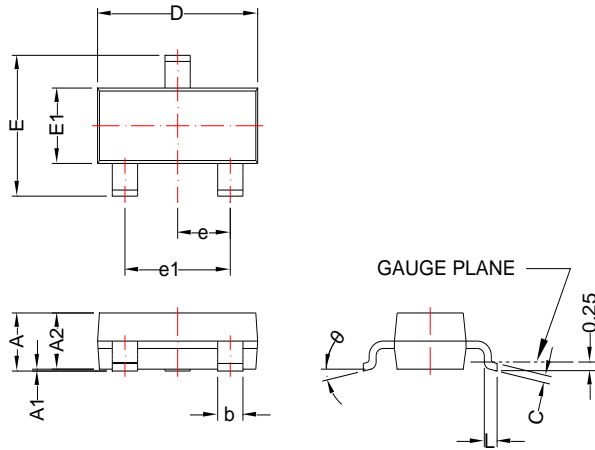


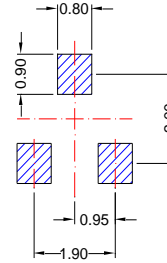
Fig.8 Maximum Safe Operating Area

SOT-23

Package Dimension



Recommended Land Pattern



Dimensions				
Symbol	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.75	1.17	0.030	0.046
A1	0.01	0.15	0.000	0.006
A2	0.70	1.02	0.028	0.040
b	0.30	0.50	0.012	0.020
c	0.08	0.20	0.003	0.008
D	2.80	3.04	0.110	0.120
E	2.10	2.64	0.083	0.104
E1	1.20	1.40	0.047	0.055
e	0.95 BSC		0.037 BSC	
e1	1.90 BSC		0.075 BSC	
L	0.3	0.6	0.012	0.024
θ	0°	8°	0°	8°





NOTE:



Dimensions are exclusive of Burrs, Mold Flash & Tie Bar extrusions.

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