GSM3131JZF

30V P-Channel 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.

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

Features

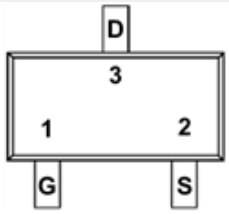
- $R_{DS(ON)}$=32mΩ@V_{GS}=-10V
- $R_{DS(ON)}$=46mΩ@V_{GS}=-4.5V
- Fast switching
- Suit for -4.5V Gate Drive Applications
- SOT-23 package design
- RoHS Compliant and Halogen Free

Applications

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

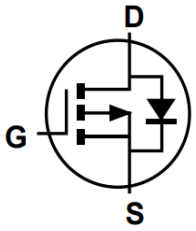
Packages & Pin Assignments

SOT-23



Pin	Description
1	Gate
2	Source
3	Drain

Equivalent Circuit



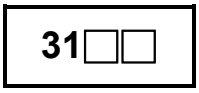
Ordering and Marking Information

Ordering Information			
Part Number	**Package**	**Part Marking**	**Quantity / Reel**
GSM3131JZF	SOT-23	31□□	3,000 PCS

GSM3131 1 2

- **Product Code:** GSM3131
- **Package Code:** 1 is **JZ** for SOT-23
- **Green Level:** 2 is **F** for RoHS Compliant and Halogen Free

Marking Information



- **Product Code:** 31
- **GS Code:** □□

Absolute Maximum Ratings (T_A=25ºC, unless otherwise specified)

Symbol	Parameter		Value	Unit
V_{DSS}	Drain-Source Voltage		-30	V
V_{GSS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	T_A=25ºC	-5	A
		T_A=70ºC	-4	
I_{DM}	Pulsed Drain Current [1]		-20	A
P_D	Power Dissipation [2]	T_A=25ºC	1.56	W
		T_A=70ºC	1	
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient		80	ºC/W
T_J	Operating Junction Temperature Range		-55 to +150	ºC
T_{STG}	Storage Temperature Range		-55 to +150	ºC

NOTE:
1. Pulse width is limited by maximum junction temperature.
2. The device mounted on 1in2 FR-4 board with 2oz. Copper

Electrical Characteristics (T_A=25ºC, 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	-30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-30V, V_{GS}=0V	-	-	-1	μA
I_{GSS}	Gate-Source Leakage Current	V_{DS}=0V, V_{GS}=±20V	-	-	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=-250μA	-1.3	-1.7	-2.3	V
$R_{DS(ON)}$	Drain-Source On-Resistance	V_{GS}=-10V, I_D=-4A	-	27	32	mΩ
		V_{GS}=-4.5V, I_D=-3A	-	42	46	
g_{FS}	Forward Transconductance	V_{DS}=-10V, I_D=-3A	-	5	-	S
V_{SD}	Diode Forward Voltage	V_{GS}=0V, I_S=-1A	-	-	-1	V
Dynamic Characteristics						
Q_g	Total Gate Charge	V_{DS}=-15V, V_{GS}=-4.5V, I_D=-5A	-	8	15	nC
Q_{gs}	Gate-Source Charge		-	3.3	6	
Q_{gd}	Gate-Drain Charge		-	2.3	5	
C_{iss}	Input Capacitance	V_{DS}=-15V,V_{GS}=0V, f=1MHz	-	757	1280	pF
C_{oss}	Output Capacitance		-	122	210	
C_{rss}	Reverse Transfer Capacitance		-	88	175	
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=-15V, I_D=-1A, V_{GS}=-10V, R_G=6Ω	-	4.6	9	ns
t_r	Turn-On Rise Time		-	14	26	
$t_{d(off)}$	Turn-Off Delay Time		-	34	58	
t_f	Turn-Off Fall Time		-	18	35	

Typical Performance Characteristics

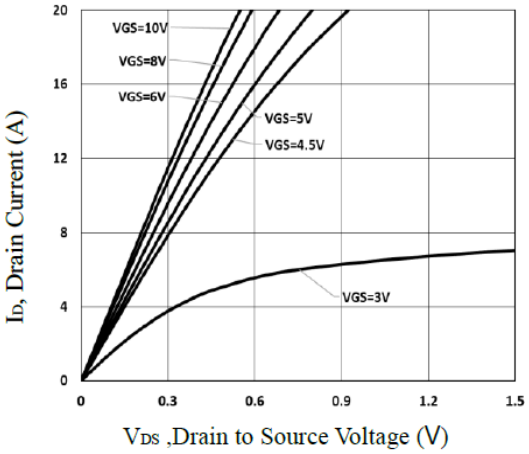


Fig.1 Typical Output Characteristics

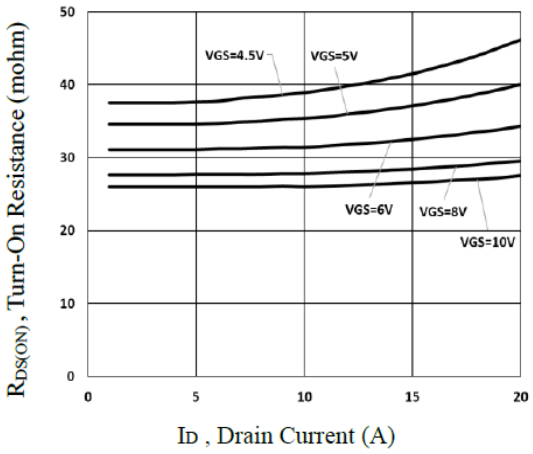


Fig.2 Turn-On Resistance vs. I_D

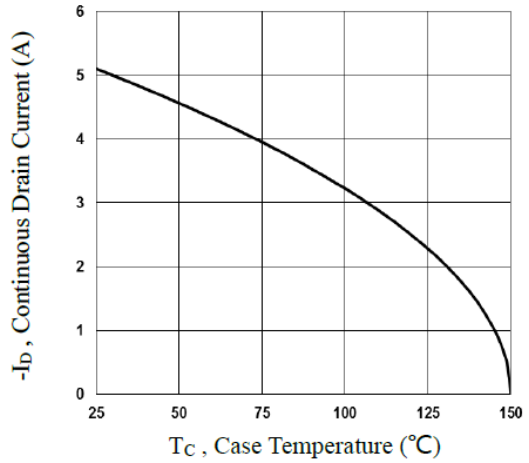


Fig.3 Continuous Drain Current vs. T_C

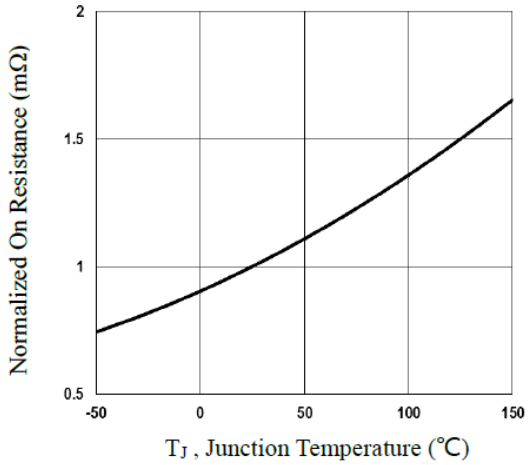


Fig.4 Normalized R_{DSON} vs. T_J

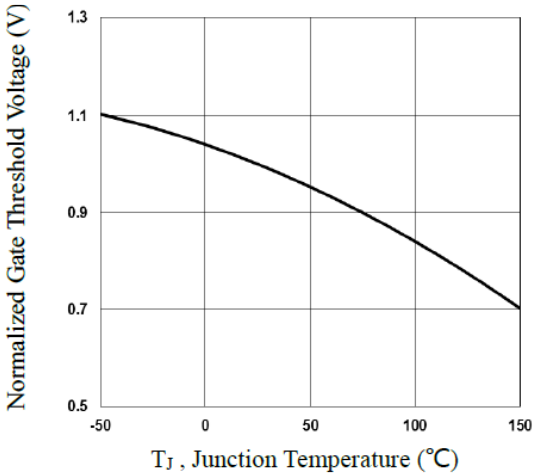


Fig.5 Normalized Vth vs. T_J

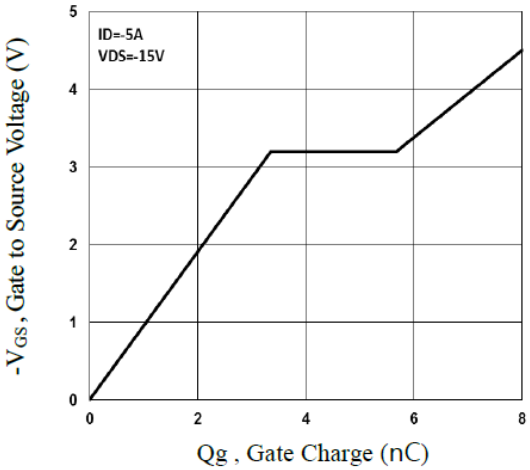


Fig.6 Gate Charge Characteristics

Typical Performance Characteristics

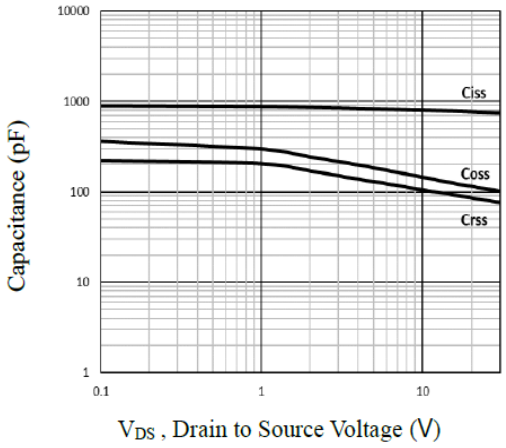


Fig.7 Capacitance Characteristics

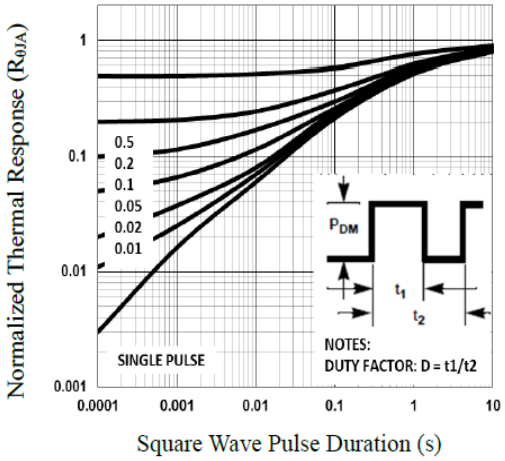


Fig.8 Normalized Transient Impedance

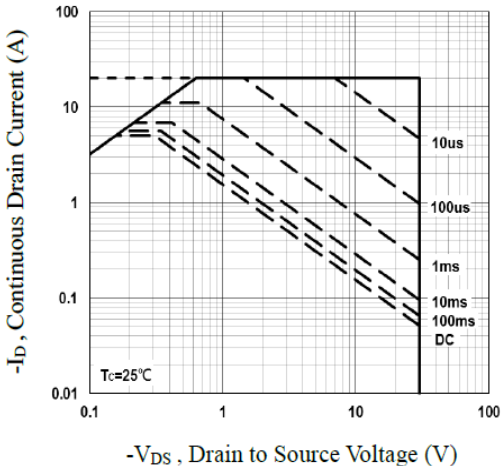


Fig.9 Maximum Safe Operation Area

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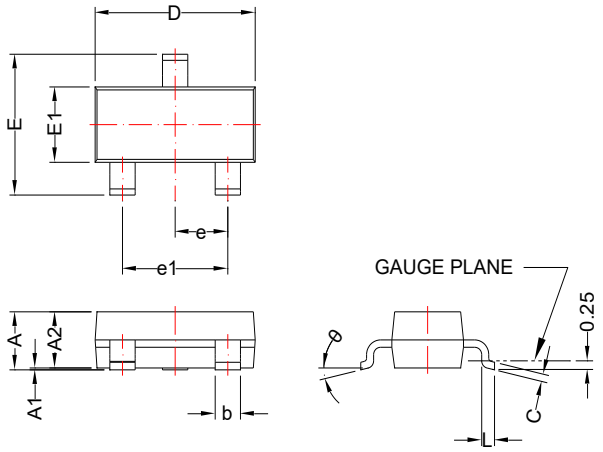
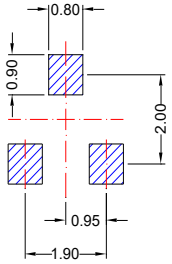
Package Dimension



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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CONTACT US

GS Headquarter	
	4F, NO.43-1, Lane 11, Sec. 6, Minquan E. Rd Neihu District, Taipei City 114761, 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