GSM2130JZF

20V N-Channel MOSFETs

Product Description

GSM2130JZF, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

This device is particularly suited for low voltage power management, such as smart phone and notebook computer and other battery powered circuits, and low in-line power loss are needed in commercial industrial surface mount applications.

Features

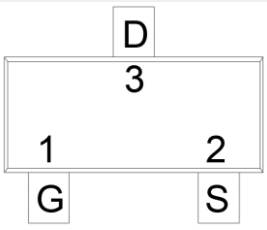
- $R_{DS(ON)}$=30mΩ@V_{GS}=4.5V
- Super high-density cell design for extremely low $R_{DS\ (ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23 package design

Applications

- Portable Equipment
- Battery Powered System
- Net Working System

Packages & Pin Assignments

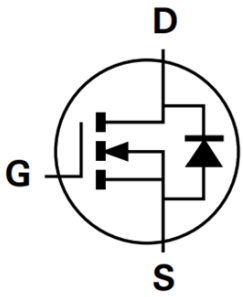
SOT-23



Top Views

Pin	Description
1	Gate
2	Source
3	Drain

Equivalent Circuit



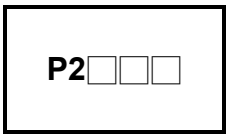
Ordering and Marking Information

Ordering Information			
Part Number	**Package**	**Part Marking**	**Quantity / Reel**
GSM2130JZF	SOT-23	P2□□□	3,000 PCS

GSM2130 1 2

- **Product Code:** GSM2130
- **Package Code:** 1 is **JZ** for SOT-23
- **Green Level:** 2 is **F** for RoHS Compliant and Halogen Free

Marking Information



- **Product Code:** P2
- **GS Code:** □□□

Absolute Maximum Ratings (T_A=25ºC, 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=25ºC	5.4	A
		T_A=70ºC	4.3	
I_{DM}	Pulsed[1] Drain Current		21	A
P_D	Power Dissipation	T_A=25ºC	1.25	W
		T_A=70ºC	0.8	W
T_J	Operating Junction Temperature		-55 to +150	ºC
T_{STG}	Storage Temperature Range		-55 to +150	ºC
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient		100	ºC/W

Electrical Characteristics (T_A=25ºC, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static characteristics						
BV_{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	-	1	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
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=4.5V, I_D=4A	-	21	30	mΩ
		V_{GS}=2.5V, I_D=3A	-	28	35	
		V_{GS}=1.8V, I_D=2A	-	40	55	
g_{FS}	Forward Transconductance	V_{DS}=10V, I_D=3A	-	-	10	S
V_{SD}	Diode Forward Voltage	I_S=1A, V_{GS}=0V	-	-	1	V
Dynamic characteristics						
C_{iss}	Input Capacitance	V_{DS}=10V, V_{GS}=0V, f=1MHz	-	532	-	pF
C_{oss}	Output Capacitance		-	144	-	
C_{rss}	Reverse Transfer Capacitance		-	117	-	
Q_g	Total Gate Charge[1、2]	V_{DS}=10V, V_{GS}=4.5V, I_D=5A	-	6.7	-	nC
Q_{gs}	Gate-Source Charge[1、2]		-	0.8	-	
Q_{gd}	Gate-Drain Charge[1、2]		-	3.0	-	
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=10V, I_D≡3.6A, V_{GEN}=4.5V R_G=6Ω		12		ns
t_r	Turn-On Rise Time			36		
$t_{d(off)}$	Turn-Off Delay Time			34		
t_f	Turn-Off Fall Time			10		

NOTE:

1. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
2. Essentially independent of operating temperature.

Typical Performance Characteristics

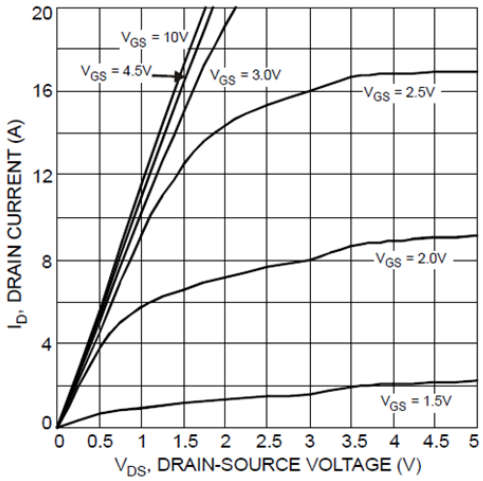


FIG.1 Output Characteristics

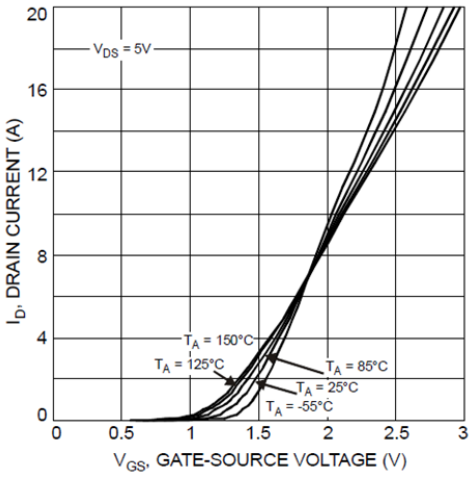


FIG.2 Transfer Characteristics

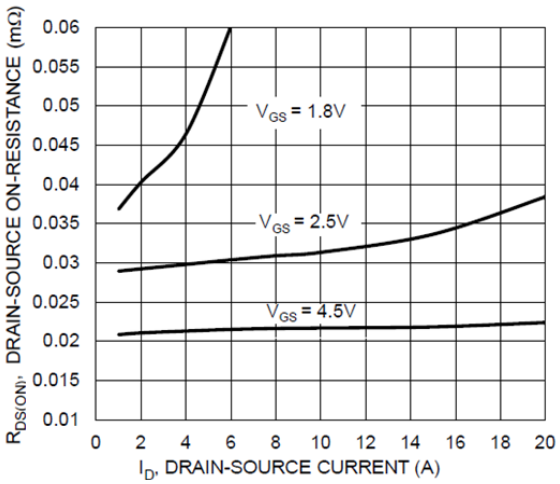


FIG.3 On-Resistance vs. Drain Current

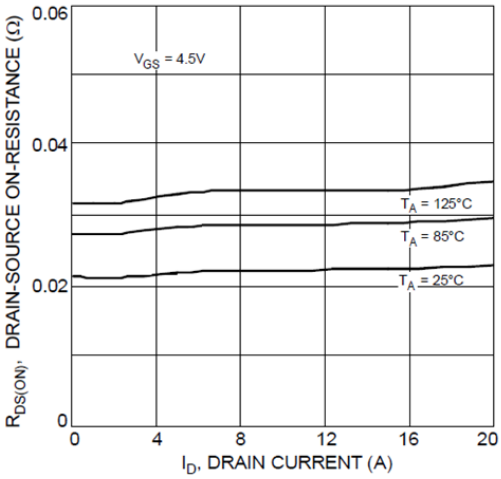


FIG.4 On-Resistance vs. Drain Current

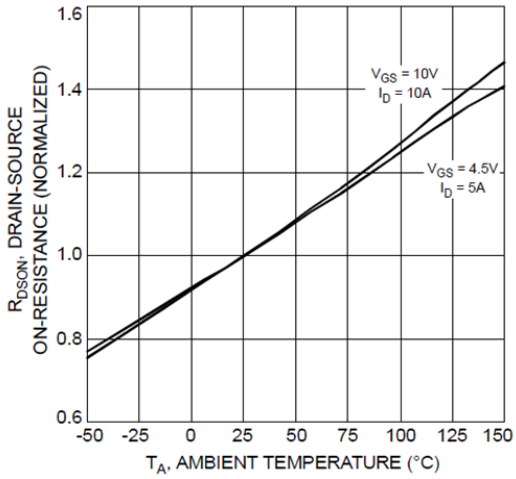


FIG.5 Normalized On-Resistance vs. T_J

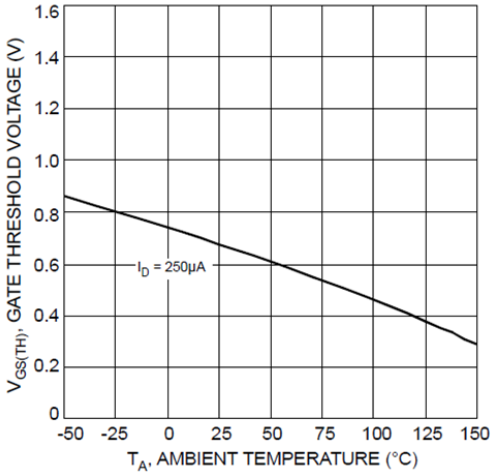


FIG.6 Normalized $V_{GS(th)}$ vs. T_J

Typical Performance Characteristics (Continued)

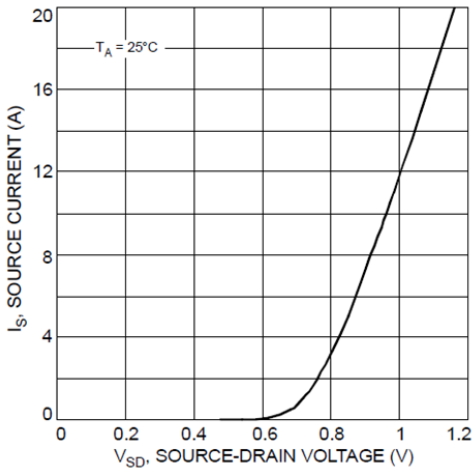


FIG.7 Diode Forward Voltage vs. Current

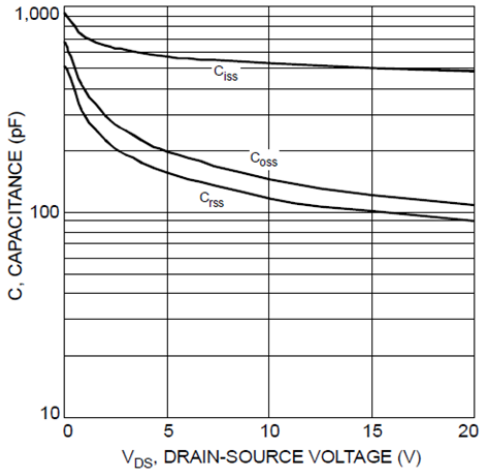


FIG.8 Typical Capacitance

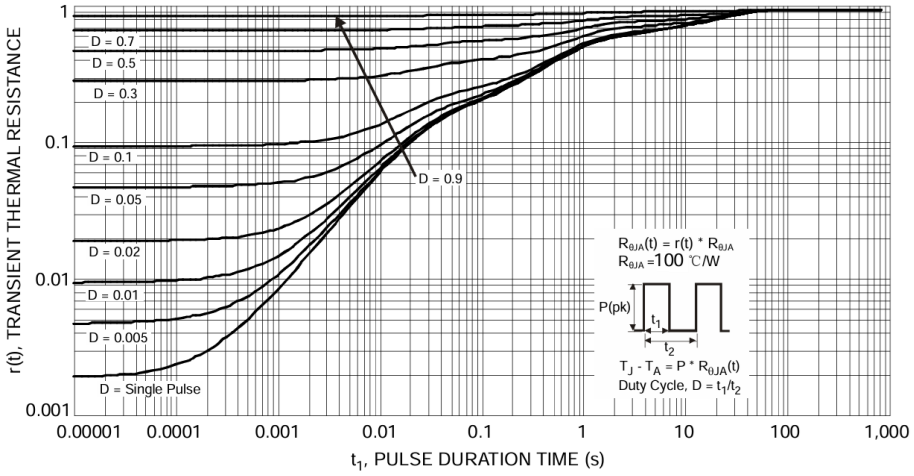
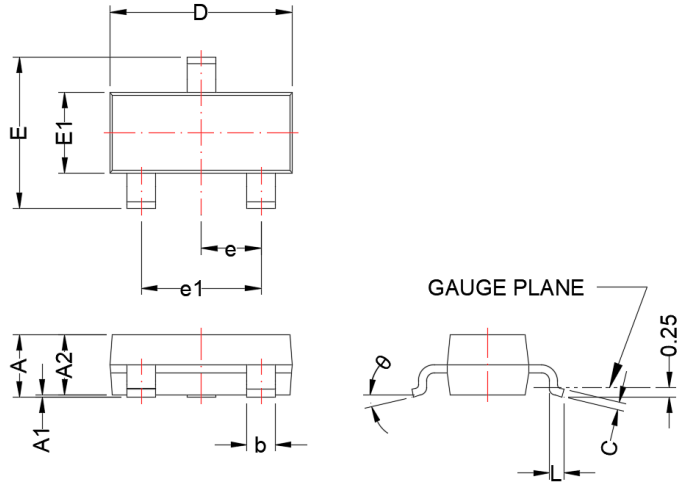


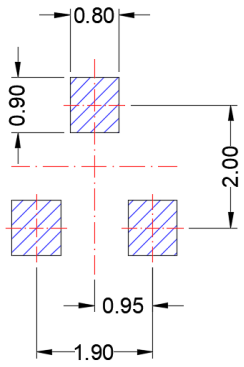
FIG.9 Transient Thermal Response

SOT-23

Package Dimension



Recommended Land Pattern



Unit:mm

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	0.30	0.60	0.012	0.024
θ	0°	8°	0°	8°

NOTE:

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

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