GSM2130NCF

20V N-Channel Enhancement Mode MOSFET

Product Description

The N-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

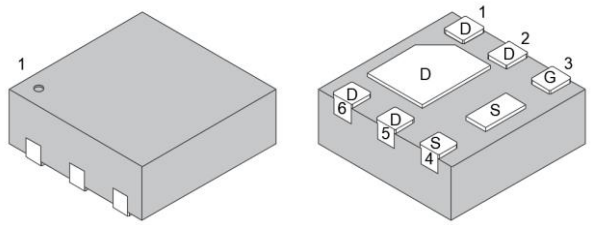
- $R_{DS(ON)}$ =30mΩ @V_{GS}=4.5V
- $R_{DS(ON)}$ =35mΩ @V_{GS}=2.5V
- $R_{DS(ON)}$ =55mΩ @V_{GS}=1.8V
- DFN2x2-6L(C) Package
- RoHS Compliant and Halogen Free

Applications

- Portable Equipment
- Battery Powered System
- Net Working System

Packages & Pin Assignments

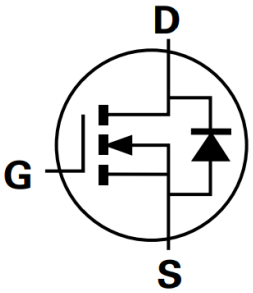
GSM2130NCF (DFN2x2-6L(C))



Bottom View

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

Equivalent Circuit



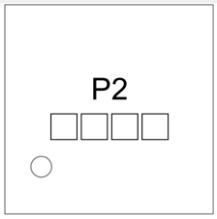
Ordering and Marking Information

Ordering Information			
Part Number	**Package**	**Part Marking**	**Quantity / Reel**
GSM2130NCF	DFN2x2-6L(C)	P2 □□□□	4,000 PCS

GSM2130 1 2

- **Product Code:** GSM2130
- **Package Code:** 1 is NC for DFN2x2-6L(C)
- **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 [1]	T_A=25ºC	5	A
		T_A=70ºC	4	
		T_C=25ºC	6	
		T_C=100ºC	3.5	
I_{DM}	Pulsed Drain Current [2]		20	A
P_D	Total Power Dissipation [3]	T_A=25ºC	1.4	W
		T_A=70ºC	0.9	
		T_C=25ºC	8.3	
		T_C=100ºC	3.3	
T_J	Operating Junction Temperature Range		-55 to +150	ºC
T_{STG}	Storage Temperature Range		-55 to +150	ºC
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient [1]		88	ºC/W
$R_{\theta JC}$	Thermal Resistance, Junction to Case [1]		15	ºC/W

Note:
1.The data tested by surface mounted on a 1 inch2 FR-4 board with 2oz copper.
2.The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%.
3.The power dissipation is limited by 150ºC junction temperature.

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=250μA	20	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	0.4	-	1	V
I_{GSS}	Gate-Source Leakage Current	V_{DS}=0V, V_{GS}=±12V	-	-	±100	nA
I_{DSS}	Drain-Source Leakage Current	V_{DS}=20V, V_{GS}=0V	-	-	1	μA
$R_{DS(ON)}$	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	V_{GS}=0V, I_S=1A	-	-	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	-	
Rg	Gate Resistance	V_{DS}=0V, V_{GS}=0V, f =1MHz	-	1.3	-	Ω
Q_g	Total Gate Charge	V_{DS}=10V, V_{GS}=4.5V, I_D=5A	-	6.7	-	nC
Q_{gs}	Gate-Source Charge		-	0.8	-	
Q_{gd}	Gate-Drain Charge		-	3	-	

Typical Performance Characteristics

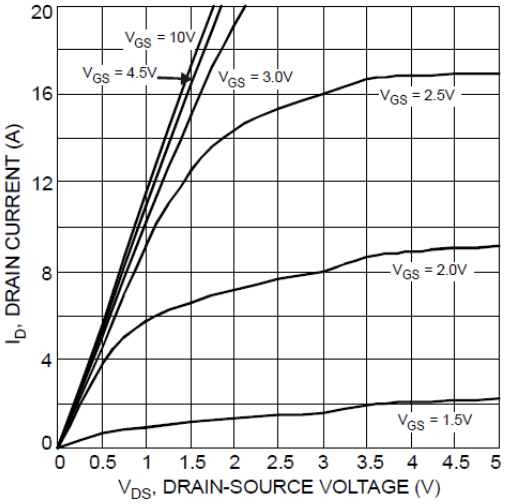


Figure 1. Typical Output Characteristics

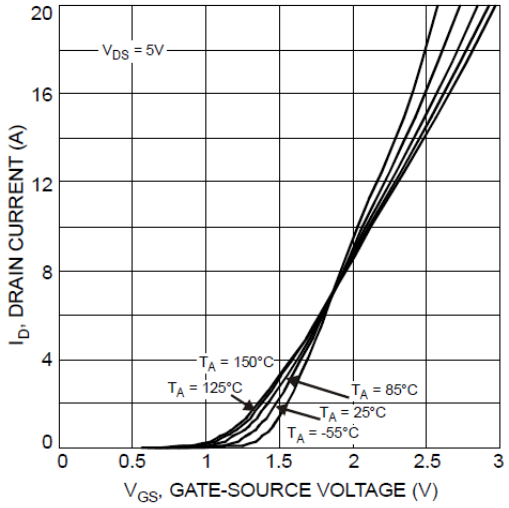


Figure 2. Typical Transfer Characteristics

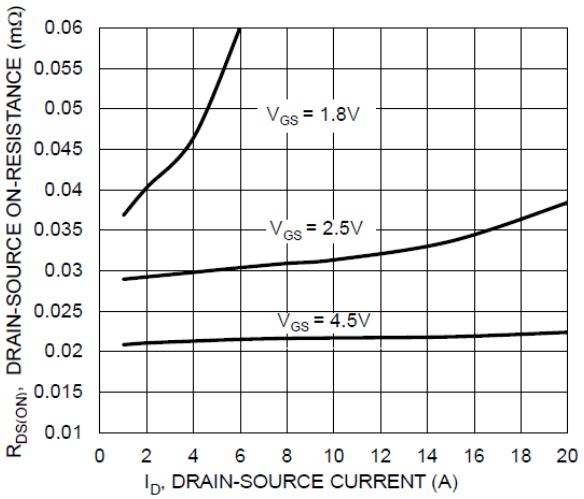


Figure 3. Drain-Source On-State Resistance vs Gate-Source Voltage

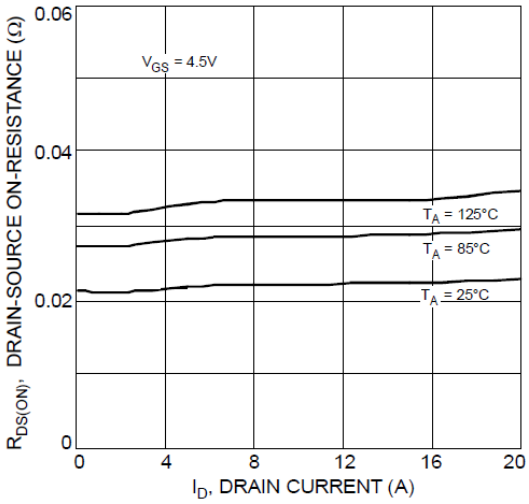


Figure 4. Drain-Source On-State Resistance vs Junction Temperature

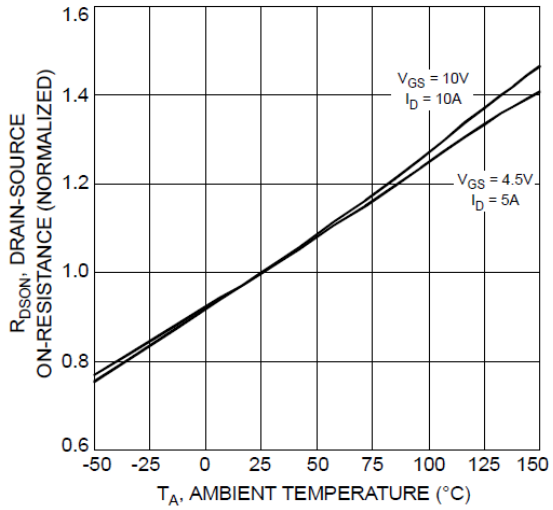


Figure 5. On-Resistance Variation with T_A

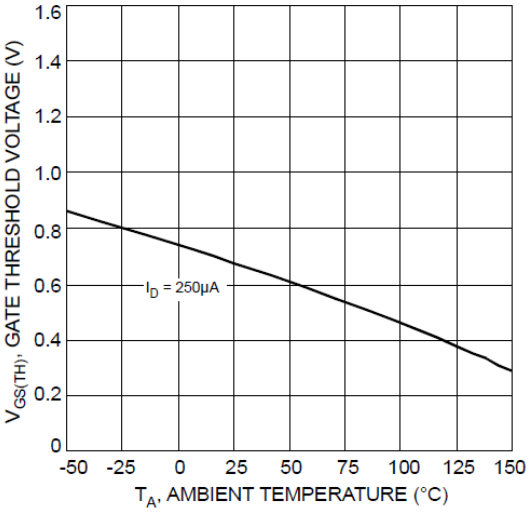


Figure 6. Gate Threshold Voltage Variation with TA

Typical Performance Characteristics

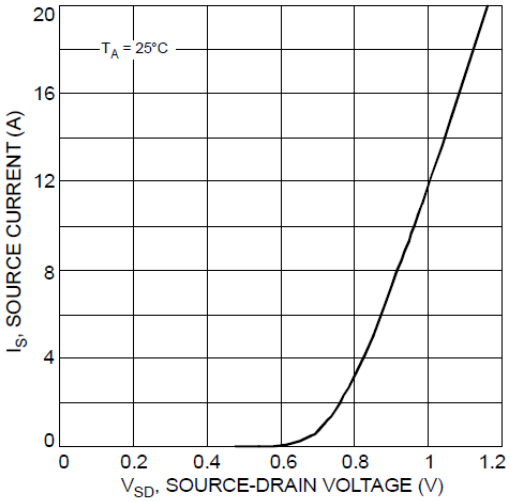


Figure 7. Diode Forward Voltage vs. Current

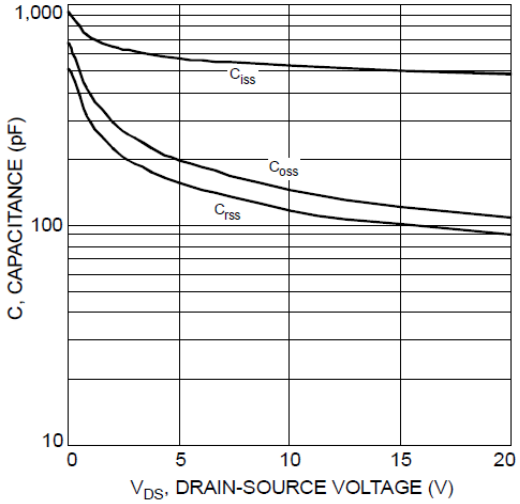


Figure 8. Typical Capacitance

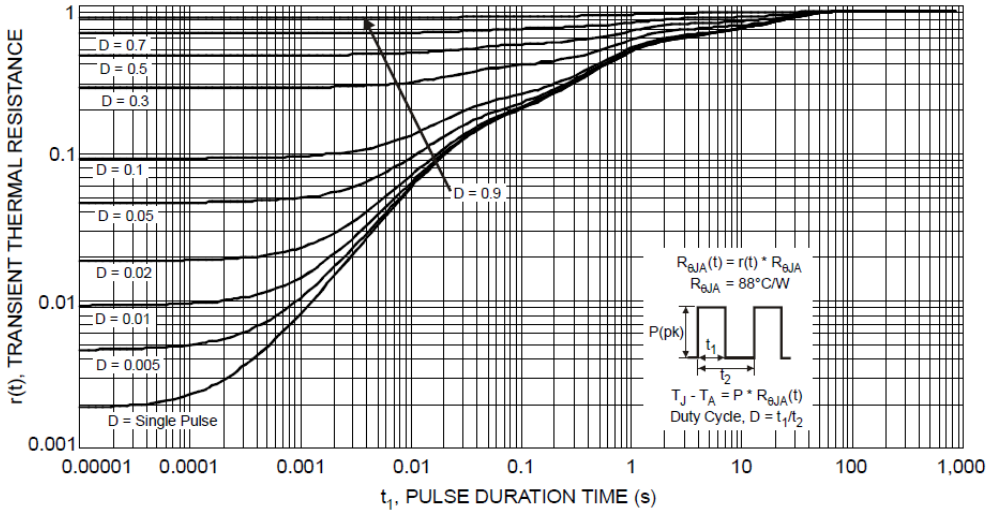
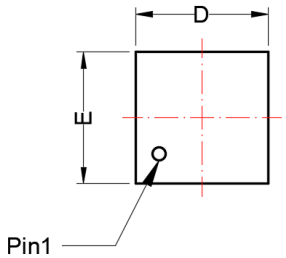
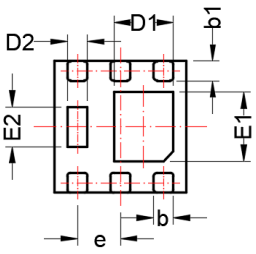


Figure 9. Transient Thermal Resistance

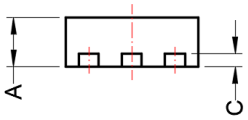
DFN2x2-6L(C)

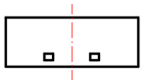
Package Dimension



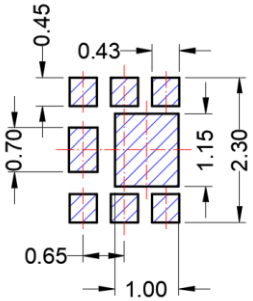


BACKSIDE VIEW





Recommended Land Pattern



Dimensions				
Symbol	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.70	0.80	0.028	0.031
b	0.25	0.35	0.010	0.014
b1	0.25	0.35	0.010	0.014
c	0.15	0.26	0.006	0.010
D	1.90	2.10	0.075	0.083
D1	0.80	1.00	0.031	0.039
D2	0.25	0.35	0.010	0.014
E	1.95	2.05	0.077	0.081
E1	0.90	1.10	0.035	0.043
E2	0.50	0.65	0.020	0.026
e	0.65 BSC		0.026 BSC	

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

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