GSM2230JRF

20V Dual N-Channel MOSFETs

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.

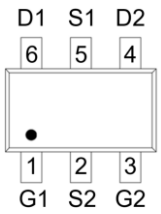
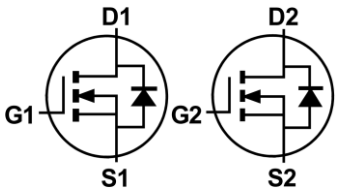
Features

- $R_{DS(ON)}$=28mΩ@V_{GS}=4.5V
- $R_{DS(ON)}$=35mΩ@V_{GS}=2.5V
- $R_{DS(ON)}$=55mΩ@V_{GS}=1.8V
- TSOT-23-6L Package
- RoHS Compliant and Halogen Free

Applications

- Portable Equipment
- Battery Powered System
- Net Working System

Packages & Pin Assignments

TSOT-23-6L	Equivalent Circuit
	

Pin	Symbol	Description	Pin	Symbol	Description
1	G1	Gate 1	**6**	D1	Drain 1
2	S2	Source 2	**5**	S1	Source 1
3	G2	Gate 2	**4**	D2	Drain 2

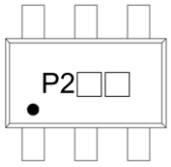
Ordering and Marking Information

Ordering Information			
Part Number	**Package**	**Part Marking**	**Quantity / Reel**
GSM2230JRF	TSOT-23-6L	P2□□	3,000 PCS

GSM2230 1 2

- **Product Code:** GSM2230
- **Package Code:** 1 is **JR** for TSOT-23-6L
- **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	6	A
		T_A=70ºC	4.8	
I_{DM}	Pulsed Drain Current [1]		20	A
P_D	Power Dissipation	T_A=25ºC	1.52	W
		T_A=70ºC	0.97	
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient [2]		82	ºC/W
T_J	Operating Junction Temperature Range		-55 to +150	ºC
T_{STG}	Storage Temperature Range		-55 to +150	ºC

NOTE:
1. Single pulse width is limited by max junction temperature.
2. The device was mounted on 1in^2 FR-4 board with 2oz.copper.

Electrical Characteristics (T_J = 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
I_{DSS}	Drain-Source Leakage Current	V_{DS}=20V, V_{GS}=0V	-	-	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{DS}=0V, V_{GS}=±12V	-	-	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	0.4	-	1	V
$R_{DS(ON)}$	Drain-Source On-Resistance	V_{GS}=4.5V, I_D=4A	-	22	28	mΩ
		V_{GS}=2.5V, I_D=3A	-	30	35	
		V_{GS}=1.8V, I_D=2A		43	55	
gfs	Forward Transconductance	V_{DS}=10V, I_D=3A	-	5	-	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=10V, V_{GS}=0V, f=1MHz	-	490	-	pF
C_{oss}	Output Capacitance		-	86	-	
C_{rss}	Reverse Transfer Capacitance		-	70	-	
Q_g	Total Gate Charge	V_{DS}=10V, I_D=4A V_{GS}=4.5V	-	6.2	-	nC
Q_{gs}	Gate-Source Charge		-	0.5	-	
Q_{gd}	Gate-Drain Charge		-	1.4	-	
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=10V, I_D=4A V_{GS}=4.5V, Rg=6Ω	-	8	-	ns
t_r	Turn-On Rise Time		-	35	-	
$t_{d(off)}$	Turn-Off Delay Time		-	39	-	
t_f	Turn-Off Fall Time		-	14	-	
Diode Characteristics						
V_{SD}	Diode Forward Voltage	V_{GS}=0V, I_S=1A	-	-	1	V

Typical Performance Characteristics

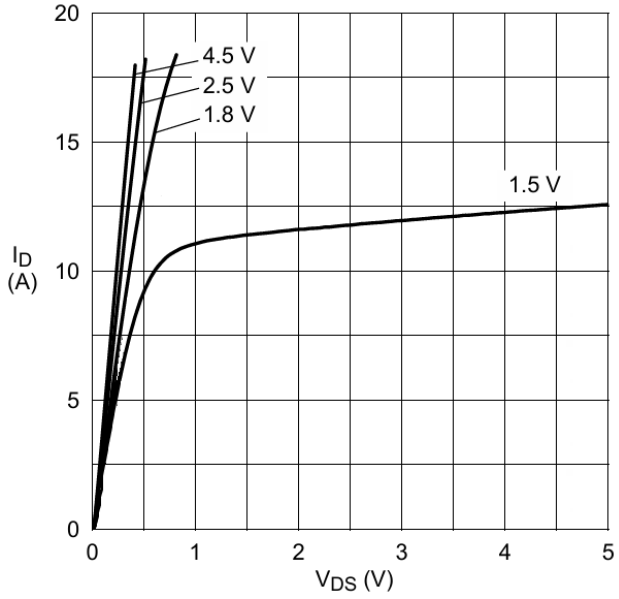


FIG.1 Output Characteristics

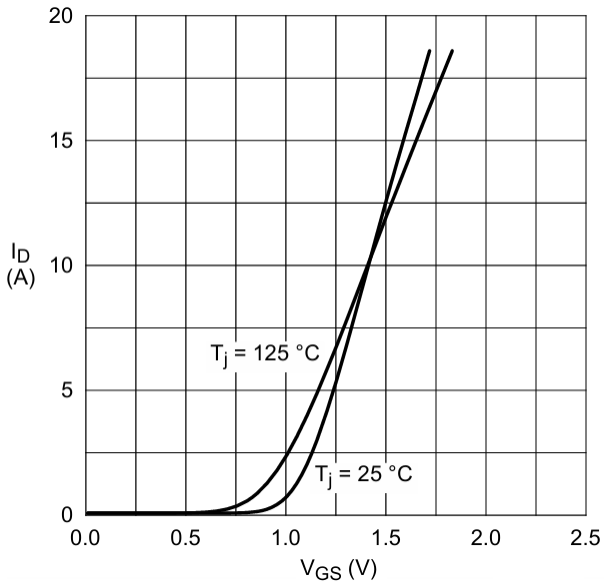


FIG.2 Transfer Characteristics

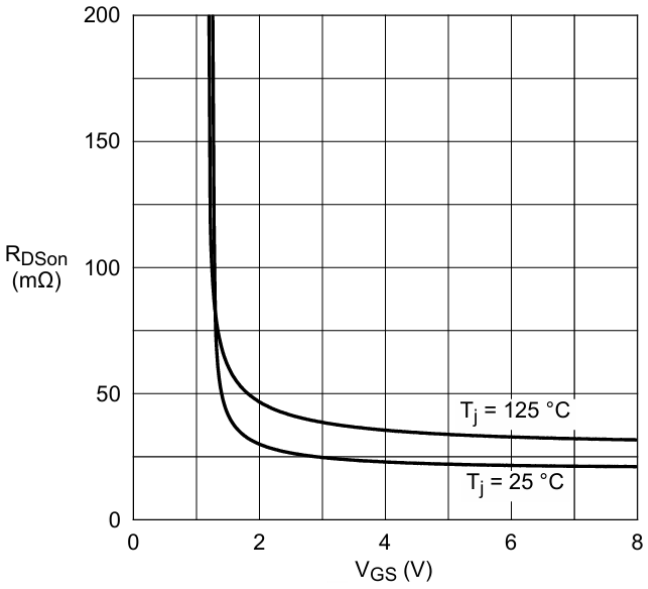


FIG.3 On-Resistance vs. Gate Voltage

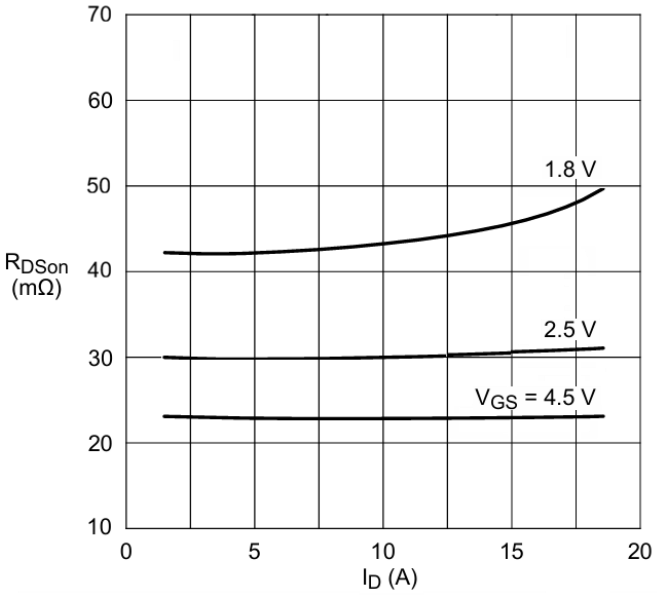


FIG.4 On-Resistance vs. Drain Current

Typical Performance Characteristics

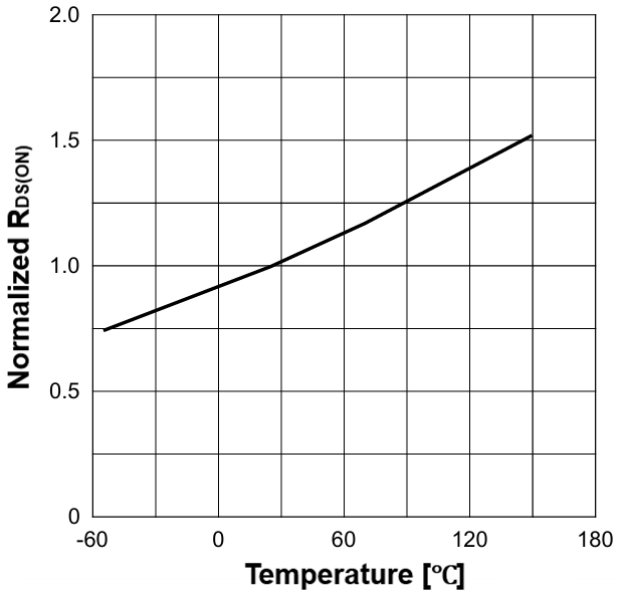


FIG.5 Normalized On-Resistance vs. T_J

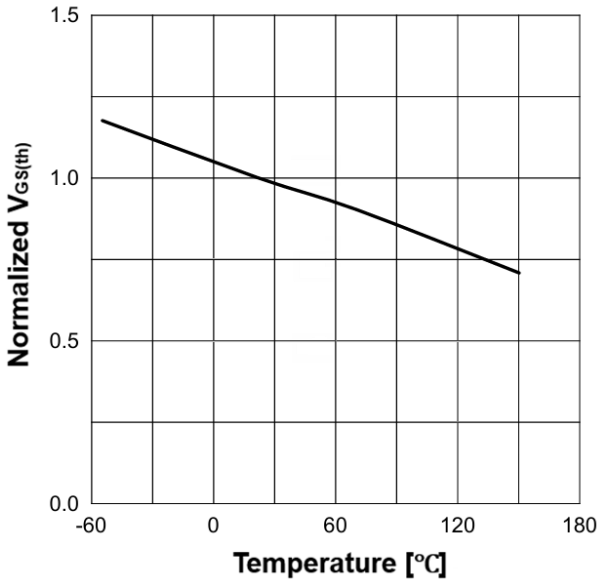


FIG.6 Normalized $V_{GS(th)}$ vs. T_J

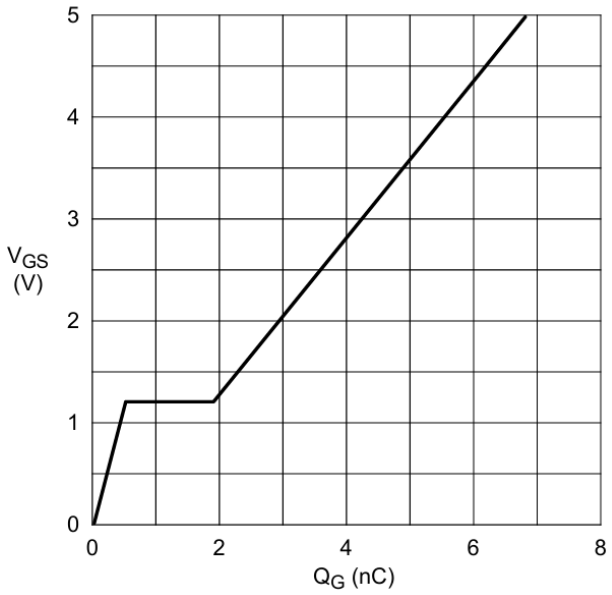


FIG.7 Gate Charge Characteristics

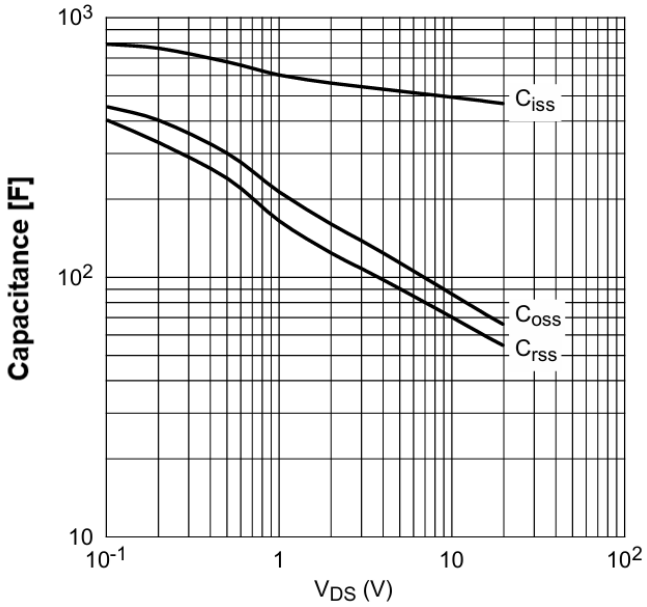


FIG.8 Capacitance Characteristics

Typical Performance Characteristics

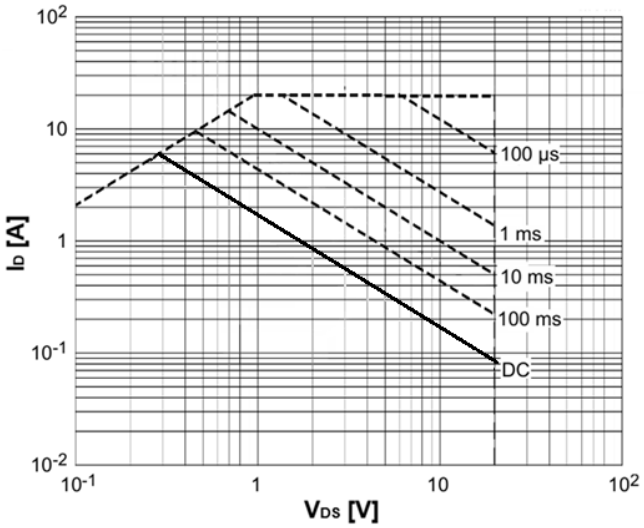


FIG.9 Maximum Safe Operation Area

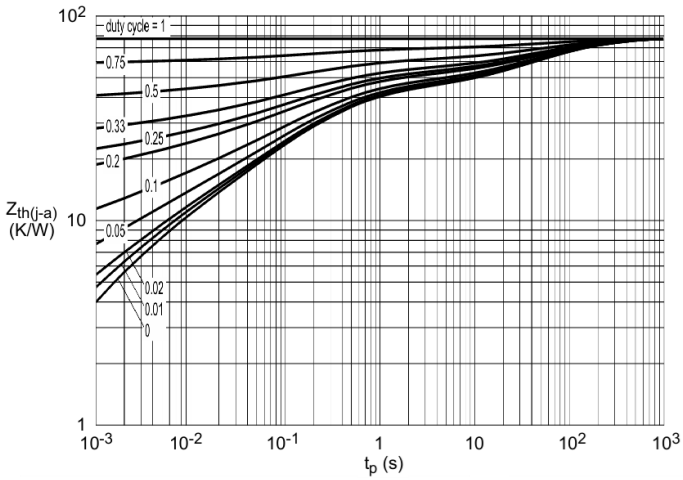


FIG.10 Typical Transient Impedance $Z_{\theta JA}$

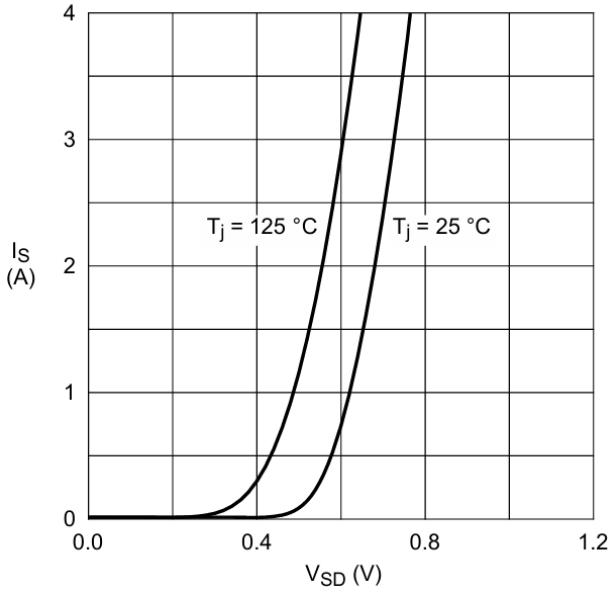
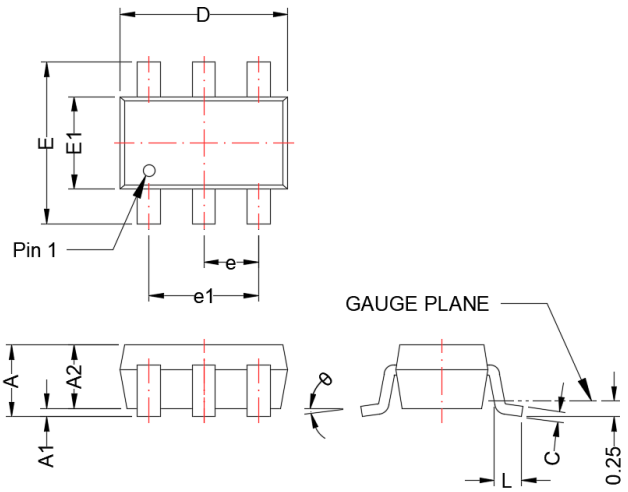


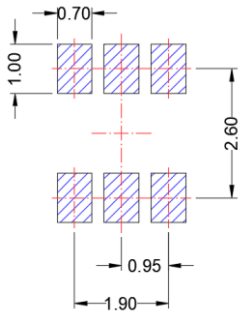
FIG.11 Body-Diode Characteristics

TSOT-23-6L

Package Dimension (2)



Recommended Land Pattern



Unit:mm

Dimensions				
Symbol	**Millimeters**		**Inches**	
	MIN	**MAX**	**MIN**	**MAX**
A	---	1.10	---	0.043
A1	0.00	0.10	0.000	0.004
A2	0.70	1.00	0.028	0.039
b	0.30	0.50	0.012	0.020
c	0.08	0.20	0.003	0.008
D	2.70	3.10	0.106	0.122
E	2.20	3.00	0.087	0.118
E1	1.30	1.75	0.051	0.069
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 and Tie Bar extrusions.

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