

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

- $R_{DS(ON)}=30m\Omega@V_{GS}=4.5V$
- $R_{DS(ON)}=35m\Omega@V_{GS}=2.5V$
- $R_{DS(ON)}=55m\Omega@V_{GS}=1.8V$
- TSOT-23-6L Package
- RoHS Compliant and Halogen Free

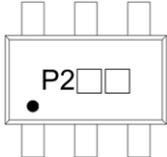
Applications

- 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 = 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	5.4
		T _A =70°C	4.3
I _{DM}	Pulsed Drain Current ¹	20	A
P _D	Power Dissipation	T _A =25°C	1.38
		T _A =70°C	0.88
R _{θJA}	Thermal Resistance-Junction to Ambient ²	90	°C/W
T _J	Operating Junction Temperature Range	-55 to +150	°C
T _{STG}	Storage Temperature Range	-55 to +150	°C

NOTE:

- Single pulse width is limited by max junction temperature.
- The device was mounted on 1in² FR-4 board with 2oz.copper.

Electrical Characteristics (T_J = 25°C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
B _V 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	30	mΩ
		V _{GS} =2.5V, I _D =3A	-	30	35	
		V _{GS} =1.8V, I _D =2A	-	43	55	
g _{fs}	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, R _g =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

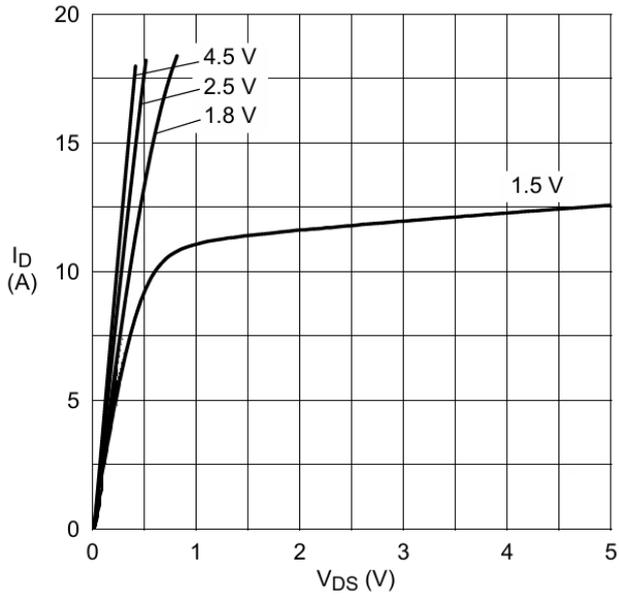


FIG.1 Output Characteristics

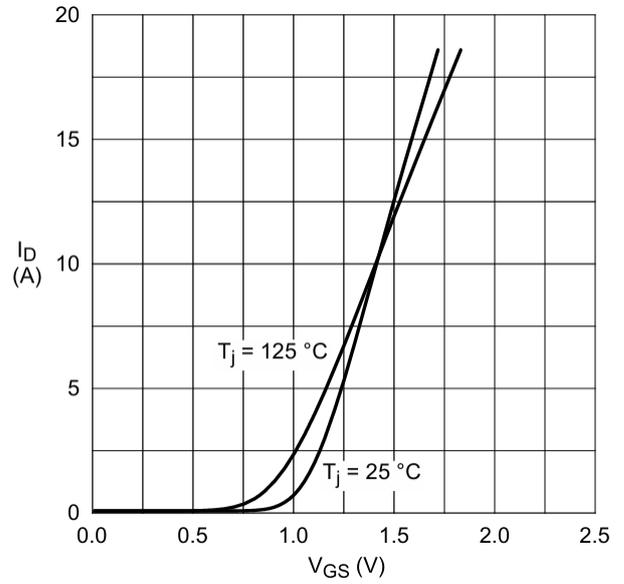


FIG.2 Transfer Characteristics

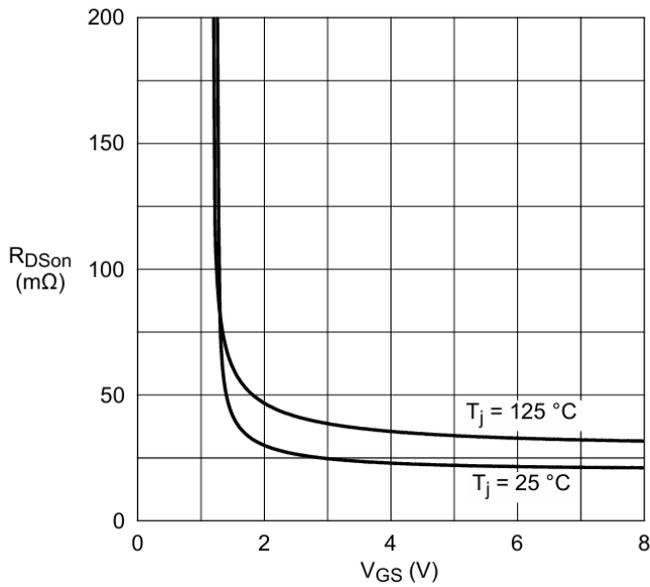


FIG.3 On-Resistance vs. Gate Voltage

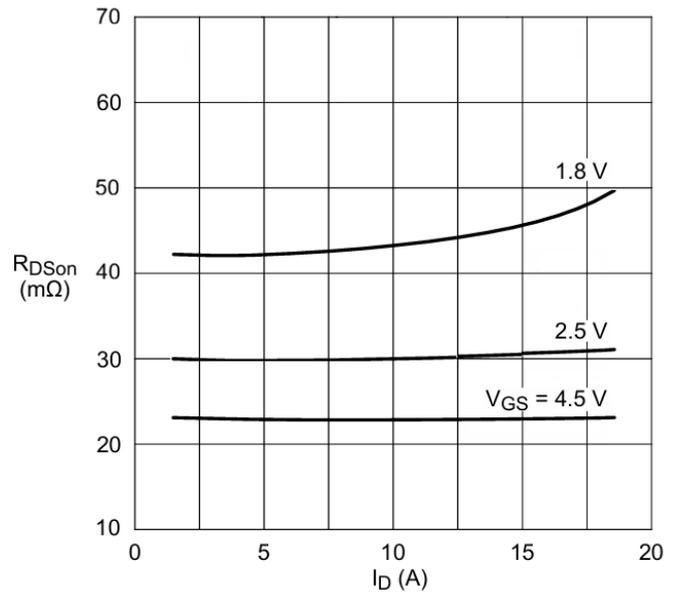


FIG.4 On-Resistance vs. Drain Current

Typical Performance Characteristics

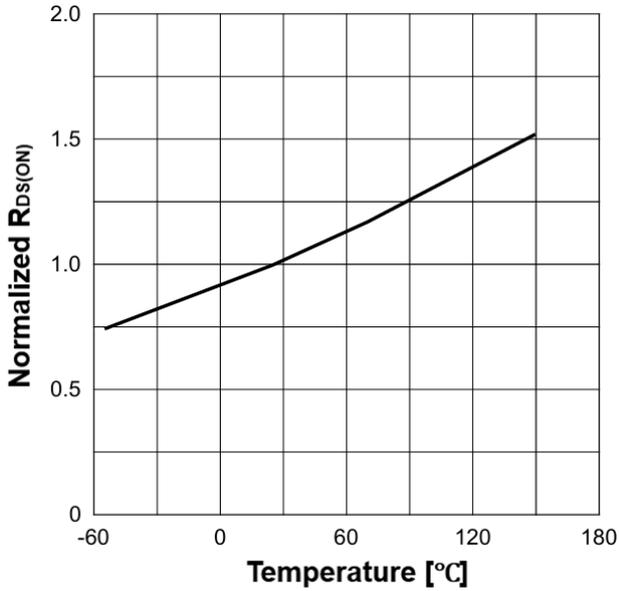


FIG.5 Normalized On-Resistance vs. T_J

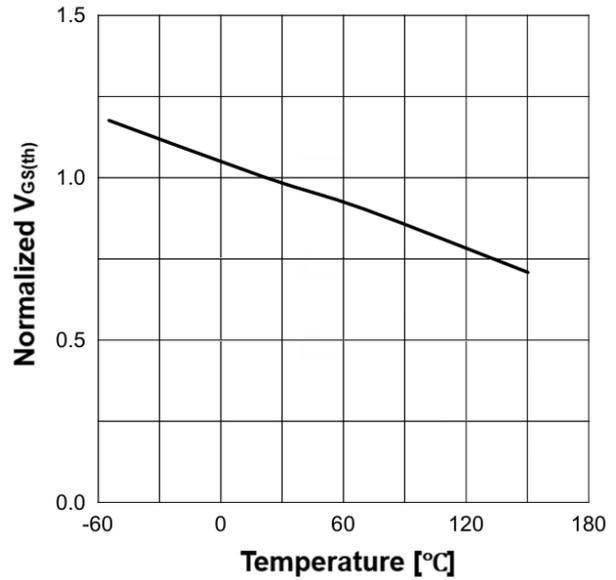


FIG.6 Normalized $V_{GS(th)}$ vs. T_J

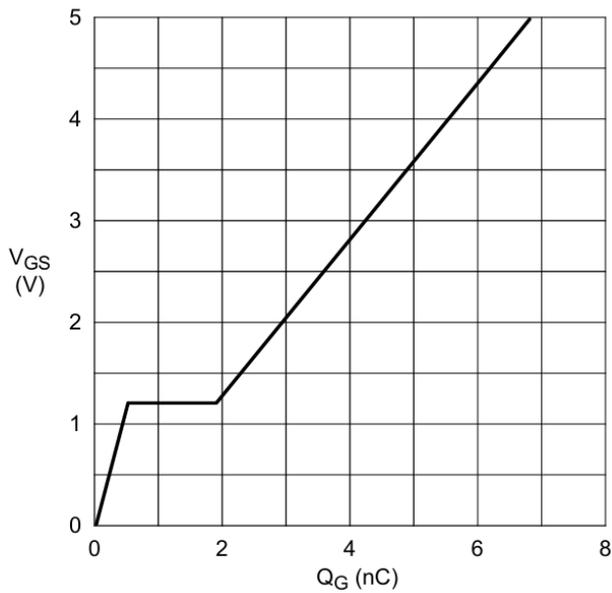


FIG.7 Gate Charge Characteristics

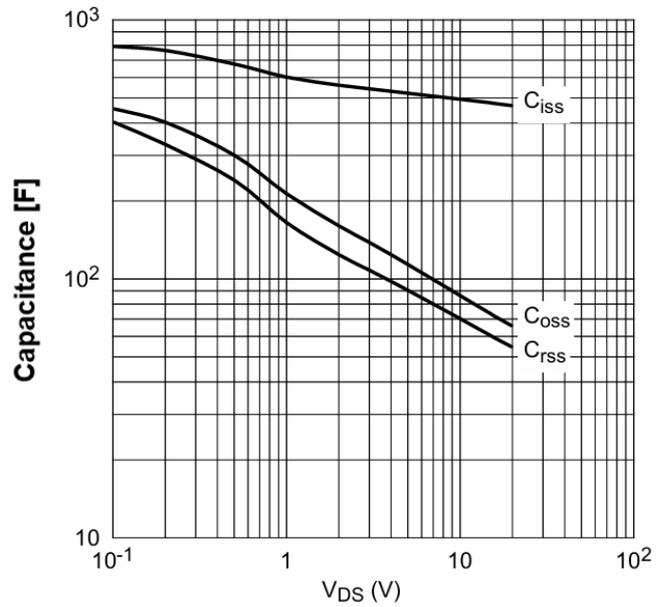


FIG.8 Capacitance Characteristics

Typical Performance Characteristics

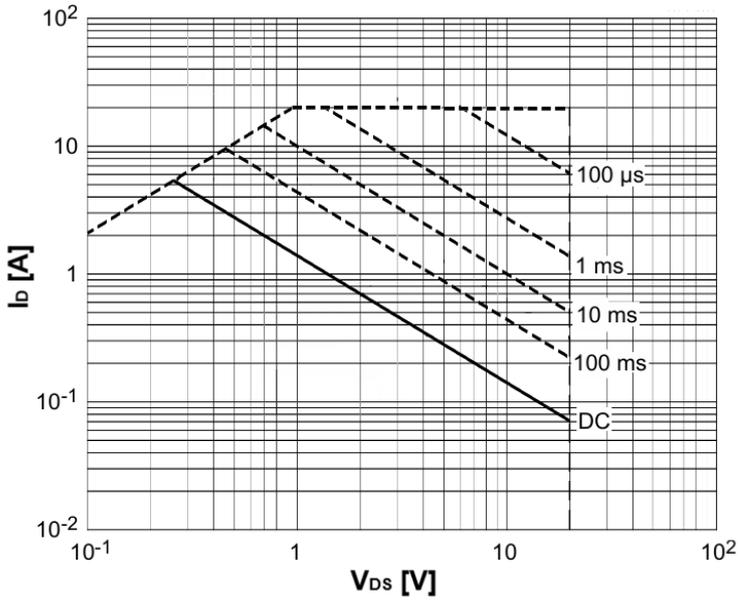


FIG.9 Maximum Safe Operation Area

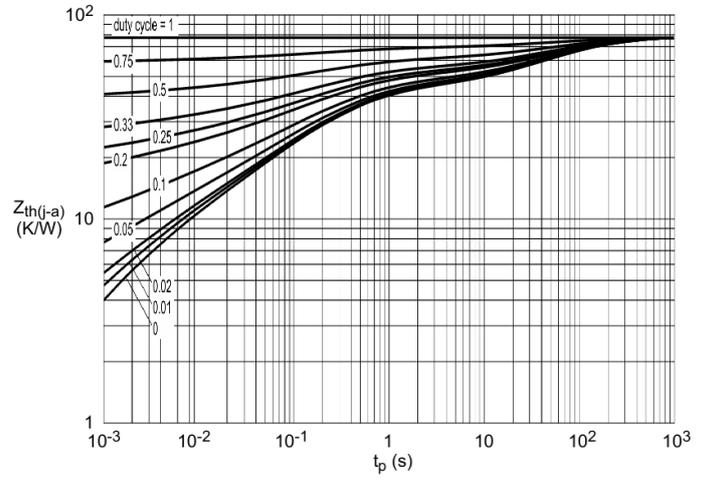


FIG.10 Typical Transient Impedance $Z_{\theta JA}$

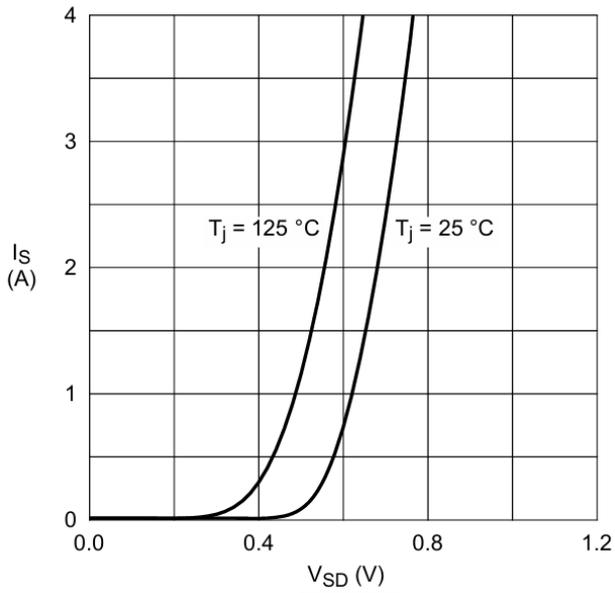
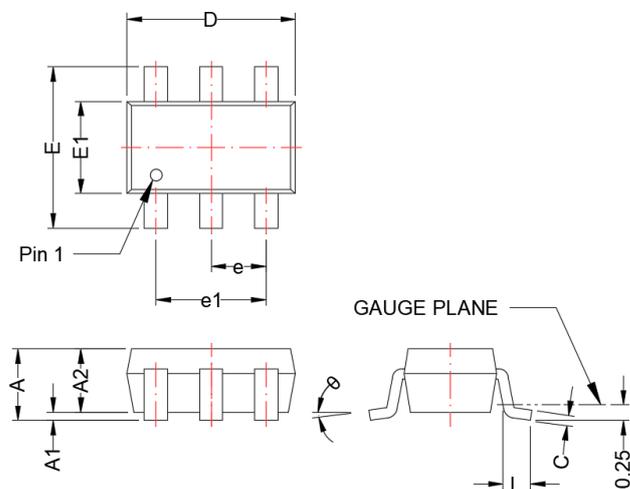


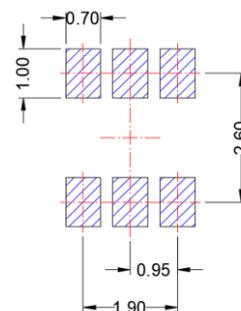
FIG.11 Body-Diode Characteristics

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
theta	0°	8°	0°	8°

NOTE:

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

NOTICE

- Globaltech Semiconductor assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all Globaltech Semiconductor products described or contained herein. Globaltech Semiconductor products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner.
- Applications shown on the herein document are examples of standard use and operation. Customers are responsible in comprehending the suitable use in particular applications. Globaltech Semiconductor makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.
- Information furnished is believed to be accurate and reliable. However Globaltech Semiconductor assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties, which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of Globaltech Semiconductor. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information without express written approval of Globaltech Semiconductor.

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