GSM1151DF

100V P-Channel Enhancement Mode 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.

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

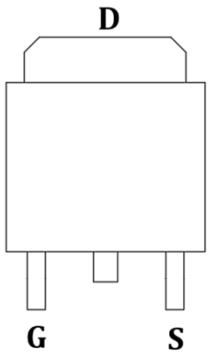
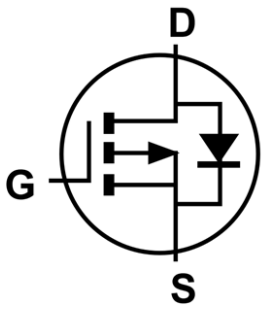
Features

- $R_{DS(ON)}$ =50mΩ@V_{GS}=-10V
- $R_{DS(ON)}$ =60mΩ@V_{GS}=-4.5V
- TO-252-2L Package
- RoHS Compliant and Halogen Free

Applications

- Networking
- Load Switch
- LED applications

Packages & Pin Assignments

GSM1151DF (TO-252-2L)	Equivalent Circuit
	

Pin	Description
G	Gate
S	Source
D	Drian

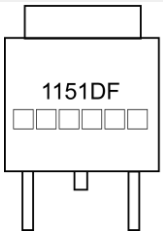
Ordering and Marking Information

Ordering Information			
Part Number	**Package**	**Part Marking**	**Quantity / Reel**
GSM1151DF	TO-252-2L	1151DF □□□□□□	2,500 PCS

GSM1151 1 2

- **Product Code:** GSM1151
- **Package Code:** 1 is **D** for TO-252-2L
- **Green Level:** 2 is **F** for RoHS Compliant and Halogen Free

Marking Information



- **Product Code:** 1151DF
- **GS Code:** □□□□□□

Absolute Maximum Ratings

T_A=25ºC, unless otherwise specified

Symbol	Parameter		Value	Unit
V_{DSS}	Drain-Source Voltage		-100	V
V_{GSS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current [1]	T_C=25ºC	-30	A
		T_C=100ºC	-18	
I_{DM}	Pulsed Drain Current [2]		-100	A
I_{AS}	Single Pulse Avalanche Current, L = 0.5mH [3]		-12	A
E_{AS}	Single Pulse Avalanche Energy, L = 0.5mH [3]		72	mJ
P_D	Power Dissipation [4]	T_C=25ºC	104	W
		T_C=100ºC	40	
T_J	Operating Junction Temperature Range		-55 to +150	ºC
T_{STG}	Storage Temperature Range		-55 to +150	ºC
$R_{\theta JC}$	Thermal Resistance, Junction to Case [1]		1.2	ºC/W

Electrical Characteristics

TA=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	-100	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=-250μA	-1.2	-	-2.5	V
I_{GSS}	Gate-Source Leakage Current	V_{DS}=0V, V_{GS}=±20V	-	-	±100	nA
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-100V, V_{GS}=0V	-	-	-1	μA
$R_{DS(ON)}$	Drain-Source On-Resistance [2]	V_{GS}=-10V, I_D=-10A	-	42	50	mΩ
		V_{GS}=-4.5V, I_D=-8A	-	46	60	
g_{FS}	Forward Transconductance	V_{DS}=-10V, I_D=-10A	-	26	-	S
V_{SD}	Diode Forward Voltage	V_{GS}=0V, I_S=-1A	-	-	-1	V
Dynamic characteristics						
C_{iss}	Input Capacitance	V_{DS}=-25V, V_{GS}=0V, f=1MHz	-	6516	-	pF
C_{oss}	Output Capacitance		-	223	-	
C_{rss}	Reverse Transfer Capacitance		-	125	-	
Q_g	Total Gate Charge	V_{DS}=-80V, V_{GS}=-10V, I_D=-14A	-	92	-	nC
Q_{gs}	Gate-Source Charge		-	17.5	-	
Q_{gd}	Gate-Drain Charge		-	14	-	
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=-50V, V_{GS}=-10V, Rg=3.3Ω, I_D=-14A	-	20.5	-	ns
t_r	Turn-On Rise Time		-	32.2	-	
$t_{d(off)}$	Turn-Off Delay Time		-	123	-	
t_f	Turn-Off Fall Time		-	63.7	-	

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 EAS data shows Max. rating . The test condition is V_{DD}=-25V, V_{GS}=-10V, L=0.5mH, IAS=-15A
4. The power dissipation is limited by 150℃ junction temperature

Typical Performance Characteristics

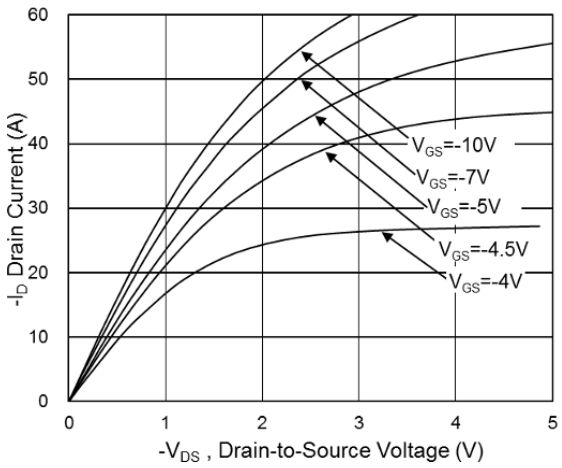


Fig.1 Typical Output Characteristics

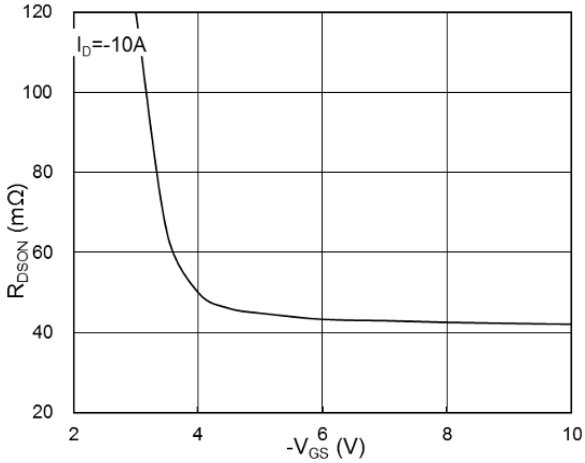


Fig.2 On-Resistance vs V_{GS}

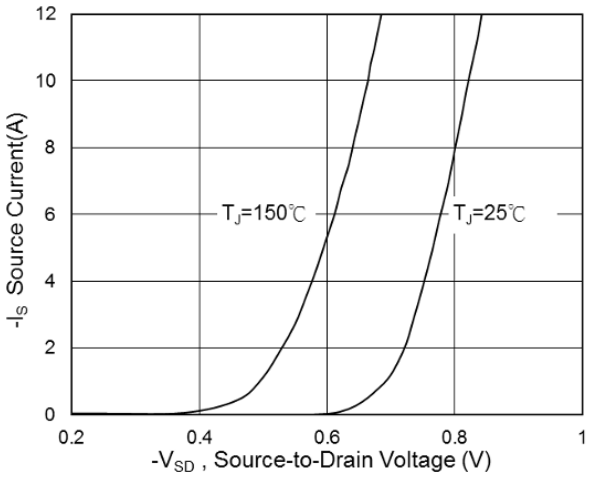


Fig.3 Typical V_{SD} Diode Forward Voltage

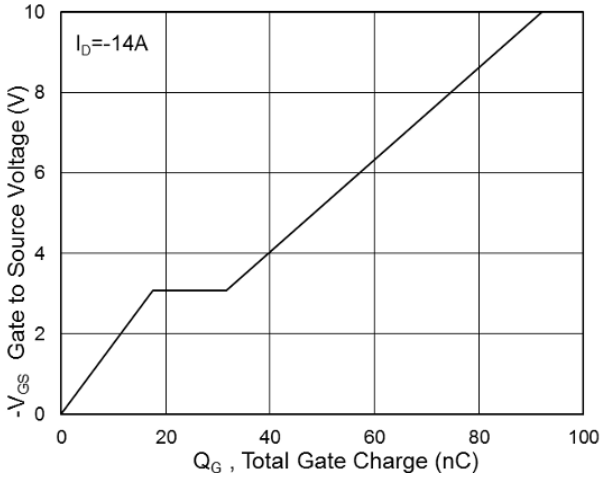


Fig.4 Gate-Charge Characteristics

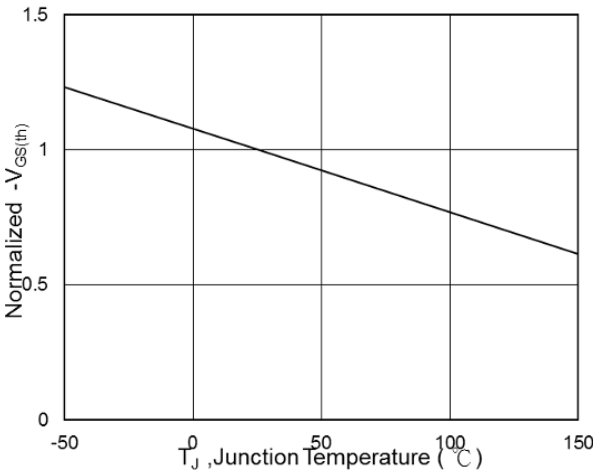


Fig.5 Normalized $V_{GS(th)}$ vs T_J

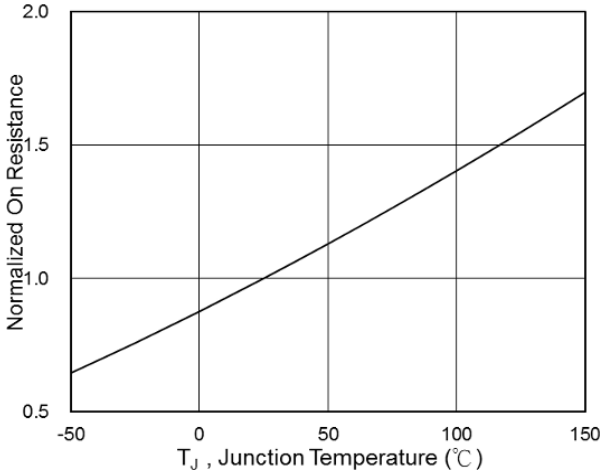


Fig.6 Normalized $R_{DS(ON)}$ vs T_J

Typical Performance Characteristics

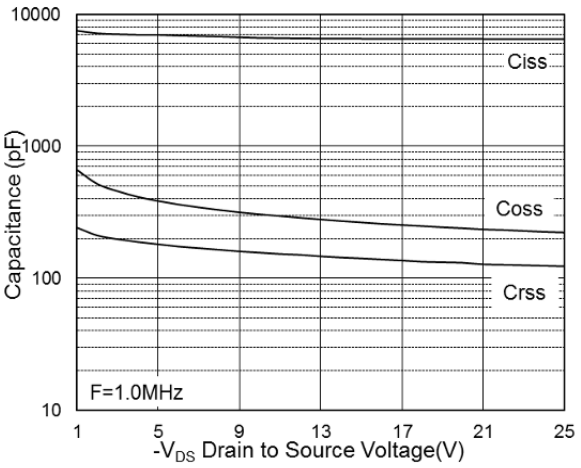


Fig.7 Capacitance

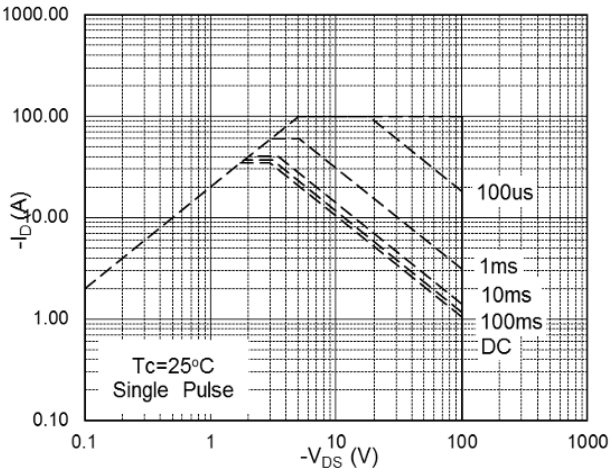


Fig.8 Safe Operating Area (SOA)

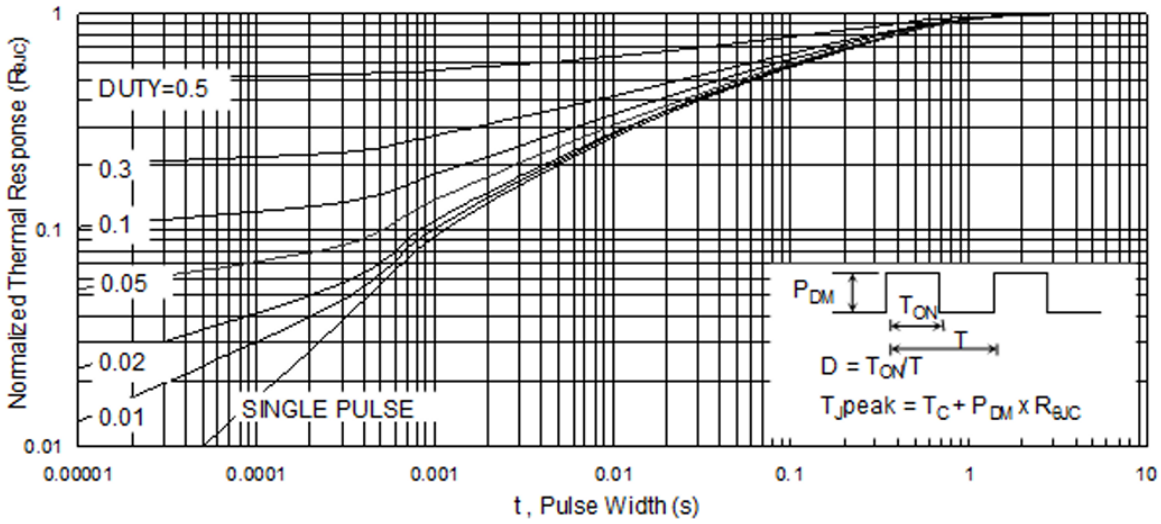
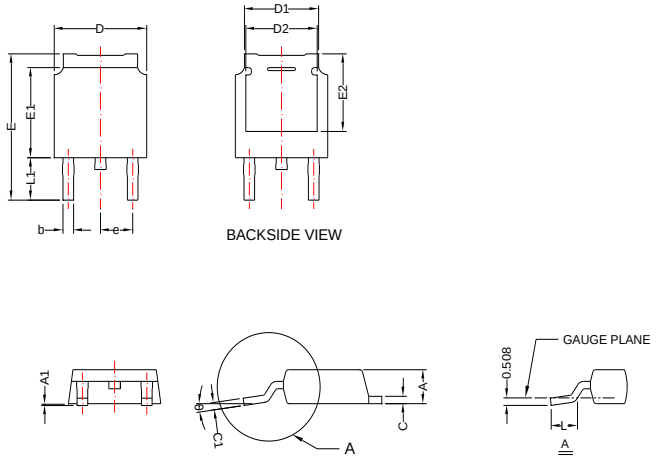


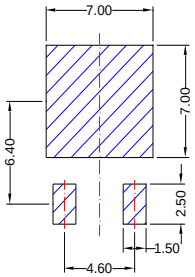
Fig.9 Normalized Maximum Transient Thermal Impedance

TO-252-2L

Package Dimension



Recommended Land Pattern



Dimensions				
Symbol	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	2.18	2.40	0.086	0.094
A1	0.00	0.15	0.000	0.006
b	0.64	0.90	0.025	0.035
c	0.40	0.89	0.016	0.035
c1	0.40	0.61	0.016	0.024
D	6.35	6.73	0.250	0.265
D1	4.95	5.46	0.195	0.215
D2	4.32	-	0.170	-
E	9.40	10.41	0.370	0.410
E1	5.97	6.22	0.235	0.245
E2	4.95	-	0.195	-
e	2.286 BSC		0.090 BSC	
L	1.40	1.77	0.055	0.070
L1	2.67	3.07	0.105	0.121
θ	0°	8°	0°	8°

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

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