GSM1151DF

100V P-Channel MOSFET

Product Description

The P-Channel enhancement mode power field effect transistors are 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.

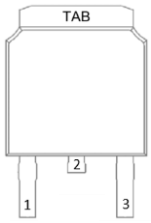
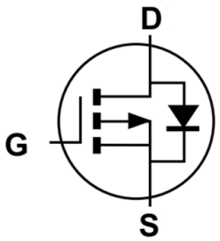
Features

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

Applications

- Notebook
- Load Switch
- Battery Protection
- Hand-held Instruments

Packages & Pin Assignments

TO-252-2L	Equivalent Circuit
	

Pin	Symbol	Description	Pin	Symbol	Description
1	G	Gate	2	D	Drain
3	S	Source	TAB	D	Drain

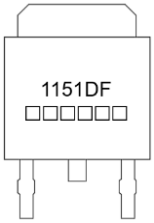
Ordering and Marking Information

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_J=25ºC Unless otherwise noted)

Symbol	Parameter		Value	Unit
V_{DS}	Drain-Source Voltage		-100	V
V_{GS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C=25ºC	-34	A
		T_C=100ºC	-21	
I_{DM}	Pulsed Drain Current [1]		-100	A
I_{AS}	Single Pulse Avalanche Current, L = 0.5mH [1]		15	A
E_{AS}	Single Pulse Avalanche Energy, L = 0.5mH [1]		75	mJ
P_D	Power Dissipation	T_C=25ºC	96	W
		T_C=100ºC	38	
$R_{\theta JC}$	Max Thermal Resistance-Junction to Case		1.3	℃/W
$R_{\theta JA}$	Max Thermal Resistance-Junction to Ambient[2]		62	℃/W
T_J	Operating Junction Temperature Range		-55 to +150	℃
T_{STG}	Storage Temperature Range		-55 to +150	℃

NOTE:
1. Pulsed width is limited by the maximum junction temperature.
2. Surface mounted on 1in2 FR-4 board with 2oz. Copper.

Electrical Characteristics (T_J=25℃, 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
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-100V, V_{GS}=0V	-	-	-1	μA
I_{GSS}	Gate-Source Leakage Current	V_{DS}=0V, V_{GS}=±20V	-	-	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=-250μA	-1.2	-	-2.5	V
$R_{DS(ON)}$	Drain-Source On-Resistance	V_{GS}=-10V, I_D=-10A	-	42	50	mΩ
		V_{GS}=-4.5V, I_D=-8A	-	46	50	
g_{FS}	Forward Transconductance	V_{DS}=-10V, I_D=-10A	-	26	-	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=-50V, V_{GS}=0V, f=1MHz	-	4100	-	pF
C_{oss}	Output Capacitance		-	145	-	
C_{rss}	Reverse Transfer Capacitance		-	130	-	
Q_g	Total Gate Charge	V_{DS}=-50V, I_D=-10A V_{GS}=-10V	-	115	-	nC
Q_{gs}	Gate-Source Charge		-	20	-	
Q_{gd}	Gate-Drain Charge		-	16	-	
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=-50V, I_D=-10A V_{GS}=-10V, Rg=3.3Ω	-	20	-	ns
t_r	Turn-On Rise Time		-	32	-	
$t_{d(off)}$	Turn-Off Delay Time		-	123	-	
t_f	Turn-Off Fall Time		-	64	-	
Diode Characteristics						
V_{SD}	Diode Forward Voltage	V_{GS}=0V, I_S=1A	-	-	-1	V

Typical Performance Characteristics

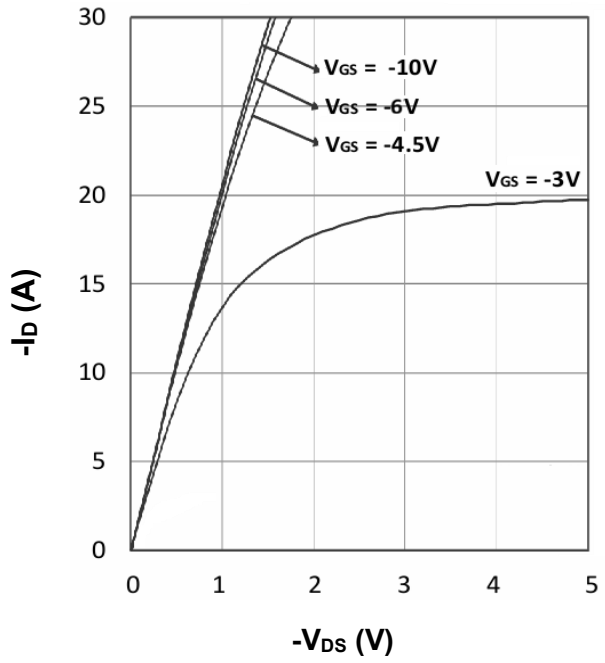


FIG.1 Output Characteristics

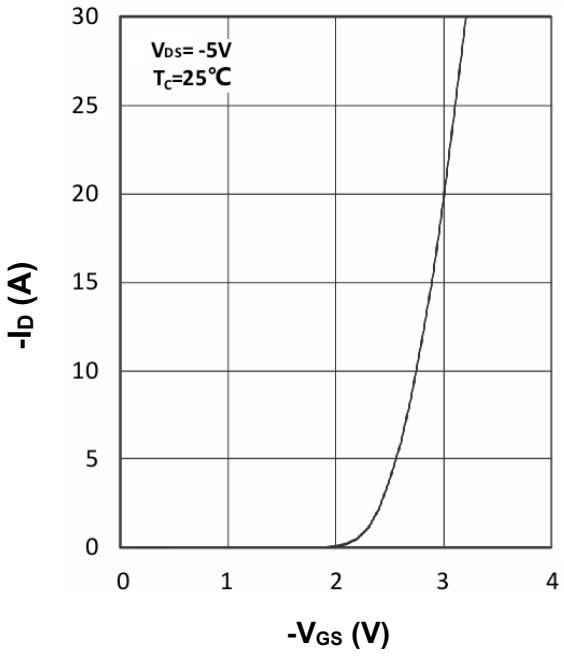


FIG.2 Transfer Characteristics

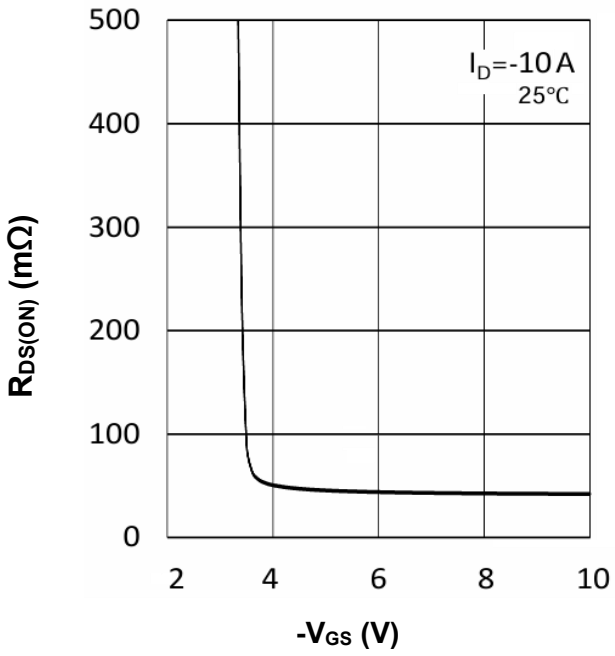


FIG.3 On-Resistance vs. Gate Voltage

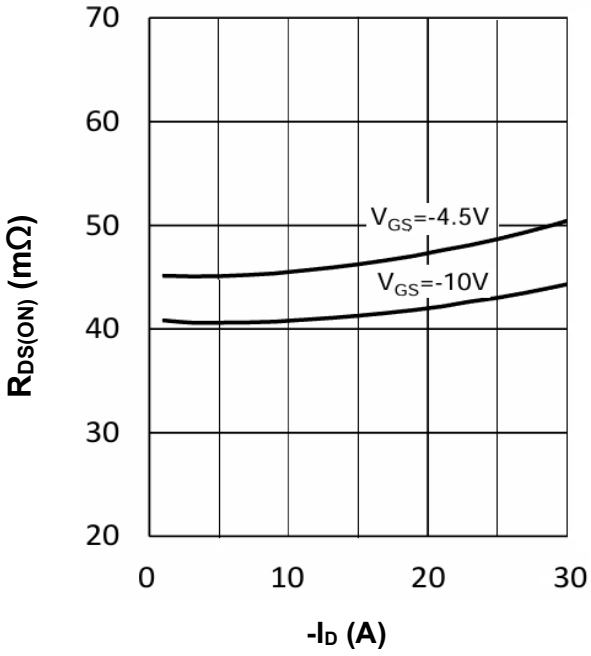


FIG.4 On-Resistance vs. Drain Current

Typical Performance Characteristics

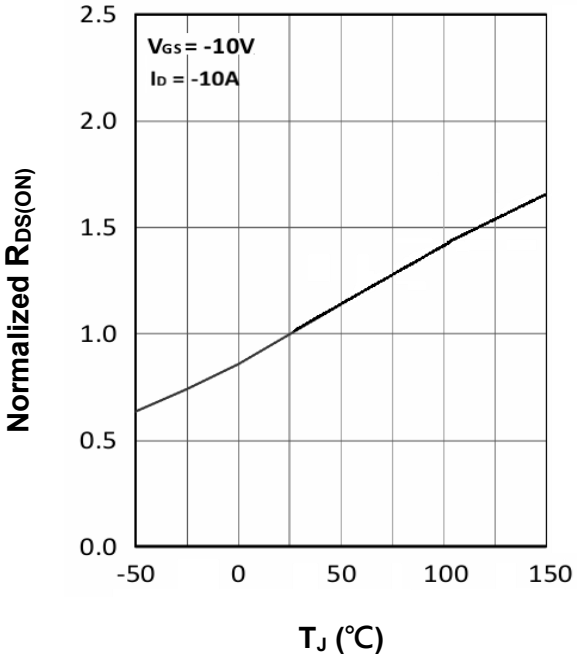


FIG.5 Normalized On-Resistance vs. T_J

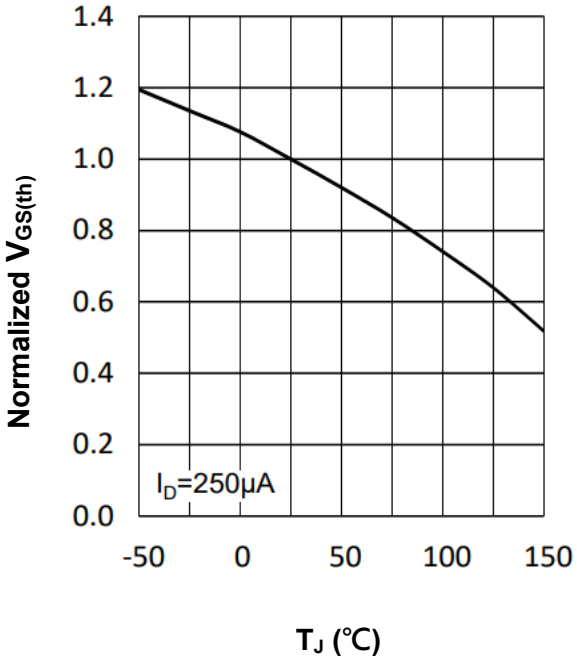


FIG.6 Normalized $V_{GS(th)}$ vs. T_J

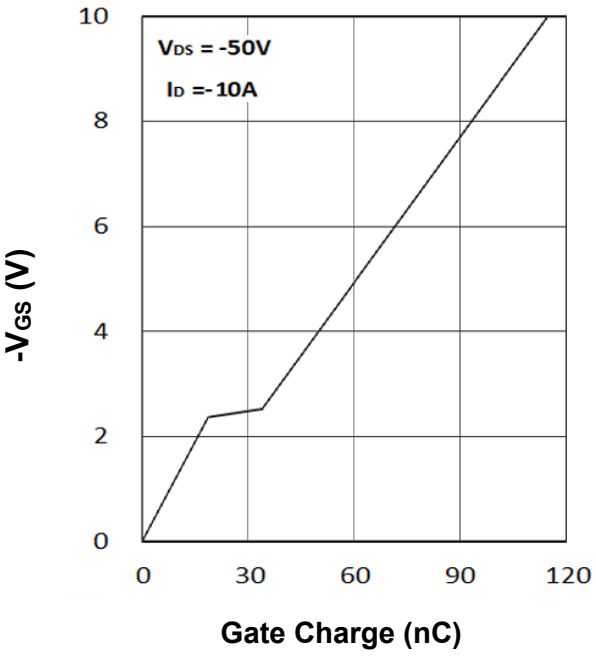


FIG.7 Gate Charge Characteristics

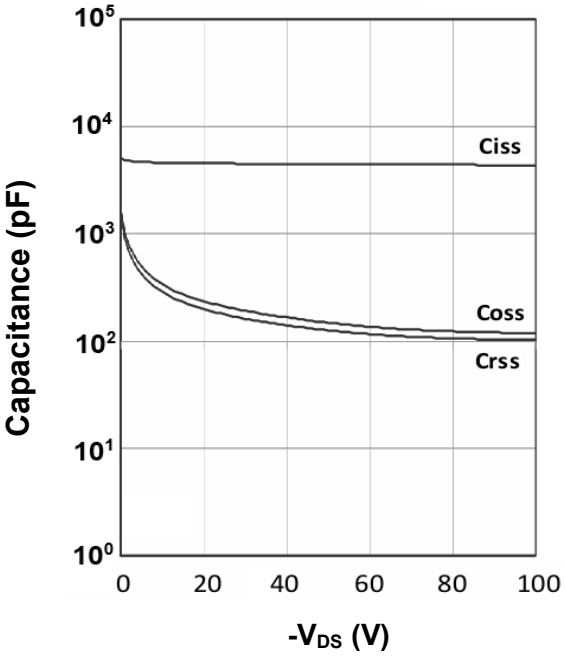


FIG.8 Capacitance Characteristics

Typical Performance Characteristics

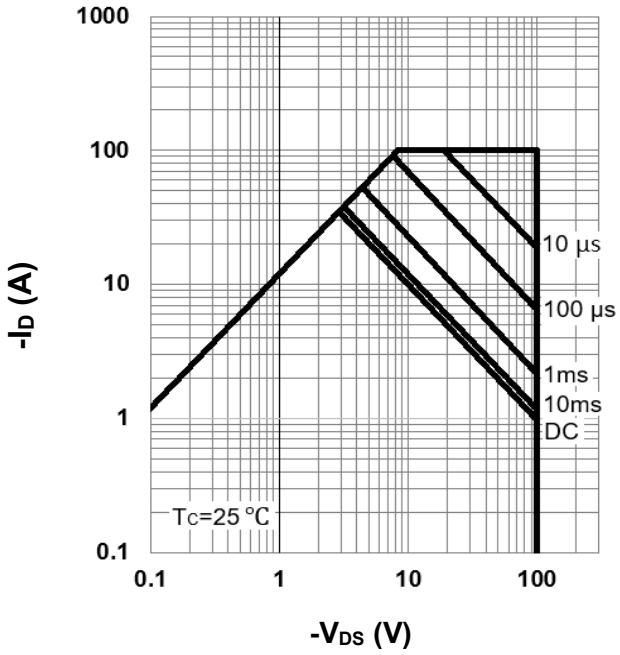


FIG.9 Maximum Safe Operation Area

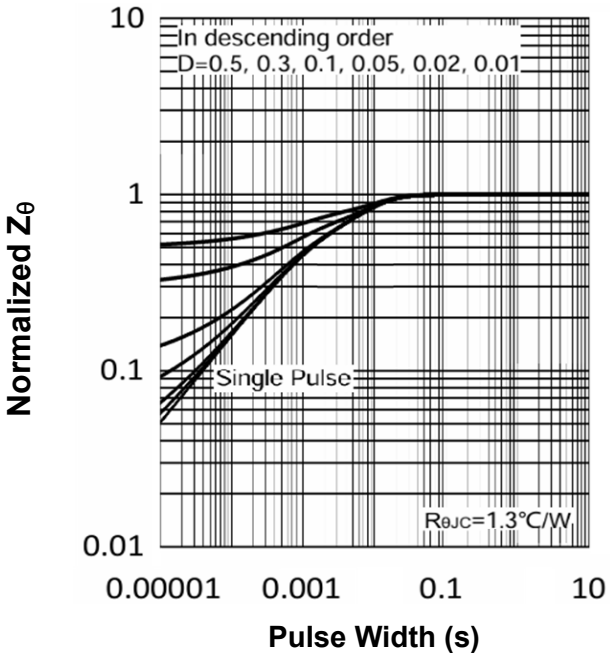
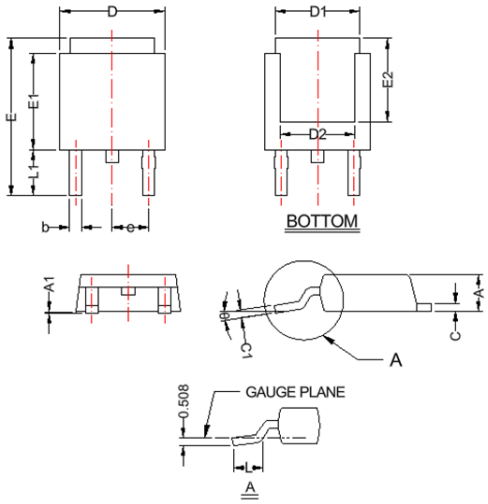


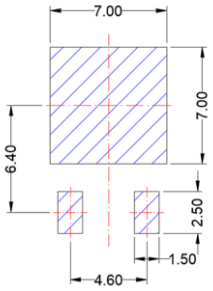
FIG.10 Normalized Transient Impedance

TO-252-2L(AA)

Package Dimension (2)



Recommended Land Pattern



Unit:mm

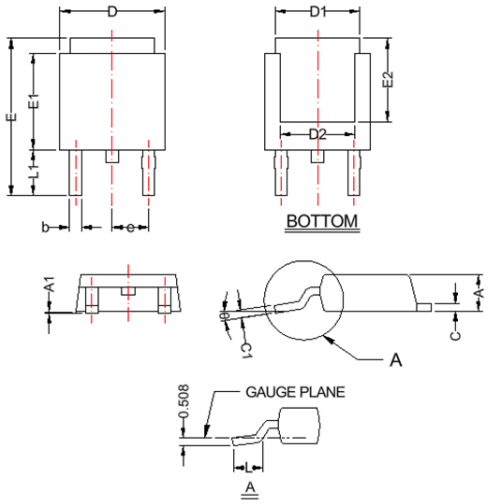
Dimensions (1)				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	2.18	2.40	0.086	0.094
A1	0.00	0.15	0.000	0.006
b	0.64	0.90	0.025	0.035
c	0.40	0.89	0.016	0.035
c1	0.40	0.61	0.016	0.024
D	6.35	6.73	0.250	0.265
D1	4.95	5.46	0.195	0.215
D2	4.32	---	0.170	---
E	9.40	10.41	0.370	0.410
E1	5.97	6.22	0.235	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:

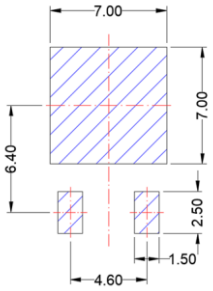
1. Dimensions are exclusive of Burrs, Mold Flash and Tie Bar extrusions.
2. The drawing is used to express the dimension while the actual appearance may vary

TO-252-2L(AB)

Package Dimension (2)



Recommended Land Pattern



Unit:mm

Dimensions (1)				
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	0.50	0.90	0.020	0.035
c	0.45	0.89	0.018	0.035
c1	0.40	0.61	0.016	0.024
D	6.35	6.80	0.250	0.268
D1	4.95	5.50	0.195	0.217
D2	3.81	---	0.150	---
E	9.40	10.41	0.370	0.410
E1	5.33	5.80	0.210	0.228
E2	4.57	---	0.180	---
e	2.286 BSC		0.090 BSC	
L	1.40	1.78	0.055	0.070
L1	2.40	3.00	0.094	0.118
θ	0°	8°	0°	8°

NOTE:

1 Dimensions are exclusive of Burrs, Mold Flash and Tie Bar extrusions.
2 The drawing is used to express the dimension while the actual appearance may vary

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