

GSM1151XF

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.

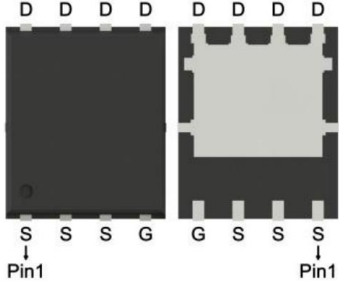
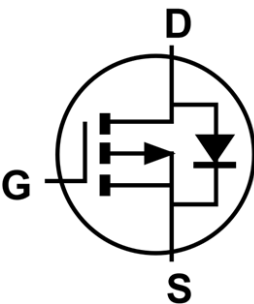
Features

- $R_{DS(ON)} = 50m\Omega @ V_{GS} = -10V$
- $R_{DS(ON)} = 60m\Omega @ V_{GS} = -4.5V$
- DFN5x6-8L Package

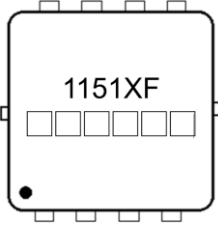
Applications

- Networking
- Load Switch
- LED applications

Packages & Pin Assignments

GSM1151XF (DFN5x6-8L)		Equivalent Circuit
		
Pin	Description	
1	Source	
2	Source	
3	Source	
4	Gate	
5	Drain	
6	Drain	
7	Drain	
8	Drain	

Ordering and Marking Information

Ordering Information			
Part Number	Package	Part Marking	Quantity / Reel
GSM1151XF	DFN5x6-8L	1151XF □□□□□□	3,000 PCS
GSM1151 1 2			
- Product Code: GSM1151 - Package Code: 1 is X for DFN5x6-8L - Green Level: 2 is F for RoHS Compliant and Halogen Free			
Marking Information			
 - Product Code: 1151XF - GS Code: □□□□□□			

Absolute Maximum Ratings

T_A=25°C, 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 =25°C	A
		T _C =100°C	
I _{DM}	Pulsed Drain Current ²	-100	A
I _{AS}	Single Pulse Avalanche Current, L = 0.5mH ³	-18	A
E _{AS}	Single Pulse Avalanche Energy, L = 0.5mH ³	108	mJ
P _D	Power Dissipation ⁴	T _C =25°C	W
		T _C =100°C	
T _J	Operating Junction Temperature Range	-55 to +150	°C
T _{STG}	Storage Temperature Range	-55 to +150	°C
R _{θJC}	Thermal Resistance, Junction to Case ¹	1.2	°C/W

Electrical Characteristics

TA=25°C, 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 =-10A	-	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, R _g =3.3Ω, I _D =-1A	-	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 20Z 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, I_{AS}=-18A
4. The power dissipation is limited by 150°C junction temperature

Typical Performance Characteristics

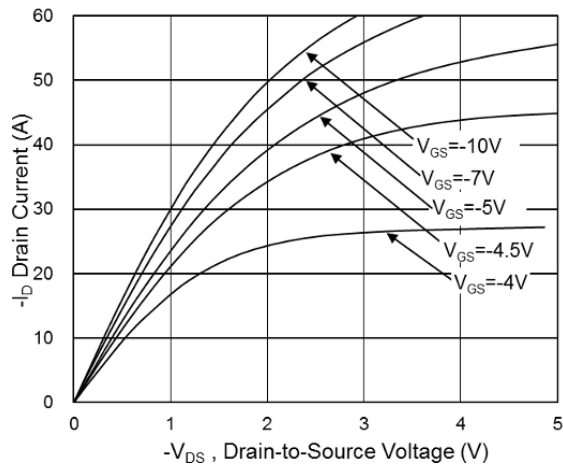


Fig.1 Typical Output Characteristics

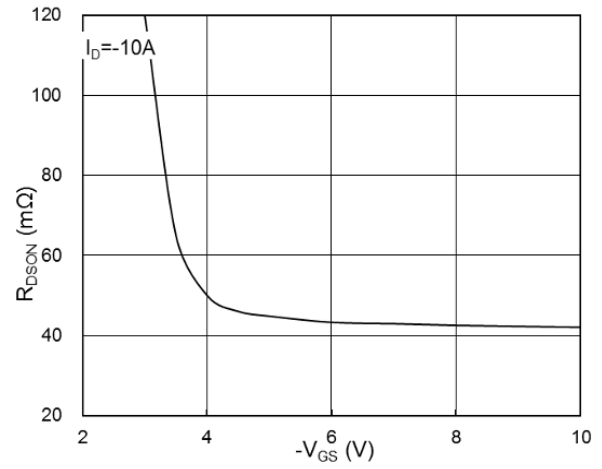


Fig.2 On-Resistance vs V_{GS}

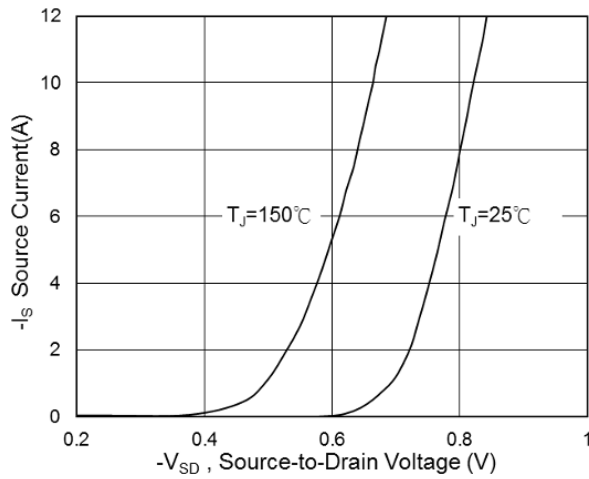


Fig.3 Typical V_{SD} Diode Forward Voltage

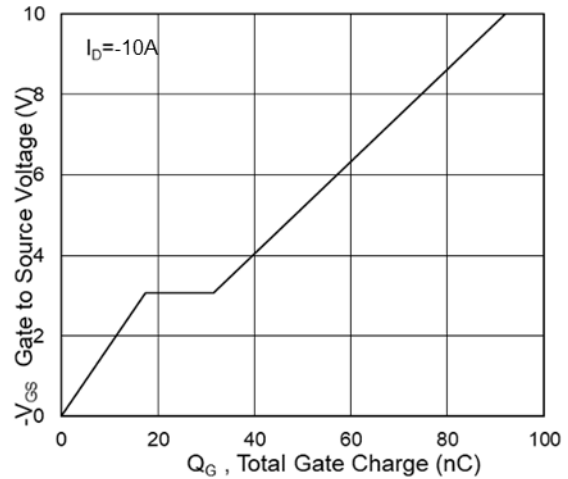


Fig.4 Gate-Charge Characteristics

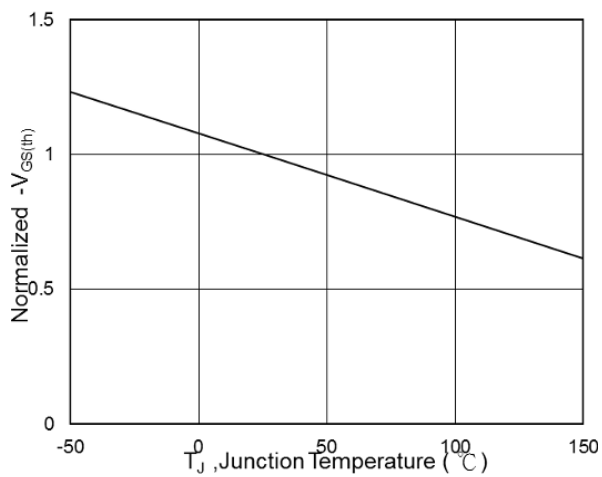


Fig.5 Normalized $V_{GS(th)}$ vs T_J

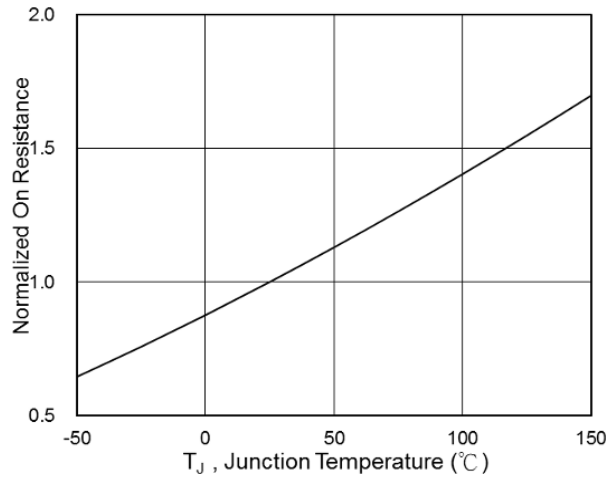


Fig.6 Normalized $R_{DS(on)}$ vs T_J

Typical Performance Characteristics

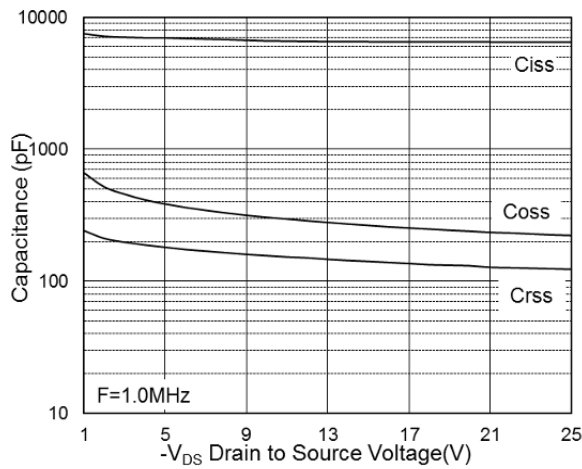


Fig.7 Capacitance

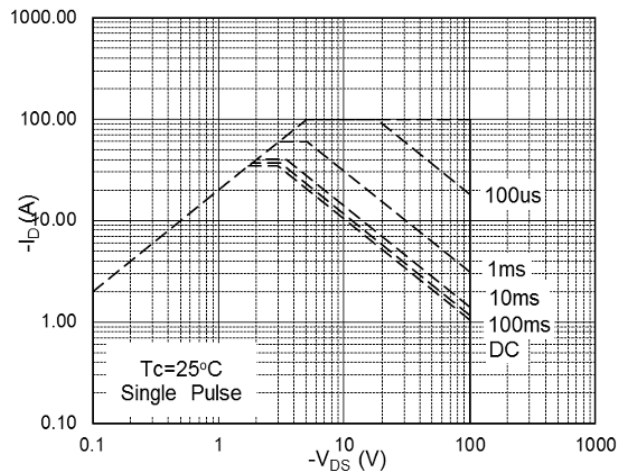


Fig.8 Safe Operating Area (SOA)

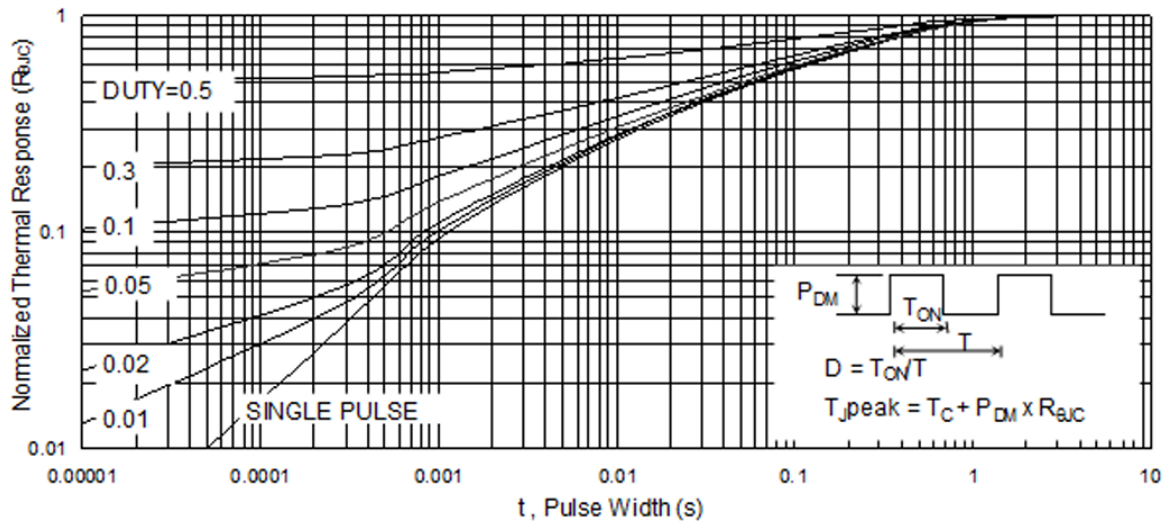
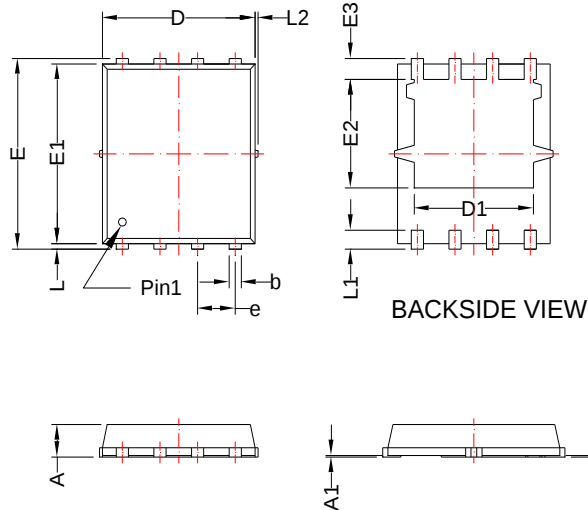


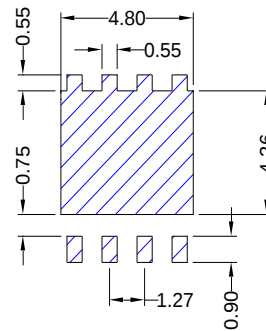
Fig.9 Normalized Maximum Transient Thermal Impedance

DFN5x6-8L

Package Dimension



Recommended Land Pattern



Dimensions				
Symbol	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.80	1.20	0.031	0.047
A1	0.00	0.05	0.000	0.002
b	0.25	0.51	0.010	0.020
c	0.20	0.35	0.008	0.014
D	4.90	5.40	0.193	0.213
D1	3.40	4.60	0.134	0.181
E	5.90	6.20	0.232	0.244
E1	5.40	5.90	0.213	0.232
E2	3.20	3.80	0.126	0.150
E3	0.40	0.80	0.016	0.031
e	1.27 BSC		0.050 BSC	
L	0.1	0.25	0.004	0.010
L1	0.45	0.75	0.018	0.030
L2	-	0.15	-	0.006

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

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