GSM2151E

25V P-Channel Enhancement Mode MOSFET

Product Description

These 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. These devices are well suited for high efficiency fast switching applications.

Features

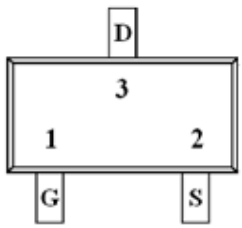
- -25V, -4.3A, $R_{DS(ON)}$=50mΩ@V_{GS}=-10V
- Fast switching
- Suit for -4.5V Gate Drive Applications
- G-S ESD Protection Diode Embedded
- Green Device Available
- SOT-23 package design

Applications

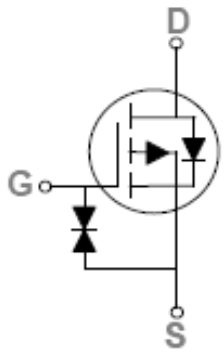
- Notebook
- Load Switch
- Battery Protection
- Hand-held Instruments

Packages & Pin Assignments

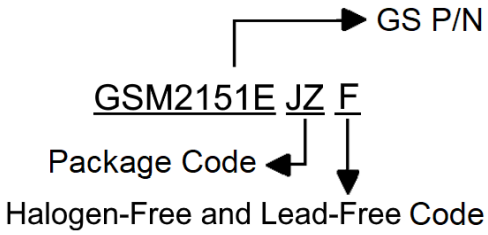
GSM2151EJZF(SOT-23)



1	Gate
2	Source
3	Drain

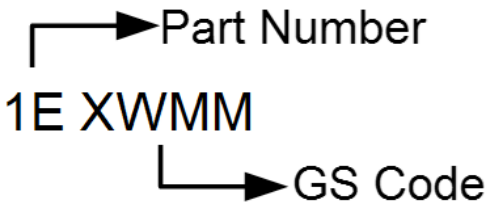


Ordering Information



Part Number	Package	Quantity Reel
GSM2151EJZF	SOT-23	3000 PCS

Marking Information



Absolute Maximum Ratings

(T_A=25ºC unless otherwise noted)

Symbol	Parameter		Typical	Unit
V_{DS}	Drain-Source Voltage		-25	V
V_{GS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current(T_J=150℃)	T_A=25ºC	-4.3	A
		T_A=70ºC	-3.4	
I_{DM}	Pulsed Drain Current[1]		-15.9	A
P_D	Power Dissipation		1.38	W
T_J	Operating Junction Temperature Range		-55 to +150	ºC
T_{STG}	Storage Temperature Range		-55 to +150	ºC
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		90	ºC/ W

Electrical Characteristics

(T_J=25ºC unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ	Max.	Unit
Static						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=-250uA	-25			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=-250uA	-1	-1.5	-3	
I_{GSS}	Gate Leakage Current	V_{DS}=0V, V_{GS}=±20V			±10	uA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-20V, V_{GS}=0V			-10	uA
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=-10V, I_D=-4A		32	50	mΩ
		V_{GS}=-4.5V, I_D=-3A		50	80	
g_{fs}	Forward Transconductance	V_{DS}=-10V, I_D=-4A		6		S
V_{SD}	Diode Forward Voltage	I_S=-1.2A, V_{GS}=0V			-1.2	V
Dynamic						
C_{iss}	Input Capacitance	V_{DS}=-15V, V_{GS}=0V, f=1MHz		833	1334	pF
C_{oss}	Output Capacitance			100		
C_{rss}	Reverse Transfer Capacitance			75		
Q_g	Total Gate Charge[2,3]	V_{DS}=-15V, V_{GS}=-4.5V, I_D=-4A		7.1	11.3	nC
Q_{gs}	Gate-Source Charge[2,3]			2.3		
Q_{gd}	Gate-Drain Charge[2,3]			2.8	2	
$t_{d(on)}$	Turn-On Time[2,3]	V_{DD}=-15V, I_D=-1A, V_{GS}=-10V, R_G=3.3Ω		8.1		ns
T_r				4.7		
$t_{d(off)}$	Turn-Off Time[2,3]			21.8		
T_f				5.3		

Notes:

1.Pulse width limited by Max. junction temperature.

2.Pulse test

3.Surface mounted on 1 in2 copper pad of FR4 board ; 270℃/W when mounted on min. copper pad.

Typical Performance Characteristics

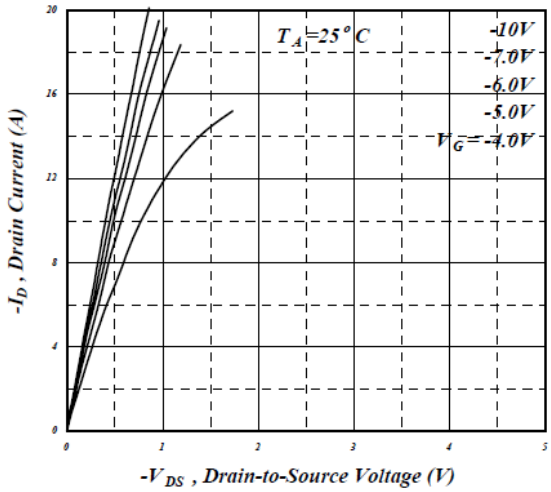


Figure 1. Typical Output Characteristics

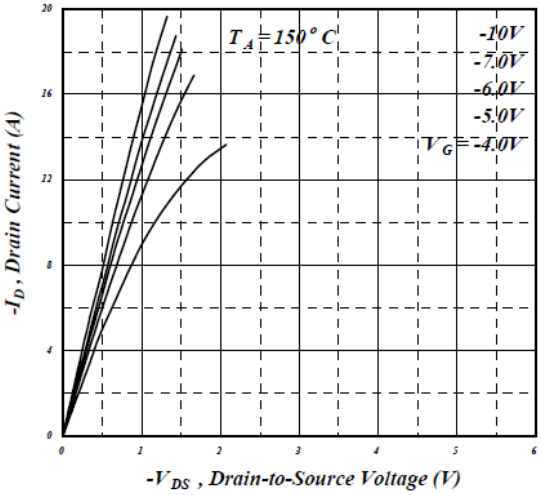


Figure 2. Typical Output Characteristics

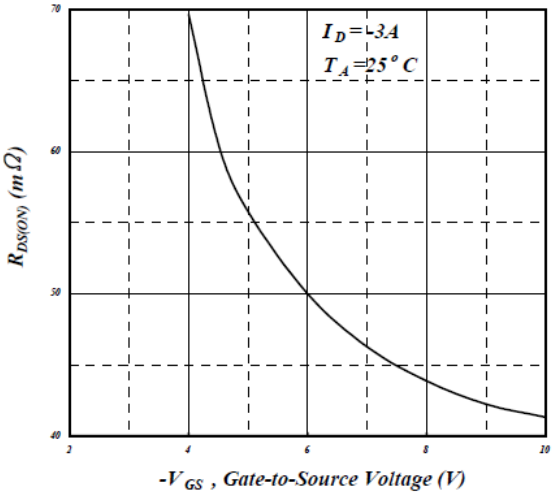


Figure 3. RDSON v.s. Gate Voltage

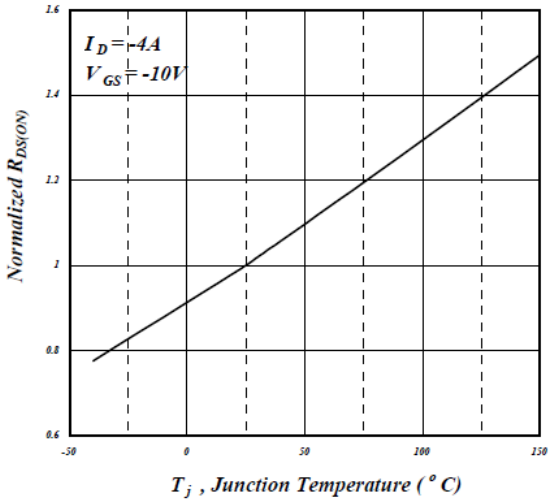


Figure 4. Normalized RDSON v.s. TJ

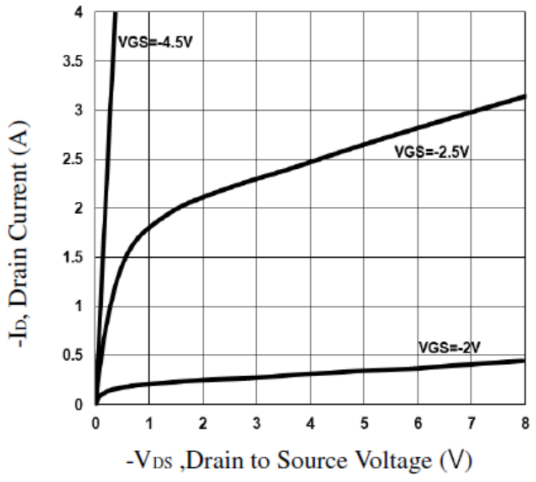


Figure 5. Forward Characteristic of Reverse Diode

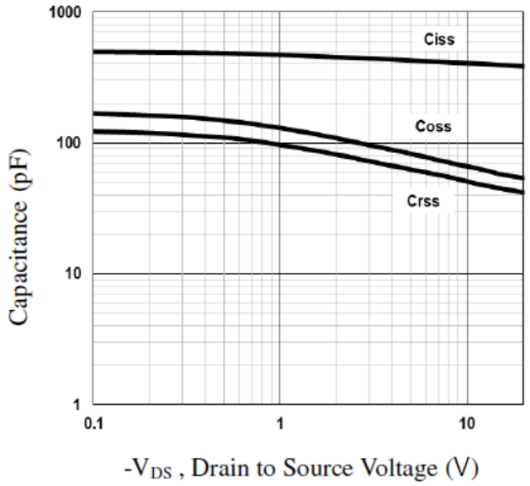


Figure 6. Gate Threshold Voltage v.s. TJ

Typical Performance Characteristics (Continue)

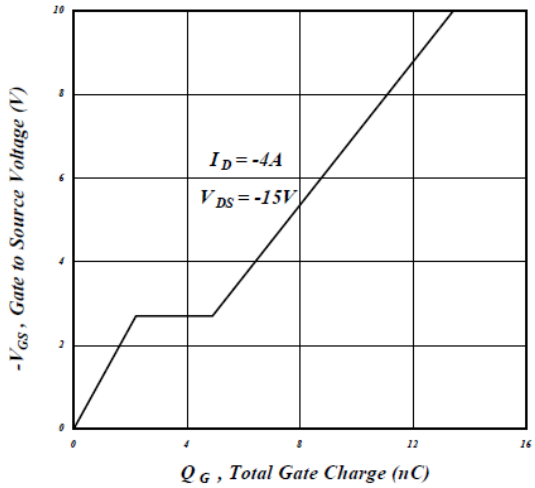


Figure 7. Gate Charge Characteristics

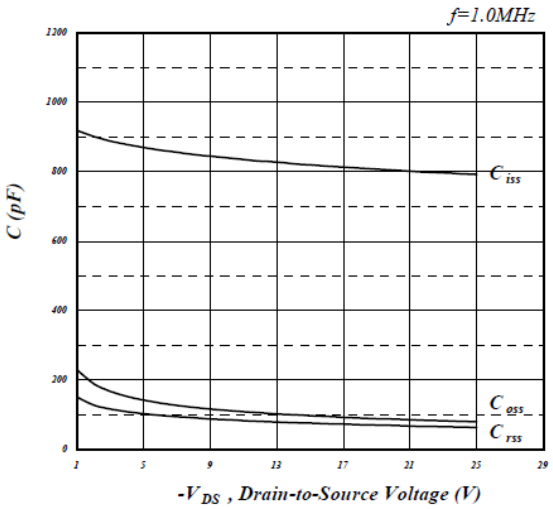


Figure 8. Typical Capacitance Characteristics

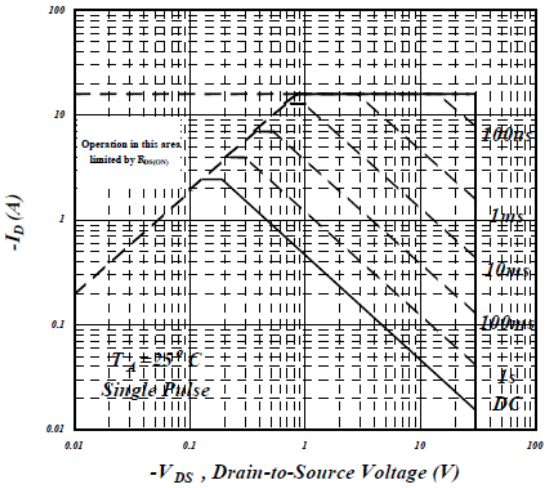


Figure 9. Maximum Safe Operating Area

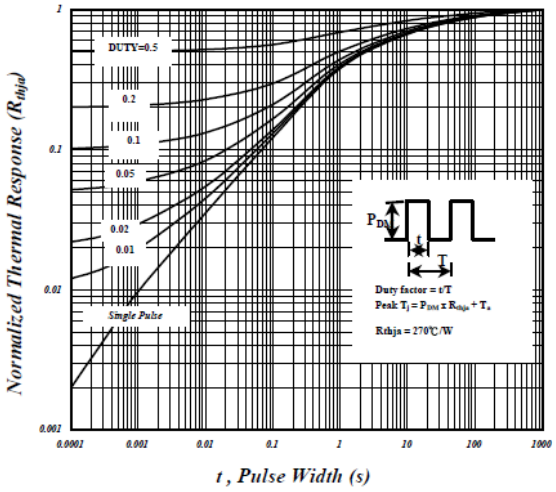


Figure 10. Effective Transient Thermal Impedance

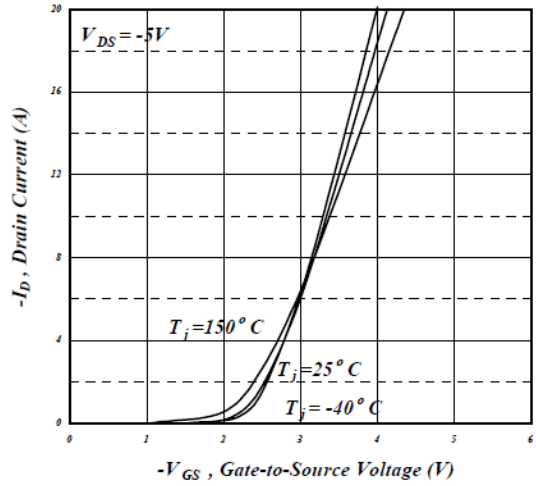


Figure 11. Transfer Characteristics

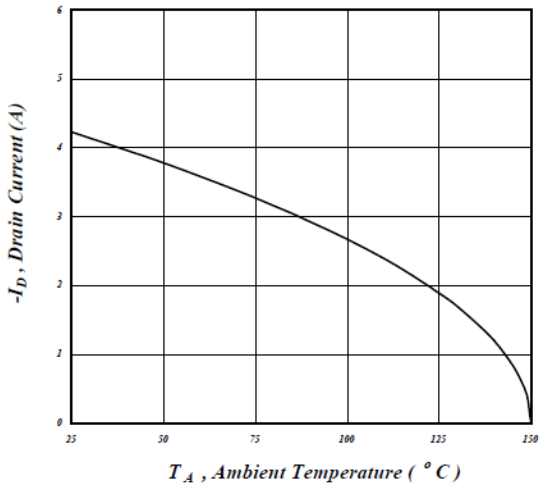
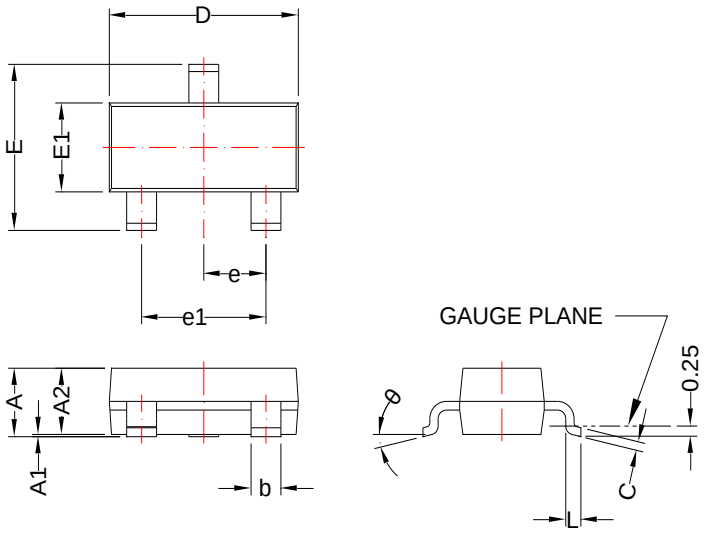


Figure 12. Maximum Continuous Drain Current v.s. T_A

Package Dimension

SOT-23



DIMENSION D DOES NOT INCLUDE MOLD FLASH,PROTRUSIONS OR GATE BURRS.MOLD FLASH,PROTRUSIONS OR GATE BURRS SHALL HOT EXCEED 0.25mm PER INTERLEAD FLASH OR PROTRUSIOB SHALL NOT EXCEED 0.25mm PER SIDE.

Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.75	1.17	0.030	0.046
A1	0.01	0.15	0.000	0.006
A2	0.70	1.02	0.028	0.040
b	0.30	0.50	0.012	0.020
c	0.08	0.20	0.003	0.008
D	2.80	3.04	0.110	0.120
E	2.10	2.64	0.083	0.104
E1	1.20	1.40	0.047	0.055
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°

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