

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.

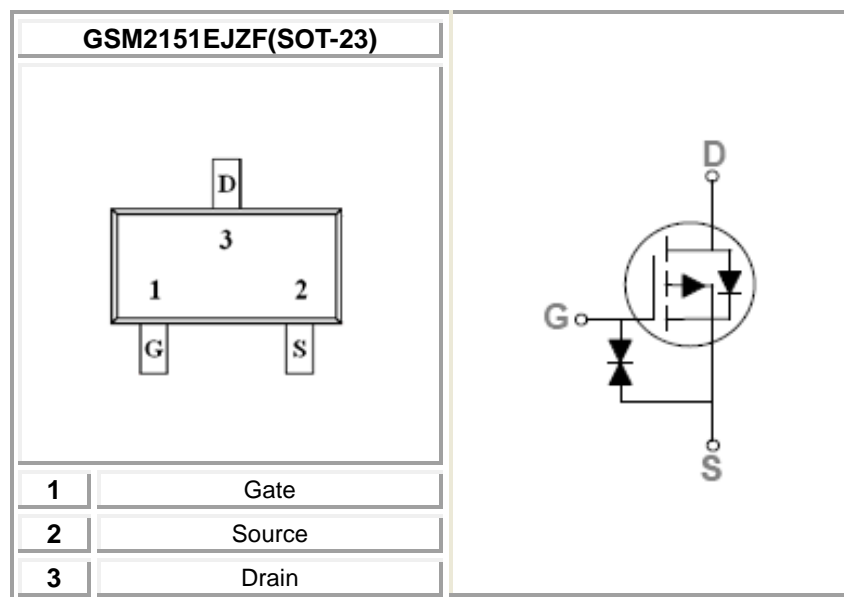
Features

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

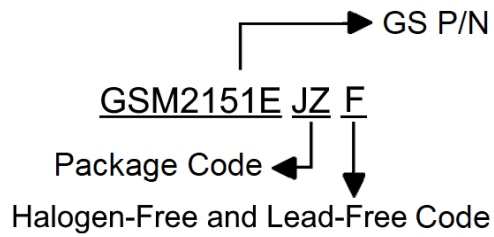
Applications

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

Packages & Pin Assignments

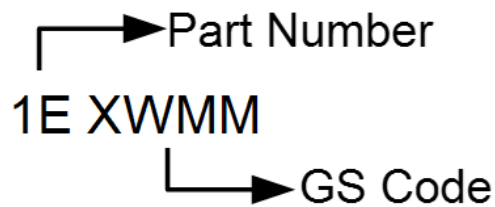


Ordering Information



Part Number	Package	Quantity Reel
GSM2151EJZF	SOT-23	3000 PCS

Marking Information



Absolute Maximum Ratings

(T_A=25°C 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°C)	T _A =25°C	-4.3
		T _A =70°C	-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	°C
T _{STG}	Storage Temperature Range	-55 to +150	°C
R _{θJA}	Thermal Resistance-Junction to Ambient	90	°C/W

Electrical Characteristics

(T_J=25°C 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°C/W when mounted on min. copper pad.

Typical Performance Characteristics

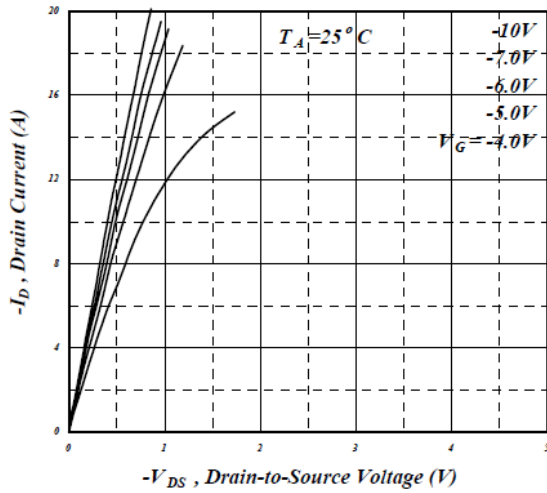


Figure 1. Typical Output Characteristics

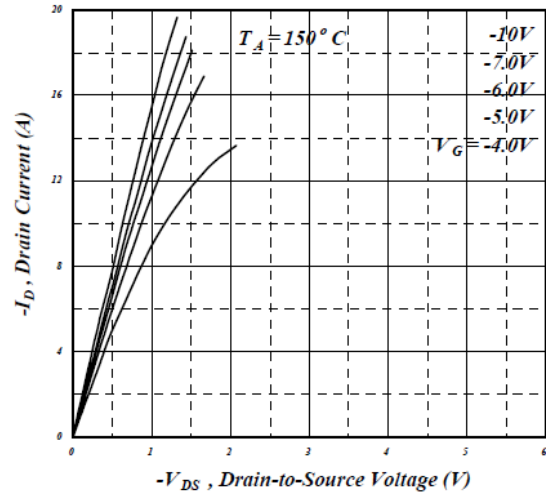


Figure 2. Typical Output Characteristics

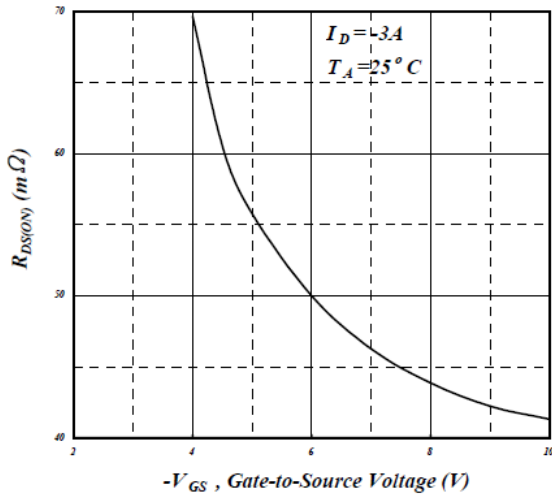


Figure 3. RDSON v.s. Gate Voltage

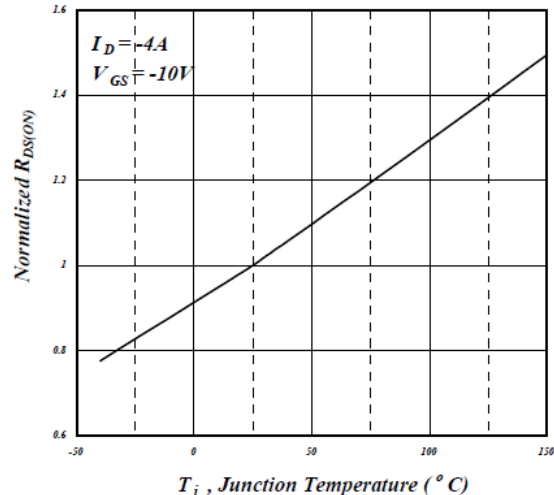


Figure 4. Normalized RDSON v.s. T_j

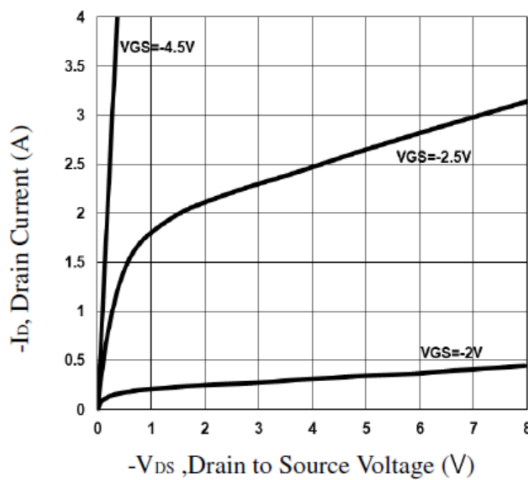


Figure 5. Forward Characteristic of Reverse Diode

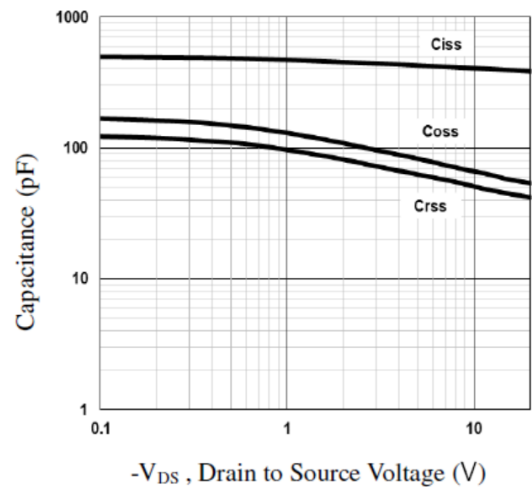


Figure 6. Gate Threshold Voltage v.s. T_j

Typical Performance Characteristics (Continue)

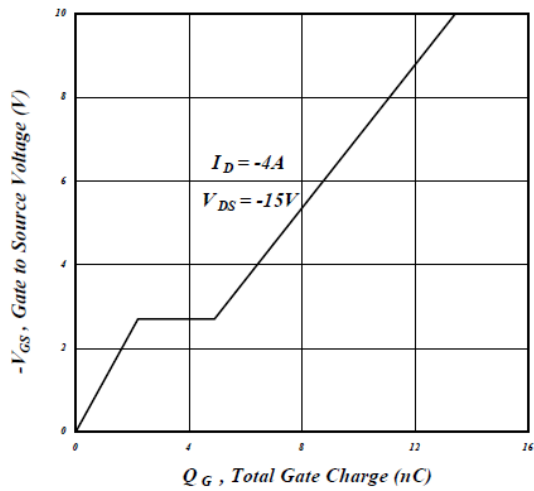


Figure 7. Gate Charge Characteristics

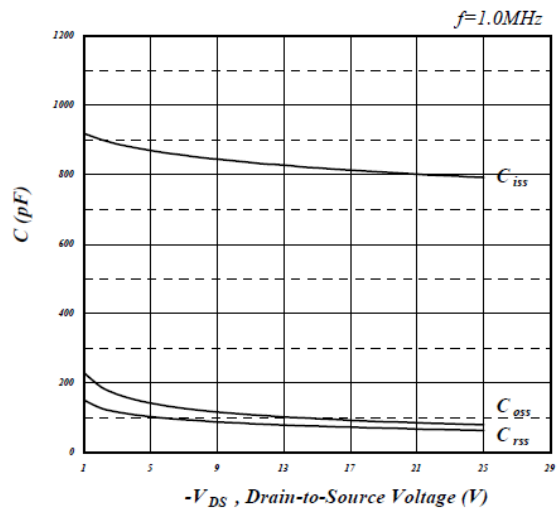


Figure 8. Typical Capacitance Characteristics

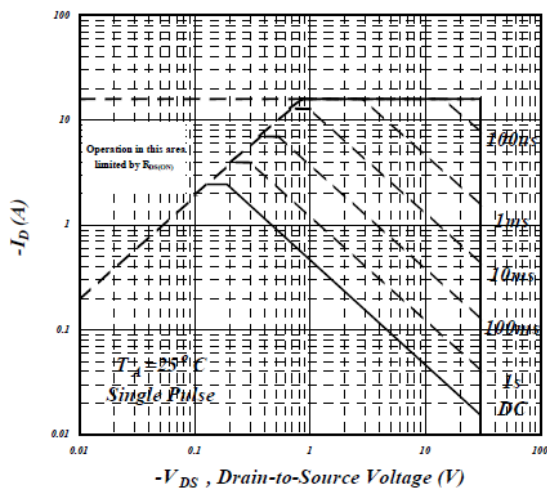


Figure 9. Maximum Safe Operating Area

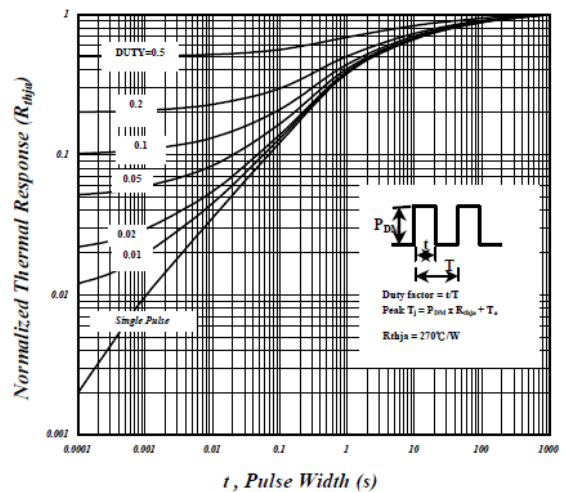


Figure 10. Effective Transient Thermal Impedance

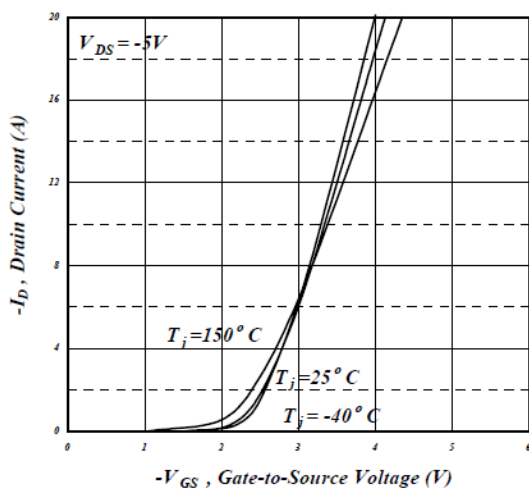


Figure 11. Transfer Characteristics

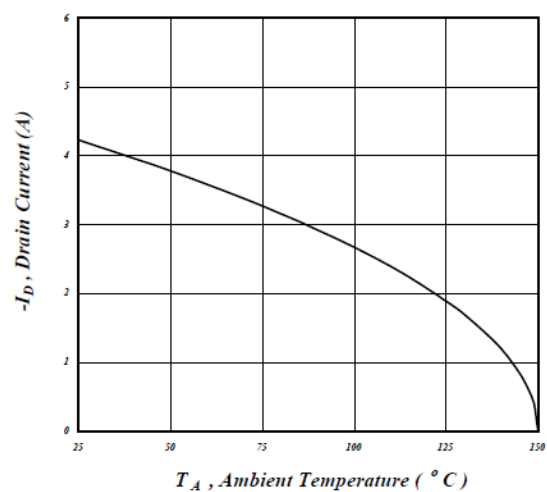
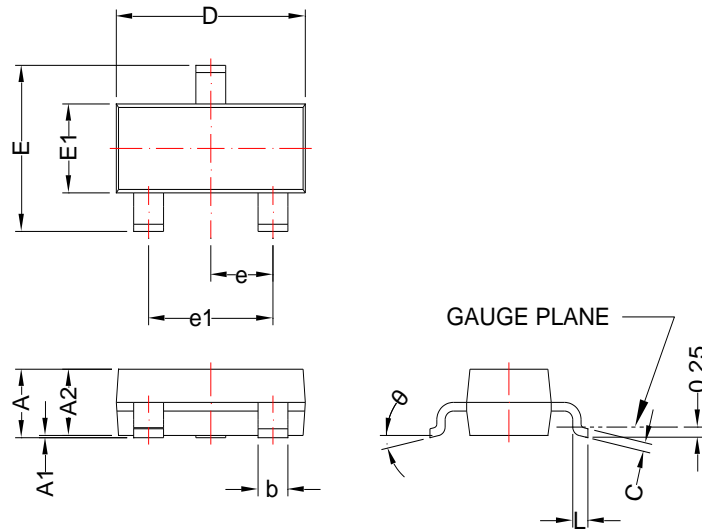


Figure 12. Maximum Continuous Drain Current v.s. T_A

Package Dimension

SOT-23



DIMENSION D DOES NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS. MOLD FLASH, PROTRUSIONS OR GATE BURRS SHALL NOT EXCEED 0.25mm PER INTERLEAD FLASH OR PROTRUSION 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
theta	0°	8°	0°	8°





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,Lane11,Sec.6,Minquan E.Rd NeiHu District Taipei City 114, 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