

GSM6184JZF

60V N-Channel MOSFET

Product Description

The N-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.

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

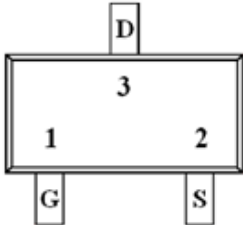
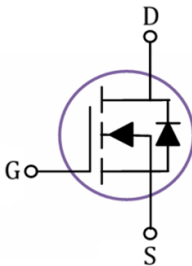
Features

- $R_{DS(ON)} = 75m\Omega$ @ $V_{GS}=10V$
- $R_{DS(ON)} = 85m\Omega$ @ $V_{GS}=4.5V$
- SOT-23 Package
- RoHS Compliant and Halogen Free

Applications

- Hand-Held Instruments
- Load Switch

Packages & Pin Assignments

SOT-23			Equivalent Circuit		
					
Pin	Symbol	Description	Pin	Symbol	Description
1	G	Gate	2	S	Source
3	D	Drain			

Ordering and Marking Information

Ordering Information			
Part Number	Package	Part Marking	Quantity / Reel
GSM6184JZF	SOT-23	S3□□□ N□□□□	3,000 PCS
GSM6184 1 2			
- Product Code: GSM6184 - Package Code: 1 is JZ for SOT-23 - Green Level: 2 is F for RoHS Compliant and Halogen Free			
Marking Information			
S3□□□ or N□□□□ - Product Code: S3 or N - GS Code: □□□ or □□□□			

Absolute Maximum Ratings (T_A = 25°C unless otherwise specified)

Symbol	Parameter	Value	Unit
V _{DSS}	Drain-Source Voltage	60	V
V _{GSS}	Gate-Source Voltage	±20	V
I _D	Continuous Drain Current	T _A =25°C	A
		T _A =70°C	
I _{DM}	Pulsed Drain Current ¹	10	A
P _D	Power Dissipation	T _A =25°C	W
		T _A =70°C	
R _{θJA}	Thermal Resistance-Junction to Ambient ²	90	°C/W
T _J	Operating Junction Temperature Range	-55 to +150	°C
T _{STG}	Storage Temperature Range	-55 to +150	°C

NOTE:

1. Single pulse width is limited by max junction temperature.

Electrical Characteristics (T_J = 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	60	-	-	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =60V, 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 =3A	-	67	75	mΩ
		V _{GS} =4.5V, I _D =2A	-	76	85	
g _{fs}	Forward Transconductance	V _{DS} =10V, I _D =3A	-	3.6	-	S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz	-	490	-	pF
C _{oss}	Output Capacitance		-	56	-	
C _{rss}	Reverse Transfer Capacitance		-	38	-	
Q _g	Total Gate Charge	V _{DS} =48V, I _D =3A V _{GS} =10V	-	10.8	-	nC
Q _{gs}	Gate-Source Charge		-	1.6	-	
Q _{gd}	Gate-Drain Charge		-	3.2	-	
t _{d(on)}	Turn-On Delay Time	V _{DD} =30V, I _D =1A V _{GS} =10V, R _g =3.3Ω	-	6	-	ns
t _r	Turn-On Rise Time		-	5	-	
t _{d(off)}	Turn-Off Delay Time		-	16	-	
t _f	Turn-Off Fall Time		-	3	-	
Diode Characteristics						
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =1A	-	-	1	V
t _{rr}	Reverse Recovery Time	I _F =3A , dI/dt=100A/μs	-	25	-	ns
Q _{rr}	Reverse Recovery Charge		-	26	-	nC

Typical Performance Characteristics

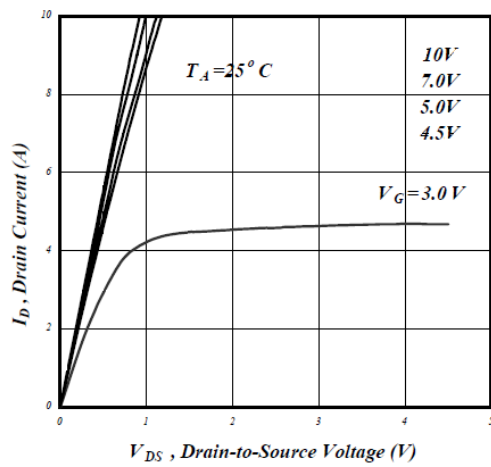


Fig.1 Output Characteristics

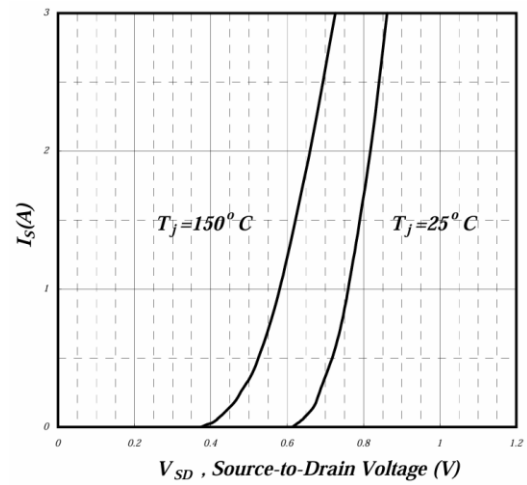


Fig.2 Diode Characteristics

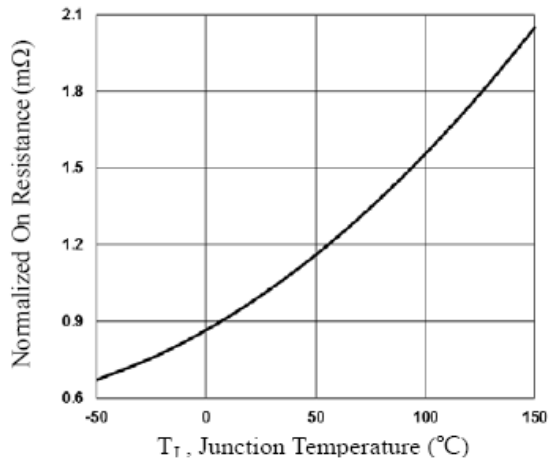


Fig.3 Normalized On-Resistance vs. T_J

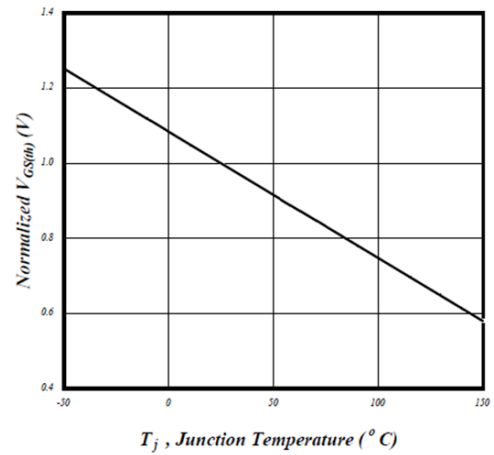


Fig.4 Normalized $V_{GS(th)}$ vs. T_J

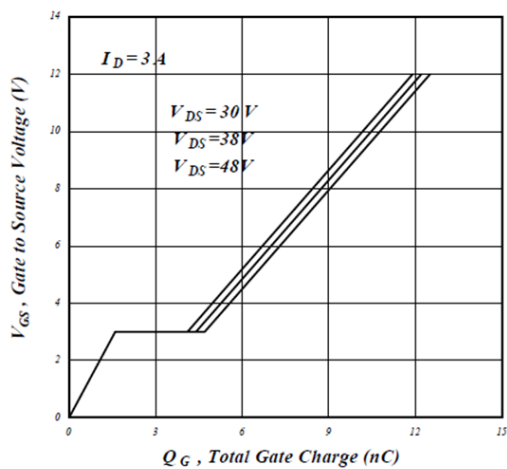


Fig.5 Gate Charge Characteristics

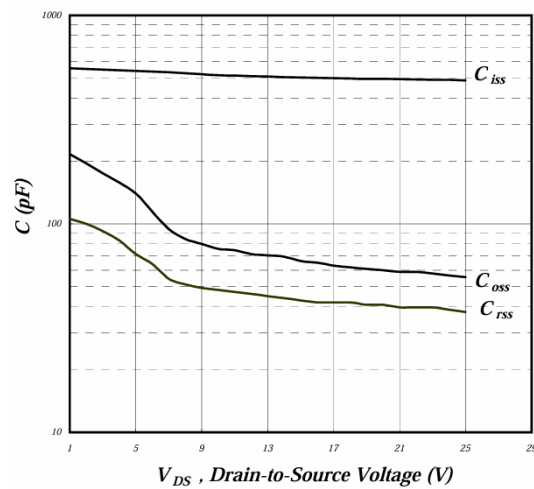


Fig.6 Capacitance Characteristics

Typical Performance Characteristics

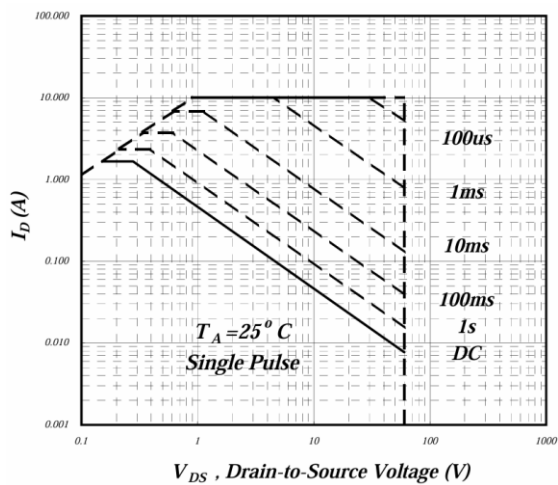


Fig.7 Maximum Safe Operation Area

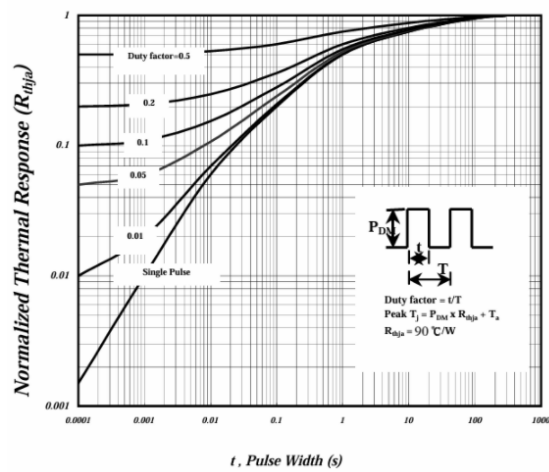
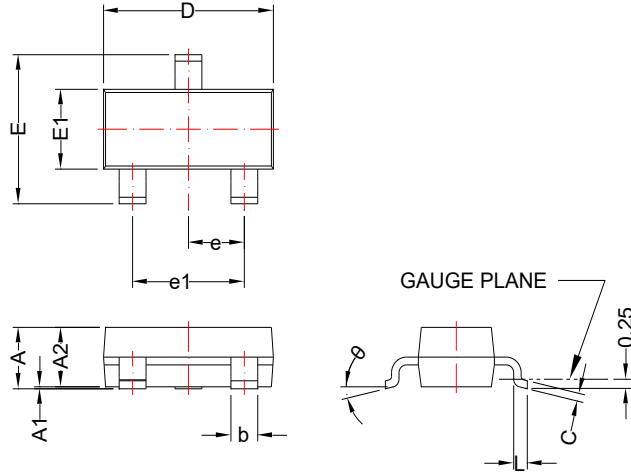


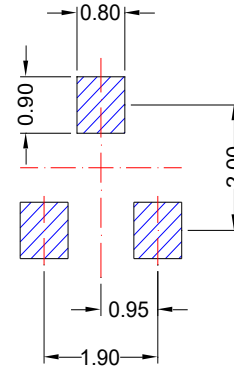
Fig.8 Normalized Transient Impedance

SOT-23

Package Dimension



Recommended Land Pattern



Unit: mm

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°

NOTE:

Dimensions are exclusive of Burrs, Mold Flash and Tie Bar extrusions.

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