

GSMBSS139JZF

60V N-Channel MOSFETs

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.

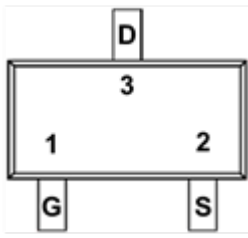
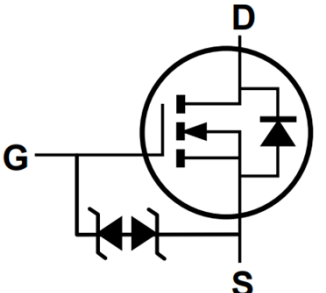
Features

- $R_{DS(ON)}=2.5\Omega@V_{GS}=4.5V$
- $R_{DS(ON)}=4\Omega@V_{GS}=2.5V$
- Improved dv/dt Capability
- Fast Switching
- ESD Protected: 1500V

Applications

- Notebook
- Load Switch
- LED Applications

Packages & Pin Assignments

GSMSOT-23)		Equivalent Circuit
 Top View		
Pin	Description	
1	Gate	
2	Source	
3	Drain	

Ordering and Marking Information

Ordering Information			
Part Number	Package	Part Marking	Quantity / Reel
GSMBSS139JZF	SOT-23	J2□□□□	3,000 PCS
GSMBSS139 ① ② - Product Code: GSMBSS139 - Package Code: ① is JZ for SOT-23 - Green Level: ② is F for RoHS Compliant and Halogen Free			
Marking Information			
J2□□□□ - Product Code: J2 - GS Code: □□□□			

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	0.2	A
		T _A =70°C	0.16	
I _{DM}	Pulsed Drain Current		0.8	A
P _D	Total Power Dissipation	T _A =25°C	0.225	W
		T _A =70°C	0.14	
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		556	°C/W

Electrical Characteristics (T_A=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
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	0.8	-	1.5	V
I _{GSS}	Gate-Source Leakage Current	V _{DS} =0V, V _{GS} =±20V	-	-	±10	μA
I _{DSS}	Drain-Source Leakage Current	V _{DS} =25V, V _{GS} =0V	-	-	0.1	μA
		V _{DS} =50V, V _{GS} =0V	-	-	0.5	
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =4.5V, I _D =0.2A	-	-	2.5	Ω
		V _{GS} =2.5V, I _D =0.1A	-	-	4	
g _{FS}	Forward Transconductance	V _{DS} =25V, I _D =0.2A	0.1	-	-	S
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =0.5A	-	-	1.2	V
Dynamic characteristics						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz	-	22.8	-	pF
C _{oss}	Output Capacitance		-	3.5	-	
C _{rss}	Reverse Transfer Capacitance		-	2.9	-	
Q _g	Total Gate Charge	V _{DS} =25V, I _D =0.2A, V _{GS} = 4.5V	-	0.6	-	nC
Q _{gs}	Gate-Source Charge		-	0.22	-	
Q _{gd}	Gate-Drain Charge		-	0.2	-	
t _{d(on)}	Turn-On Delay Time	V _{DS} =25V, V _{GS} =10V, R _g =25Ω, I _D =0.2A	-	3.8	-	ns
t _r	Turn-On Rise Time		-	7.5	-	
t _{d(off)}	Turn-Off Delay Time		-	19	-	
t _f	Turn-Off Fall Time		-	15	-	

Typical Performance Characteristics

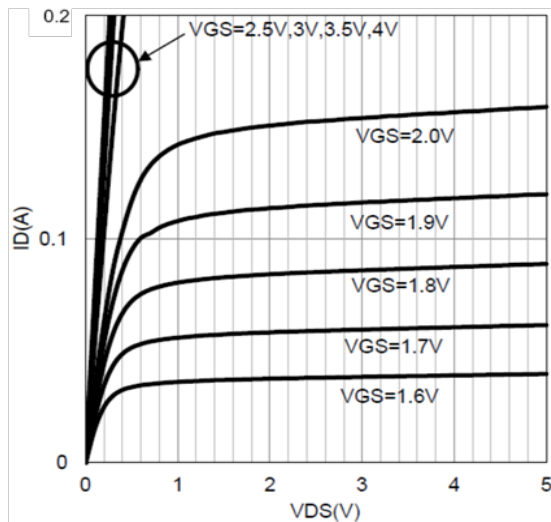


Figure 1. Typical Output Characteristics

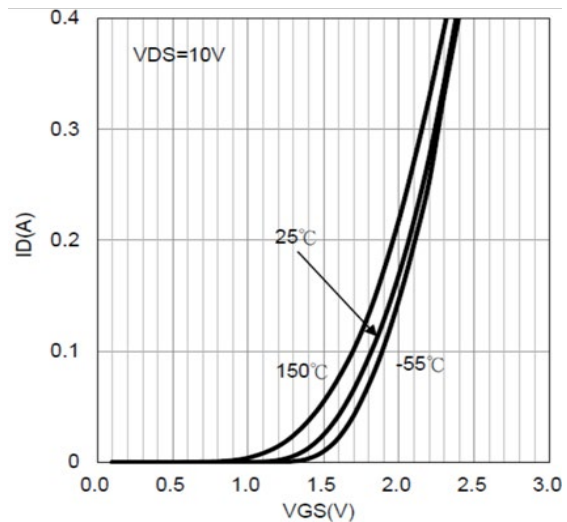


Figure 2. Typical Transfer Characteristics

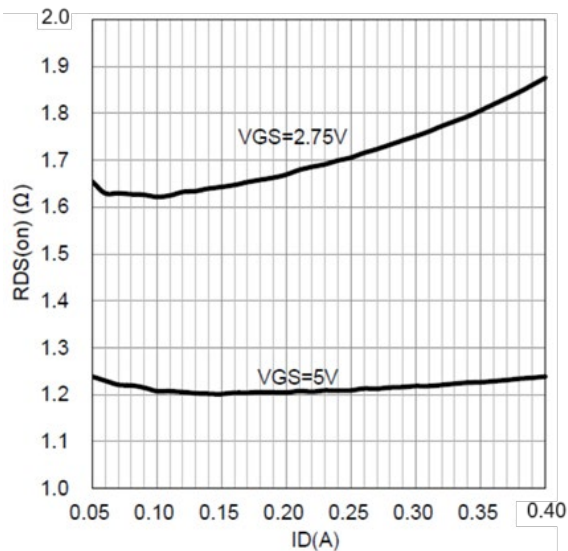


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

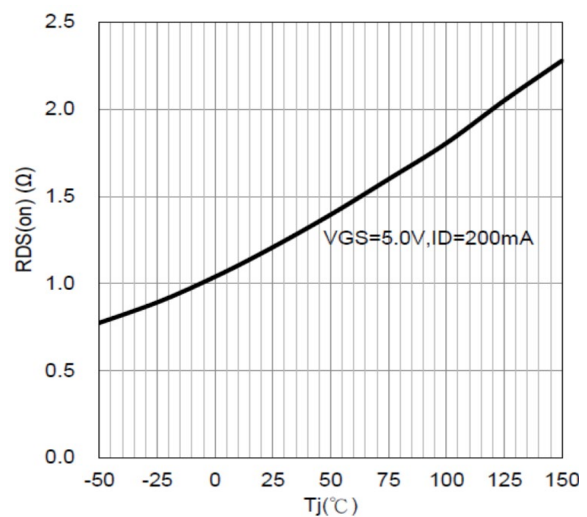


Figure 4. Drain-Source On-State Resistance vs. Junction Temperature

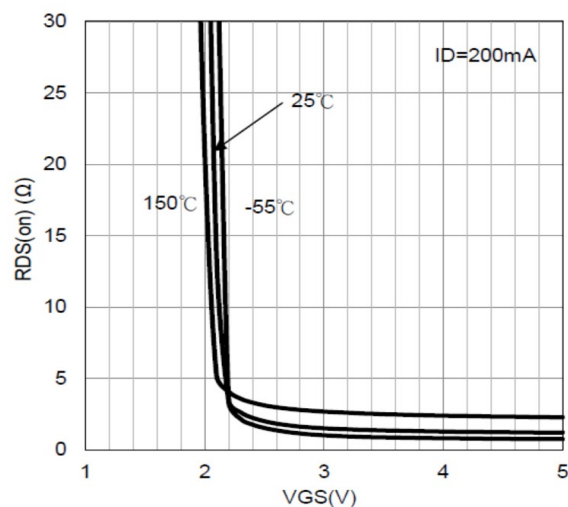


Figure 5. Drain-Source On-State Resistance vs. Gate-Source Voltage

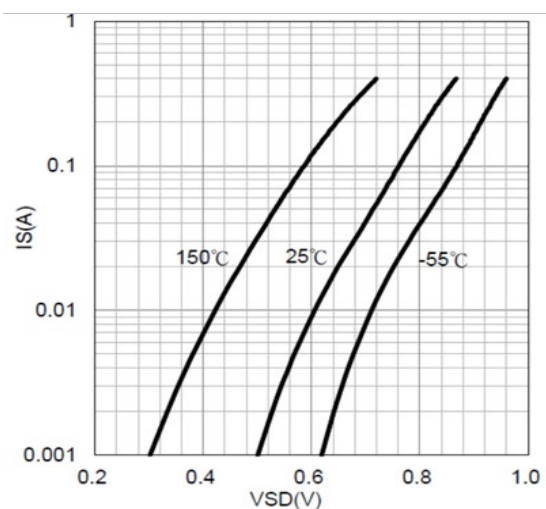


Figure 6. Diode Forward Voltage vs. Current

Typical Performance Characteristics

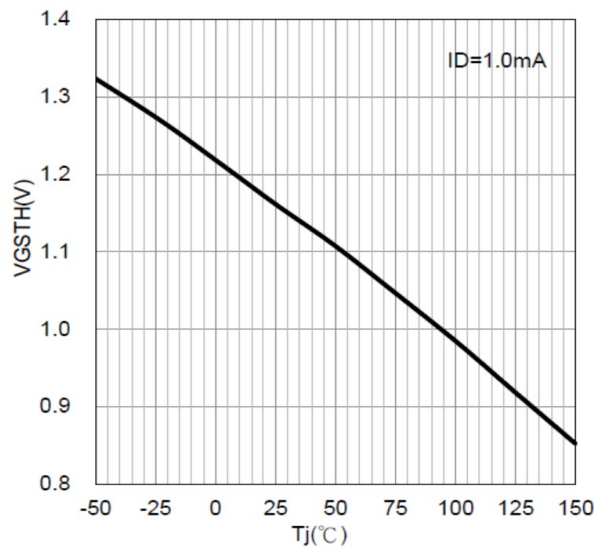


Figure 7. Gate Threshold Voltage vs. Junction Temperature

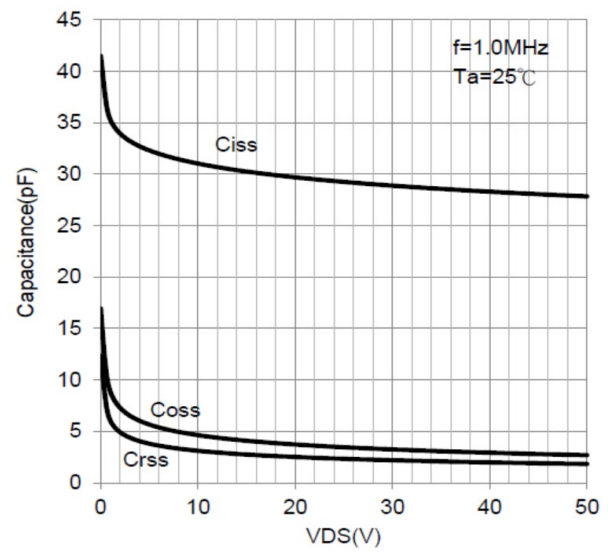


Figure 8. Capacitance vs. Drain-Source Voltage

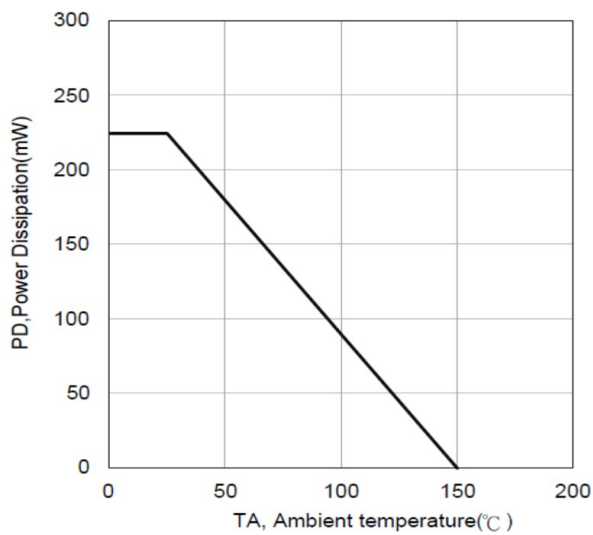
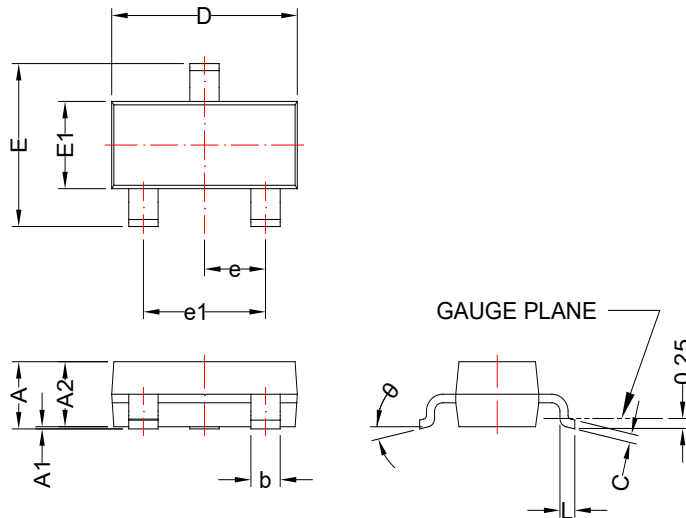


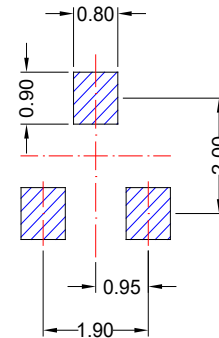
Figure 9. Power Dissipation vs. Ambient temperature

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	0.30	0.60	0.012	0.024
θ	0°	8°	0°	8°

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

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