

GSMBSS138

50V N-Channel Enhancement Mode MOSFET

Product Description

The GSMBSS138 is the N-Channel enhancement mode field effect transistors are produced using high cell density DMOS technology.

These products have been designed to minimize on-state resistance while provide rugged, reliable, and fast switching performance.

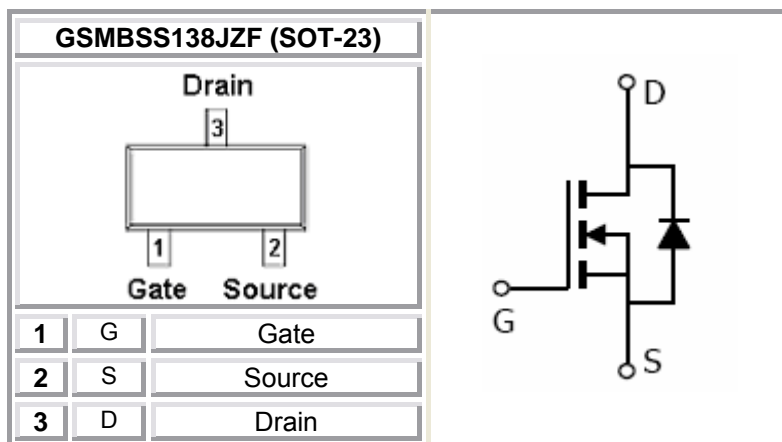
Features

- 50V/0.2A , $R_{DS(ON)}=3.5\Omega@V_{GS}=5V$
- 50V/0.2A , $R_{DS(ON)}=10\Omega@V_{GS}=2.75V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23 package design

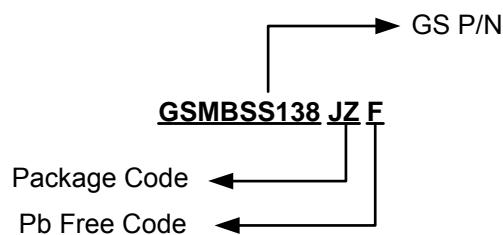
Applications

- DC to DC Converter
- Cellular & PCMCIA Card
- Cordless Telephone
- Power Management in Portable and Battery etc.

Packages & Pin Assignments

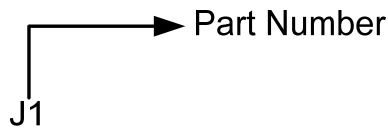


Ordering Information



Part Number	Package	Quantity
GSMBSS138JZF	SOT-23	3000 PCS

Marking Information



Absolute Maximum Ratings

$T_A=25^\circ\text{C}$ Unless otherwise noted

Symbol	Parameter	Typical	Unit
V_{DSS}	Drain-Source Voltage	50	V
V_{GSS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current ($T_A=25^\circ\text{C}$)	200	mA
I_{DM}	Pulsed Drain Current ($t_p \leq 10\mu\text{s}$)	800	mA
P_D	Power Dissipation ($T_A=25^\circ\text{C}$)	225	mW
T_J	Operating Junction Temperature	-55 to 150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
$R_{\theta JA}$	Maximax Junction to Ambient	556	$^\circ\text{C}/\text{W}$

Electrical Characteristics

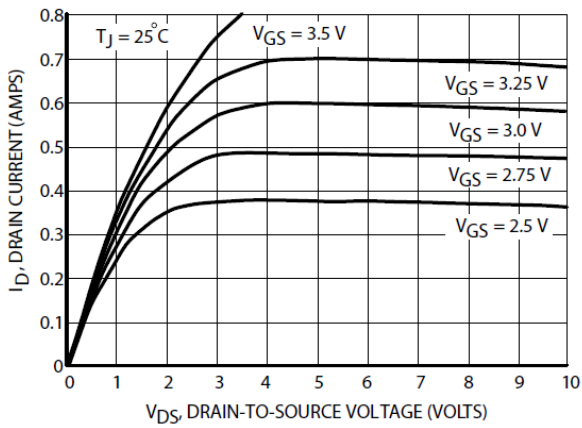
$T_A=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0\text{V}, I_D=250\mu\text{A}$	50			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=1.0\text{mA}$	0.5		1.5	
I_{GSS}	Gate-Source Leakage Current	$V_{DS}=0\text{V}, V_{GS}=\pm 20\text{V}$			± 0.1	μA
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=25\text{V}, V_{GS}=0\text{V}$			0.1	μA
		$V_{DS}=50\text{V}, V_{GS}=0\text{V}$			0.5	
$R_{DS(on)}$	Drain-Source On-Resistance	$V_{GS}=2.75\text{V}, I_D < 200\text{mA}$		5.6	10	Ω
		$V_{GS}=5.0\text{V}, I_D=200\text{mA}$			3.5	
g_{fs}	Forward Transconductance	$V_{DS}=25\text{V}, I_D=200\text{mA}, f=1.0\text{KHz}$	100			mS
Dynamic						
C_{iss}	Input Capacitance	$V_{DS}=25\text{V}, V_{GS}=0\text{V}, f=1\text{MHz}$		40	50	pF
C_{oss}	Output Capacitance			12	25	
C_{rss}	Reverse Transfer Capacitance			3.5	5.0	
$t_{d(on)}$	Turn-On Time	$V_{DD}=30\text{V}, I_D=200\text{mA}$			20	ns
$t_{d(off)}$	Turn-Off Time	$V_{DD}=30\text{V}, I_D=100\text{mA}$			20	

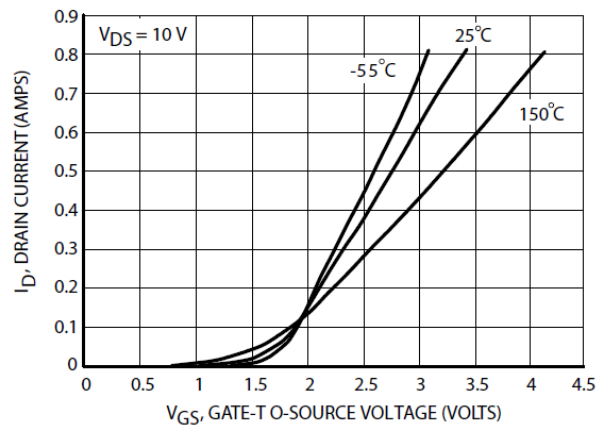
Note 1: Pulse Test: $PW \leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

Note 2: Switching Time is Essentially Independent of Operating Temperature.

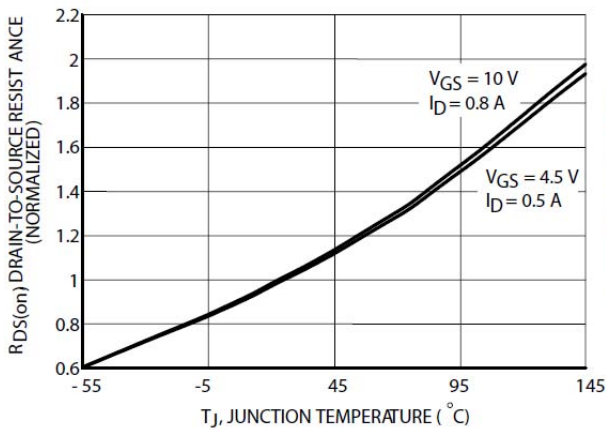
Typical Performance Characteristics



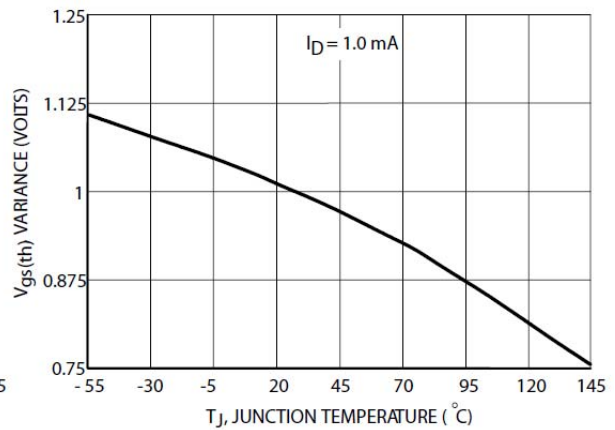
On-Region Characteristics



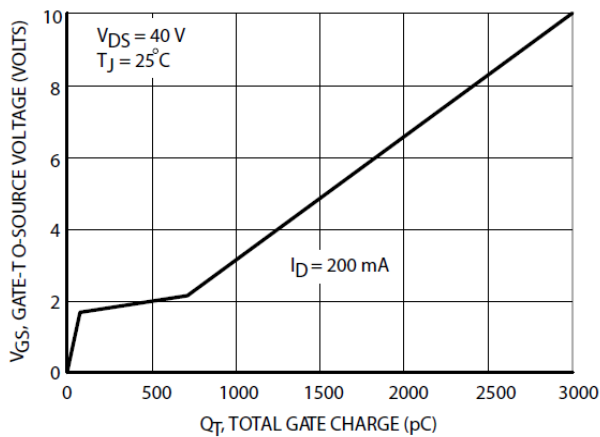
Transfer Characteristics



On-Resistance Variation with Temperature

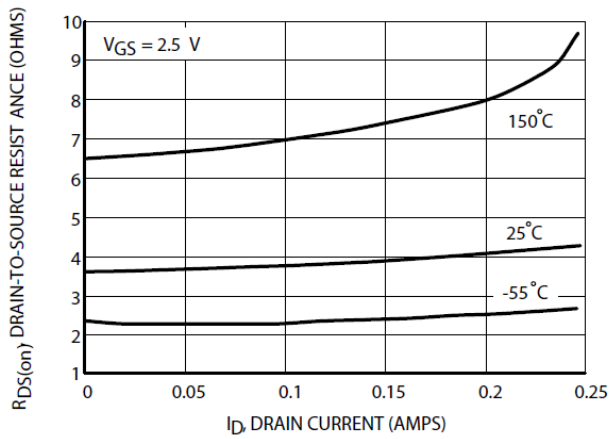


Threshold Voltage Variation with Temperature

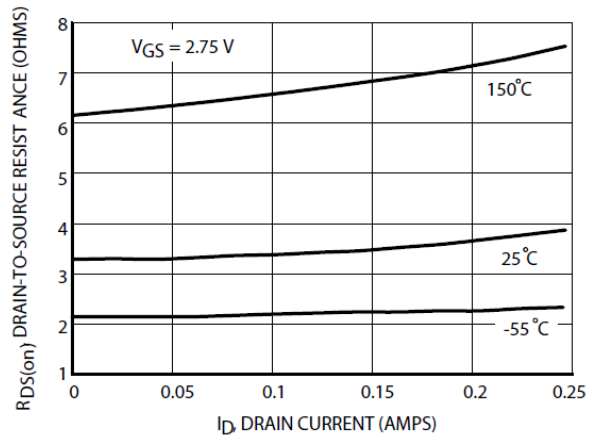


Gate Charge

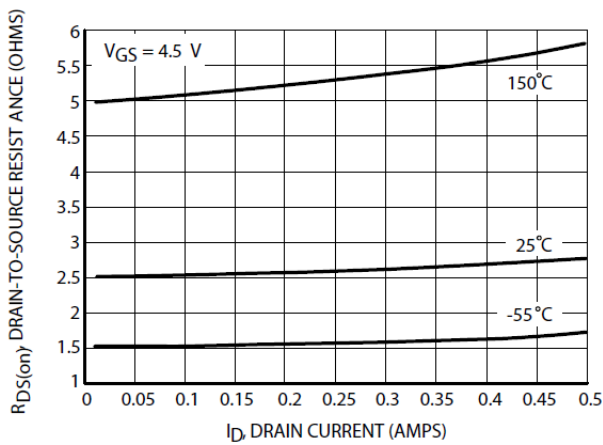
Typical Performance Characteristics (continue)



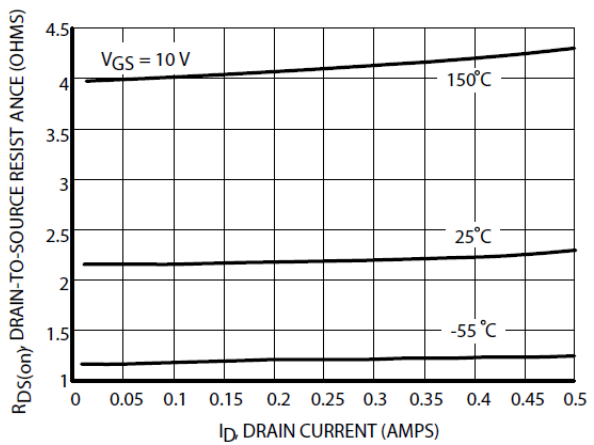
On-Region versus Drain Current



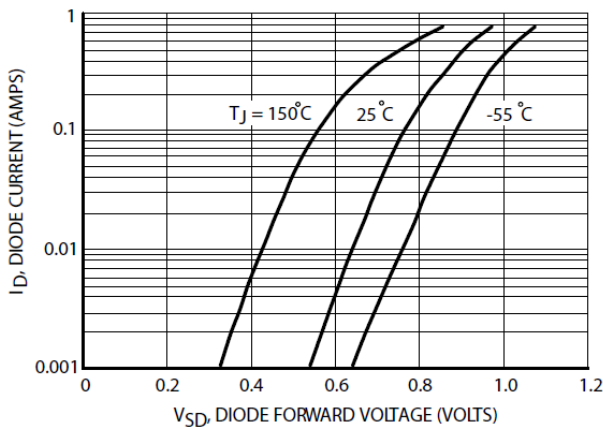
On-Region versus Drain Current



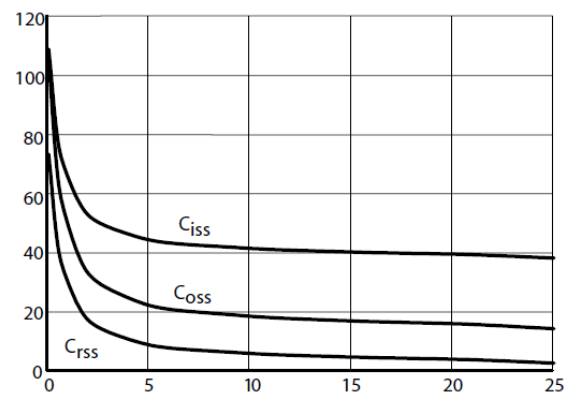
On-Region versus Drain Current



On-Region versus Drain Current



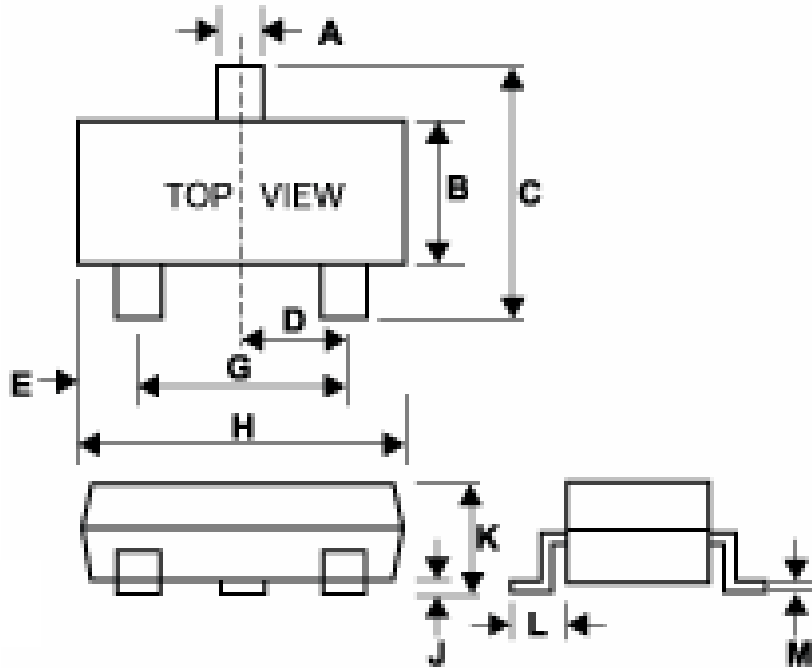
Body Diode Forward Voltage



Gate Charge

Package Dimension

SOT-23







Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.35	0.51	0.013	0.020
B	1.19	1.80	0.046	0.070
C	2.10	3.00	0.082	0.118
D	0.85	1.05	0.033	0.041
E	0.46	1.00	0.018	0.039
G	1.70	2.10	0.066	0.082
H	2.70	3.10	0.106	0.122
J	0.01	0.13	0.0003	0.005
K	0.89	1.60	0.035	0.062
L	0.30	0.61	0.011	0.024
M	0.076	0.25	0.002	0.009



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