BSS123LT1

Preferred Device

Power MOSFET 170 mAmps, 100 Volts

N−Channel SOT−23

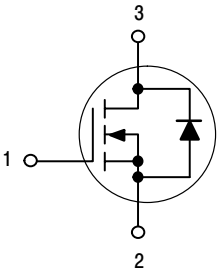
ON Semiconductor®

Features

- Pb−Free Packages are Available

170 mAMPS
100 VOLTS
$R_{DS(on)}$ = 6 Ω

N−Channel



MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Drain−Source Voltage	V_{DSS}	100	Vdc
Gate−Source Voltage − Continuous − Non−repetitive ($t_p \le 50$ μs)	 V_{GS} V_{GSM}	 ±20 ±40	 Vdc Vpk
Drain Current − Continuous (Note 1) − Pulsed (Note 2)	 I_D I_{DM}	 0.17 0.68	Adc

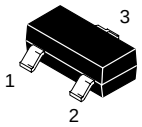
Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

THERMAL CHARACTERISTICS

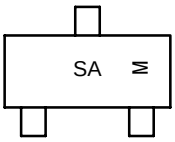
Characteristic	Symbol	Max	Unit
Total Device Dissipation FR−5 Board (Note 3) T_A = 25°C Derate above 25°C	 P_D	 225 1.8	 mW mW/°C
Thermal Resistance, Junction−to−Ambient	$R_{\theta JA}$	556	°C/W
Junction and Storage Temperature	T_J, T_{stg}	−55 to +150	°C

1. The Power Dissipation of the package may result in a lower continuous drain current.
2. Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.
3. FR−5 = 1.0 × 0.75 × 0.062 in.

MARKING DIAGRAM

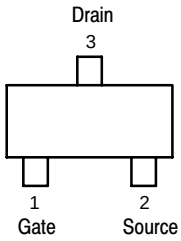


SOT−23
CASE 318
STYLE 21



SA = Device Code
M = Date Code

PIN ASSIGNMENT



ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

Preferred devices are recommended choices for future use and best overall value.

Publication Order Number:
BSS123LT1/D

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain−Source Breakdown Voltage (V_{GS} = 0, I_D = 250 μAdc)		$V_{(BR)DSS}$	100	−	−	Vdc
Zero Gate Voltage Drain Current (V_{GS} = 0, V_{DS} = 100 Vdc)	T_J = 25°C	I_{DSS}	−	−	15	μAdc
	T_J = 125°C		−	−	60	
Gate−Body Leakage Current (V_{GS} = 20 Vdc, V_{DS} = 0)		I_{GSS}	−	−	50	nAdc
ON CHARACTERISTICS (Note 4)						
Gate Threshold Voltage (V_{DS} = V_{GS}, I_D = 1.0 mAdc)		$V_{GS(th)}$	0.8	−	2.8	Vdc
Static Drain−Source On−Resistance (V_{GS} = 10 Vdc, I_D = 100 mAdc)		$r_{DS(on)}$	−	5.0	6.0	Ω
Forward Transconductance (V_{DS} = 25 Vdc, I_D = 100 mAdc)		g_{fs}	80	−	−	mmhos
DYNAMIC CHARACTERISTICS						
Input Capacitance (V_{DS} = 25 Vdc, V_{GS} = 0, f = 1.0 MHz)		C_{iss}	−	20	−	pF
Output Capacitance (V_{DS} = 25 Vdc, V_{GS} = 0, f = 1.0 MHz)		C_{oss}	−	9.0	−	pF
Reverse Transfer Capacitance (V_{DS} = 25 Vdc, V_{GS} = 0, f = 1.0 MHz)		C_{rss}	−	4.0	−	pF
SWITCHING CHARACTERISTICS[4]						
Turn−On Delay Time	(V_{CC} = 30 Vdc, I_C = 0.28 Adc, V_{GS} = 10 Vdc, R_{GS} = 50 Ω)	$t_{d(on)}$	−	20	−	ns
Turn−Off Delay Time		$t_{d(off)}$	−	40	−	ns
REVERSE DIODE						
Diode Forward On−Voltage (I_D = 0.34 Adc, V_{GS} = 0 Vdc)		V_{SD}	−	−	1.3	V

4. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

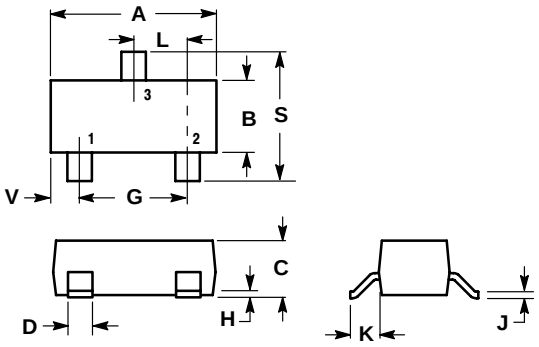
ORDERING INFORMATION

Device	Package	Shipping†
BSS123LT1	SOT−23	3,000 Tape & Reel
BSS123LT1G	SOT−23 (Pb−Free)	3,000 Tape & Reel
BSS123LT3	SOT−23	10,000 Tape & Reel
BSS123LT3G	SOT−23 (Pb−Free)	10,000 Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

PACKAGE DIMENSIONS

SOT−23
(TO−236)
CASE 318−08
ISSUE AK

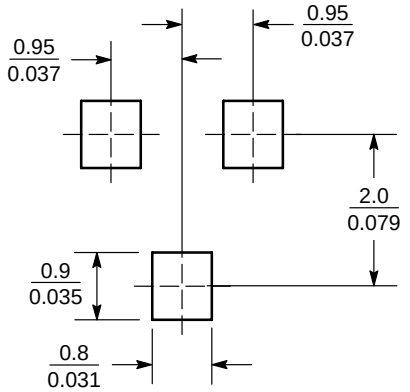


NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. 318−01 THRU −07 AND −09 OBSOLETE, NEW STANDARD 318−08.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.50
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.0140	0.0285	0.35	0.69
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.1039	2.10	2.64
V	0.0177	0.0236	0.45	0.60

STYLE 21:
PIN 1. GATE
2. SOURCE
3. DRAIN

SOLDERING FOOTPRINT*



*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.