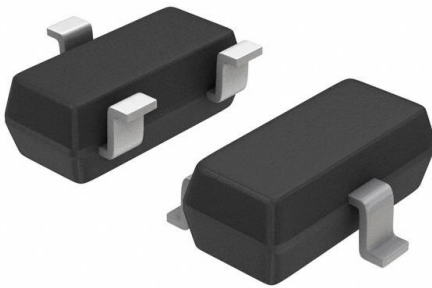


BSS123LT1G Datasheet

www.digi-electronics.com



<https://www.DiGi-Electronics.com>

DiGi Electronics Part Number	BSS123LT1G-DG
Manufacturer	onsemi
Manufacturer Product Number	BSS123LT1G
Description	MOSFET N-CH 100V 170MA SOT23-3
Detailed Description	N-Channel 100 V 170mA (Ta) 225mW (Ta) Surface Mount SOT-23-3 (TO-236)



Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

DiGi is a global authorized distributor of electronic components.

Purchase and inquiry

Manufacturer Product Number:

BSS123LT1G

Series:

-

FET Type:

N-Channel

Drain to Source Voltage (Vdss):

100 V

Drive Voltage (Max Rds On, Min Rds On):

10V

Vgs(th) (Max) @ Id:

2.6V @ 1mA

Input Capacitance (Ciss) (Max) @ Vds:

20 pF @ 25 V

Power Dissipation (Max):

225mW (Ta)

Mounting Type:

Surface Mount

Package / Case:

TO-236-3, SC-59, SOT-23-3

Manufacturer:

onsemi

Product Status:

Active

Technology:

MOSFET (Metal Oxide)

Current - Continuous Drain (Id) @ 25°C:

170mA (Ta)

Rds On (Max) @ Id, Vgs:

60hm @ 100mA, 10V

Vgs (Max):

±20V

FET Feature:

-

Operating Temperature:

-55°C ~ 150°C (TJ)

Supplier Device Package:

SOT-23-3 (TO-236)

Base Product Number:

BSS123

Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.21.0095

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99

MOSFET – Power

170 mAmps, 100 Volts

N-Channel SOT-23

BSS123LT1G, BVSS123LT1G

Features

- HBM Class 0A, MM Class M1B (Note 4)
- BVSS Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb-Free and are RoHS Compliant

MAXIMUM RATINGS

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

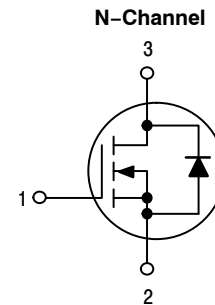
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

THERMAL CHARACTERISTICS

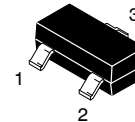
Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-5 Board (Note 3) $T_A = 25^\circ C$ Derate above $25^\circ C$	P_D	225 1.8	mW mW/ $^\circ C$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	556	$^\circ C/W$
Junction and Storage Temperature	T_J, T_{stg}	-55 to +150	$^\circ C$

1. The Power Dissipation of the package may result in a lower continuous drain current.
2. Pulse Width $\leq 300 \mu s$, Duty Cycle $\leq 2.0\%$.
3. FR-5 = $1.0 \times 0.75 \times 0.062$ in.
4. ESD between the gate and source serves only, no gate overvoltage rating is implied.

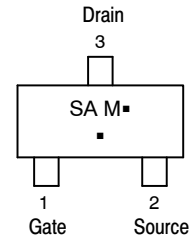
170 mAmps
100 VOLTS
 $R_{DS(on)} = 6 \Omega$



MARKING DIAGRAM & PIN ASSIGNMENT



**SOT-23
CASE 318
STYLE 21**



SA = Device Code
M = Date Code
▪ = Pb-Free Package

(Note: Microdot may be in either location)
*Date Code orientation and/or position may vary depending upon manufacturing location.

ORDERING INFORMATION

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

BSS123LT1G, BVSS123LT1G**ELECTRICAL CHARACTERISTICS** ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Drain-Source Breakdown Voltage ($V_{GS} = 0, I_D = 250 \mu\text{A}$)	$V_{(BR)DSS}$	100	-	-	Vdc
Zero Gate Voltage Drain Current ($V_{GS} = 0, V_{DS} = 100 \text{ Vdc}$) $T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$	I_{DSS}	-	-	15 60	μA
Gate-Body Leakage Current ($V_{GS} = 20 \text{ Vdc}, V_{DS} = 0$)	I_{GSS}	-	-	50	nA

ON CHARACTERISTICS (Note 5)

Gate Threshold Voltage ($V_{DS} = V_{GS}, I_D = 1.0 \text{ mA}$)	$V_{GS(th)}$	1.6	-	2.6	Vdc
Static Drain-Source On-Resistance ($V_{GS} = 10 \text{ Vdc}, I_D = 100 \text{ mA}$)	$r_{DS(on)}$	-	-	6.0	Ω
Forward Transconductance ($V_{DS} = 25 \text{ Vdc}, I_D = 100 \text{ mA}$)	g_{fs}	80	-	-	mmhos

DYNAMIC CHARACTERISTICS

Input Capacitance ($V_{DS} = 25 \text{ Vdc}, V_{GS} = 0, f = 1.0 \text{ MHz}$)	C_{iss}	-	20	-	pF
Output Capacitance ($V_{DS} = 25 \text{ Vdc}, V_{GS} = 0, f = 1.0 \text{ MHz}$)	C_{oss}	-	9.0	-	pF
Reverse Transfer Capacitance ($V_{DS} = 25 \text{ Vdc}, V_{GS} = 0, f = 1.0 \text{ MHz}$)	C_{rss}	-	4.0	-	pF

SWITCHING CHARACTERISTICS(4)

Turn-On Delay Time	($V_{CC} = 30 \text{ Vdc}, I_C = 0.28 \text{ A}$, $V_{GS} = 10 \text{ Vdc}, R_{GS} = 50 \Omega$)	$t_{d(on)}$	-	20	-	ns
Turn-Off Delay Time		$t_{d(off)}$	-	40	-	ns

REVERSE DIODE

Diode Forward On-Voltage ($I_D = 0.34 \text{ A}$, $V_{GS} = 0 \text{ Vdc}$)	V_{SD}	-	-	1.3	V
---	----------	---	---	-----	---

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

5. Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2.0\%$.

ORDERING INFORMATION

Device	Package	Shipping [†]
BSS123LT1G	SOT-23 (Pb-Free)	3,000 / Tape & Reel
BVSS123LT1G*	SOT-23 (Pb-Free)	3,000 / Tape & Reel
BSS123LT7G	SOT-23 (Pb-Free)	3,500 / 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.

*BVSS Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.

BSS123LT1G, BVSS123LT1G

TYPICAL ELECTRICAL CHARACTERISTICS

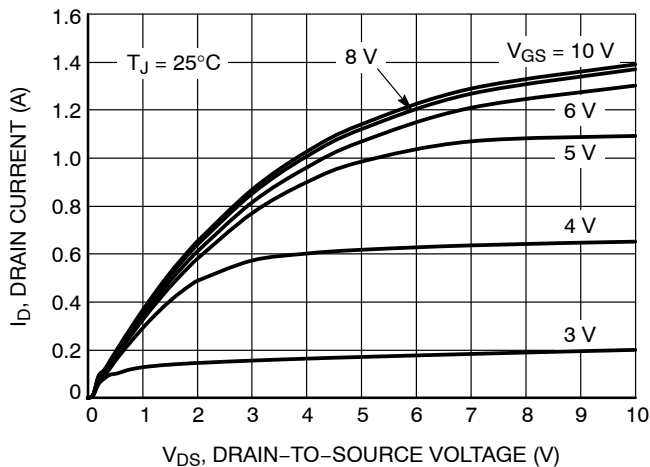


Figure 1. On-Region Characteristics

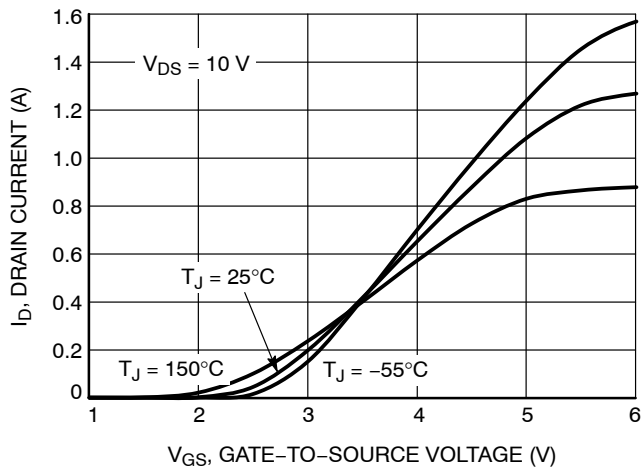


Figure 2. Transfer Characteristics

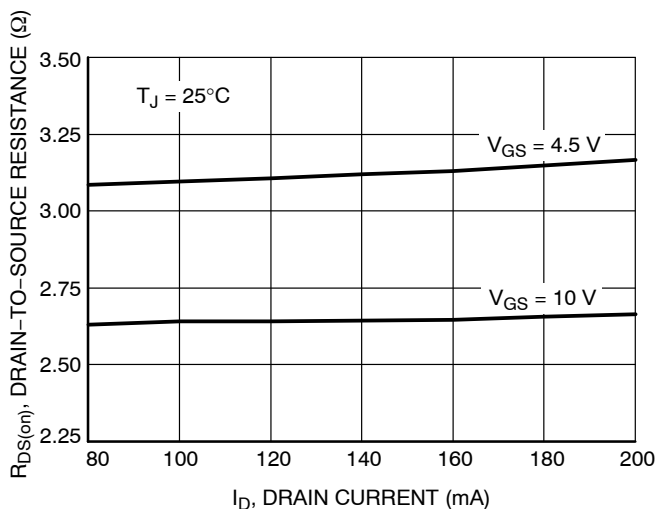


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

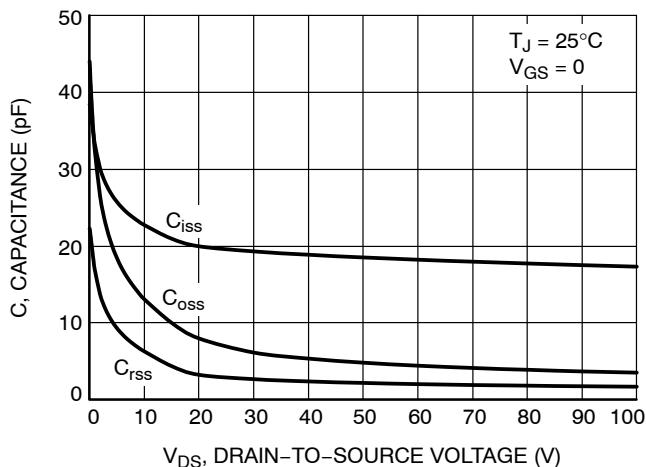


Figure 4. Capacitance Variation

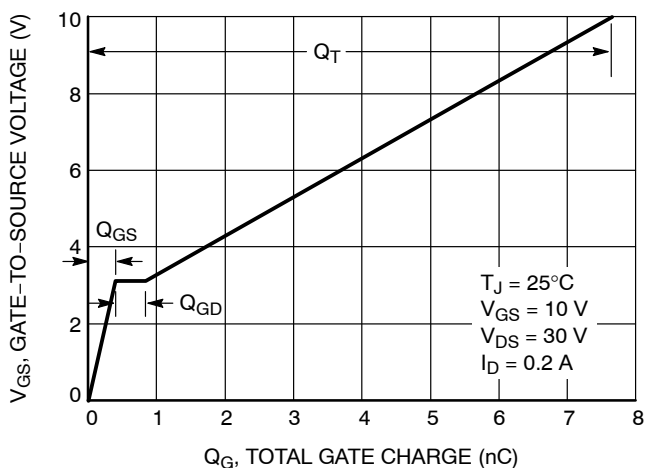


Figure 5. Gate-to-Source and Drain-to-Source Voltage vs. Total Charge

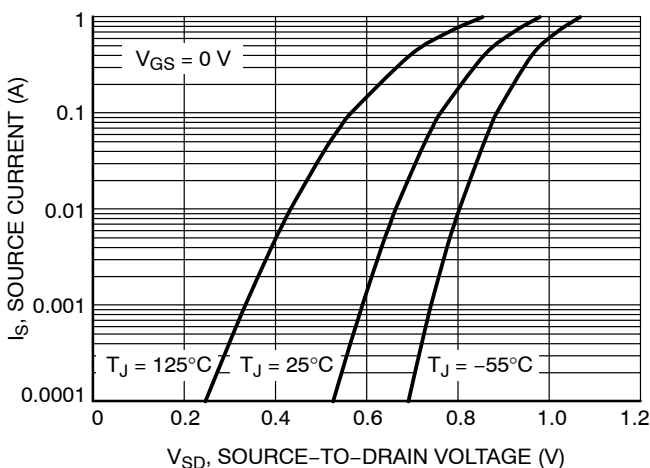


Figure 6. Diode Forward Voltage vs. Current

BSS123LT1G, BVSS123LT1G

TYPICAL ELECTRICAL CHARACTERISTICS

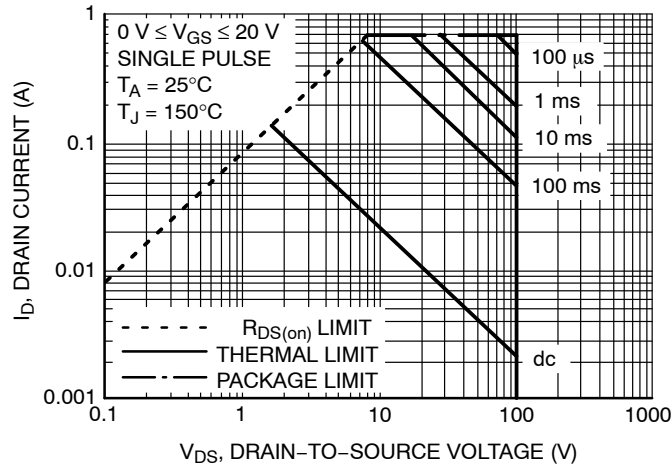


Figure 7. Maximum Rated Forward Biased Safe Operating Area

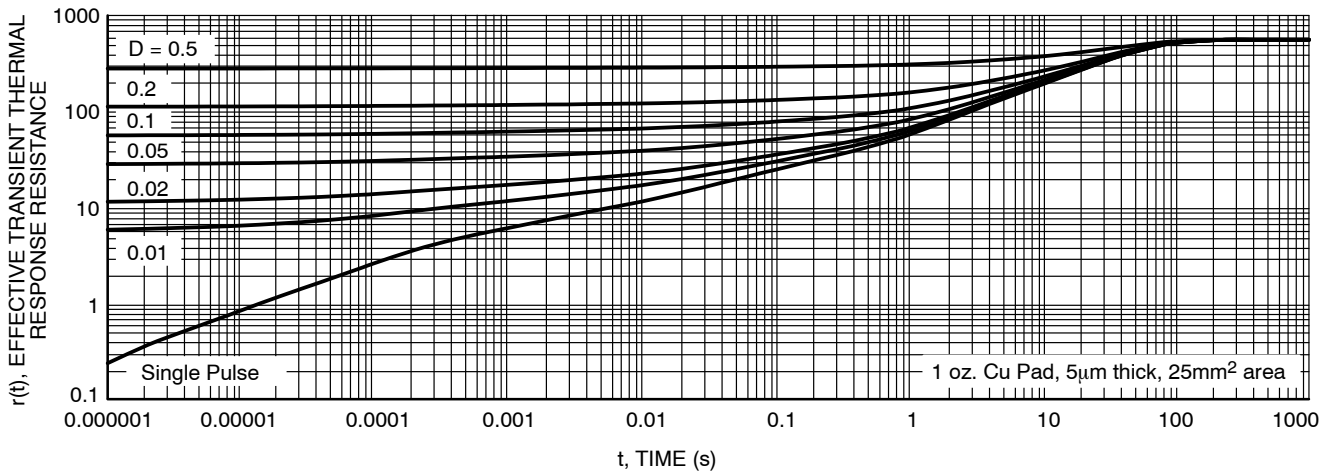


Figure 8. Thermal Response



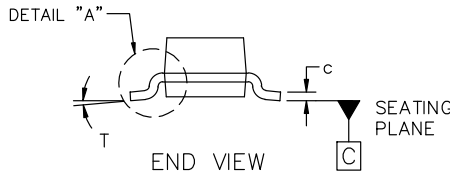
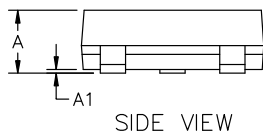
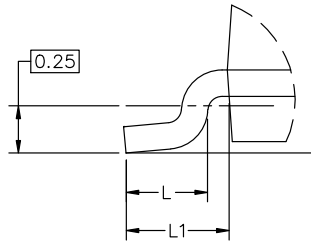
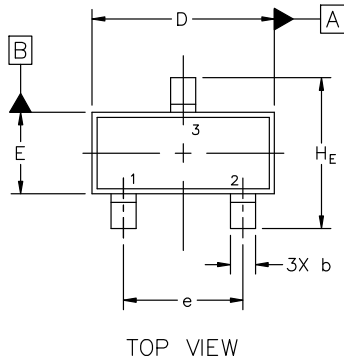
**MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS**



SCALE 4:1

SOT-23 (TO-236) 2.90x1.30x1.00 1.90P
CASE 318
ISSUE AU

DATE 14 AUG 2024

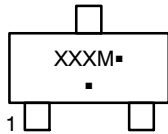


MILLIMETERS			
DIM	MIN	NOM	MAX
A	0.89	1.00	1.11
A1	0.01	0.06	0.10
b	0.37	0.44	0.50
c	0.08	0.14	0.20
D	2.80	2.90	3.04
E	1.20	1.30	1.40
e	1.78	1.90	2.04
L	0.30	0.43	0.55
L1	0.35	0.54	0.69
HE	2.10	2.40	2.64
T	0°	---	10°

NOTES:

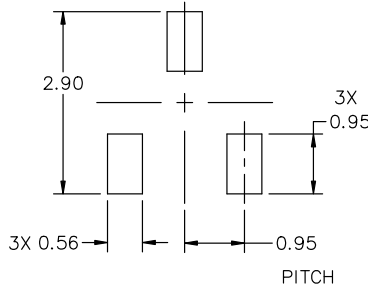
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2018.
2. CONTROLLING DIMENSIONS: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF THE BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

GENERIC MARKING DIAGRAM*



XXX = Specific Device Code
M = Date Code
▪ = Pb-Free Package

*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.



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

STYLES ON PAGE 2

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CASE 318
ISSUE AU

DATE 14 AUG 2024

- STYLE 1 THRU 5:
CANCELLED
- STYLE 6:
PIN 1. BASE
2. EMITTER
3. COLLECTOR
- STYLE 7:
PIN 1. EMITTER
2. BASE
3. COLLECTOR
- STYLE 8:
PIN 1. ANODE
2. NO CONNECTION
3. CATHODE
- STYLE 9:
PIN 1. ANODE
2. ANODE
3. CATHODE
- STYLE 10:
PIN 1. DRAIN
2. SOURCE
3. GATE
- STYLE 11:
PIN 1. ANODE
2. CATHODE
3. CATHODE-ANODE
- STYLE 12:
PIN 1. CATHODE
2. CATHODE
3. ANODE
- STYLE 13:
PIN 1. SOURCE
2. DRAIN
3. GATE
- STYLE 14:
PIN 1. CATHODE
2. GATE
3. ANODE
- STYLE 15:
PIN 1. GATE
2. CATHODE
3. ANODE
- STYLE 16:
PIN 1. ANODE
2. CATHODE
3. CATHODE
- STYLE 17:
PIN 1. NO CONNECTION
2. ANODE
3. CATHODE
- STYLE 18:
PIN 1. NO CONNECTION
2. CATHODE
3. ANODE
- STYLE 19:
PIN 1. CATHODE
2. ANODE
3. CATHODE-ANODE
- STYLE 20:
PIN 1. CATHODE
2. ANODE
3. GATE
- STYLE 21:
PIN 1. GATE
2. SOURCE
3. DRAIN
- STYLE 22:
PIN 1. RETURN
2. OUTPUT
3. INPUT
- STYLE 23:
PIN 1. ANODE
2. ANODE
3. CATHODE
- STYLE 24:
PIN 1. GATE
2. DRAIN
3. SOURCE
- STYLE 25:
PIN 1. ANODE
2. CATHODE
3. GATE
- STYLE 26:
PIN 1. CATHODE
2. ANODE
3. NO CONNECTION
- STYLE 27:
PIN 1. CATHODE
2. CATHODE
3. CATHODE
- STYLE 28:
PIN 1. ANODE
2. ANODE
3. ANODE

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