

Schottky Barrier Diodes MBD101G, MMBD101LT1G

Designed primarily for UHF mixer applications but suitable also for use in detector and ultra-fast switching circuits. Supplied in an inexpensive plastic package for low-cost, high-volume consumer requirements. Also available in Surface Mount package.

Features

- Low Noise Figure 6.0 dB Typ @ 1.0 GHz
- Very Low Capacitance Less Than 1.0 pF
- High Forward Conductance 0.5 V (Typ) @ $I_F = 10 \text{ mA}$
- These Devices are Pb-Free and are RoHS Compliant

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Reverse Voltage	V_{R}	7.0	V
Forward Power Dissipation $T_A = 25^{\circ}C \qquad MBD101$ $MMBD101LT1$ Derate above 25°C MBD101 $MMBD101LT1$	P _F	280 225 2.2 1.8	mW mW/°C
Junction Temperature	T_J	+150	°C
Storage Temperature Range	T _{stg}	-55 to +150	°C

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.

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

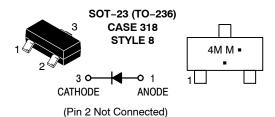
Characteristic	Symbol	Min	Тур	Max	Unit
Reverse Breakdown Voltage (I _R = 10 μA)	V _{(BR)R}	7.0	10	-	V
Diode Capacitance (V _R = 0, f = 1.0 MHz, Note 1, page 2)	C _D	-	0.88	1.0	pF
Forward Voltage (I _F = 10 mA)	V _F	-	0.5	0.6	V
Reverse Leakage (V _R = 3.0 V)	I _R	-	0.02	0.25	μΑ

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.

1

SILICON SCHOTTKY BARRIER DIODES

TO-92 2-Lead CASE 182 STYLE 1 1 2 2 0 0 1 CATHODE ANODE



A = Assembly Location

Y = Year

W = Work Week

4M = Device Code (SOT-23)

M = Date Code*

= Pb-Free Package

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

ORDERING INFORMATION

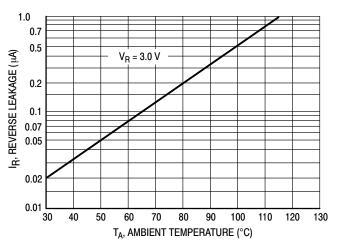
Device	Package	Shipping [†]
MBD101G	TO-92 (Pb-Free)	5000 Units / Box
MMBD101LT1G	SOT-23 (Pb-Free)	3000 / Tape & Reel

†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.

MBD101G, MMBD101LT1G

TYPICAL CHARACTERISTICS

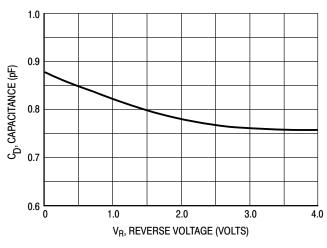
(T_A = 25°C unless noted)



100 T_A = 85°C 10 T_A = -40°C T_A = -40°C T_A = -40°C V_F FORWARD VOLTAGE (VOLTS)

Figure 1. Reverse Leakage

Figure 2. Forward Voltage



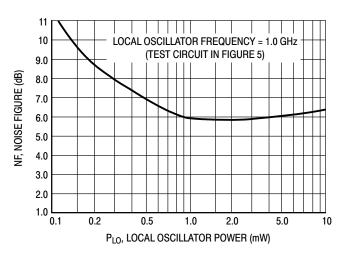


Figure 3. Capacitance

Figure 4. Noise Figure

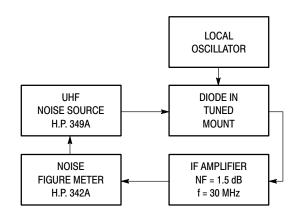


Figure 5. Noise Figure Test Circuit

NOTES ON TESTING AND SPECIFICATIONS

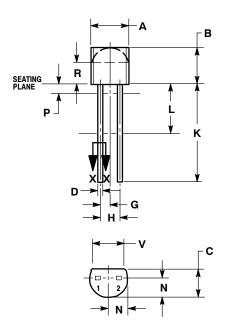
- Note 1 C_D is measured using a capacitance bridge (Boonton Electronics Model 75A or equivalent).
- Note 2 Noise figure measured with diode under test in tuned diode mount using UHF noise source and local oscillator (LO) frequency of 1.0 GHz. The LO power is adjusted for 1.0 mW. IF amplifier NF = 1.5 dB, f = 30 MHz, see Figure 5.
- Note 3 L_S is measured on a package having a short instead of a die, using an impedance bridge (Boonton Radio Model 250A RX Meter).



TO-92 (TO-226) CASE 182-06 **ISSUE L**

DATE 04/18/1998







SECTION X-X

- OTES:
 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. CONTOUR OF PACKAGE BEYOND ZONE R IS UNCONTROLLED.
 4. LEAD DIMENSION IS UNCONTROLLED IN P AND

- BEYOND DIMENSION K MINIMUM.

	INCHES		MILLIN	IETERS	
DIM	MIN	MAX	MIN	MAX	
Α	0.175	0.205	4.45	5.21	
В	0.170	0.210	4.32	5.33	
С	0.125	0.165	3.18	4.19	
D	0.016	0.021	0.407	0.533	
G	0.050 BSC		1.27 BSC		
Н	0.100 BSC		2.54 BSC		
ſ	0.014	0.016	0.36	0.41	
K	0.500	-	12.70		
٦	0.250		6.35		
N	0.080	0.105	2.03	2.66	
Р		0.050		1.27	
R	0.115	-	2.93		
٧	0.135		3.43		

STYLE 1: PIN 1. ANODE 2. CATHODE STYLE 2: PIN 1. CATHODE 2. ANODE

STYLE 3: PIN 1. MAIN TERMINAL 1 2. MAIN TERMINAL 2 STYLE 4: CANCELLED STYLE 5: PIN 1. INPUT 2. OUTPUT

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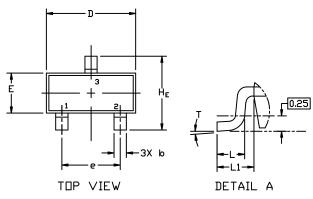


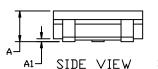


SOT-23 (TO-236) CASE 318 ISSUE AT

DATE 01 MAR 2023









NOTES:

- DIMENSIONING AND TOLERANCING PER ASME Y14.5M,1994.
- 2. CONTROLLING DIMENSION: 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.

	MILLIM	IETERS			INCHES	
DIM	MIN.	N□M.	MAX.	MIN.	N□M.	MAX.
Α	0.89	1.00	1.11	0.035	0.039	0.044
A1	0.01	0.06	0.10	0.000	0.002	0.004
b	0.37	0.44	0.50	0.015	0.017	0.020
С	0.08	0.14	0.20	0.003	0.006	0.008
D	2.80	2.90	3.04	0.110	0.114	0.120
Ε	1.20	1.30	1.40	0.047	0.051	0.055
e	1.78	1.90	2.04	0.070	0.075	0.080
L	0.30	0.43	0.55	0.012	0.017	0.022
L1	0.35	0.54	0.69	0.014	0.021	0.027
HE	2.10	2.40	2.64	0.083	0.094	0.104
Т	0*		10°	0*		10°

GENERIC MARKING DIAGRAM*



XXX = Specific Device Code

M = Date Code

■ = Pb-Free Package



RECOMMENDED MOUNTING FOOTPRINT

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

STYLES ON PAGE 2

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^{*}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.

MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS



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DATE 01 MAR 2023

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	1	
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: N 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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