

BGR269

200 MHz, 35 dB gain reverse amplifier

Rev. 6 — 5 August 2010

Product data sheet

1. Product profile

1.1 General description

High performance amplifier in a SOT115J package, operating at a voltage supply of 24 V (DC).

CAUTION



This device is sensitive to ElectroStatic Discharge (ESD). Therefore care should be taken during transport and handling.

1.2 Features and benefits

- Excellent linearity
- Silicon nitride passivation
- Rugged construction
- Gold metallization ensures excellent reliability
- 35 dB amplification up to 200 MHz

1.3 Applications

- Reverse amplifier in two-way CATV systems operating in the 5 MHz to 200 MHz frequency range

1.4 Quick reference data

Table 1. Quick reference data

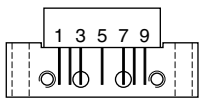
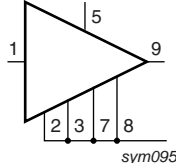
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
G_p	power gain	$f = 5 \text{ MHz}$	34.5	35	35.5	dB
		$f = 200 \text{ MHz}$	35	-	36	dB
I_{tot}	total current	$V_B = 24 \text{ V}$	[1] 145	160	175	mA

[1] The module normally operates at $V_B = 24 \text{ V}$, but is able to withstand supply transients up to $V_B = 35 \text{ V}$.



2. Pinning information

Table 2. Pinning

Pin	Description	Simplified outline	Symbol
1	input		
2	common		
3	common		
5	+V _B		
7	common		
8	common		
9	output		

3. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BGR269	-	rectangular single-ended package; aluminium flange; 2 vertical mounting holes; 2 × 6-32 UNC and 2 extra horizontal mounting holes; 7 gold-plated in-line leads	SOT115J

4. Limiting values

Table 4. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions	Min	Max	Unit
V _i	RF input voltage		-	50	dBmV
T _{mb}	mounting base temperature		-20	+100	°C
T _{stg}	storage temperature	range	-40	+100	°C

5. Characteristics

Table 5. Characteristics

Bandwidth 5 MHz to 200 MHz; $V_B = 24$ V; $T_{mb} = 30$ °C; $Z_S = Z_L = 75$ Ω ; unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit	
G_p	power gain	$f = 5$ MHz	34.5	35	35.5	dB	
		$f = 200$ MHz	35	-	36	dB	
SL	slope straight line	$f = 5$ MHz to 200 MHz	-0.2	-	0.6	dB	
FL	flatness of frequency response	$f = 5$ MHz to 10 MHz	-0.1	-	+0.4	dB	
		$f = 10$ MHz to 190 MHz	-0.1	-	+0.5	dB	
		$f = 190$ MHz to 200 MHz	-0.1	-	+0.4	dB	
S_{11}	input return losses	$f = 5$ MHz to 200 MHz	20	-	-	dB	
S_{22}	output return losses	$f = 5$ MHz to 200 MHz	20	-	-	dB	
ϕ_{s21}	phase response	$f = 5$ MHz	-45	-	+45	deg	
S_{12}	reverse isolation	$f = 5$ MHz to 200 MHz	-	-	-42	dB	
CTB	composite triple beat	$V_o = 50$ dBmV					
		6 channels flat; measured at 37 MHz	[1]	-	-	-74	dB
		10 channels flat; measured at 67.25 MHz	[2]	-	-	-68	dB
		28 channels flat; measured at 199.25 MHz	[3]	-	-	-57	dB
X_{mod}	cross modulation	$V_o = 50$ dBmV					
		6 channels flat; measured at 37 MHz	[1]	-	-	-66	dB
		10 channels flat; measured at 25 MHz	[2]	-	-	-57	dB
		28 channels flat; measured at 25 MHz	[3]	-	-	-50	dB
CSO	composite second order distortion	$V_o = 50$ dBmV					
		6 channels flat; measured at 38 MHz	[1]	-	-	-74	dB
		10 channels flat; measured at 68.5 MHz	[2]	-	-	-74	dB
		28 channels flat; measured at 200.5 MHz	[3]	-	-	-66	dB
V_o	output voltage	$d_{im} = -60$ dB	[4]	62	-	-	dBmV
d_2	second-order distortion		[5]	-	-	-70	dB
NF	noise figure	$f = 70$ MHz	-	-	5.3	dB	
		$f = 200$ MHz	-	-	5.5	dB	
I_{tot}	total current		[6]	145	160	175	mA

[1] From the following frequencies: 7.00 MHz, 13.00 MHz, 19.00 MHz, 25.00 MHz, 31.00 MHz and 37.00 MHz.

[2] From the following frequencies: 7.00 MHz, 13.00 MHz, 19.00 MHz, 25.00 MHz, 31.00 MHz, 37.00 MHz, 43.00 MHz, 55.25 MHz, 61.25 MHz and 67.25 MHz.

[3] From the following frequencies: 7.00 MHz, 13.00 MHz, 19.00 MHz, 25.00 MHz, 31.00 MHz, 37.00 MHz, 43.00 MHz, 55.25 MHz, 61.25 MHz, 67.25 MHz, 77.25 MHz, 83.25 MHz, 109.25 MHz, 115.25 MHz, 121.25 MHz, 127.25 MHz, 133.25 MHz, 139.25 MHz, 145.25 MHz, 151.25 MHz, 157.25 MHz, 163.25 MHz, 169.25 MHz, 175.25 MHz, 181.25 MHz, 187.25 MHz, 193.25 MHz and 199.25 MHz.

[4] Measured according to DIN45004B;

$f_p = 197.25$ MHz; $V_p = V_o$; $f_q = 204.25$ MHz; $V_q = V_o - 6$ dB; $f_r = 206.25$ MHz; $V_r = V_o - 6$ dB; measured at $f_p + f_q - f_r = 195.25$ MHz.

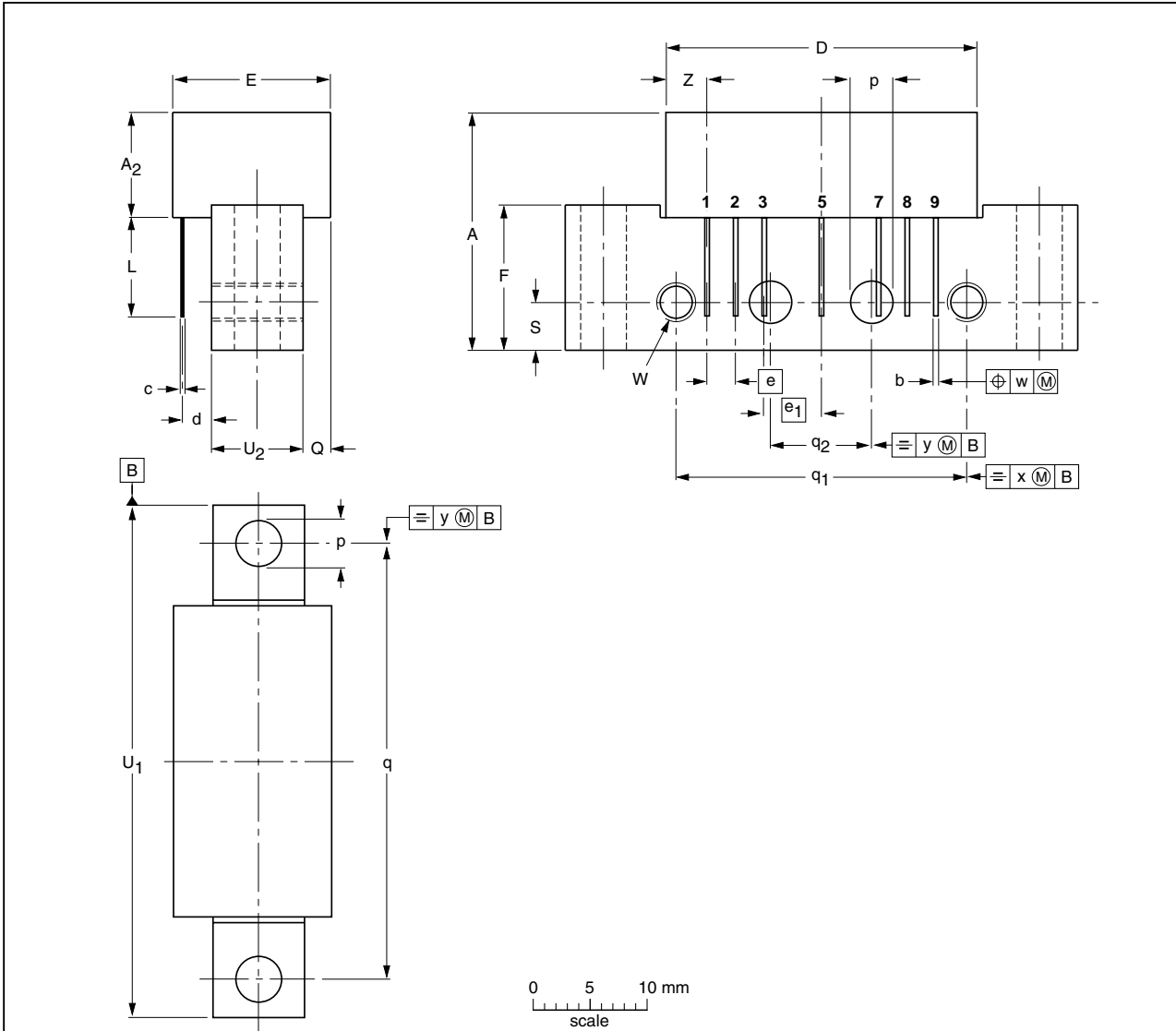
[5] $f_p = 83.25$ MHz; $V_p = 50$ dBmV; $f_q = 115.25$ MHz; $V_q = 50$ dBmV; measured at $f_p + f_q = 198.5$ MHz.

[6] The module normally operates at $V_B = 24$ V, but is able to withstand supply transients up to $V_B = 35$ V.

6. Package outline

Rectangular single-ended package; aluminium flange; 2 vertical mounting holes; 2 x 6-32 UNC and 2 extra horizontal mounting holes; 7 gold-plated in-line leads

SOT115J



DIMENSIONS (mm are the original dimensions)

UNIT	A max.	A ₂ max.	b	c	D max.	d	E max.	e	e ₁	F	L min.	p	Q max.	q	q ₁	q ₂	S	U ₁	U ₂	W	w	x	y	Z max.
mm	20.8	9.5	0.51 0.38	0.25	27.2	2.04 2.54	13.75	2.54	5.08	12.7	8.8	4.15 3.85	2.4	38.1	25.4	10.2	4.2	44.75 44.25	8.2 7.8	6-32 UNC	0.25	0.7	0.1	3.8

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT115J						-04-02-04- 10-06-18

Fig 1. Package outline SOT115J

7. Revision history

Table 6. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BGR269 v.6	20100805	Product data sheet	-	BGR269_5
Modifications:		<ul style="list-style-type: none">• The format of this data sheet has been redesigned to comply with the new identity guidelines of NXP Semiconductors.• Legal texts have been adapted to the new company name where appropriate.• Table 5 “Characteristics” SL minimum value modified.		
BGR269_5	20050530	Product data sheet	-	BGR269_4
BGR269_4	20020305	Product specification	-	BGR269_N_3
BGR269_N_3	20010928	Preliminary specification	-	BGR269_N_2
BGR269_N_2	20001212	Preliminary specification	-	BGR269_1
BGR269_1	20000501	Objective specification	-	-

8. Legal information

8.1 Data sheet status

Document status ^{[1][2]}	Product status ^[3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

[1] Please consult the most recently issued document before initiating or completing a design.

[2] The term 'short data sheet' is explained in section "Definitions".

[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL <http://www.nxp.com>.

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