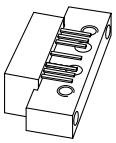

BGR269

200 MHz, 35 dB gain reverse amplifier

Rev. 05 — 30 May 2005 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

- 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 MHz		34.5	35	35.5	dB
		f = 200 MHz		35	-	36	dB
I_{tot}	total current consumption	V_B = 24 V	[1]	145	160	175	mA

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

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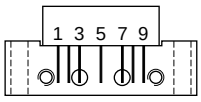
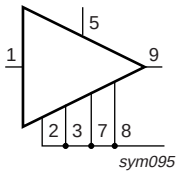
2. Pinning information

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	-	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 consumption		[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.

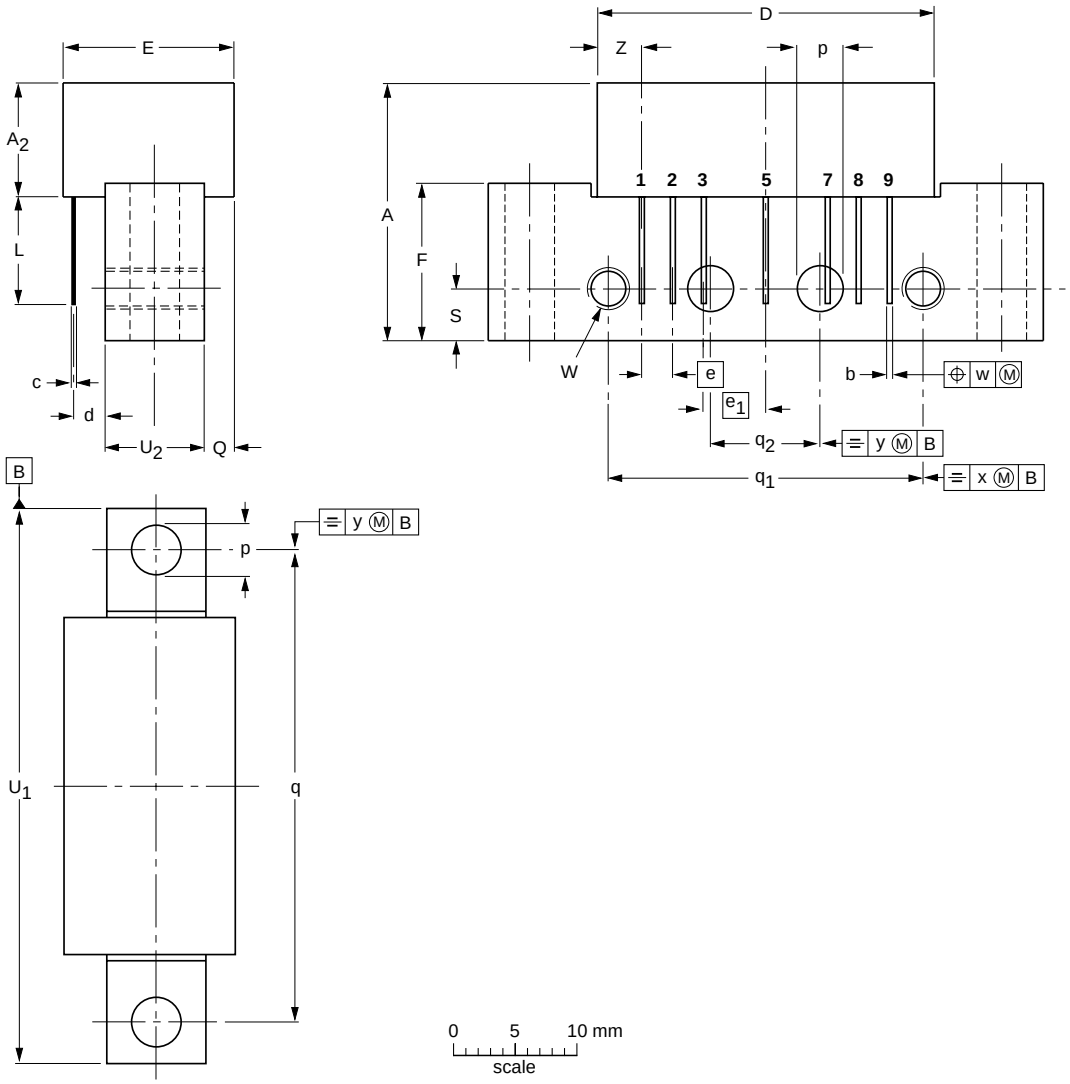
[4] Measured according to DIN45004B;
f_p = 197.25 MHz; $V_p = V_o$; f_q = 204.25 MHz; $V_q = V_o$ – 6 dB; f_r = 206.25 MHz; $V_r = V_o$ – 6 dB; measured at $f_p + f_q - f_r$ = 195.25 MHz.

[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 max.	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	9.1	0.51 0.38	0.25	27.2	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						~~99-02-06~~ 04-02-04

Fig 1. Package outline SOT115J

7. Revision history

Table 6: Revision history

Document ID	Release date	Data sheet status	Change notice	Doc. number	Supersedes
BGR269_5	20050530	Product data sheet	-	9397 750 14741	BGR269_4
Modifications:	• The format of this data sheet has been redesigned to comply with the new presentation and information standard of Philips Semiconductors.				
BGR269_4	20020305	Product specification	-	9397 750 09455	BGR269_N_3
BGR269_N_3	20010928	Preliminary specification	-	9397 750 08867	BGR269_N_2
BGR269_N_2	20001212	Preliminary specification	-	9397 750 07841	BGR269_1
BGR269_1	20000501	Objective specification	-	9397 750 07043	-

8. Data sheet status

Level	Data sheet status [1]	Product status [2] [3]	Definition
I	Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
II	Preliminary data	Qualification	This data sheet contains data from the preliminary specification. Supplementary data will be published at a later date. Philips Semiconductors reserves the right to change the specification without notice, in order to improve the design and supply the best possible product.
III	Product data	Production	This data sheet contains data from the product specification. Philips Semiconductors reserves the right to make changes at any time in order to improve the design, manufacturing and supply. Relevant changes will be communicated via a Customer Product/Process Change Notification (CPCN).

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

[2] The product status of the device(s) described in this data sheet may have changed since this data sheet was published. The latest information is available on the Internet at URL http://www.semiconductors.philips.com.

[3] For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

9. Definitions

Short-form specification — The data in a short-form specification is extracted from a full data sheet with the same type number and title. For detailed information see the relevant data sheet or data handbook.

Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.

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13. Contents

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