

# 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

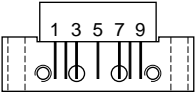
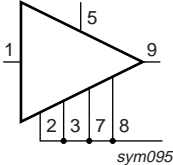
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$G_p$	power gain	$f = 5 \text{ MHz}$	34.5	35	35.5	dB
		$f = 200 \text{ MHz}$	35	-	36	dB
$I_{\text{tot}}$	total current consumption	$V_B = 24 \text{ V}$	<a href="#">[1]</a> 145	160	175	mA

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

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2. Pinning information

Table 2: Pinning

Pin	Description	Simplified outline	Symbol
1	input		
2	common		
3	common		
5	+V <sub>B</sub>		
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 <sub>i</sub>	RF input voltage		-	50	dBmV
T <sub>mb</sub>	mounting base temperature		-20	+100	°C
T <sub>stg</sub>	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
$\phi_{s21}$	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

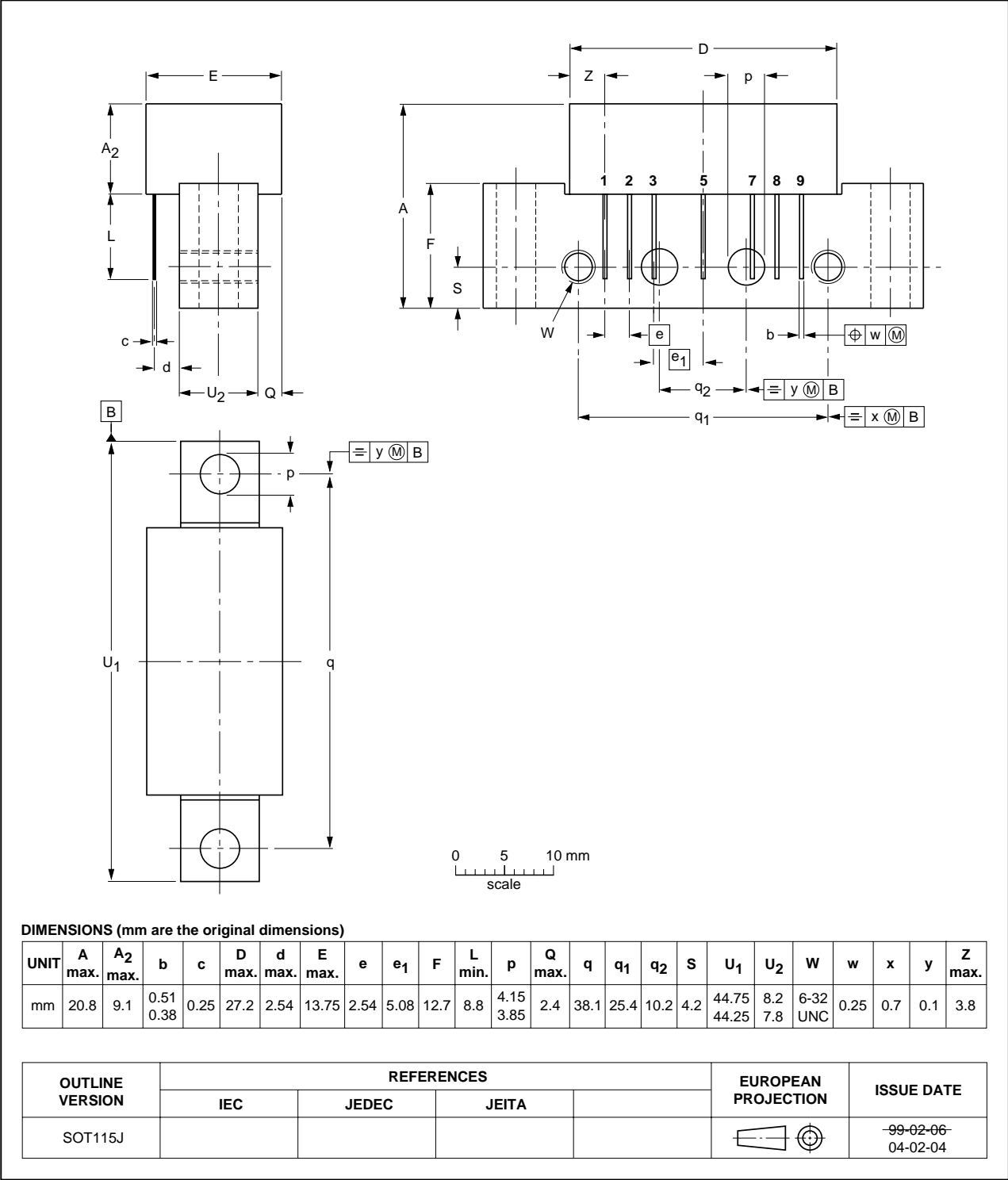


Fig 1. Package outline SOT115J

## 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:	<ul style="list-style-type: none"><li>The format of this data sheet has been redesigned to comply with the new presentation and information standard of Philips Semiconductors.</li></ul>				
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 <sup>[1]</sup>	Product status <sup>[2] [3]</sup>	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.
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[3] For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

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