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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

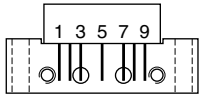
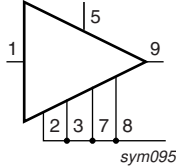
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
G_p	power gain	$f = 5 \text{ MHz}$	34.5	35	35.5	dB
		$f = 200 \text{ MHz}$	35	-	36	dB
I_{tot}	total current	$V_B = 24 \text{ V}$	[1] 145	160	175	mA

[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; $V_B = 24\text{ V}$; $T_{mb} = 30\text{ }^\circ\text{C}$; $Z_S = Z_L = 75\text{ }\Omega$; unless otherwise specified.

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	
SL	slope straight line	$f = 5\text{ MHz to }200\text{ MHz}$	-0.2	-	0.6	dB	
FL	flatness of frequency response	$f = 5\text{ MHz to }10\text{ MHz}$	-0.1	-	+0.4	dB	
		$f = 10\text{ MHz to }190\text{ MHz}$	-0.1	-	+0.5	dB	
		$f = 190\text{ MHz to }200\text{ MHz}$	-0.1	-	+0.4	dB	
S_{11}	input return losses	$f = 5\text{ MHz to }200\text{ MHz}$	20	-	-	dB	
S_{22}	output return losses	$f = 5\text{ MHz to }200\text{ MHz}$	20	-	-	dB	
ϕ_{s21}	phase response	$f = 5\text{ MHz}$	-45	-	+45	deg	
S_{12}	reverse isolation	$f = 5\text{ MHz to }200\text{ MHz}$	-	-	-42	dB	
CTB	composite triple beat	$V_o = 50\text{ dBmV}$					
		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	$V_o = 50\text{ dBmV}$					
		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	$V_o = 50\text{ dBmV}$					
		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	$d_{im} = -60\text{ dB}$	[4]	62	-	dBmV	
d_2	second-order distortion		[5]	-	-	-70	dB
NF	noise figure	$f = 70\text{ MHz}$	-	-	5.3	dB	
		$f = 200\text{ MHz}$	-	-	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;

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

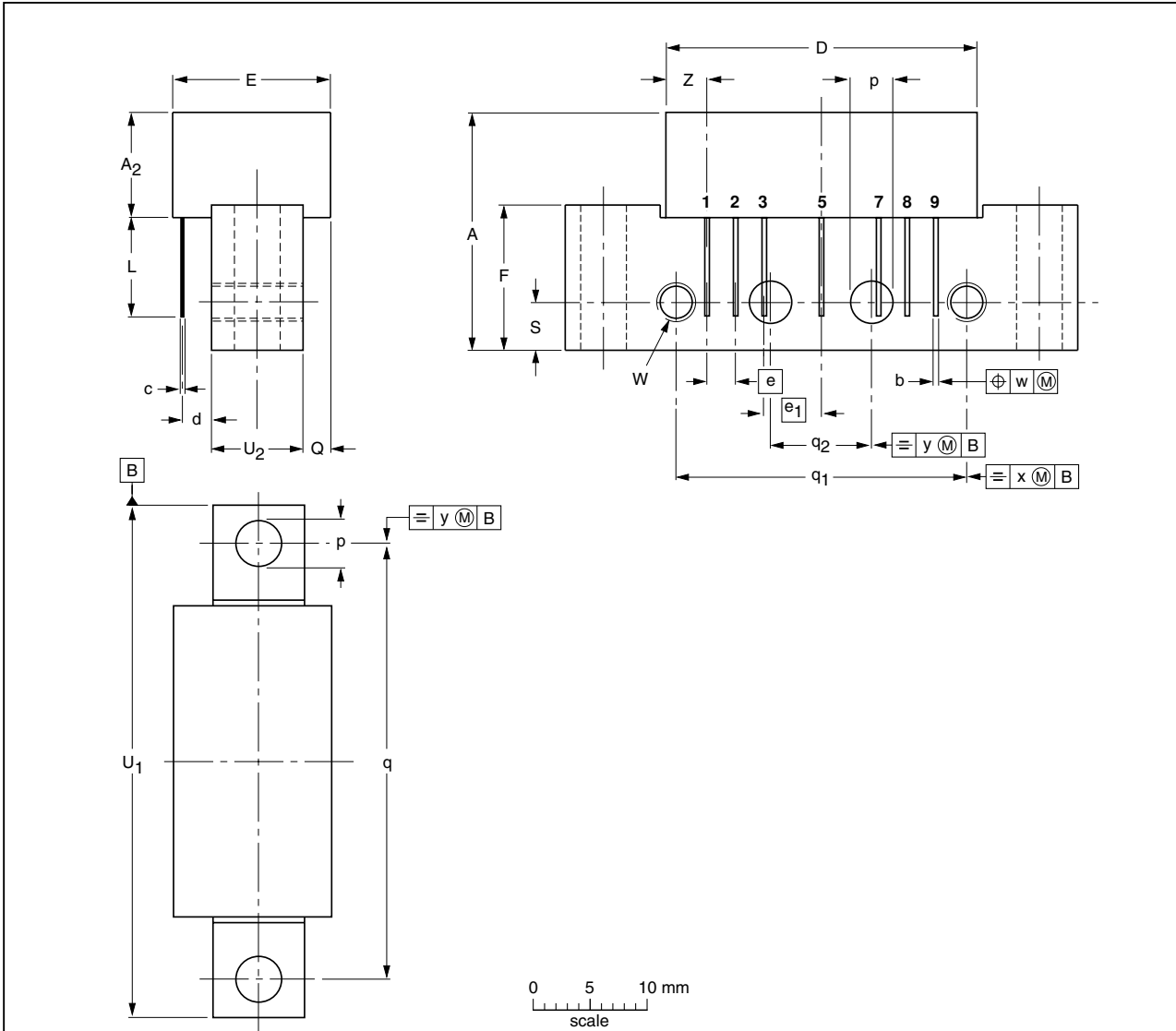
[5] $f_p = 83.25\text{ MHz}$; $V_p = 50\text{ dBmV}$; $f_q = 115.25\text{ MHz}$; $V_q = 50\text{ dBmV}$; measured at $f_p + f_q = 198.5\text{ MHz}$.

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

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".

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