

# BGD712C

750 MHz, 18 dB gain push-pull amplifier

Rev. 01 — 2 May 2006

Product data sheet

## 1. Product profile

### 1.1 General description

Hybrid high dynamic range amplifier module in SOT115J package operating at a supply voltage 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
- Extremely low noise
- Excellent return loss properties
- Silicon nitride passivation
- Rugged construction
- Gold metallization ensures excellent reliability

### 1.3 Applications

- CATV systems operating in the 40 MHz to 750 MHz frequency range.

### 1.4 Quick reference data

Table 1: Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
G <sub>p</sub>	power gain	f = 45 MHz	18.2	-	18.8	dB
		f = 750 MHz	19	-	20	dB
I <sub>tot</sub>	total current	V <sub>B</sub> = 24 V	[1] 380	-	410	mA

[1] The module normally operates at V<sub>B</sub> = 24 V, but is able to withstand supply transients up to 30 V.

## 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
BGD712C	-	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>B</sub>	supply voltage		-	30	V
V <sub>i</sub>	input voltage		-	70	dBmV
T <sub>stg</sub>	storage temperature		-40	+100	°C
T <sub>mb</sub>	mounting base temperature		-20	+100	°C

## 5. Characteristics

**Table 5: Characteristics**

Bandwidth 40 MHz to 750 MHz;  $V_B = 24$  V;  $T_{mb} = 35$  °C;  $Z_S = Z_L = 75$  Ω.

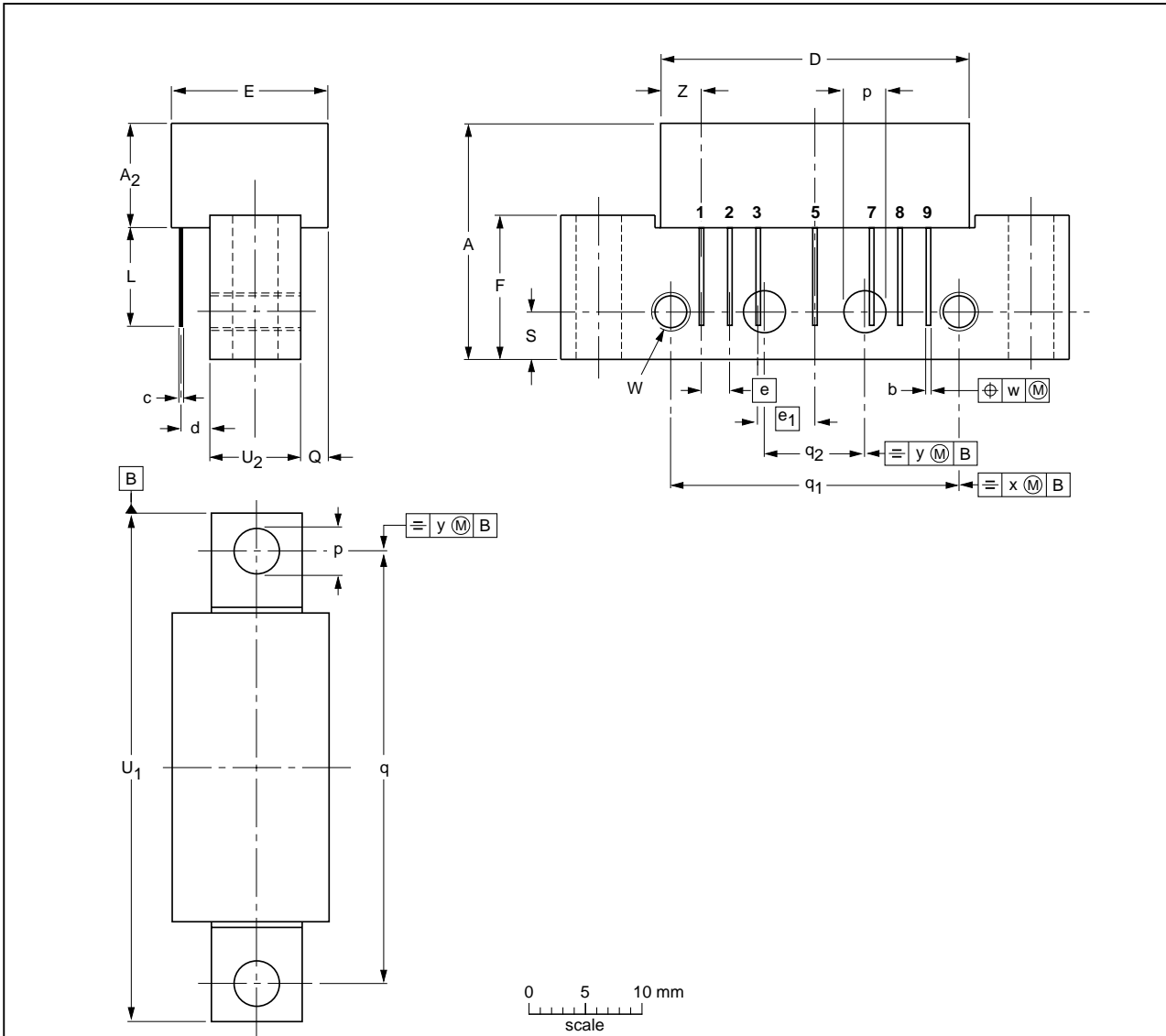
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$G_p$	power gain	f = 45 MHz	18.2	-	18.8	dB
		f = 750 MHz	19.0	-	20.0	dB
SL	slope cable equivalent	f = 45 MHz to 750 MHz	0.5	-	1.5	dB
FL	flatness of frequency response	f = 45 MHz to 100 MHz	-	-	±0.35	dB
		f = 100 MHz to 700 MHz	-	-	±0.5	dB
		f = 700 MHz to 750 MHz	-	-	±0.15	dB
$S_{11}$	input return losses	f = 45 MHz to 790 MHz	17	-	-	dB
$S_{22}$	output return losses	f = 45 MHz to 790 MHz	17	-	-	dB
$\varphi_{s21}$	phase response	f = 50 MHz	135	-	225	deg
CTB	composite triple beat	112 channels flat; $V_o = 44$ dBmV; measured at 745.25 MHz	-	-	-62	dB
		60 channels flat; $V_o = 44$ dBmV measured at 745.25 MHz	-	-67	-	dB
		79 channels flat; $V_o = 44$ dBmV measured at 547.25 MHz	-	-	-68	dB
CSO	composite second-order distortion	112 channels flat; $V_o = 44$ dBmV; measured at 746.5 MHz	-	-	-63	dB
		60 channels flat; $V_o = 44$ dBmV measured at 746.5 MHz	-	-70	-	dB
		79 channels flat; $V_o = 44$ dBmV measured at 548.5 MHz	-	-	-68	dB
NF	noise figure	f = 50 MHz	-	-	7	dB
		f = 750 MHz	-	-	7	dB
$I_{tot}$	total current		[1] 380	-	410	mA

[1] The module normally operates at  $V_B = 24$  V, but is able to withstand supply transients up to 30 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 <sub>2</sub> max.	b	c	D max.	d max.	E max.	e	e <sub>1</sub>	F	L min.	p	Q max.	q	q <sub>1</sub>	q <sub>2</sub>	S	U <sub>1</sub>	U <sub>2</sub>	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	Supersedes
BGD712C_1	20060502	Product data sheet	-	-

## 8. Legal information

### 8.1 Data sheet status

Document status <sup>[1][2]</sup>	Product status <sup>[3]</sup>	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.semiconductors.philips.com>.

### 8.2 Definitions

**Draft** — The document is a draft version only. The content is still under internal review and subject to formal approval, which may result in modifications or additions. Philips Semiconductors does not give any representations or warranties as to the accuracy or completeness of information included herein and shall have no liability for the consequences of use of such information.

**Short data sheet** — A short data sheet is an extract from a full data sheet with the same product type number(s) and title. A short data sheet is intended for quick reference only and should not be relied upon to contain detailed and full information. For detailed and full information see the relevant full data sheet, which is available on request via the local Philips Semiconductors sales office. In case of any inconsistency or conflict with the short data sheet, the full data sheet shall prevail.

### 8.3 Disclaimers

**General** — Information in this document is believed to be accurate and reliable. However, Philips Semiconductors does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information.

**Right to make changes** — Philips Semiconductors reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.

**Suitability for use** — Philips Semiconductors products are not designed, authorized or warranted to be suitable for use in medical, military, aircraft, space or life support equipment, nor in applications where failure or

malfunction of a Philips Semiconductors product can reasonably be expected to result in personal injury, death or severe property or environmental damage. Philips Semiconductors accepts no liability for inclusion and/or use of Philips Semiconductors products in such equipment or applications and therefore such inclusion and/or use is for the customer's own risk.

**Applications** — Applications that are described herein for any of these products are for illustrative purposes only. Philips Semiconductors makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.

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

**Terms and conditions of sale** — Philips Semiconductors products are sold subject to the general terms and conditions of commercial sale, as published at <http://www.semiconductors.philips.com/profile/terms>, including those pertaining to warranty, intellectual property rights infringement and limitation of liability, unless explicitly otherwise agreed to in writing by Philips Semiconductors. In case of any inconsistency or conflict between information in this document and such terms and conditions, the latter will prevail.

**No offer to sell or license** — Nothing in this document may be interpreted or construed as an offer to sell products that is open for acceptance or the grant, conveyance or implication of any license under any copyrights, patents or other industrial or intellectual property rights.

### 8.4 Trademarks

Notice: All referenced brands, product names, service names and trademarks are the property of their respective owners.

## 9. Contact information

For additional information, please visit: <http://www.semiconductors.philips.com>

For sales office addresses, send an email to: [sales.addresses@www.semiconductors.philips.com](mailto:sales.addresses@www.semiconductors.philips.com)

## 10. Contents

<b>1</b>	<b>Product profile</b> . . . . .	<b>1</b>
1.1	General description . . . . .	1
1.2	Features . . . . .	1
1.3	Applications . . . . .	1
1.4	Quick reference data . . . . .	1
<b>2</b>	<b>Pinning information</b> . . . . .	<b>2</b>
<b>3</b>	<b>Ordering information</b> . . . . .	<b>2</b>
<b>4</b>	<b>Limiting values</b> . . . . .	<b>2</b>
<b>5</b>	<b>Characteristics</b> . . . . .	<b>3</b>
<b>6</b>	<b>Package outline</b> . . . . .	<b>4</b>
<b>7</b>	<b>Revision history</b> . . . . .	<b>5</b>
<b>8</b>	<b>Legal information</b> . . . . .	<b>6</b>
8.1	Data sheet status . . . . .	6
8.2	Definitions . . . . .	6
8.3	Disclaimers . . . . .	6
8.4	Trademarks . . . . .	6
<b>9</b>	<b>Contact information</b> . . . . .	<b>6</b>
<b>10</b>	<b>Contents</b> . . . . .	<b>7</b>

Please be aware that important notices concerning this document and the product(s) described herein, have been included in section 'Legal information'.



© Koninklijke Philips Electronics N.V. 2006. All rights reserved.

For more information, please visit: <http://www.semiconductors.philips.com>.  
For sales office addresses, email to: [sales.addresses@www.semiconductors.philips.com](mailto:sales.addresses@www.semiconductors.philips.com).

Date of release: 2 May 2006

Document identifier: BGD712C\_1