

# BGD712C

750 MHz, 18.5 dB gain power doubler amplifier

Rev. 3 — 29 September 2010

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 and benefits

- 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

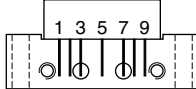
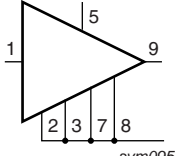
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$G_p$	power gain	$f = 45 \text{ MHz}$	18.2	-	18.8	dB
		$f = 750 \text{ MHz}$	19	-	20	dB
$I_{tot}$	total current	$V_B = 24 \text{ V}$	[1] 380	-	410	mA

[1] The module normally operates at  $V_B = 24 \text{ V}$ , but is able to withstand supply transients up to 30 V.



## 2. Pinning information

**Table 2. Pinning**

Pin	Description	Simplified outline	Graphic 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;  $Z_S = Z_L = 75$   $\Omega$ .

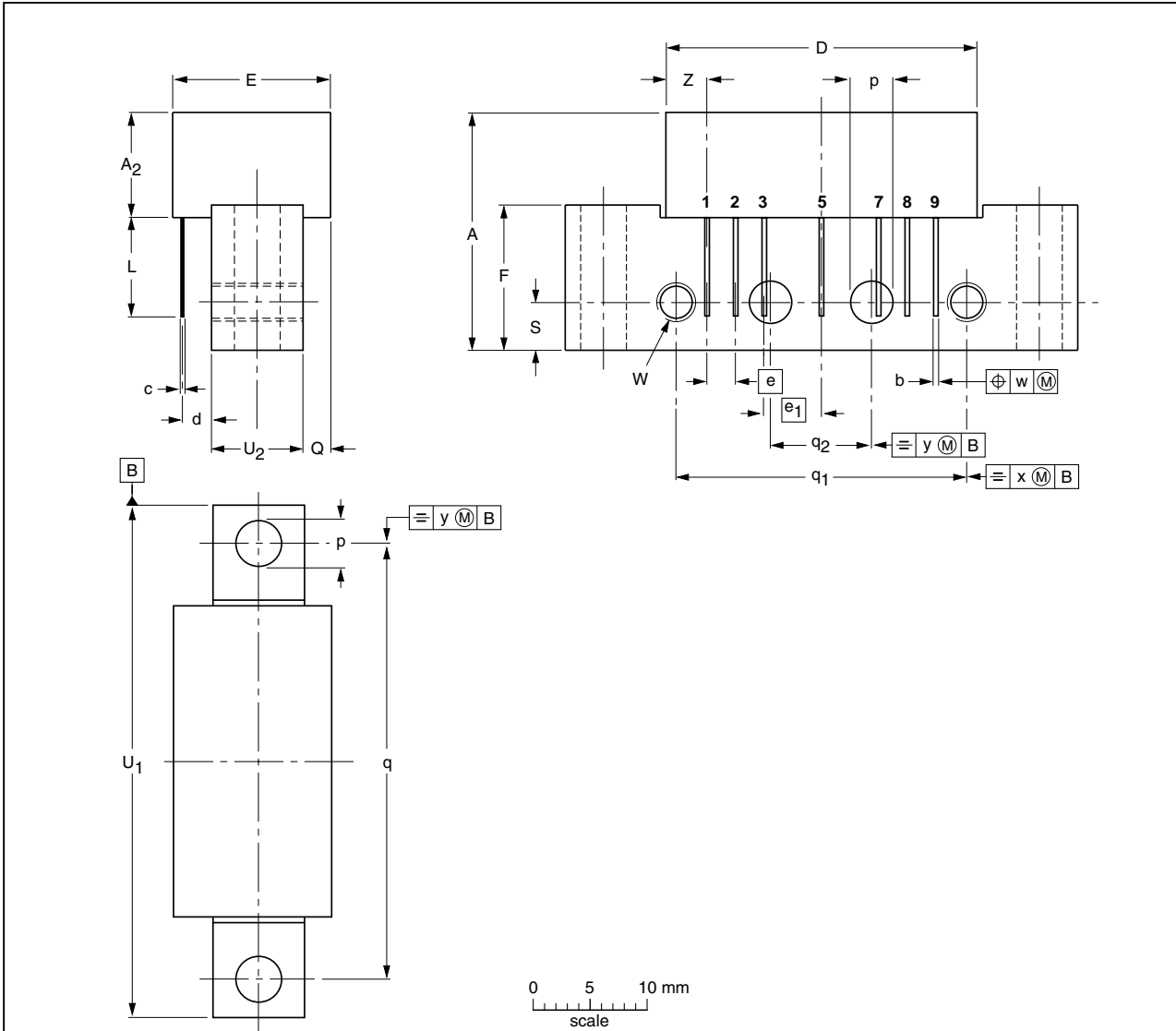
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$G_p$	power gain	f = 45 MHz	18.2	-	18.8	dB
		f = 750 MHz	19.0	-	20.0	dB
SL	slope cable equivalent	f = 45 MHz to 750 MHz	0.5	-	1.5	dB
FL	flatness of frequency response	f = 45 MHz to 100 MHz	-	-	$\pm 0.35$	dB
		f = 100 MHz to 700 MHz	-	-	$\pm 0.5$	dB
		f = 700 MHz to 750 MHz	-	-	$\pm 0.15$	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
$\phi_{s21}$	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		<a href="#">1</a> 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	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	9.5	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
BGD712C v.3	20100929	Product data sheet	-	BGD712C v.2
Modifications:		<ul style="list-style-type: none"><li>• The format of this data sheet has been redesigned to comply with the new identity guidelines of NXP Semiconductors.</li><li>• Legal texts have been adapted to the new company name where appropriate.</li><li>• Package outline drawings have been updated to the latest version.</li></ul>		
BGD712C v.2	20070816	Product data sheet	-	BGD712C v.1
BGD712C v.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".

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## 10. Contents

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<b>1</b>	<b>Product profile</b> . . . . .	<b>1</b>
1.1	General description . . . . .	1
1.2	Features and benefits . . . . .	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 . . . . .	7
<b>9</b>	<b>Contact information</b> . . . . .	<b>7</b>
<b>10</b>	<b>Contents</b> . . . . .	<b>8</b>

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Date of release: 29 September 2010

Document identifier: BGD712C