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

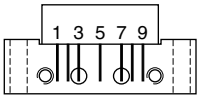
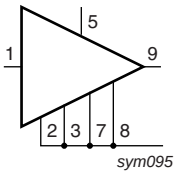
Table 1. Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
G_p	power gain	f = 45 MHz		18.2	-	18.8	dB
		f = 750 MHz		19	-	20	dB
I_{tot}	total current	V_B = 24 V	[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.

2. Pinning information

Table 2. Pinning

Pin	Description	Simplified outline	Graphic 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
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_B	supply voltage		-	30	V
V_i	input voltage		-	70	dBmV
T_{stg}	storage temperature		−40	+100	°C
T_{mb}	mounting base temperature		−20	+100	°C

5. Characteristics

Table 5. Characteristics

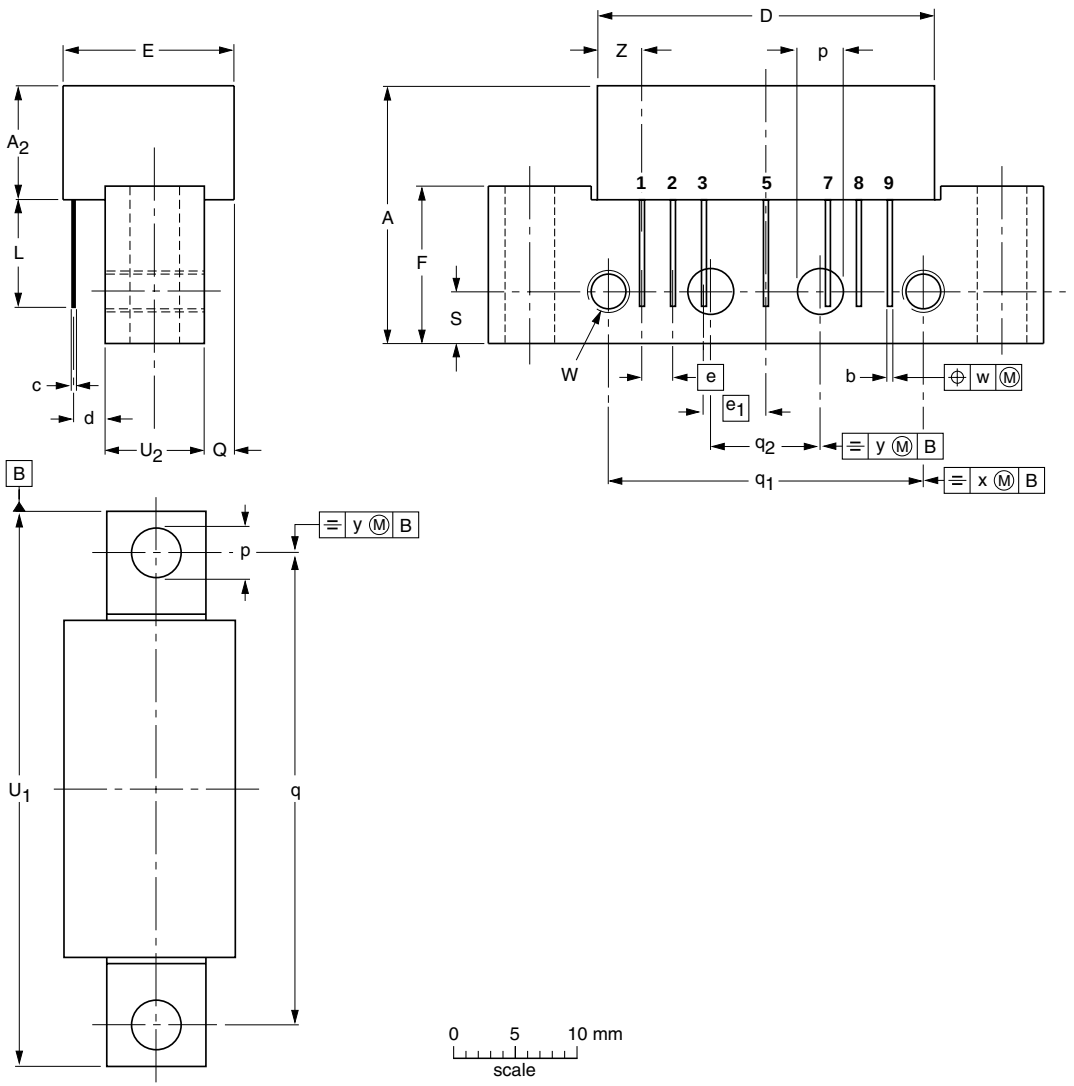
Bandwidth 40 MHz to 750 MHz; V_B = 24 V; T_{mb} = 35 °C; Z_S = Z_L = 75 Ω.

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
φ_{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_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
BGD712C v.3	20100929	Product data sheet	-	BGD712C v.2
Modifications:	• 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. • Package outline drawings have been updated to the latest version.			
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[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".

[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.nxp.com.

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10. Contents

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