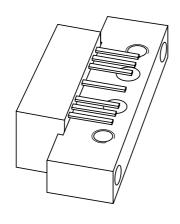
DISCRETE SEMICONDUCTORS

DATA SHEET



BGD502 550 MHz, 18.5 dB gain power doubler amplifier

Product specification Supersedes data of 1995 Oct 25 2001 Nov 15





550 MHz, 18.5 dB gain power doubler amplifier

BGD502

FEATURES

- Excellent linearity
- · Extremely low noise
- Silicon nitride passivation

Philips Semiconductors

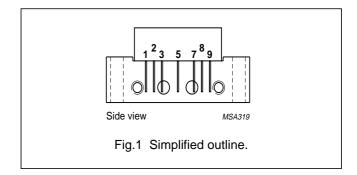
- Rugged construction
- TiPtAu metallized crystals ensure optimal reliability.

DESCRIPTION

Hybrid amplifier modules for CATV systems operating over a frequency range of 40 to 550 MHz at a voltage supply of 24 V (DC).

PINNING - SOT115J

PIN	DESCRIPTION	
1	input	
2, 3	common	
5	+V _B	
7, 8	common	
9	output	



QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
G _p	power gain	f = 50 MHz	18	19	dB
		f = 550 MHz	18.8	20.8	dB
I _{tot}	total current consumption (DC)	V _B = 24 V	_	435	mA

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134).

SYMBOL	PARAMETER		MAX.	UNIT
Vi	RF input voltage		65	dBmV
T _{stg}	storage temperature		+100	°C
T _{mb}	operating mounting base temperature		+100	°C

550 MHz, 18.5 dB gain power doubler amplifier

BGD502

CHARACTERISTICS

Table 1 Bandwidth 40 to 550 MHz; $V_B = 24 \text{ V}$; $T_{mb} = 35 \, ^{\circ}\text{C}$; $Z_S = Z_L = 75 \, \Omega$.

SYMBOL	PARAMETER	PARAMETER CONDITIONS MIN		TYP.	MAX.	UNIT
G _p	power gain	f = 50 MHz	18	_	19	dB
		f = 550 MHz	18.8	_	20.8	dB
SL	slope cable equivalent	f = 40 to 550 MHz	0.2	_	2.2	dB
FL	flatness of frequency response	f = 40 to 550 MHz	_	_	±0.3	dB
S ₁₁	input return losses	f = 40 to 80 MHz	20	_	_	dB
		f = 80 to 160 MHz	19	_	_	dB
		f = 160 to 550 MHz	18	_	_	dB
S ₂₂	output return losses	f = 40 to 80 MHz	20	_	_	dB
		f = 80 to 160 MHz	19	_	_	dB
		f = 160 to 550 MHz	18	_	_	dB
s ₂₁	phase response	f = 50 MHz	+135	_	+225	deg
СТВ	composite triple beat	77 channels flat; V _o = 44 dBmV; measured at 547.25 MHz	_	-	-65	dB
X _{mod}	cross modulation	77 channels flat; V _o = 44 dBmV; measured at 55.25 MHz	_	_	-68	dB
CSO	composite second order distortion	77 channels flat; V _o = 44 dBmV; measured at 548.5 MHz	-	_	-62	dB
d_2	second order distortion	note 1	_	_	-72	dB
Vo	output voltage	$d_{im} = -60 \text{ dB}$; note 2	64	_	_	dBmV
NF	noise figure	f = 550 MHz	_	_	8	dB
I _{tot}	total current consumption (DC)	note 3	_	415	435	mA

Notes

- 1. fp = 55.25 MHz; Vp = 44 dBmV; fq = 493.25 MHz; Vq = 44 dBmV; measured at fp + fq = 548.5 MHz.
- 2. Measured according to DIN45004B: fp = 540.25 MHz; Vp = Vo; fq = 547.25 MHz; Vq = Vo -6 dB; fr = 549.25 MHz; Vr = Vo -6 dB; measured at fp + fq fr = 538.25 MHz.
- 3. The module normally operates at VB = 24 V, but are able to withstand supply transients up to VB = 30 V.

550 MHz, 18.5 dB gain power doubler amplifier

BGD502

Table 2 Bandwidth 40 to 450 MHz; $V_B = 24$ V; $T_{mb} = 35$ °C; $Z_S = Z_L = 75$ Ω .

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Gp	power gain	f = 50 MHz	18	_	19	dB
		f = 450 MHz	18.6	_	20.6	dB
SL	slope cable equivalent	f = 40 to 450 MHz	0.2	_	1.8	dB
FL	flatness of frequency response	f = 40 to 450 MHz	_	_	±0.3	dB
S ₁₁	input return losses	f = 40 to 80 MHz	20	_	_	dB
		f = 80 to 160 MHz	19	_	_	dB
		f = 160 to 450 MHz	18	_	_	dB
S ₂₂	output return losses	f = 40 to 80 MHz	20	_	_	dB
		f = 80 to 160 MHz	19	_	_	dB
		f = 160 to 450 MHz	18	_	_	dB
s ₂₁	phase response	f = 50 MHz	+135	_	+225	deg
СТВ	composite triple beat	60 channels flat; V _o = 46 dBmV; measured at 445.25 MHz	-	-	-67	dB
CSO	composite second order distortion	60 channels flat; V _o = 46 dBmV; measured at 446.5 MHz	_	-	-60	dB
X _{mod}	cross modulation	60 channels flat; V _o = 46 dBmV; measured at 55.25 MHz	_	_	-67	dB
d_2	second order distortion	note 1	_	_	-75	dB
Vo	output voltage	d _{im} = -60 dB; note 2	67	_	_	dBmV
NF	noise figure	f = 450 MHz	_	_	7	dB
I _{tot}	total current consumption (DC)	note 3	_	415	435	mA

Notes

- 1. fp = 55.25 MHz; Vp = 46 dBmV; fq = 391.25 MHz; Vq = 46 dBmV; measured at fp + fq = 446.5 MHz.
- 2. Measured according to DIN45004B: fp = 440.25 MHz; Vp = Vo; fq = 447.25 MHz; Vq = Vo 6 dB; fr = 449.25 MHz; Vr = Vo 6 dB; measured at fp + fq fr = 438.25 MHz.
- 3. The modules normally operate at VB = 24 V, but are able to withstand supply transients up to VB = 30 V.

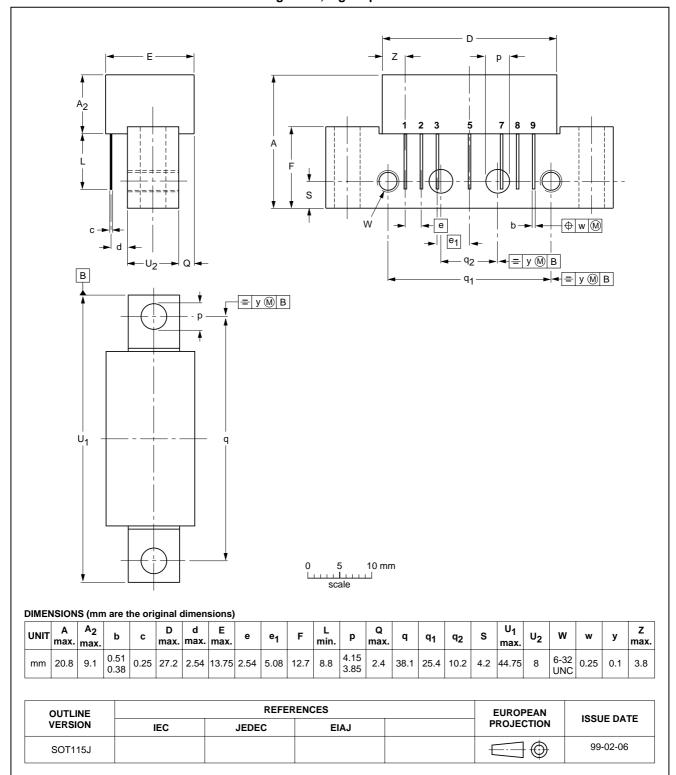
550 MHz, 18.5 dB gain power doubler amplifier

BGD502

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



550 MHz, 18.5 dB gain power doubler amplifier

BGD502

DATA SHEET STATUS

DATA SHEET STATUS(1)	PRODUCT STATUS ⁽²⁾	DEFINITIONS
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.
Preliminary data	Qualification	This data sheet contains data from the preliminary specification. Supplementary data will be published at a later date. Philips Semiconductors reserves the right to change the specification without notice, in order to improve the design and supply the best possible product.
Product data	Production	This data sheet contains data from the product specification. Philips Semiconductors reserves the right to make changes at any time in order to improve the design, manufacturing and supply. Changes will be communicated according to the Customer Product/Process Change Notification (CPCN) procedure SNW-SQ-650A.

Notes

- 1. Please consult the most recently issued data sheet before initiating or completing a design.
- 2. The product status of the device(s) described in this data sheet may have changed since this data sheet was published. The latest information is available on the Internet at URL http://www.semiconductors.philips.com.

DEFINITIONS

Short-form specification — The data in a short-form specification is extracted from a full data sheet with the same type number and title. For detailed information see the relevant data sheet or data handbook.

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

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

DISCLAIMERS

Life support applications — These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Philips Semiconductors customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips Semiconductors for any damages resulting from such application.

Right to make changes — Philips Semiconductors reserves the right to make changes, without notice, in the products, including circuits, standard cells, and/or software, described or contained herein in order to improve design and/or performance. Philips Semiconductors assumes no responsibility or liability for the use of any of these products, conveys no licence or title under any patent, copyright, or mask work right to these products, and makes no representations or warranties that these products are free from patent, copyright, or mask work right infringement, unless otherwise specified.

CAUTION

This product is supplied in anti-static packing to prevent damage caused by electrostatic discharge during transport and handling. For further information, refer to Philips specs.: SNW-EQ-608, SNW-FQ-302A and SNW-FQ-302B.

550 MHz, 18.5 dB gain power doubler amplifier

BGD502

NOTES

Philips Semiconductors – a worldwide company

Contact information

For additional information please visit http://www.semiconductors.philips.com. Fax: +31 40 27 24825 For sales offices addresses send e-mail to: sales.addresses@www.semiconductors.philips.com.

© Koninklijke Philips Electronics N.V. 2001

SCA73

All rights are reserved. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner.

The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice. No liability will be accepted by the publisher for any consequence of its use. Publication thereof does not convey nor imply any license under patent- or other industrial or intellectual property rights.

Printed in The Netherlands

613518/04/pp8

Date of release: 2001 Nov 15

Document order number: 9397 750 08825

Let's make things better.

Philips Semiconductors



