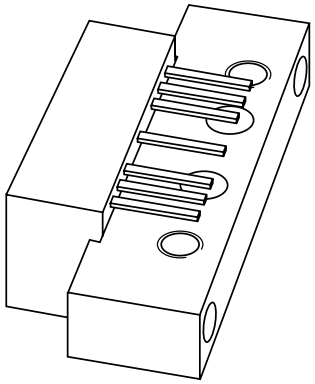
DATA SHEET



BGD502

550 MHz, 18.5 dB gain power doubler amplifier

Product specification
Supersedes data of 1995 Oct 25

2001 Nov 15

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550 MHz, 18.5 dB gain power doubler amplifier BGD502

FEATURES

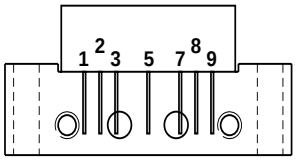
- Excellent linearity
- Extremely low noise
- Silicon nitride passivation
- Rugged construction
- TiPtAu metallized crystals ensure optimal reliability.

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



Side view MSA319

Fig.1 Simplified outline.

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	MIN.	MAX.	UNIT
V_i	RF input voltage	–	65	dBmV
T_{stg}	storage temperature	–40	+100	°C
T_{mb}	operating mounting base temperature	–20	+100	°C

CHARACTERISTICS

Table 1 Bandwidth 40 to 550 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 = 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
CTB	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
V_o	output voltage	d_{im} = –60 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.

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

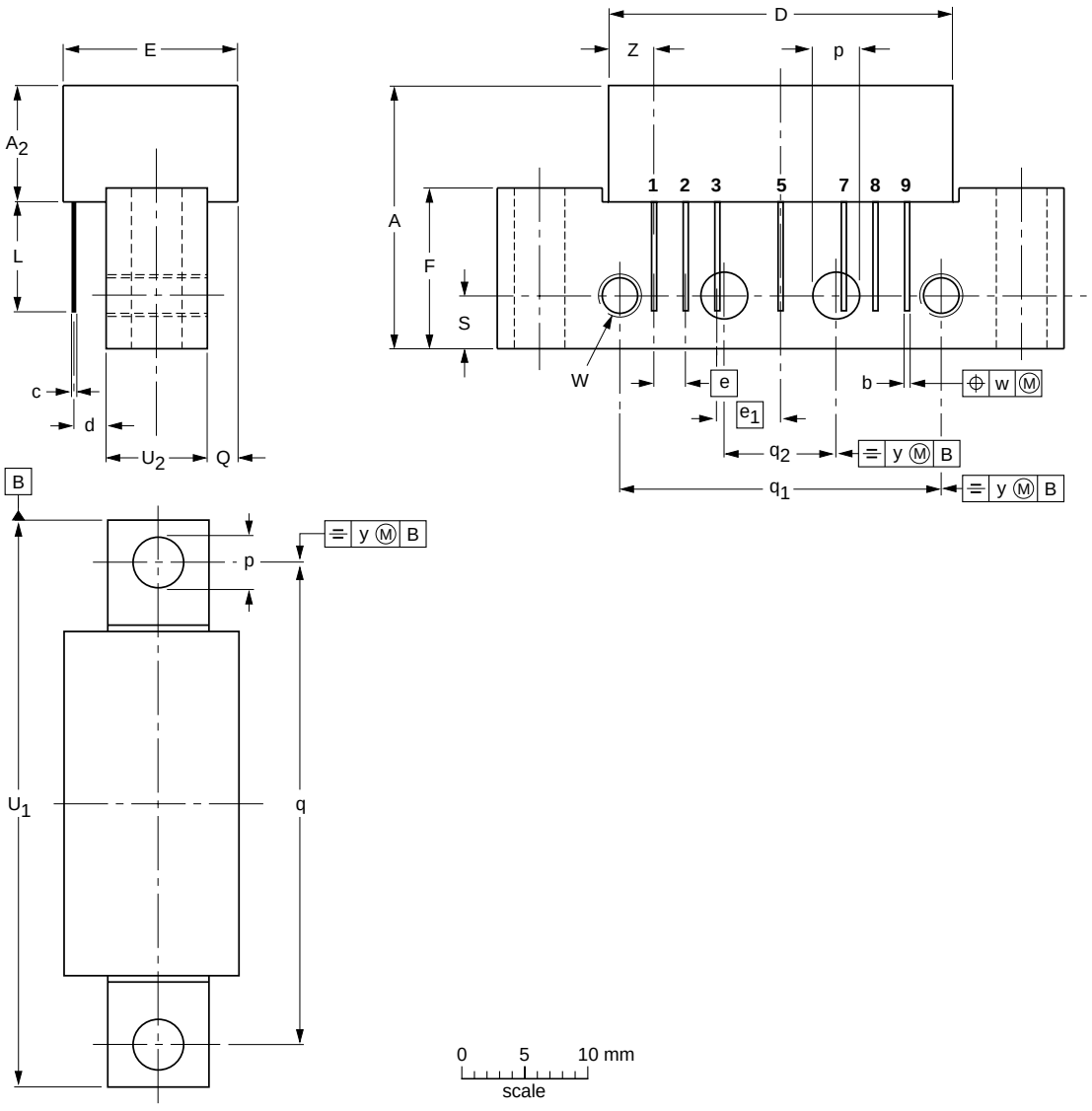
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
G_p	power gain	f = 50 MHz	18	–	19	dB
		f = 450 MHz	18.6	–	20.6	dB
SL	slope cable equivalent	f = 40 to 450 MHz	0.2	–	1.8	dB
FL	flatness of frequency response	f = 40 to 450 MHz	–	–	±0.3	dB
s_{11}	input return losses	f = 40 to 80 MHz	20	–	–	dB
		f = 80 to 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
CTB	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
V_o	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.

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 max.	E max.	e	e_1	F	L min.	p	Q max.	q	q_1	q_2	S	U_1 max.	U_2	W	w	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	8	6-32 UNC	0.25	0.1	3.8

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT115J						99-02-06

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.

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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.

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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.

NOTES

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Contact information

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