

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

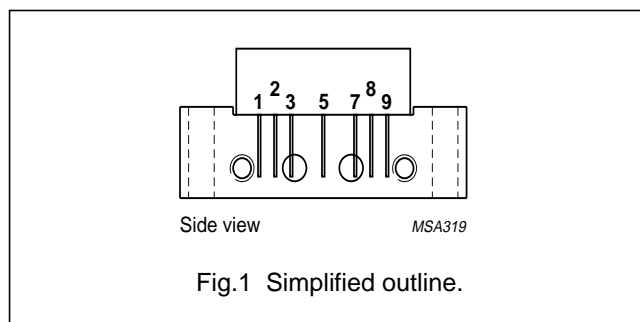
- Excellent linearity
- Extremely low noise
- Silicon nitride passivation
- Rugged construction
- TiPtAu metallized crystals ensure optimal reliability.

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	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

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BGD502

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. $f_p = 55.25$ MHz; $V_p = 44$ dBmV; $f_q = 493.25$ MHz; $V_q = 44$ dBmV; measured at $f_p + f_q = 548.5$ MHz.
2. Measured according to DIN45004B: $f_p = 540.25$ MHz; $V_p = V_o$; $f_q = 547.25$ MHz; $V_q = V_o - 6$ dB; $f_r = 549.25$ MHz; $V_r = V_o - 6$ dB; measured at $f_p + f_q - f_r = 538.25$ MHz.
3. The module normally operates at $V_B = 24$ V, but are able to withstand supply transients up to $V_B = 30$ 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
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. $f_p = 55.25$ MHz; $V_p = 46$ dBmV; $f_q = 391.25$ MHz; $V_q = 46$ dBmV; measured at $f_p + f_q = 446.5$ MHz.
2. Measured according to DIN45004B: $f_p = 440.25$ MHz; $V_p = V_o$; $f_q = 447.25$ MHz; $V_q = V_o - 6$ dB; $f_r = 449.25$ MHz; $V_r = V_o - 6$ dB; measured at $f_p + f_q - f_r = 438.25$ MHz.
3. The modules normally operate at $V_B = 24$ V, but are able to withstand supply transients up to $V_B = 30$ V.

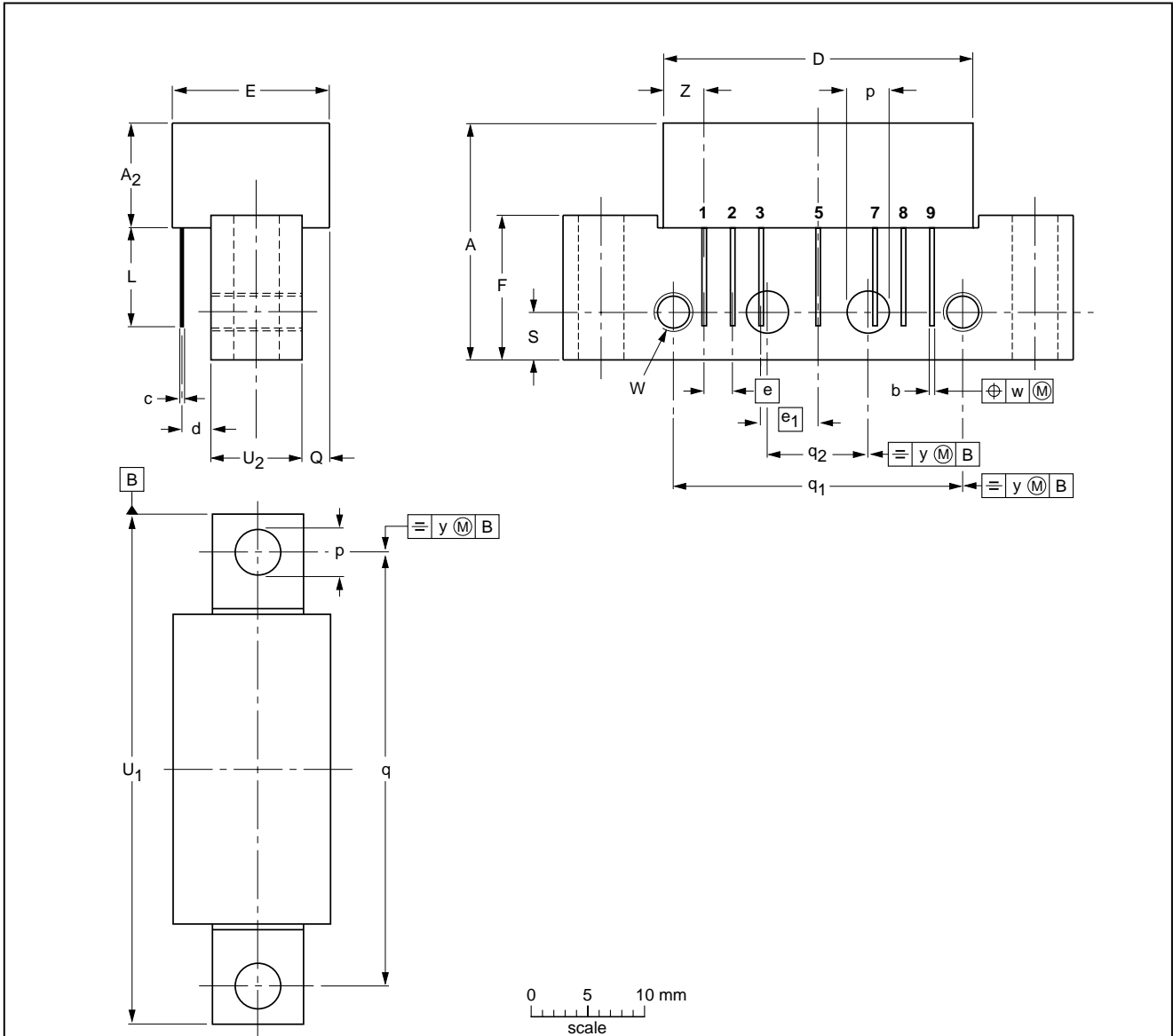
550 MHz, 18.5 dB gain power doubler amplifier

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



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

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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.

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BGD502

NOTES

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