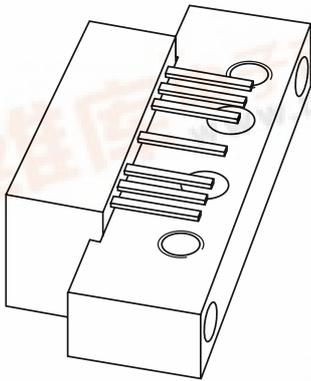


DISCRETE SEMICONDUCTORS

DATA SHEET



BGD906L CATV amplifier module

Objective specification

1999 Mar 22

CATV amplifier module

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FEATURES

- Excellent linearity
- Extremely low noise
- Excellent return loss properties
- Silicon nitride passivation
- Rugged construction
- Gold metallization ensures excellent reliability
- Low DC current consumption.

APPLICATIONS

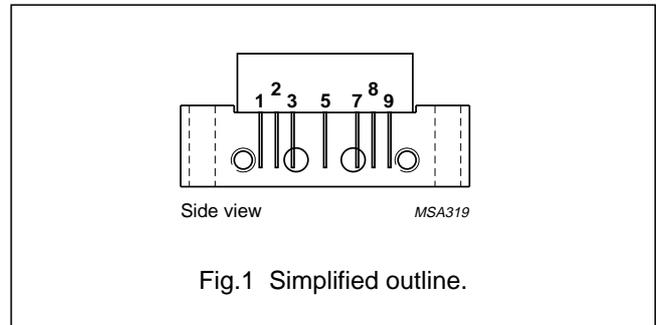
- CATV systems operating in the 40 to 900 MHz frequency range.

DESCRIPTION

Hybrid amplifier module in a SOT115J package operating with a voltage supply of 24 V (DC).

PINNING - SOT115J

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



QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
G _p	power gain	f = 50 MHz	21.2	21.8	dB
		f = 900 MHz	22	23	dB
I _{tot}	total current consumption (DC)	V _B = 24 V	350	380	mA

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	MIN.	MAX.	UNIT
V _B	supply voltage	-	30	V
V _i	RF input voltage	-	70	dBmV
T _{stg}	storage temperature	-40	+100	°C
T _{mb}	operating mounting base temperature	-20	+100	°C

CATV amplifier module

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CHARACTERISTICSBandwidth 40 to 900 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	21.2	21.5	21.8	dB
		f = 900 MHz	22	22.5	23	dB
SL	slope cable equivalent	f = 40 to 900 MHz	0.5	1.0	1.5	dB
FL	flatness of frequency response	f = 40 to 900 MHz	–	–	±0.3	dB
S ₁₁	input return losses	f = 40 to 80 MHz	21	–	–	dB
		f = 80 to 160 MHz	20	–	–	dB
		f = 160 to 320 MHz	17	–	–	dB
		f = 320 to 650 MHz	16	–	–	dB
		f = 650 to 900 MHz	15	–	–	dB
S ₂₂	output return losses	f = 40 to 80 MHz	25	–	–	dB
		f = 80 to 160 MHz	22	–	–	dB
		f = 160 to 320 MHz	20	–	–	dB
		f = 320 to 550 MHz	19	–	–	dB
		f = 550 to 650 MHz	18	–	–	dB
		f = 650 to 750 MHz	17	–	–	dB
S ₂₁	phase response	f = 50 MHz	–45	–	+45	deg
CTB	composite triple beat	49 chs flat; V _o = 47 dBmV; f _m = 859.25 MHz	–	–	–63	dB
		77 chs flat; V _o = 44 dBmV; f _m = 547.25 MHz	–	–	–64	dB
		110 chs flat; V _o = 44 dBmV; f _m = 745.25 MHz	–	–	–58	dB
		129 chs flat; V _o = 44 dBmV; f _m = 859.25 MHz	–	–	–54	dB
		110 chs; f _m = 400 MHz; V _o = 49 dBmV at 550 MHz; note 1	–	–	tbd	dB
		129 chs; f _m = 650 MHz; V _o = 49.5 dBmV at 860 MHz; note 2	–	–	tbd	dB
X _{mod}	cross modulation	49 chs flat; V _o = 47 dBmV; f _m = 55.25 MHz	–	–	–59	dB
		77 chs flat; V _o = 44 dBmV; f _m = 55.25 MHz	–	–	–62	dB
		110 chs flat; V _o = 44 dBmV; f _m = 55.25 MHz	–	–	–59	dB
		129 chs flat; V _o = 44 dBmV; f _m = 55.25 MHz	–	–	–57	dB
		110 chs; f _m = 400 MHz; V _o = 49 dBmV at 550 MHz; note 1	–	–	tbd	dB
		129 chs; f _m = 860 MHz; V _o = 49.5 dBmV at 860 MHz; note 2	–	–	tbd	dB

CATV amplifier module

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SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
CSO	composite second order distortion	49 chs flat; $V_o = 47$ dBmV; $f_m = 860.5$ MHz	–	–	–61	dB
		77 chs flat; $V_o = 44$ dBmV; $f_m = 548.5$ MHz	–	–	–64	dB
		110 chs flat; $V_o = 44$ dBmV; $f_m = 746.5$ MHz	–	–	–58	dB
		129 chs flat; $V_o = 44$ dBmV; $f_m = 860.5$ MHz	–	–	–56	dB
		110 chs; $f_m = 250$ MHz; $V_o = 49$ dBmV at 550 MHz; note 1	–	–	tbd	dB
		129 chs; $f_m = 250$ MHz; $V_o = 49.5$ dBmV at 860 MHz; note 2	–	–	tbd	dB
d_2	second order distortion	note 3	–	–	–70	dB
		note 4	–	–	–72	dB
		note 5	–	–	–76	dB
V_o	output voltage	$d_{im} = -60$ dB; note 6	61.5	–	–	dBmV
		$d_{im} = -60$ dB; note 7	62.5	–	–	dBmV
		$d_{im} = -60$ dB; note 8	64.5	–	–	dBmV
		CTB compression = 1 dB; 129 chs flat; $f = 859.25$ MHz	tbd	tbd	–	dBmV
		CSO compression = 1 dB; 129 chs flat; $f = 860.5$ MHz	tbd	tbd	–	dBmV
F	noise figure	$f = 50$ MHz	–	–	5.5	dB
		$f = 550$ MHz	–	–	5	dB
		$f = 750$ MHz	–	–	6	dB
		$f = 900$ MHz	–	–	7.5	dB
I_{tot}	total current consumption (DC)	note 9	350	365	380	mA

Notes

- Tilt = 9 dB (50 to 550 MHz)
tilt = 3.5 dB at –6 dB offset (550 to 750 MHz).
- Tilt = 12.5 dB (50 to 860 MHz).
- $f_p = 55.25$ MHz; $V_p = 44$ dBmV;
 $f_q = 805.25$ MHz; $V_q = 44$ dBmV;
measured at $f_p + f_q = 860.5$ MHz.
- $f_p = 55.25$ MHz; $V_p = 44$ dBmV;
 $f_q = 691.25$ MHz; $V_q = 44$ dBmV;
measured at $f_p + f_q = 746.5$ MHz.
- $f_p = 55.25$ MHz; $V_p = 44$ dBmV;
 $f_q = 493.25$ MHz; $V_q = 44$ dBmV;
measured at $f_p + f_q = 548.5$ MHz.
- Measured according to DIN45004B:
 $f_p = 851.25$ MHz; $V_p = V_o$;
 $f_q = 858.25$ MHz; $V_q = V_o - 6$ dB;
 $f_r = 860.25$ MHz; $V_r = V_o - 6$ dB;
measured at $f_p + f_q - f_r = 849.25$ MHz.
- Measured according to DIN45004B:
 $f_p = 740.25$ MHz; $V_p = V_o$;
 $f_q = 747.25$ MHz; $V_q = V_o - 6$ dB;
 $f_r = 749.25$ MHz; $V_r = V_o - 6$ dB;
measured at $f_p + f_q - f_r = 738.25$ MHz.
- 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.
- The module normally operates at $V_B = 24$ V, but is able to withstand supply transients up to 35 V.

CATV amplifier module

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DEFINITIONS

Data Sheet Status	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
Limiting values	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). 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	
Where application information is given, it is advisory and does not form part of the specification.	

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 customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips for any damages resulting from such improper use or sale.

CATV amplifier module

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