

DATA SHEET

BGY681 CATV amplifier module

Product specification
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Philips Semiconductors



PHILIPS

CATV amplifier module

BGY681

FEATURES

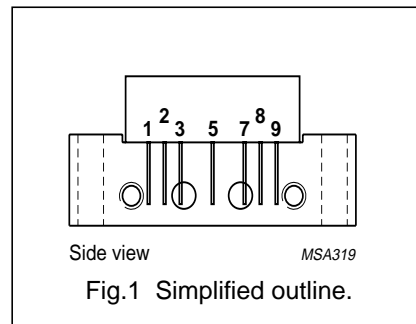
- Excellent linearity
- Extremely low noise
- Silicon nitride passivation
- Rugged construction
- Gold metallization ensures excellent reliability.

DESCRIPTION

Hybrid high dynamic range amplifier module designed for CATV systems operating over a frequency range of 40 to 600 MHz 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	12	13	dB
		f = 600 MHz	12.7	–	dB
I _{tot}	total current consumption (DC)	V _B = 24 V	–	240	mA

LIMITING VALUES

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

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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CHARACTERISTICSBandwidth 40 to 600 MHz; $V_B = 24$ V; $T_{mb} = 30$ °C; $Z_S = Z_L = 75$ Ω .

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
G _p	power gain	f = 50 MHz	12	–	13	dB
		f = 600 MHz	12.7	–	–	dB
SL	slope cable equivalent	f = 40 to 600 MHz	0.7	–	2.2	dB
FL	flatness of frequency response	f = 40 to 600 MHz	–	–	±0.2	dB
S ₁₁	input return losses	f = 40 to 80 MHz	20	–	–	dB
		f = 80 to 160 MHz	19	–	–	dB
		f = 160 to 600 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 600 MHz	18	–	–	dB
S ₂₁	phase response	f = 50 MHz	–45	–	+45	deg
CTB	composite triple beat	85 channels flat; V _o = 44 dBmV; measured at 595.25 MHz	–	–	–52	dB
X _{mod}	cross modulation	85 channels flat; V _o = 44 dBmV; measured at 55.25 MHz	–	–	–58	dB
CSO	composite second order distortion	85 channels flat; V _o = 44 dBmV; measured at 596.5 MHz	–	–	–57	dB
d ₂	second order distortion	note 1	–	–	–70	dB
V _o	output voltage	d _{im} = –60 dB; note 2	59.5	–	–	dBmV
F	noise figure	f = 600 MHz	–	–	9.5	dB
I _{tot}	total current consumption (DC)	note 3	–	220	240	mA

Notes

1. $f_p = 55.25$ MHz; $V_p = 44$ dBmV;
 $f_q = 541.25$ MHz; $V_q = 44$ dBmV;
measured at $f_p + f_q = 596.5$ MHz.
2. Measured according to DIN45004B:
 $f_p = 590.25$ MHz; $V_p = V_o$;
 $f_q = 597.25$ MHz; $V_q = V_o - 6$ dB;
 $f_r = 599.25$ MHz; $V_r = V_o - 6$ dB;
measured at $f_p + f_q - f_r = 588.25$ MHz.
3. The module normally operates at $V_B = 24$ V, but is able to withstand supply transients up to 30 V.

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CHARACTERISTICSBandwidth 40 to 550 MHz; $V_B = 24$ V; $T_{mb} = 30$ °C; $Z_S = Z_L = 75$ Ω .

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
G _p	power gain	f = 50 MHz	12	–	13	dB
		f = 550 MHz	12.5	–	14.5	dB
SL	slope cable equivalent	f = 40 to 550 MHz	0.5	–	2	dB
FL	flatness of frequency response	f = 40 to 550 MHz	–	–	±0.2	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	–45	–	+45	deg
CTB	composite triple beat	77 channels flat; V _o = 44 dBmV; measured at 547.25 MHz	–	–	–56	dB
X _{mod}	cross modulation	77 channels flat; V _o = 44 dBmV; measured at 55.25 MHz	–	–	–62	dB
CSO	composite second order distortion	77 channels flat; V _o = 44 dBmV; measured at 548.5 MHz	–	–	–59	dB
d ₂	second order distortion	note 1	–	–	–72	dB
V _o	output voltage	d _{im} = –60 dB; note 2	61.5	–	–	dBmV
F	noise figure	f = 550 MHz	–	–	9	dB
I _{tot}	total current consumption (DC)	note 3	–	220	240	mA

Notes

- 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 = 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 30 V.

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CHARACTERISTICSBandwidth 40 to 450 MHz; $V_B = 24$ V; $T_{mb} = 30$ °C; $Z_S = Z_L = 75$ Ω .

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
G _p	power gain	f = 50 MHz	12	–	13	dB
		f = 450 MHz	12.5	–	14	dB
SL	slope cable equivalent	f = 40 to 450 MHz	0.5	–	1.5	dB
FL	flatness of frequency response	f = 40 to 450 MHz	–	–	±0.2	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	–45	–	+45	deg
CTB	composite triple beat	60 channels flat; V _o = 46 dBmV; measured at 445.25 MHz	–	–	–58	dB
X _{mod}	cross modulation	60 channels flat; V _o = 46 dBmV; measured at 55.25 MHz	–	–	–62	dB
CSO	composite second order distortion	60 channels flat; V _o = 46 dBmV; measured at 446.5 MHz	–	–	–61	dB
d ₂	second order distortion	note 1	–	–	–74	dB
V _o	output voltage	d _{im} = –60 dB; note 2	64	–	–	dBmV
F	noise figure	f = 450 MHz	–	–	8	dB
I _{tot}	total current consumption (DC)	note 3	–	220	240	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 module normally operates at $V_B = 24$ V, but is able to withstand supply transients up to 30 V.