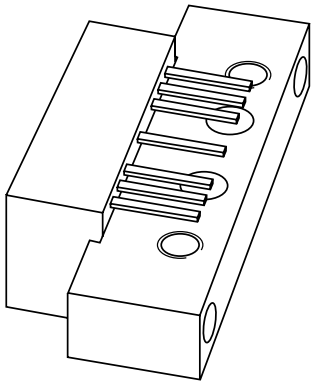
DATA SHEET



BGD816L

860 MHz, 21.5 dB gain power doubler amplifier

Product specification
Supersedes data of 2001 May 18

2001 Nov 15

Philips
Components

PHILIPS

860 MHz, 21.5 dB gain power doubler amplifier BGD816L

FEATURES

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

APPLICATIONS

- CATV systems operating in the 40 to 870 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, 3	common
5	$+V_B$
7, 8	common
9	output

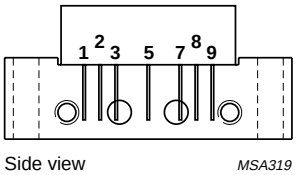


Fig.1 Simplified outline.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
G_p	power gain	f = 45 MHz	21.2	21.8	dB
		f = 870 MHz	22	23	dB
I_{tot}	total current consumption (DC)	V_B = 24 V	345	375	mA

LIMITING VALUES

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

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

CHARACTERISTICS

Bandwidth 40 to 870 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 = 45 MHz	21.2	–	21.8	dB
		f = 870 MHz	22	–	23	dB
SL	slope straight line	f = 45 to 870 MHz; note 1	0.5	1	1.5	dB
FL	flatness straight line	f = 45 to 100 MHz	–	–	±0.25	dB
		f = 100 to 800 MHz	–	–	±0.5	dB
		f = 800 to 870 MHz	–0.4	–	0.1	dB
s_{11}	input return losses	f = 45 to 80 MHz	22	–	–	dB
		f = 80 to 160 MHz	21	–	–	dB
		f = 160 to 320 MHz	19	–	–	dB
		f = 320 to 550 MHz	18	–	–	dB
		f = 550 to 650 MHz	17	–	–	dB
		f = 650 to 750 MHz	16	–	–	dB
		f = 750 to 870 MHz	15	–	–	dB
		f = 870 to 914 MHz	12	–	–	dB
s_{22}	output return losses	f = 45 to 80 MHz	25	–	–	dB
		f = 80 to 160 MHz	23	–	–	dB
		f = 160 to 320 MHz	18	–	–	dB
		f = 320 to 550 MHz	17	–	–	dB
		f = 550 to 650 MHz	16	–	–	dB
		f = 650 to 750 MHz	15	–	–	dB
		f = 750 to 870 MHz	15	–	–	dB
		f = 870 to 914 MHz	12	–	–	dB
s_{21}	phase response	f = 50 MHz	–45	–	+45	deg
CTB	composite triple beat	79 chs flat; V_o = 44 dBmV; f_m = 547.25 MHz	–	–	–66	dB
		112 chs flat; V_o = 44 dBmV; f_m = 745.25 MHz	–	–	–59.5	dB
		132 chs flat; V_o = 44 dBmV; f_m = 859.25 MHz	–	–	–55	dB
		112 chs; f_m = 547.25 MHz; V_o = 48.2 dBmV at 745 MHz; note 2	–	–	–59	dB
		79 chs; f_m = 331.25 MHz; V_o = 45.3 dBmV at 547 MHz; note 3	–	–	–68.5	dB
X_{mod}	cross modulation	79 chs flat; V_o = 44 dBmV; f_m = 55.25 MHz	–	–	–64	dB
		112 chs flat; V_o = 44 dBmV; f_m = 55.25 MHz	–	–	–61	dB
		132 chs flat; V_o = 44 dBmV; f_m = 55.25 MHz	–	–	–58	dB
		112 chs; f_m = 745.25 MHz; V_o = 48.2 dBmV at 745 MHz; note 2	–	–	–60	dB
		79 chs; f_m = 445.25 MHz; V_o = 45.3 dBmV at 547 MHz; note 3	–	–	–66	dB

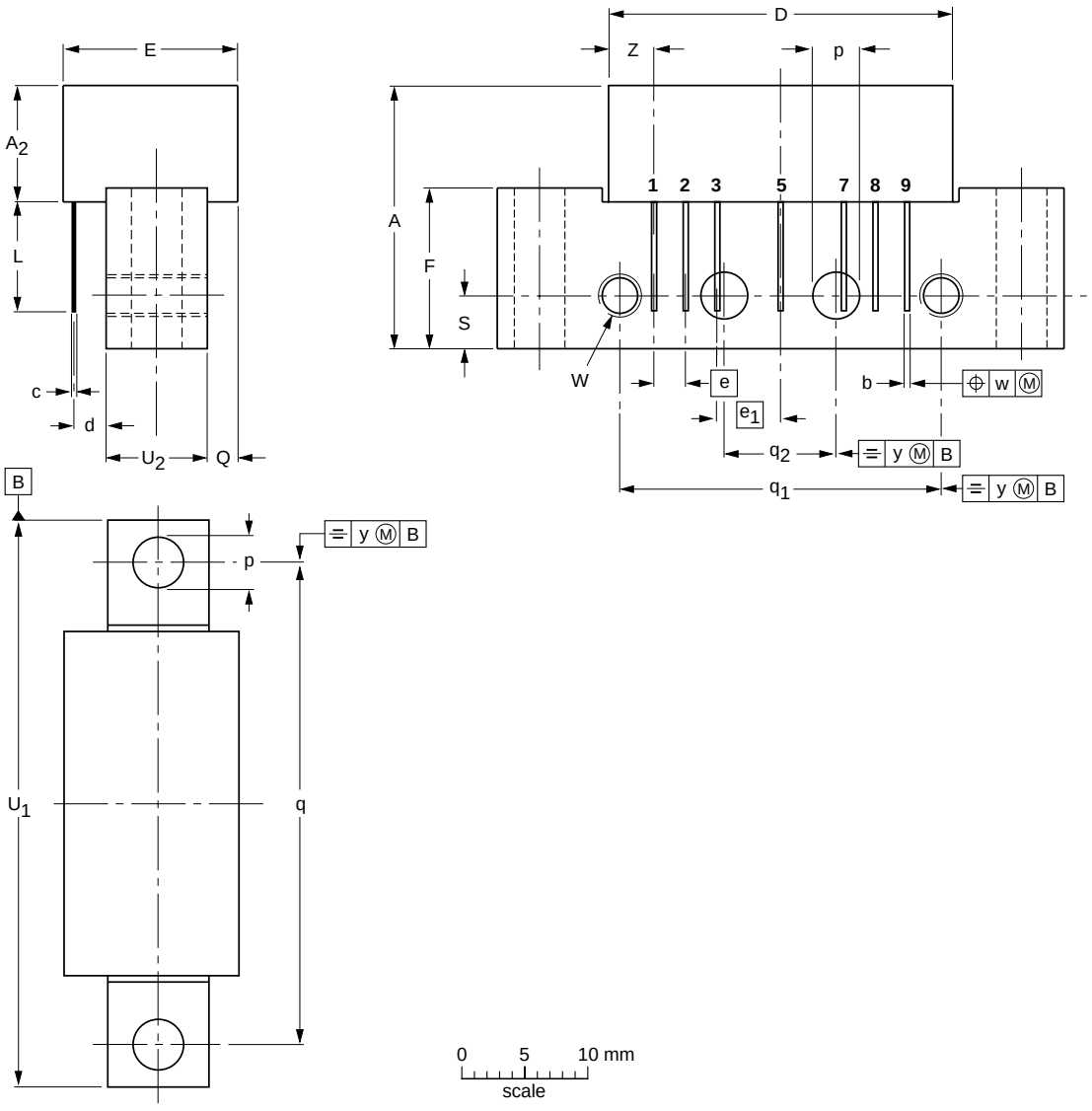
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
CSO	composite second order distortion	79 chs flat; V_o = 44 dBmV; f_m = 548.5 MHz	–	–	–66	dB
		112 chs flat; V_o = 44 dBmV; f_m = 746.5 MHz	–	–	–58	dB
		132 chs flat; V_o = 44 dBmV; f_m = 860.5 MHz	–	–	–56	dB
		112 chs; f_m = 210.0 MHz; V_o = 48.2 dBmV at 745 MHz; note 2	–	–	–57	dB
		79 chs; f_m = 210.0 MHz; V_o = 45.3 dBmV at 547 MHz; note 3	–	–	–64	dB
d_2	second order distortion	note 4	–	–	–70	dB
V_o	output voltage	d_{im} = –60 dB; note 5	62	–	–	dBmV
		CTB compression = 1 dB; 132 chs flat; f = 859.25 MHz	48	–	–	dBmV
		CSO compression = 1 dB; 132 chs flat; f = 860.5 MHz	49	–	–	dBmV
NF	noise figure	f = 50 MHz	–	–	5.5	dB
		f = 550 MHz	–	–	5.5	dB
		f = 750 MHz	–	–	6.5	dB
		f = 870 MHz	–	–	7.5	dB
I_{tot}	total current consumption (DC)	note 6	345	360	375	mA

Notes

1. Slope straight line is defined as gain at 870 MHz against gain at 45 MHz.
2. Tilt = 10.2 dB (55 to 745 MHz).
3. Tilt = 7.3 dB (55 to 547 MHz).
4. 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.
5. 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.
6. The module normally operates at V_B = 24 V, but is able to withstand supply transients up to 35 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.

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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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