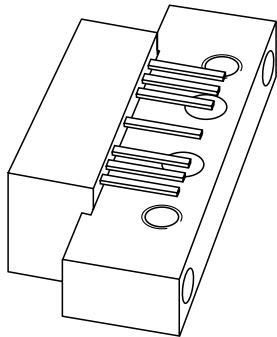


DATA SHEET



BGD814

**860 MHz, 20 dB gain power
doubler amplifier**

Product specification
Supersedes data of 2001 Sep 07

2001 Nov 01

860 MHz, 20 dB gain power doubler amplifier

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FEATURES

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

APPLICATIONS

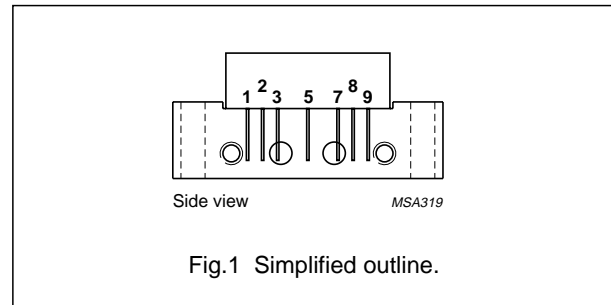
- CATV systems operating in the 40 to 870 MHz frequency range.

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



QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
G _p	power gain	f = 45 MHz	19.7	20.3	dB
		f = 870 MHz	20.5	21.5	dB
I _{tot}	total current consumption (DC)	V _B = 24 V	380	410	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

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CHARACTERISTICSBandwidth 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	19.7	–	20.3	dB
		f = 870 MHz	20.5	–	21.5	dB
SL	slope straight line	f = 45 to 870 MHz; note 1	0.5	–	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	25	–	–	dB
		f = 80 to 160 MHz	22	–	–	dB
		f = 160 to 320 MHz	19	–	–	dB
		f = 320 to 550 MHz	17	–	–	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	24	–	–	dB
		f = 80 to 160 MHz	22	–	–	dB
		f = 160 to 320 MHz	17	–	–	dB
		f = 320 to 550 MHz	18	–	–	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	13	–	–	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	–	–	–60.5	dB
		132 chs flat; $V_o = 44$ dBmV; $f_m = 859.25$ MHz	–	–	–56	dB
		112 chs; $f_m = 547.25$ MHz; $V_o = 50.2$ dBmV at 745 MHz; note 2	–	–	–55.5	dB
		79 chs; $f_m = 331.25$ MHz; $V_o = 47.3$ dBmV at 547 MHz; note 3	–	–	–65	dB
X_{mod}	cross modulation	79 chs flat; $V_o = 44$ dBmV; $f_m = 55.25$ MHz	–	–	–66	dB
		112 chs flat; $V_o = 44$ dBmV; $f_m = 55.25$ MHz	–	–	–62.5	dB
		132 chs flat; $V_o = 44$ dBmV; $f_m = 55.25$ MHz	–	–	–61	dB
		112 chs; $f_m = 745.25$ MHz; $V_o = 50.2$ dBmV at 745 MHz; note 2	–	–	–57	dB
		79 chs; $f_m = 445.25$ MHz; $V_o = 47.3$ dBmV at 547 MHz; note 3	–	–	–66	dB

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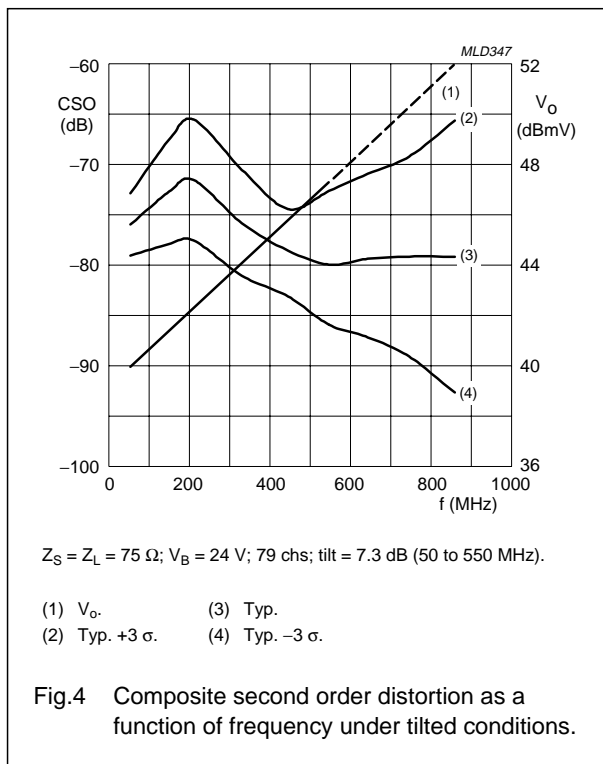
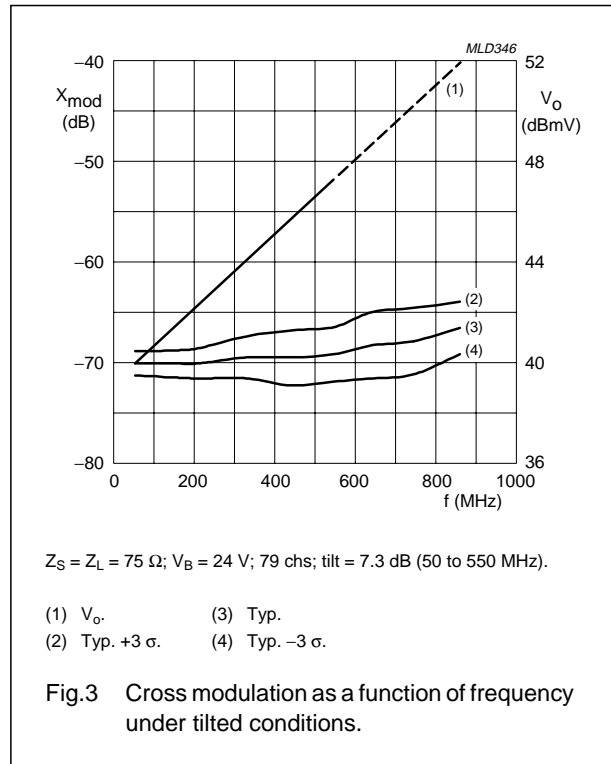
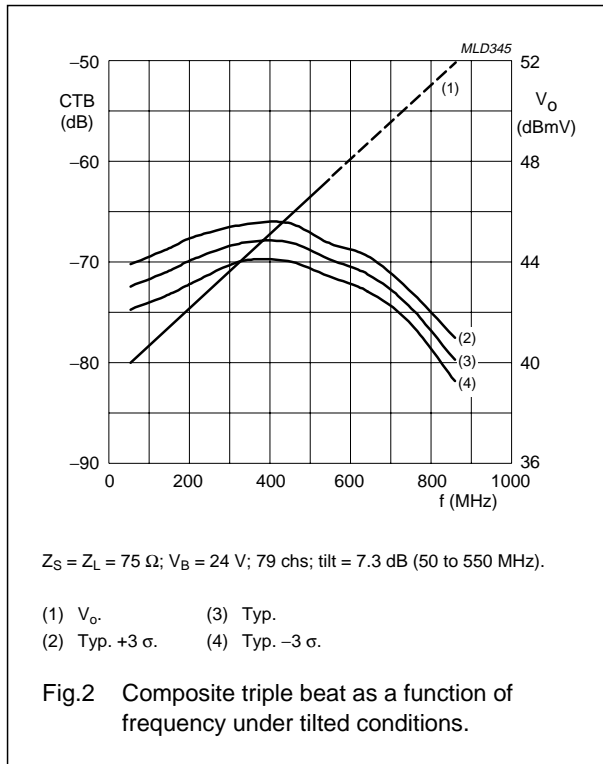
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
CSO	composite second order distortion	79 chs flat; $V_o = 44$ dBmV; $f_m = 548.5$ MHz	–	–	–68	dB
		112 chs flat; $V_o = 44$ dBmV; $f_m = 746.5$ MHz	–	–	–61	dB
		132 chs flat; $V_o = 44$ dBmV; $f_m = 860.5$ MHz	–	–	–57	dB
		112 chs; $f_m = 210$ MHz; $V_o = 50.2$ dBmV at 745 MHz; note 2	–	–	–56	dB
		79 chs; $f_m = 210$ MHz; $V_o = 47.3$ dBmV at 547 MHz; note 3	–	–	–64	dB
d_2	second order distortion	note 4	–	–	–69	dB
V_o	output voltage	$d_{im} = -60$ dB; note 5	64	–	–	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	50	–	–	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	380	395	410	mA

Notes

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

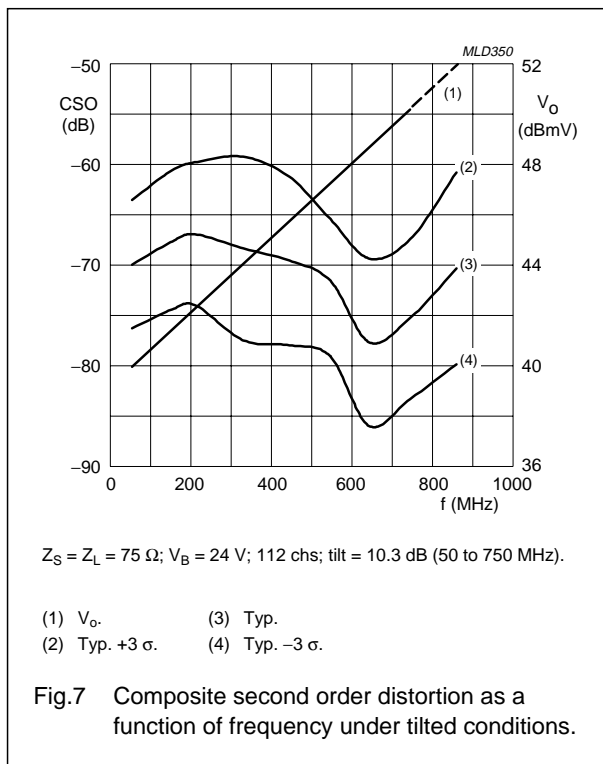
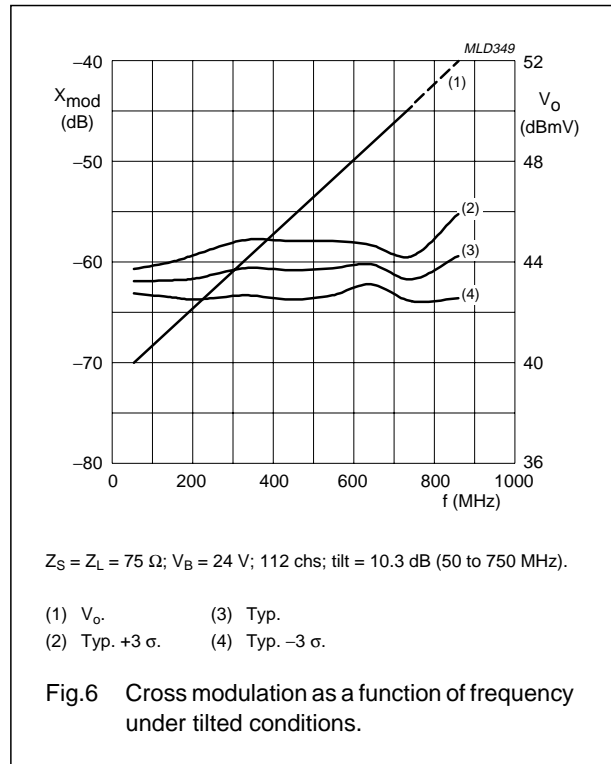
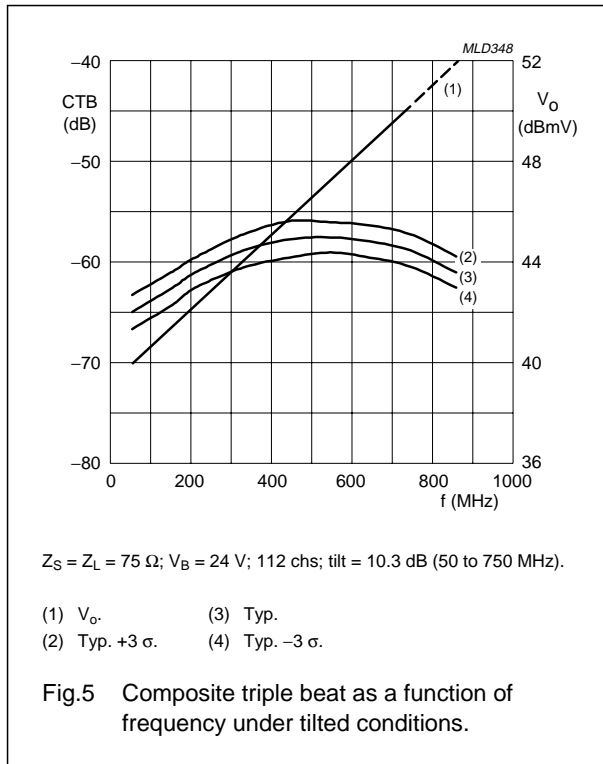
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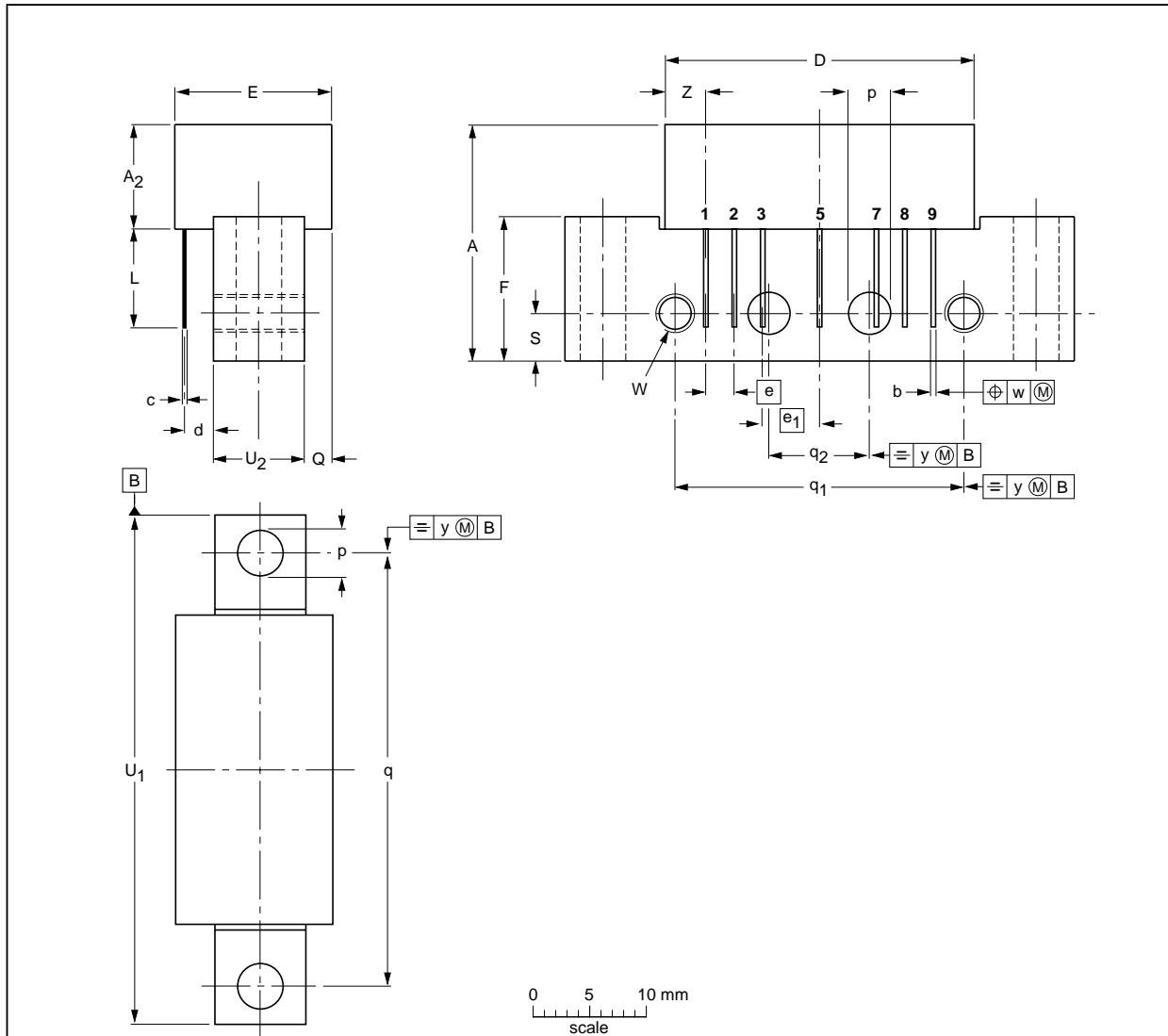
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PACKAGE OUTLINE

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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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.
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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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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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NOTES

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NOTES

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