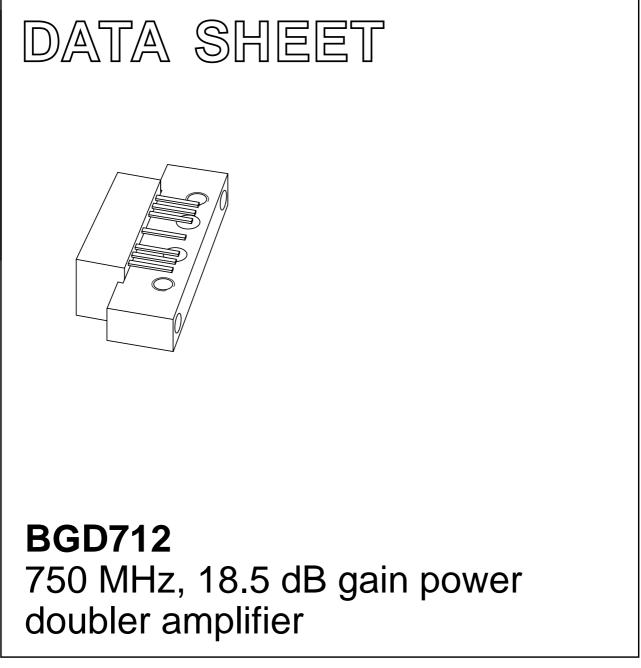
DISCRETE SEMICONDUCTORS



Product specification Supersedes data of 2001 Oct 29 2001 Nov 02



BGD712

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 750 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	

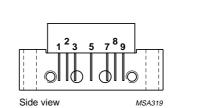


Fig.1 Simplified outline.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
G _p	power gain	f = 45 MHz	18.2	18.8	dB
		f = 750 MHz	19	20	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		MAX.	UNIT
V _B	supply voltage	-	30	V
Vi	RF input voltage		70	dBmV
T _{stg}	storage temperature	-40	+100	°C
T _{mb}	operating mounting base temperature	-20	+100	°C

BGD712

CHARACTERISTICS

Bandwidth 40 to 750 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	18.2	18.5	18.8	dB
		f = 750 MHz	19	19.5	20	dB
SL	slope straight line	f = 45 to 750 MHz; note 1	0.5	1	1.5	dB
FL	flatness straight line	f = 45 to 100 MHz	_	-	±0.35	dB
		f = 100 to 700 MHz	_	-	±0.5	dB
		f = 700 to 750 MHz	_	-	±0.15	dB
S ₁₁	input return losses	f = 45 to 80 MHz	23	-	_	dB
		f = 80 to 160 MHz	23	-	_	dB
		f = 160 to 320 MHz	21	-	-	dB
		f = 320 to 550 MHz	20	-	_	dB
		f = 550 to 650 MHz	20	-	_	dB
		f = 650 to 750 MHz	19	-	-	dB
		f = 750 to 790 MHz	17	-	-	dB
S ₂₂	output return losses	f = 45 to 80 MHz	23	-	-	dB
		f = 80 to 160 MHz	23	-	_	dB
		f = 160 to 320 MHz	20	-	-	dB
		f = 320 to 550 MHz	20	-	-	dB
		f = 550 to 650 MHz	19	-	_	dB
		f = 650 to 750 MHz	19	-	-	dB
		f = 750 to 790 MHz	17	-	_	dB
S ₂₁	phase response	f = 50 MHz	-45	-	+45	deg
СТВ	composite triple beat	112 channels flat; $V_o = 44 \text{ dBmV}$; $f_m = 745.25 \text{ MHz}$	-	-	-62	dB
		79 channels flat; $V_o = 44 \text{ dBmV}$; f _m = 547.25 MHz	-	-	-68	dB
		79 channels; $f_m = 445.25$ MHz; V _o = 49.3 dBmV at 547 MHz; note 2	-	-	-63	dB
X _{mod}	cross modulation	112 channels flat; $V_o = 44 \text{ dBmV}$; f _m = 55.25 MHz	-	-	-63	dB
		79 channels flat; $V_o = 44 \text{ dBmV}$; f _m = 55.25 MHz	-	-	-69	dB
		79 channels; f_m = 745.25 MHz; V _o = 49.3 dBmV at 547 MHz; note 2	-	-	-60	dB

BGD712

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
CSO	composite second order distortion	112 channels flat; $V_o = 44 \text{ dBmV}$; f _m = 746.5 MHz	-	-	-63	dB
		79 channels flat; $V_o = 44 \text{ dBmV}$; $f_m = 548.5 \text{ MHz}$	-	-	-68	dB
		79 channels; f_m = 746.5 MHz; V _o = 49.3 dBmV at 547 MHz; note 2	-	-	-62	dB
d ₂	second order distortion	note 3	_	-	-74	dB
Vo	output voltage	d _{im} = -60 dB; note 4	64	-	_	dBmV
NF	noise figure	f = 50 MHz	_	_	5.5	dB
		f = 550 MHz	_	_	5.5	dB
		f = 750 MHz	-	-	7	dB
I _{tot}	total current consumption (DC)	note 5	380	395	410	mA

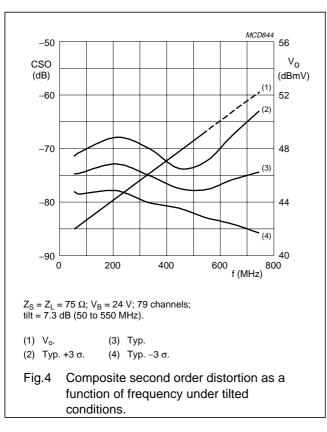
Notes

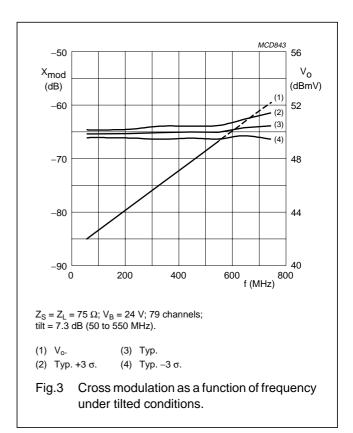
- 1. Slope straight line is defined as gain at 750 MHz gain at 45 MHz.
- 2. Tilt = 7.3 dB (55 to 547 MHz).
- $\begin{array}{ll} \text{3.} & f_p = 55.25 \text{ MHz}; \text{ } \text{V}_p = 44 \text{ } \text{dBmV}; \\ & f_q = 691.25 \text{ } \text{MHz}; \text{ } \text{V}_q = 44 \text{ } \text{dBmV}; \\ & \text{measured at } f_p + f_q = 746.5 \text{ } \text{MHz}. \end{array}$
- 4. Measured according to DIN45004B: $f_p = 740.25 \text{ MHz}; V_p = V_o;$ $f_q = 747.25 \text{ MHz}; V_q = V_o -6 \text{ dB};$ $f_r = 749.25 \text{ MHz}; V_r = V_o -6 \text{ dB};$ measured at $f_p + f_q - f_r = 738.25 \text{ MHz}.$
- 5. The module normally operates at $V_B = 24$ V, but is able to withstand supply transients up to 30 V.

BGD712

750 MHz, 18.5 dB gain power doubler amplifier

MCD842 56 -50 Vo СТВ (dBmV) (dB) (1) -60 52 -70 48 • (2) (3) -80 - (4) 44 40 -90 600 800 f (MHz) 0 200 400 $Z_{S} = Z_{L} = 75 \ \Omega; V_{B} = 24 \ V; 79 \text{ channels};$ tilt = 7.3 dB (50 to 550 MHz). (1) V_o. (3) Typ. (4) Typ. –3 σ. (2) Typ. +3 σ. Fig.2 Composite triple beat as a function of frequency under tilted conditions.

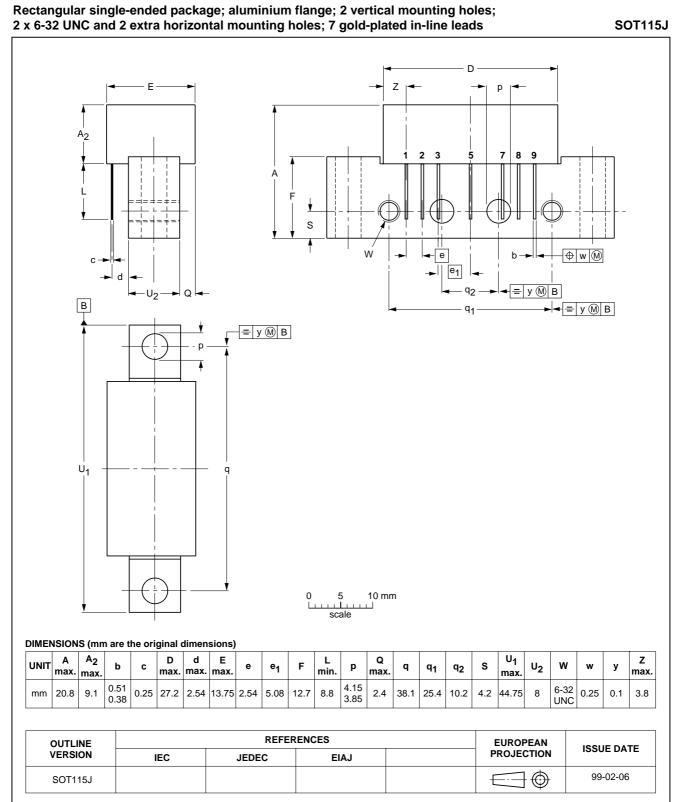




BGD712

750 MHz, 18.5 dB gain power doubler amplifier

PACKAGE OUTLINE



2001 Nov 02

BGD712

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.

Notes

- 1. Please consult the most recently issued data sheet before initiating or completing a design.
- 2. The product status of the device(s) described in this data sheet may have changed since this data sheet was published. The latest information is available on the Internet at URL http://www.semiconductors.philips.com.

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Short-form specification — The data in a short-form specification is extracted from a full data sheet with the same type number and title. For detailed information see the relevant data sheet or data handbook.

Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). 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.

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