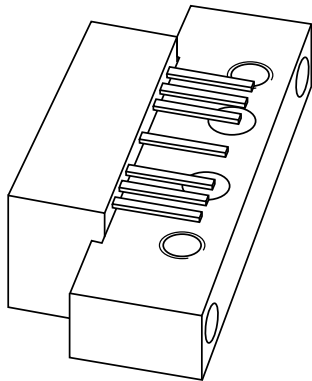


# DATA SHEET



## **BGD712**

750 MHz, 18.5 dB gain power  
doubler amplifier

Product specification  
Supersedes data of 2001 Oct 29

2001 Nov 02



# 750 MHz, 18.5 dB gain power doubler amplifier

**BGD712**

**FEATURES**

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

**APPLICATIONS**

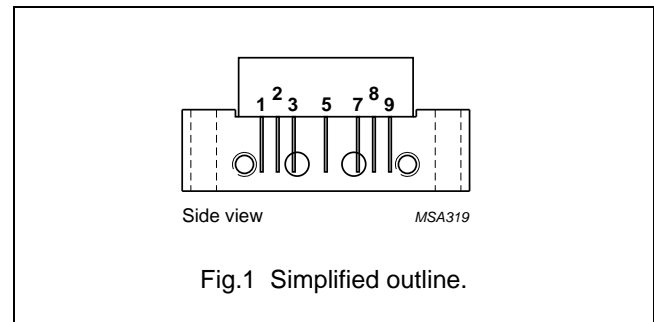
- CATV systems operating in the 40 to 750 MHz frequency range.

**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 <sub>B</sub>
7, 8	common
9	output



**QUICK REFERENCE DATA**

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
G <sub>p</sub>	power gain	f = 45 MHz	18.2	18.8	dB
		f = 750 MHz	19	20	dB
I <sub>tot</sub>	total current consumption (DC)	V <sub>B</sub> = 24 V	380	410	mA

**LIMITING VALUES**

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

SYMBOL	PARAMETER	MIN.	MAX.	UNIT
V <sub>B</sub>	supply voltage	–	30	V
V <sub>i</sub>	RF input voltage	–	70	dBmV
T <sub>stg</sub>	storage temperature	–40	+100	°C
T <sub>mb</sub>	operating mounting base temperature	–20	+100	°C

# 750 MHz, 18.5 dB gain power doubler amplifier

BGD712

## CHARACTERISTICS

Bandwidth 40 to 750 MHz;  $V_B = 24\text{ V}$ ;  $T_{mb} = 35\text{ °C}$ ;  $Z_S = Z_L = 75\ \Omega$ 

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
G <sub>p</sub>	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 <sub>11</sub>	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 <sub>22</sub>	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 <sub>21</sub>	phase response	f = 50 MHz	–45	–	+45	deg
CTB	composite triple beat	112 channels flat; V <sub>o</sub> = 44 dBmV; f <sub>m</sub> = 745.25 MHz	–	–	–62	dB
		79 channels flat; V <sub>o</sub> = 44 dBmV; f <sub>m</sub> = 547.25 MHz	–	–	–68	dB
		79 channels; f <sub>m</sub> = 445.25 MHz; V <sub>o</sub> = 49.3 dBmV at 547 MHz; note 2	–	–	–63	dB
X <sub>mod</sub>	cross modulation	112 channels flat; V <sub>o</sub> = 44 dBmV; f <sub>m</sub> = 55.25 MHz	–	–	–63	dB
		79 channels flat; V <sub>o</sub> = 44 dBmV; f <sub>m</sub> = 55.25 MHz	–	–	–69	dB
		79 channels; f <sub>m</sub> = 745.25 MHz; V <sub>o</sub> = 49.3 dBmV at 547 MHz; note 2	–	–	–60	dB

# 750 MHz, 18.5 dB gain power doubler amplifier

## BGD712

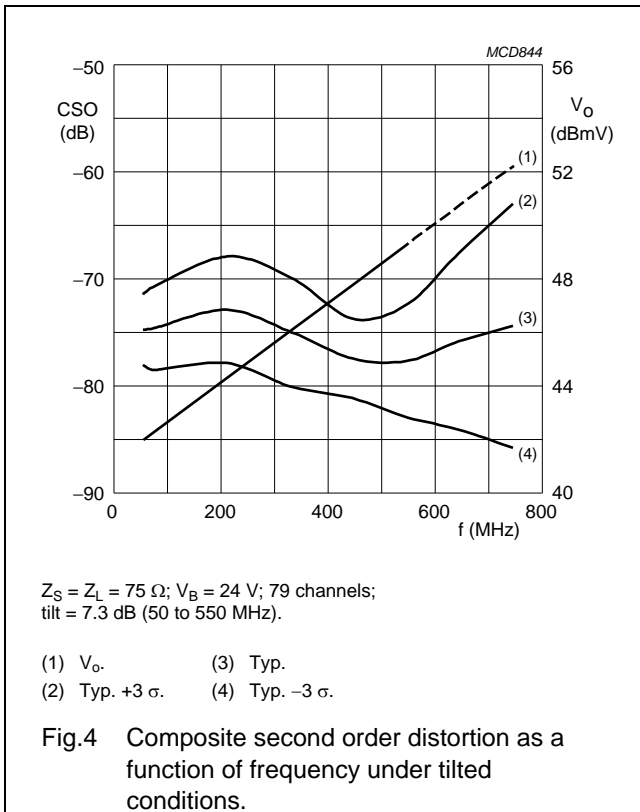
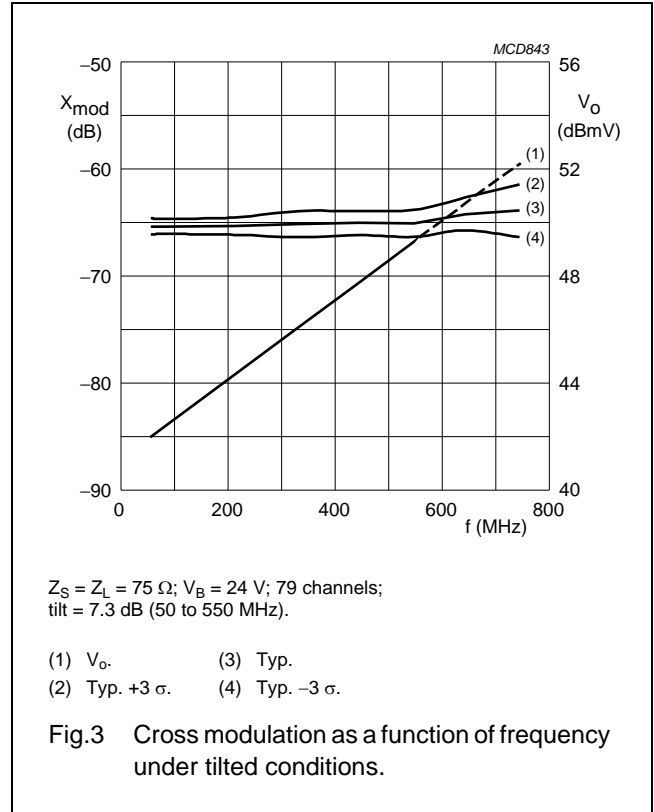
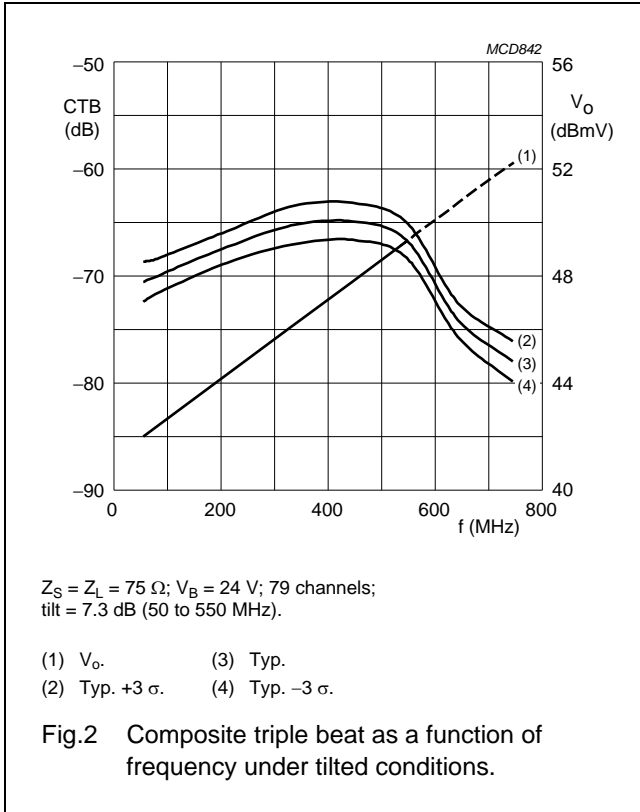
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
CSO	composite second order distortion	112 channels flat; $V_o = 44$ dBmV; $f_m = 746.5$ MHz	–	–	–63	dB
		79 channels flat; $V_o = 44$ dBmV; $f_m = 548.5$ MHz	–	–	–68	dB
		79 channels; $f_m = 746.5$ MHz; $V_o = 49.3$ dBmV at 547 MHz; note 2	–	–	–62	dB
$d_2$	second order distortion	note 3	–	–	–74	dB
$V_o$	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

- Slope straight line is defined as gain at 750 MHz – gain at 45 MHz.
- Tilt = 7.3 dB (55 to 547 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.
- 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.
- The module normally operates at  $V_B = 24$  V, but is able to withstand supply transients up to 30 V.

# 750 MHz, 18.5 dB gain power doubler amplifier

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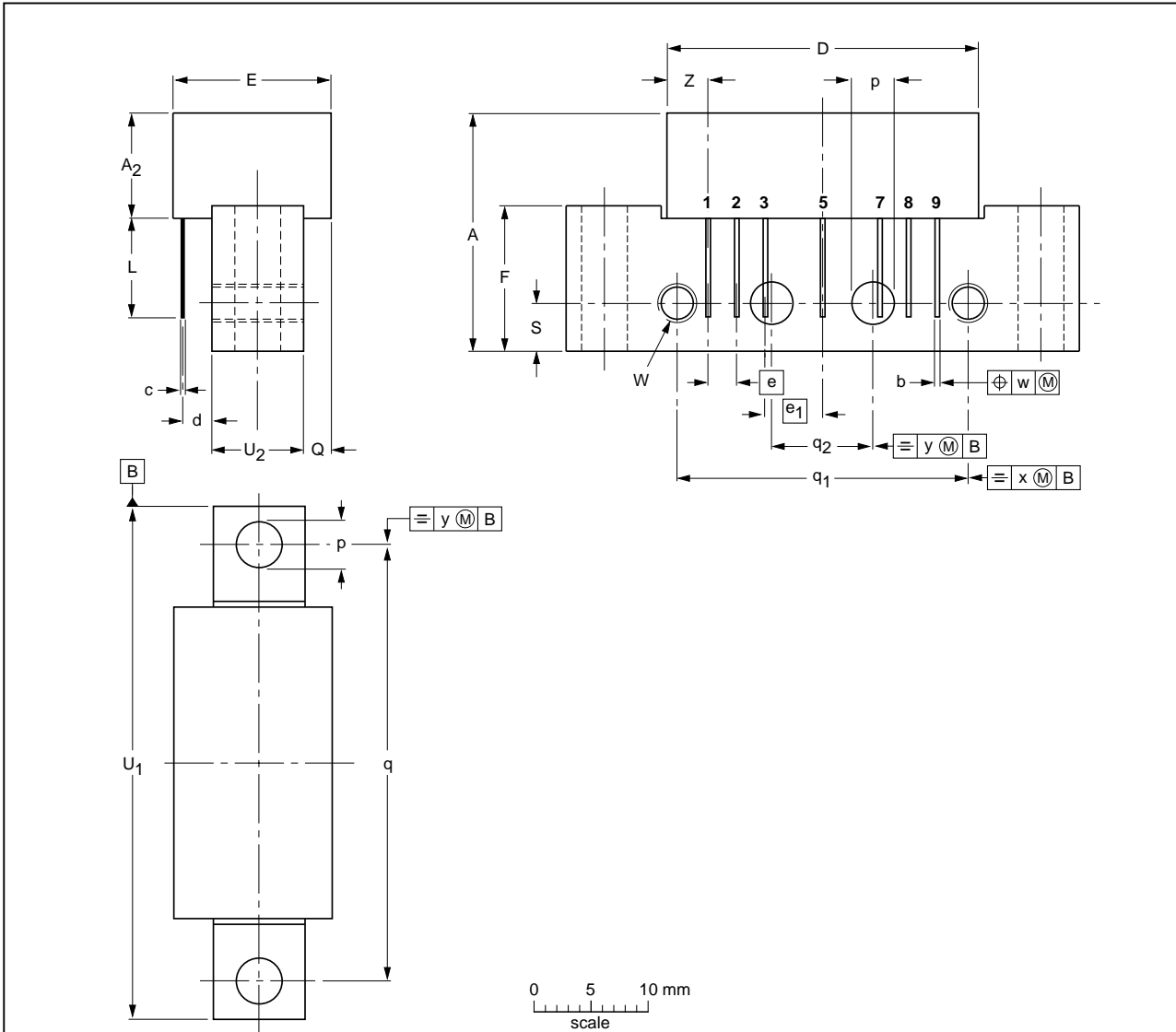
750 MHz, 18.5 dB gain power doubler amplifier

BGD712

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 <sub>2</sub> max.	b	c	D max.	d	E max.	e	e <sub>1</sub>	F	L min.	p	Q max.	q	q <sub>1</sub>	q <sub>2</sub>	S	U <sub>1</sub>	U <sub>2</sub>	W	w	x	y	Z max.
mm	20.8	9.5	0.51 0.38	0.25	27.2	2.04 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 44.25	8.2 7.8	6-32 UNC	0.25	0.7	0.1	3.8

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT115J						04-02-04 10-06-18

750 MHz, 18.5 dB gain power doubler amplifier

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**DATA SHEET STATUS**

DOCUMENT STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)</sup>	DEFINITION
Objective data sheet	Development	This document contains data from the objective specification for product development.
Preliminary data sheet	Qualification	This document contains data from the preliminary specification.
Product data sheet	Production	This document contains the product specification.

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