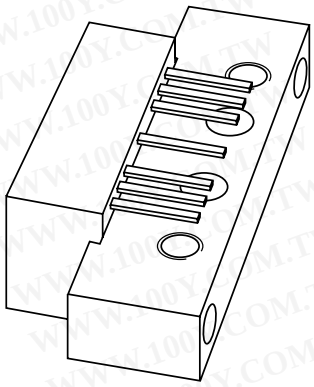
DATA SHEET



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Http://www.100y.com.tw

BGD714
CATV amplifier module

Product specification
Supersedes data of 1999 Nov 02

2000 Jan 13

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CATV amplifier module

BGD714

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

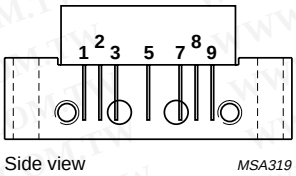

Fig.1 Simplified outline.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
G_p	power gain	f = 45 MHz	20	20.6	dB
		f = 750 MHz	20.8	21.8	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 134).

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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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	20	20.3	20.6	dB
		f = 750 MHz	20.8	21.3	21.8	dB
SL	slope straight line	f = 45 to 100 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	20	–	–	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
CTB	composite triple beat	112 channels flat; V_o = 44 dBmV; f_m = 745.25 MHz	–	–	–61	dB
		79 chs channels; V_o = 44 dBmV; f_m = 547.25 MHz	–	–	–67	dB
		79 channels; f_m = 445.25 MHz; V_o = 49.3 dBmV at 547 MHz; note 2	–	–	–62	dB
X_{mod}	cross modulation	112 channels flat; V_o = 44 dBmV; f_m = 55.25 MHz	–	–	–62	dB
		79 channels flat; V_o = 44 dBmV; f_m = 55.25 MHz	–	–	–66	dB
		79 channels; f_m = 745.25 MHz; V_o = 49.3 dBmV at 547 MHz; note 2	–	–	–58	dB

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SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
CSO	composite second order distortion	112 channels flat; V_o = 44 dBmV; f_m = 746.5 MHz	–	–	–62	dB
		79 channels flat; V_o = 44 dBmV; f_m = 548.5 MHz	–	–	–67	dB
		79 channels; f_m = 746.5 MHz; V_o = 49.3 dBmV at 547 MHz; note 2	–	–	–60	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

1. Slope straight line is defined as gain at 750 MHz – gain at 45 MHz.
2. Tilt = 7.3 dB (55 to 547 MHz).
3. 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.
4. 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.
5. The module normally operates at V_B = 24 V, but is able to withstand supply transients up to 30 V.

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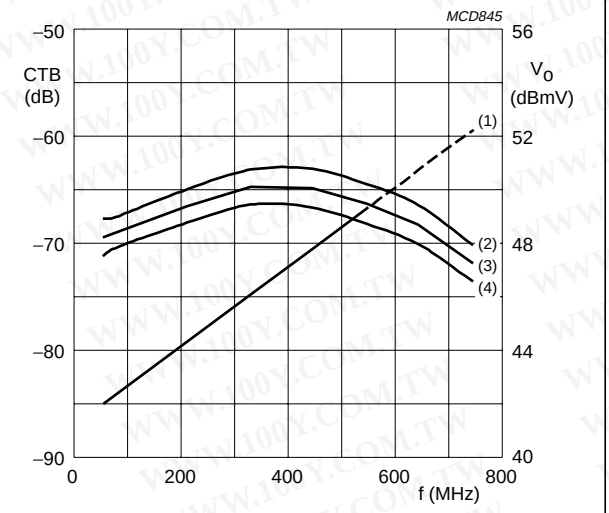
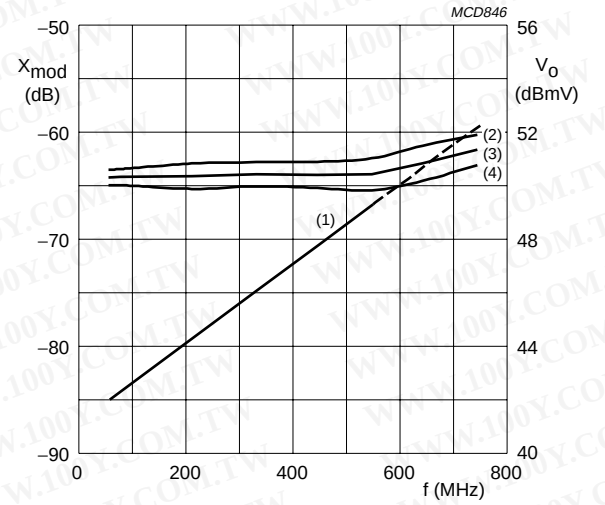


$Z_S = Z_L = 75\ \Omega$; $V_B = 24$ V; 79 channels;
tilt = 7.3 dB (50 to 550 MHz).

(1) V_o. (3) Typ.
(2) Typ. +3 σ. (4) Typ. –3 σ.

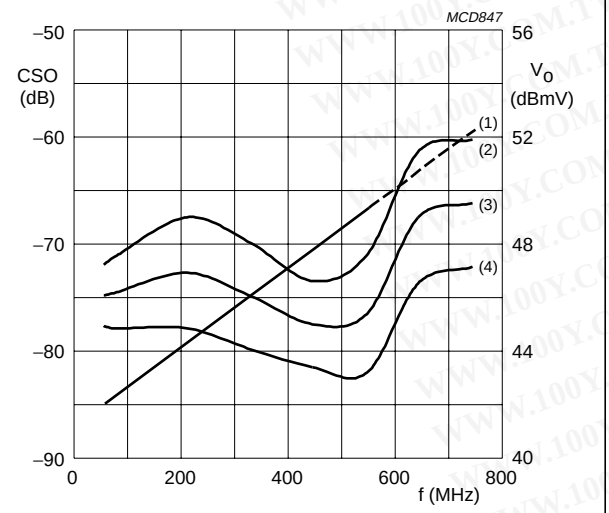
Fig.2 Composite triple beat as a function of frequency under tilted conditions.



$Z_S = Z_L = 75\ \Omega$; $V_B = 24$ V; 79 channels;
tilt = 7.3 dB (50 to 550 MHz).

(1) V_o. (3) Typ.
(2) Typ. +3 σ. (4) Typ. –3 σ.

Fig.3 Cross modulation as a function of frequency under tilted conditions.



$Z_S = Z_L = 75\ \Omega$; $V_B = 24$ V; 79 channels;
tilt = 7.3 dB (50 to 550 MHz).

(1) V_o. (3) Typ.
(2) Typ. +3 σ. (4) Typ. –3 σ.

Fig.4 Composite second order distortion as a function of frequency under tilted conditions.

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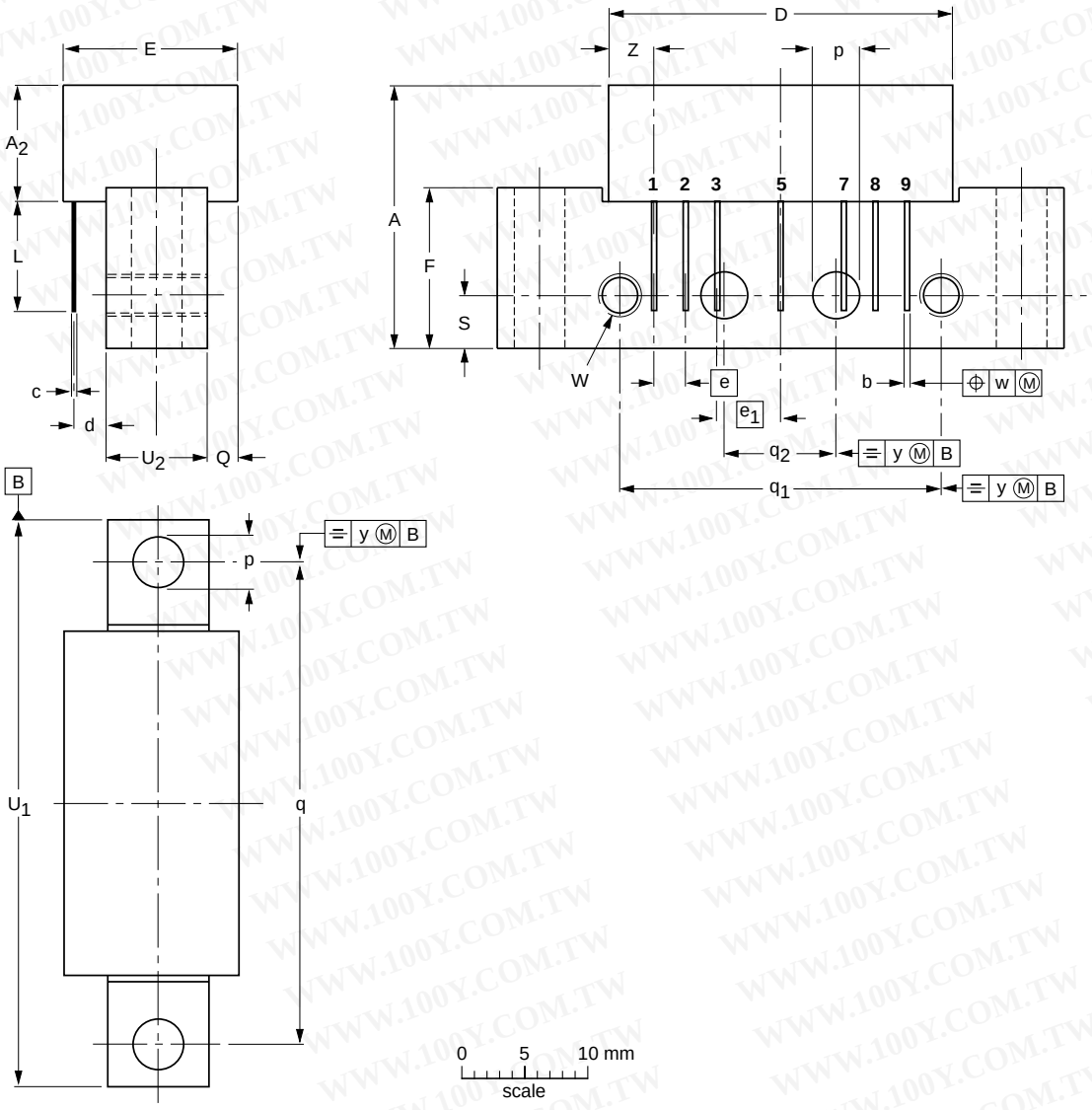
PACKAGE OUTLINE

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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DEFINITIONS

Data Sheet Status	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
Limiting values	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). 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.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	

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