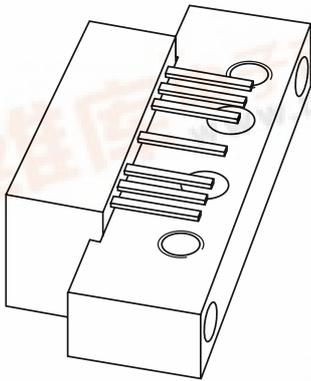


DISCRETE SEMICONDUCTORS

DATA SHEET



BGD906; BGD906MI CATV amplifier modules

Product specification
Supersedes data of 1999 Mar 22

2000 Mar 28

CATV amplifier modules

BGD906; BGD906MI

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 900 MHz frequency range.

DESCRIPTION

Hybrid amplifier modules in a SOT115J package operating with a voltage supply of 24 V (DC).

Both modules are electrically identical, only the pinning is different.

PINNING - SOT115J

PIN	DESCRIPTION	
	BGD906	BGD906MI
1	input	output
2, 3	common	common
5	+V _B	+V _B
7, 8	common	common
9	output	input

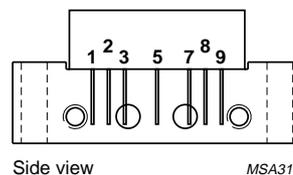


Fig.1 Simplified outline SOT115J.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
G _p	power gain	f = 50 MHz	21.2	21.8	dB
		f = 900 MHz	22	23	dB
I _{tot}	total current consumption (DC)	V _B = 24 V; T _{mb} = 35 °C	405	435	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

CATV amplifier modules

BGD906; BGD906MI

CHARACTERISTICSBandwidth 40 to 900 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 = 50 MHz	21.2	21.5	21.8	dB
		f = 900 MHz	22	22.5	23	dB
SL	slope straight line	f = 40 to 900 MHz	0.5	1	1.5	dB
FL	flatness straight line	f = 40 to 900 MHz	–	–	±0.35	dB
S ₁₁	input return losses	f = 40 to 80 MHz	22	25	–	dB
		f = 80 to 160 MHz	21	24	–	dB
		f = 160 to 320 MHz	18	23	–	dB
		f = 320 to 550 MHz	17	23	–	dB
		f = 550 to 900 MHz	16	20	–	dB
S ₂₂	output return losses	f = 40 to 80 MHz	22	25	–	dB
		f = 80 to 160 MHz	21	25	–	dB
		f = 160 to 320 MHz	20	23	–	dB
		f = 320 to 550 MHz	19	22	–	dB
		f = 550 to 650 MHz	18	24	–	dB
		f = 650 to 750 MHz	17	23	–	dB
		f = 750 to 900 MHz	16	21	–	dB
S ₂₁	phase response	f = 50 MHz	–45	–	+45	deg
CTB	composite triple beat	49 chs flat; V _o = 47 dBmV; f _m = 859.25 MHz	–	–68.5	–66	dB
		77 chs flat; V _o = 44 dBmV; f _m = 547.25 MHz	–	–70	–67	dB
		110 chs flat; V _o = 44 dBmV; f _m = 745.25 MHz	–	–63	–61	dB
		129 chs flat; V _o = 44 dBmV; f _m = 859.25 MHz	–	–59	–57	dB
		110 chs; f _m = 397.25 MHz; V _o = 49 dBmV at 550 MHz; note 1	–	–62.5	–60.5	dB
		129 chs; f _m = 697.25 MHz; V _o = 49.5 dBmV at 860 MHz; note 2	–	–57	–54.5	dB
X _{mod}	cross modulation	49 chs flat; V _o = 47 dBmV; f _m = 55.25 MHz	–	–64	–62	dB
		77 chs flat; V _o = 44 dBmV; f _m = 55.25 MHz	–	–67.5	–65	dB
		110 chs flat; V _o = 44 dBmV; f _m = 55.25 MHz	–	–64	–61.5	dB
		129 chs flat; V _o = 44 dBmV; f _m = 55.25 MHz	–	–61	–60	dB
		110 chs; f _m = 397.25 MHz; V _o = 49 dBmV at 550 MHz; note 1	–	–60	–58	dB
		129 chs; f _m = 859.25 MHz; V _o = 49.5 dBmV at 860 MHz; note 2	–	–56.5	–55	dB

CATV amplifier modules

BGD906; BGD906MI

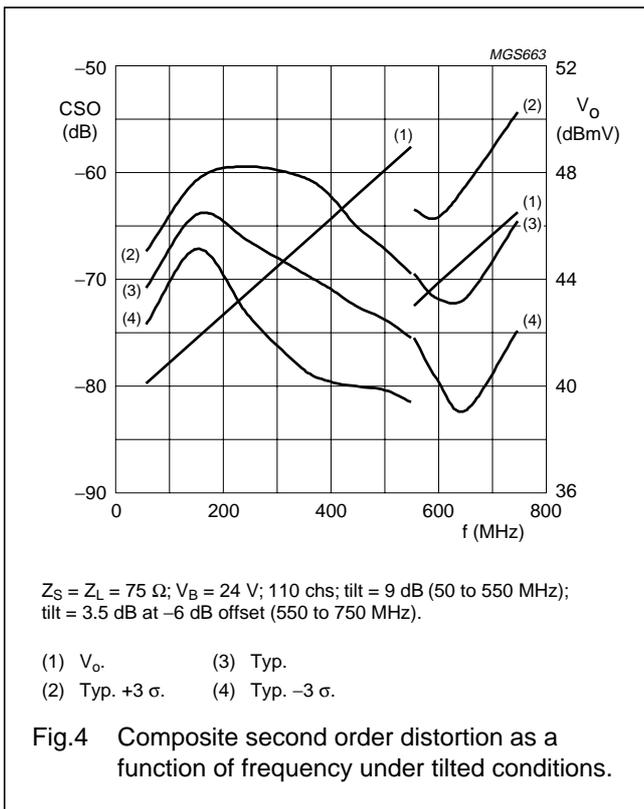
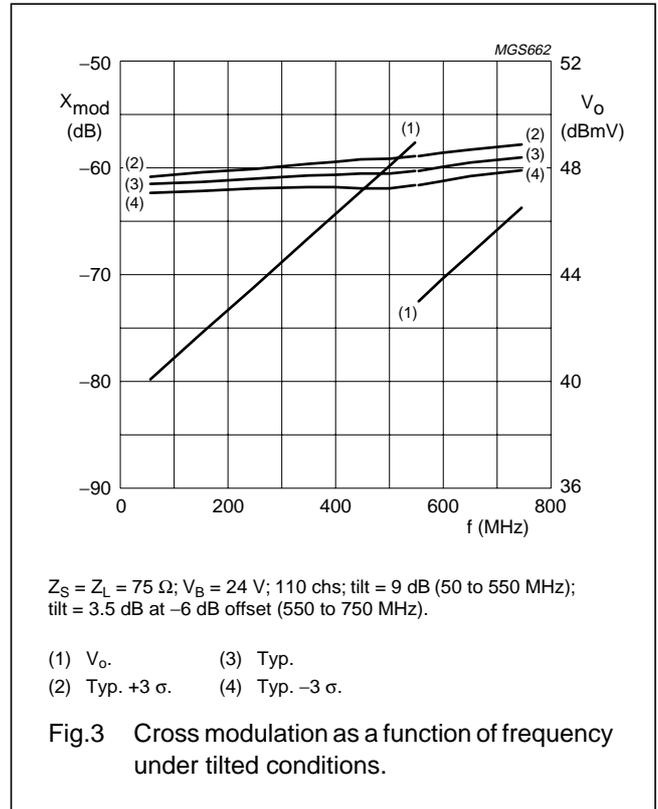
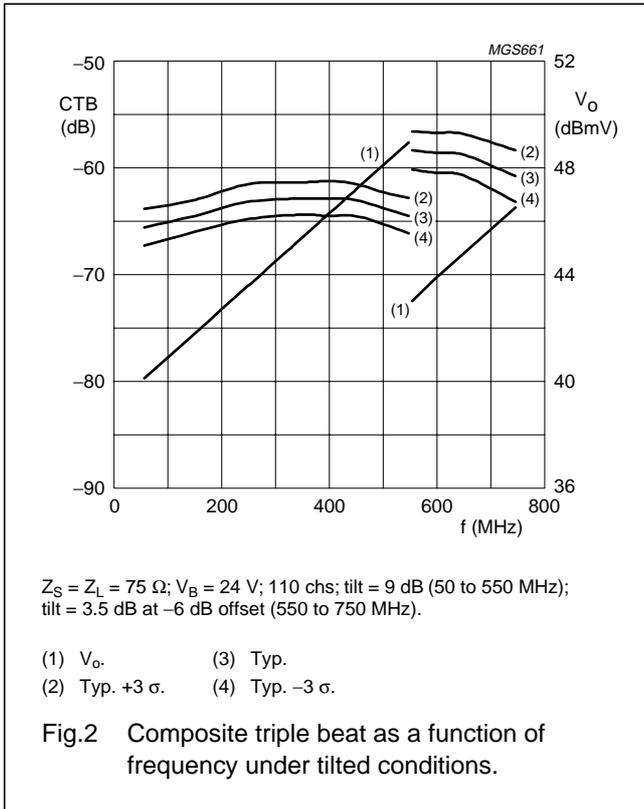
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
CSO	composite second order distortion	49 chs flat; $V_o = 47$ dBmV; $f_m = 860.5$ MHz	–	–63	–59	dB
		77 chs flat; $V_o = 44$ dBmV; $f_m = 548.5$ MHz	–	–74	–65	dB
		110 chs flat; $V_o = 44$ dBmV; $f_m = 746.5$ MHz	–	–66	–58	dB
		129 chs flat; $V_o = 44$ dBmV; $f_m = 860.5$ MHz	–	–59	–54	dB
		110 chs; $f_m = 150$ MHz; $V_o = 49$ dBmV at 550 MHz; note 1	–	–64	–60	dB
		129 chs; $f_m = 150$ MHz; $V_o = 49.5$ dBmV at 860 MHz; note 2	–	–60	–54	dB
d_2	second order distortion	note 3	–	–83	–70	dB
		note 4	–	–81.5	–73	dB
		note 5	–	–79	–76	dB
V_o	output voltage	$d_{im} = -60$ dB; note 6	63.5	64.5	–	dBmV
		$d_{im} = -60$ dB; note 7	64.5	66.5	–	dBmV
		$d_{im} = -60$ dB; note 8	66.5	69	–	dBmV
		CTB compression = 1 dB; 129 chs flat; $f = 859.25$ MHz	48.5	49	–	dBmV
		CSO compression = 1 dB; 129 chs flat; $f = 860.5$ MHz	51	54	–	dBmV
NF	noise figure	$f = 50$ MHz	–	5	5.5	dB
		$f = 550$ MHz	–	4.5	5	dB
		$f = 750$ MHz	–	5	6	dB
		$f = 900$ MHz	–	6	7.5	dB
I_{tot}	total current consumption (DC)	note 9	405	420	435	mA

Notes

- Tilt = 9 dB (50 to 550 MHz)
tilt = 3.5 dB at –6 dB offset (550 to 750 MHz).
- Tilt = 12.5 dB (50 to 860 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.
- $f_p = 55.25$ MHz; $V_p = 44$ dBmV;
 $f_q = 691.25$ MHz; $V_q = 44$ dBmV;
measured at $f_p + f_q = 746.5$ MHz.
- $f_p = 55.25$ MHz; $V_p = 44$ dBmV;
 $f_q = 493.25$ MHz; $V_q = 44$ dBmV;
measured at $f_p + f_q = 548.5$ 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.
- 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.
- Measured according to DIN45004B:
 $f_p = 540.25$ MHz; $V_p = V_o$;
 $f_q = 547.25$ MHz; $V_q = V_o - 6$ dB;
 $f_r = 549.25$ MHz; $V_r = V_o - 6$ dB;
measured at $f_p + f_q - f_r = 538.25$ MHz.
- The module normally operates at $V_B = 24$ V, but is able to withstand supply transients up to 35 V.

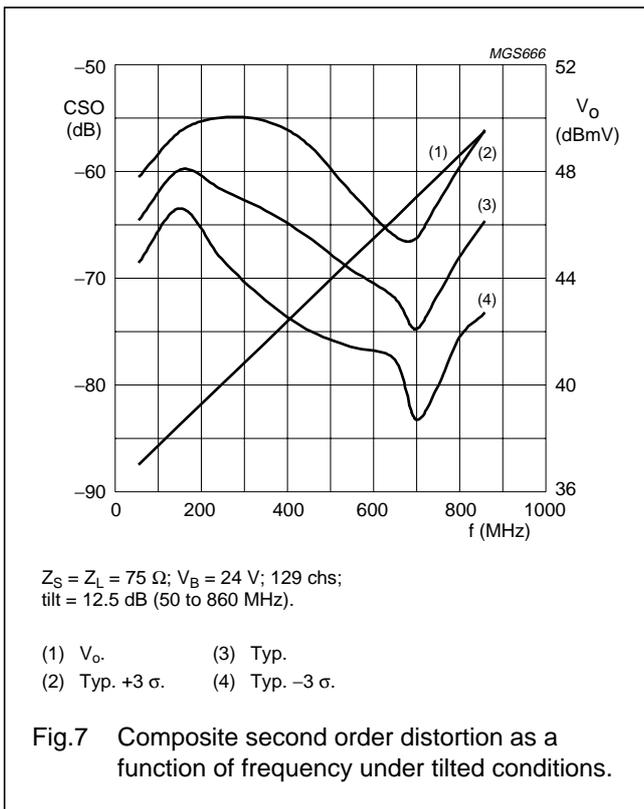
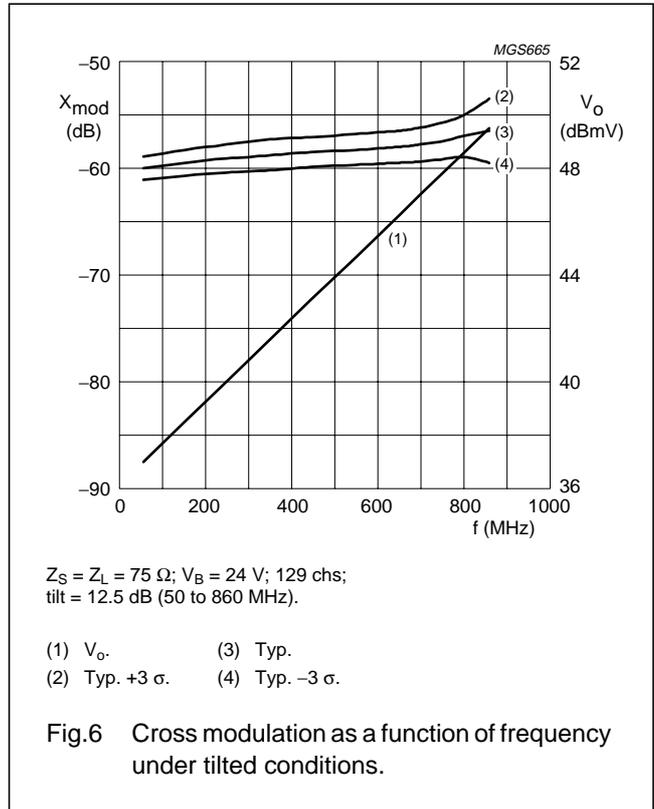
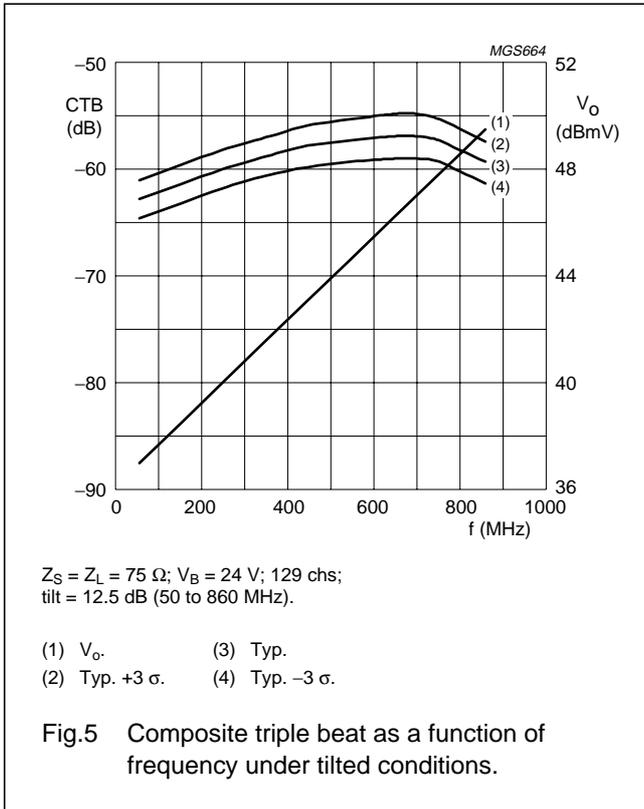
CATV amplifier modules

BGD906; BGD906MI



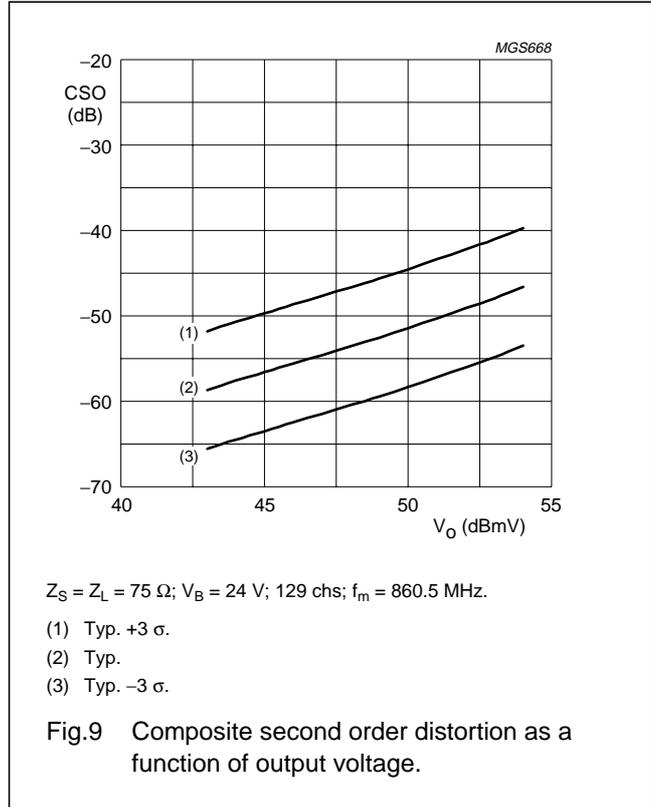
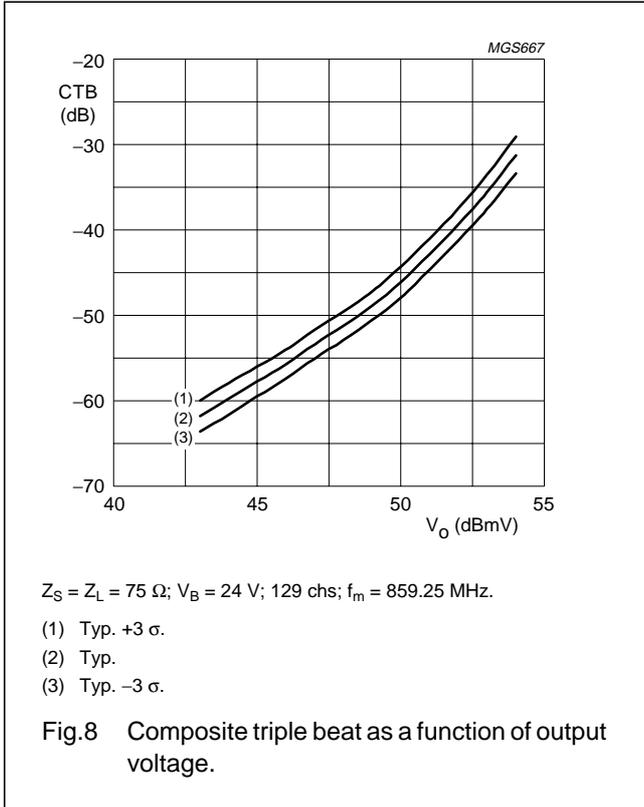
CATV amplifier modules

BGD906; BGD906MI



CATV amplifier modules

BGD906; BGD906MI



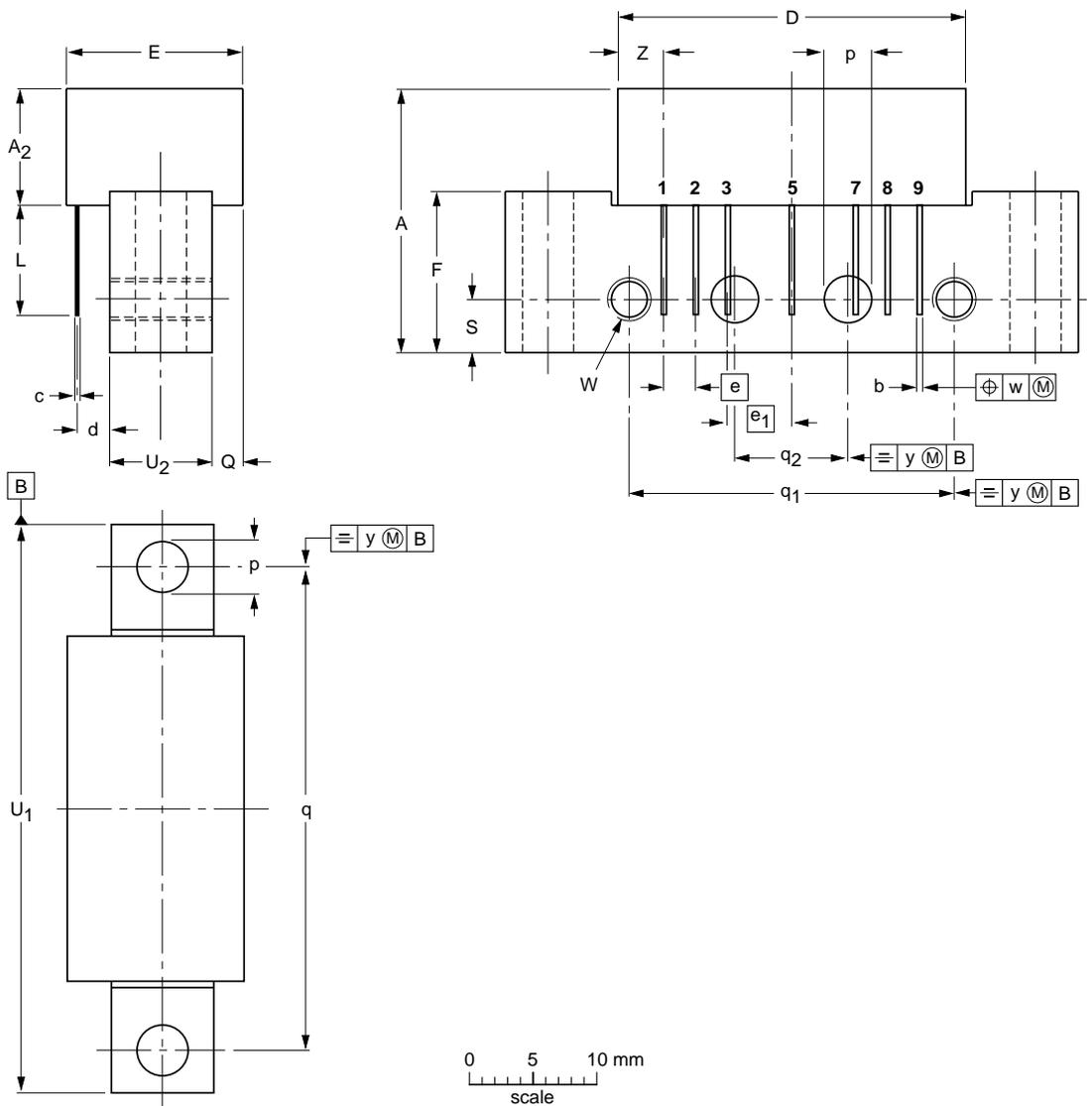
CATV amplifier modules

BGD906; BGD906MI

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

CATV amplifier modules

BGD906; BGD906MI

DATA SHEET STATUS

DATA SHEET STATUS	PRODUCT STATUS	DEFINITIONS ⁽¹⁾
Objective specification	Development	This data sheet contains the design target or goal specifications for product development. Specification may change in any manner without notice.
Preliminary specification	Qualification	This data sheet contains preliminary data, and supplementary data will be published at a later date. Philips Semiconductors reserves the right to make changes at any time without notice in order to improve design and supply the best possible product.
Product specification	Production	This data sheet contains final specifications. Philips Semiconductors reserves the right to make changes at any time without notice in order to improve design and supply the best possible product.

Note

1. Please consult the most recently issued data sheet before initiating or completing a design.

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CATV amplifier modules

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NOTES

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