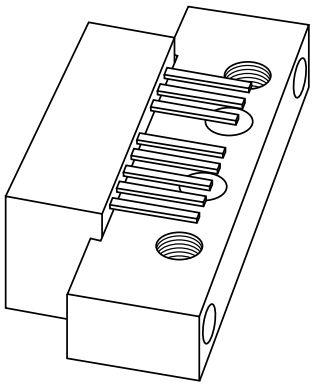
DATA SHEET



CGD923

870 MHz, 20 dB gain power doubler amplifier

Product specification

2002 Oct 08

870 MHz, 20 dB gain power doubler amplifier

CGD923

FEATURES

- High output capability
- Excellent linearity
- Extremely low noise
- Excellent return loss properties
- Rugged construction
- Gold metallization ensures excellent reliability
- Adjustable supply current.

APPLICATIONS

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

DESCRIPTION

Hybrid amplifier module in a SOT115AE package operating at a voltage supply of 24 V (DC), employing both GaAs and Si dies.

PINNING - SOT115AE

PIN	DESCRIPTION
1	input
2 and 3	common
4	$I_{DC\ adjust}$
5	$+V_B$
7 and 8	common
9	output

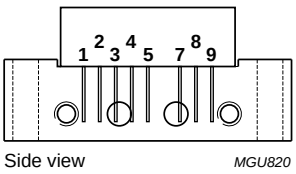


Fig.1 Simplified outline.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
G_p	power gain	f = 45 MHz	19.25	19.75	dB
		f = 870 MHz	19.5	20.5	dB
I_{tot}	total current consumption (DC)	V_B = 24 V	–	–	
		pin 4 not connected	460	490	mA
		pin 4 connected to ground	385	415	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			
	single tone	–	70	dBmV
	132 channels flat	–	45	dBmV
T_{stg}	storage temperature	−40	+100	°C
T_{mb}	operating mounting base temperature	−20	+100	°C
$I_{DC\ adjust}$	DC current adjust	−10	0	mA

CHARACTERISTICS

Bandwidth 45 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	19.25	19.5	19.75	dB
		f = 870 MHz	19.5	20.0	20.5	dB
SL	slope straight line	f = 45 to 870 MHz	0.0	0.5	1.0	dB
FL	flatness straight line	f = 45 to 100 MHz	−0.2	–	+0.2	dB
		f = 100 to 800 MHz	−0.6	–	+0.4	dB
		f = 800 to 870 MHz	−0.45	–	+0.2	dB
s_{11}	input return losses	f = 40 to 80 MHz	20	–	–	dB
		f = 80 to 160 MHz	19	–	–	dB
		f = 160 to 320 MHz	18	–	–	dB
		f = 320 to 550 MHz	17	–	–	dB
		f = 550 to 870 MHz	16	–	–	dB
s_{22}	output return losses	f = 40 to 80 MHz	20	–	–	dB
		f = 80 to 160 MHz	19	–	–	dB
		f = 160 to 320 MHz	18	–	–	dB
		f = 320 to 550 MHz	17	–	–	dB
		f = 550 to 870 MHz	16	–	–	dB
s_{21}	phase response	f = 50 MHz	−45	–	+45	deg
s_{12}	reverse isolation	RF_{out} to RF_{in}	–	–	22	dB
NF	noise figure	f = 50 MHz	–	–	5	dB
		f = 870 MHz	–	–	5.5	dB
Pin 4 not connected						
I_{tot}	total current consumption (DC)	note 2	460	475	490	mA
CTB	composite triple beat	79 chs; f_m = 445.25 MHz; note 1	–	–	−64	dB
		79 chs flat; V_o = 50 dBmV; f_m = 547.25 MHz	–	–	−64	dB
		132 chs flat; V_o = 48 dBmV; f_m = 745.25 MHz	–	–	−56	dB
X_{mod}	cross modulation	79 chs; f_m = 55.25 MHz; note 1	–	–	−57	dB
		79 chs flat; V_o = 50 dBmV; f_m = 55.25 MHz	–	–	−57	dB
		132 chs flat; V_o = 48 dBmV; f_m = 55.25 MHz	–	–	−57	dB
CSO_{sum}	composite second order distortion (sum)	79 chs; f_m = 446.5 MHz; note 1	–	–	−60	dB
		79 chs flat; V_o = 50 dBmV; f_m = 548.5 MHz	–	–	−60	dB
		132 chs flat; V_o = 48 dBmV; f_m = 860.5 MHz	–	–	−54	dB
CSO_{diff}	composite second order distortion (diff)	79 chs; f_m = 150 MHz; note 1	–	–	−60	dB
		79 chs flat; V_o = 50 dBmV; f_m = 150 MHz	–	–	−60	dB
		132 chs flat; V_o = 48 dBmV; f_m = 150 MHz	–	–	−56	dB

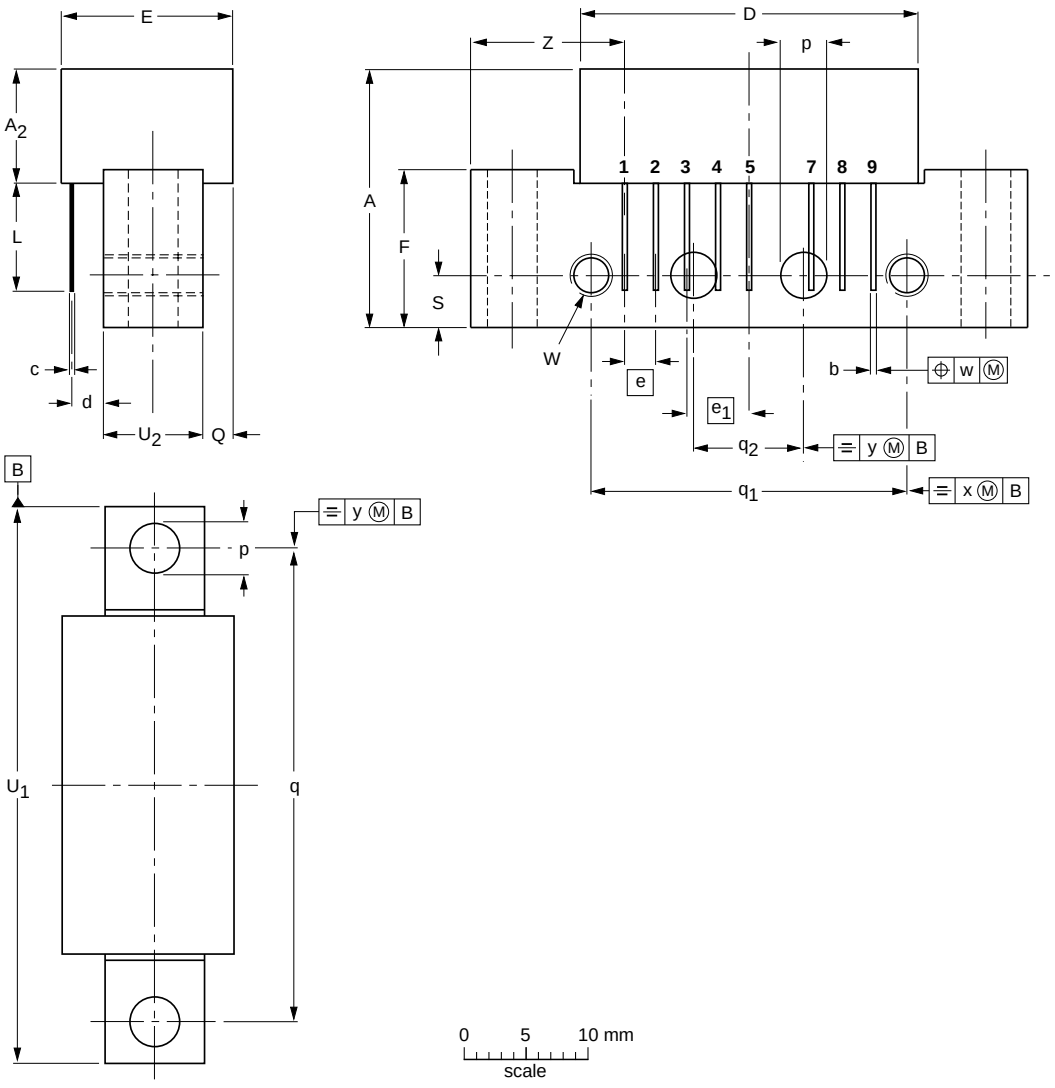
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Pin 4 connected to ground						
I_{tot}	total current consumption (DC)	note 3	395	400	415	mA
CTB	composite triple beat	79 chs; fm = 445.25 MHz; notes 1 and 3	–	–	–62	dB
		79 chs flat; V_o = 50 dBmV; f_m = 547.25 MHz	–	–	–62	dB
		132 chs flat; V_o = 48 dBmV; f_m = 745.25 MHz	–	–	–54	dB
X_{mod}	cross modulation	79 chs; f_m = 55.25 MHz; notes 1 and 3	–	–	–55	dB
		79 chs flat; V_o = 50 dBmV; f_m = 55.25 MHz	–	–	–55	dB
		132 chs flat; V_o = 48 dBmV; f_m = 55.25 MHz	–	–	–55	dB
CSO Sum	composite second order distortion (sum)	79 chs; f_m = 446.5 MHz; notes 1 and 3	–	–	–60	dB
		79 chs flat; V_o = 50 dBmV; f_m = 548.5 MHz	–	–	–60	dB
		132 chs flat; V_o = 48 dBmV; f_m = 860.5 MHz	–	–	–54	dB
CSO Diff	composite second order distortion (diff)	79 chs; f_m = 150 MHz; notes 1 and 3	–	–	–60	dB
		79 chs flat; V_o = 50 dBmV; f_m = 150 MHz	–	–	–60	dB
		132 chs flat; V_o = 48 dBmV; f_m = 150 MHz	–	–	–56	dB

Notes

1. V_o = 58 dBmV at 870 MHz; Tilt = 7.3 dB (55 to 547 MHz) extrapolated to 12 dB at 870 MHz.
2. Pin 4 is not connected.
3. Pin 4 connected to ground.

PACKAGE OUTLINE

Rectangular single-ended package; aluminium flange; 2 vertical mounting holes; 2 x 6-32 UNC and 2 extra horizontal mounting holes; 8 gold-plated in-line leads **SOT115AE**



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	U_2	W	w	x	y	Z max.
mm	20.8	9.5	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 44.25	8.2 7.8	6-32 UNC	0.25	0.7	0.1	12

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT115AE						~~04-02-04~~ 10-06-18

DATA SHEET STATUS

DOCUMENT STATUS[1]	PRODUCT STATUS[2]	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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