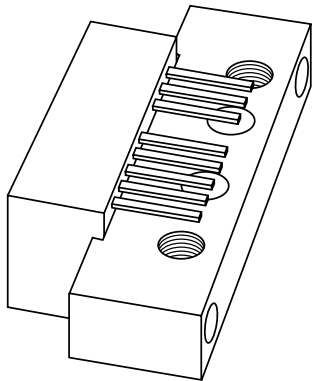


DATA SHEET



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

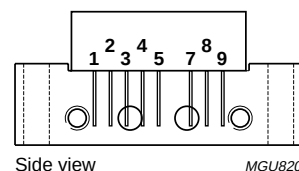


Fig.1 Simplified outline.

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

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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

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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; $f_m = 445.25$ 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

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

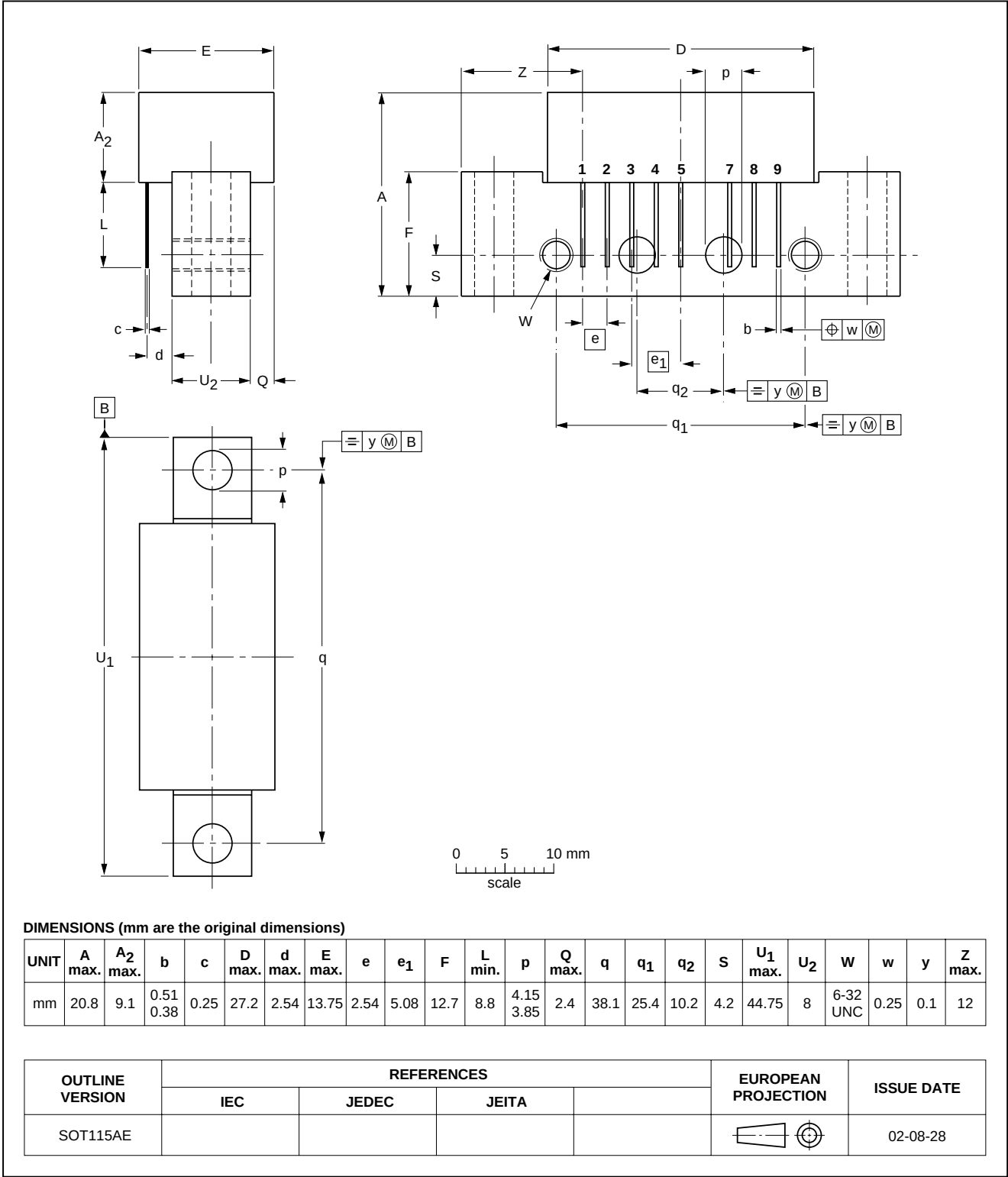
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PACKAGE OUTLINE

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

SOT115AE



870 MHz, 20 dB gain power doubler amplifier

CGD923

DATA SHEET STATUS

LEVEL	DATA SHEET STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾⁽³⁾	DEFINITION
I	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.
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CAUTION
This product is supplied in anti-static packing to prevent damage caused by electrostatic discharge during transport and handling. For further information, refer to Philips specs.: SNW-EQ-608, SNW-FQ-302A, and SNW-FQ-302B.

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Contact information

For additional information please visit **<http://www.semiconductors.philips.com>**. Fax: **+31 40 27 24825**

For sales offices addresses send e-mail to: **sales.addresses@www.semiconductors.philips.com**.

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