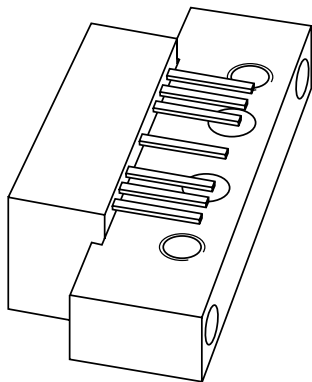


# DATA SHEET



## **CGY887**

**870 MHz, 21.5 dB gain  
push-pull amplifier**

Product specification  
Supersedes data of 2002 June 07

2002 Jun 27

# 870 MHz, 21.5 dB gain push-pull amplifier

CGY887

## FEATURES

- Superior linearity
- Extremely low noise
- Rugged construction
- Gold metallization ensures excellent reliability
- Excellent gain behaviour over temperature.

## APPLICATIONS

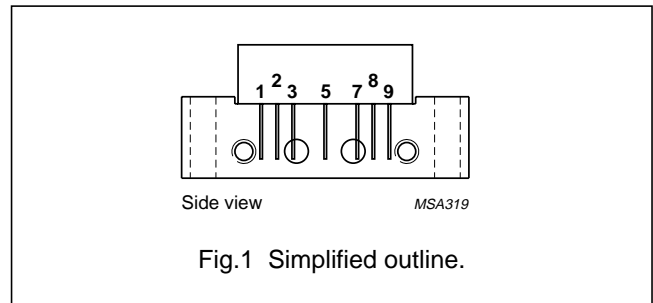
- CATV systems operating in the 40 to 870 MHz frequency range.

## DESCRIPTION

Hybrid dynamic range amplifier module in a SOT115J package operating with a voltage supply of 24 V (DC), employing both GaAs and Si dies.

## PINNING - SOT115J

PIN	DESCRIPTION
1	input
2	common
3	common
5	+V <sub>B</sub>
7	common
8	common
9	output



## QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
G <sub>p</sub>	power gain	f = 50 MHz	21.2	21.8	dB
		f = 870 MHz	22	23	dB
I <sub>tot</sub>	total current consumption (DC)	V <sub>B</sub> = 24 V	–	240	mA

## LIMITING VALUES

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

SYMBOL	PARAMETER	MIN.	MAX.	UNIT
V <sub>i</sub>	RF input voltage	–	75	dBmV
T <sub>stg</sub>	storage temperature	–40	+100	°C
T <sub>mb</sub>	operating mounting base temperature	–20	+100	°C

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**CHARACTERISTICS**Bandwidth 40 to 870 MHz;  $V_B = 24$  V;  $T_{mb} = 35$  °C;  $Z_S = Z_L = 75$   $\Omega$ 

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
G <sub>p</sub>	power gain	f = 45 MHz	21.2	21.8	dB
		f = 870 MHz	22	23	dB
SL	slope straight line	f = 45 to 870 MHz; note 1	0.6	1.4	dB
FL	flatness straight line	f = 45 to 100 MHz	–	±0.3	dB
		f = 100 to 800 MHz	–	±0.5	dB
		f = 800 to 870 MHz	–	±0.3	dB
S <sub>11</sub>	input return losses	f = 45 to 80 MHz	20	–	dB
		f = 80 to 160 MHz	20	–	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	17	–	dB
		f = 750 to 870 MHz	17	–	dB
S <sub>22</sub>	output return losses	f = 45 to 80 MHz	21	–	dB
		f = 80 to 160 MHz	19	–	dB
		f = 160 to 320 MHz	17	–	dB
		f = 320 to 550 MHz	16	–	dB
		f = 550 to 650 MHz	16	–	dB
		f = 650 to 750 MHz	16	–	dB
		f = 750 to 870 MHz	16	–	dB
S <sub>21</sub>	phase response	f = 50 MHz	–45	+45	deg
CTB	composite triple beat	79 chs flat; V <sub>o</sub> = 44 dBmV; f <sub>m</sub> = 547.25 MHz	–	–57	dB
		112 chs flat; V <sub>o</sub> = 44 dBmV; f <sub>m</sub> = 745.25 MHz	–	–55	dB
		132 chs flat; V <sub>o</sub> = 42 dBmV; f <sub>m</sub> = 859.25 MHz	–	–55	dB
X <sub>mod</sub>	cross modulation	79 chs flat; V <sub>o</sub> = 44 dBmV; f <sub>m</sub> = 55.25 MHz	–	–53	dB
		112 chs flat; V <sub>o</sub> = 44 dBmV; f <sub>m</sub> = 55.25 MHz	–	–50	dB
		132 chs flat; V <sub>o</sub> = 42 dBmV; f <sub>m</sub> = 55.25 MHz	–	–52	dB
CSO	composite second order distortion	79 chs flat; V <sub>o</sub> = 44 dBmV; f <sub>m</sub> = 548.5 MHz	–	–60	dB
		CSO <sub>sum</sub> 112 chs flat; V <sub>o</sub> = 44 dBmV; f <sub>m</sub> = 746.5 MHz	–	–55	dB
		CSO <sub>dif</sub> 112 chs flat; V <sub>o</sub> = 44 dBmV; f <sub>m</sub> = 150 MHz	–	–65	dB
		CSO <sub>sum</sub> 132 chs flat; V <sub>o</sub> = 42 dBmV; f <sub>m</sub> = 860.5 MHz	–	–55	dB
		CSO <sub>dif</sub> 132 chs flat; V <sub>o</sub> = 42 dBmV; f <sub>m</sub> = 150 MHz	–	–65	dB
d <sub>2</sub>	second order distortion	note 2	–	–58	dB
		note 3	–	–57	dB
		note 4	–	–57	dB
V <sub>o</sub>	output voltage	d <sub>im</sub> = –60 dB; note 5	64	–	dBmV
		d <sub>im</sub> = –60 dB; note 6	63	–	dBmV
		d <sub>im</sub> = –60 dB; note 7	62	–	dBmV

## 870 MHz, 21.5 dB gain push-pull amplifier

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SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
NF	noise figure	f = 50 MHz	–	5.5	dB
		f = 100 MHz to f = 870 MHz	–	5	dB
I <sub>tot</sub>	total current consumption (DC)	note 8	–	240	mA

**Notes**

- Slope straight line is defined as gain at 870 MHz against gain at 45 MHz.
- f<sub>p</sub> = 55.25 MHz; V<sub>p</sub> = 60 dBmV;  
f<sub>q</sub> = 493.25 MHz; V<sub>q</sub> = 60 dBmV;  
measured at f<sub>p</sub> + f<sub>q</sub> = 548.5 MHz.
- f<sub>p</sub> = 55.25 MHz; V<sub>p</sub> = 60 dBmV;  
f<sub>q</sub> = 691.25 MHz; V<sub>q</sub> = 60 dBmV;  
measured at f<sub>p</sub> + f<sub>q</sub> = 746.5 MHz.
- f<sub>p</sub> = 55.25 MHz; V<sub>p</sub> = 60 dBmV;  
f<sub>q</sub> = 805.25 MHz; V<sub>q</sub> = 60 dBmV;  
measured at f<sub>p</sub> + f<sub>q</sub> = 860.5 MHz.
- Measured according to DIN45004B:  
f<sub>p</sub> = 540.25 MHz; V<sub>p</sub> = V<sub>o</sub>;  
f<sub>q</sub> = 547.25 MHz; V<sub>q</sub> = V<sub>o</sub> – 6 dB;  
f<sub>r</sub> = 549.25 MHz; V<sub>r</sub> = V<sub>o</sub> – 6 dB;  
measured at f<sub>p</sub> + f<sub>q</sub> – f<sub>r</sub> = 538.25 MHz.
- Measured according to DIN45004B:  
f<sub>p</sub> = 740.25 MHz; V<sub>p</sub> = V<sub>o</sub>;  
f<sub>q</sub> = 747.25 MHz; V<sub>q</sub> = V<sub>o</sub> – 6 dB;  
f<sub>r</sub> = 749.25 MHz; V<sub>r</sub> = V<sub>o</sub> – 6 dB;  
measured at f<sub>p</sub> + f<sub>q</sub> – f<sub>r</sub> = 738.25 MHz.
- Measured according to DIN45004B:  
f<sub>p</sub> = 851.25 MHz; V<sub>p</sub> = V<sub>o</sub>;  
f<sub>q</sub> = 858.25 MHz; V<sub>q</sub> = V<sub>o</sub> – 6 dB;  
f<sub>r</sub> = 860.25 MHz; V<sub>r</sub> = V<sub>o</sub> – 6 dB;  
measured at f<sub>p</sub> + f<sub>q</sub> – f<sub>r</sub> = 849.25 MHz.
- The module normally operates at V<sub>B</sub> = 24 V, but is able to withstand supply transients up to 30 V.

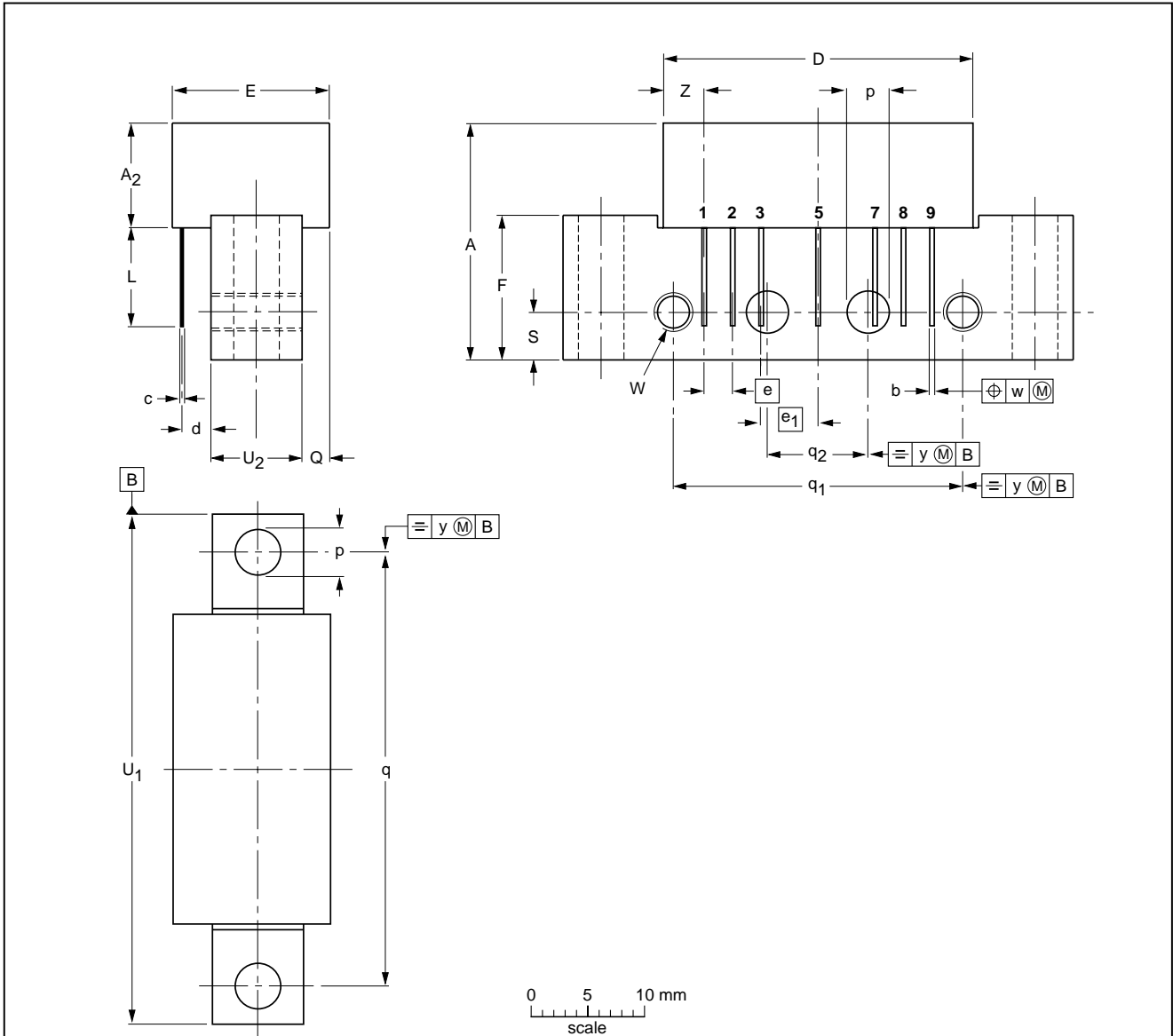
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PACKAGE OUTLINE

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 <sub>2</sub> max.	b	c	D max.	d max.	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> max.	U <sub>2</sub>	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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## DATA SHEET STATUS

DATA SHEET STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)</sup>	DEFINITIONS
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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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**NOTES**

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