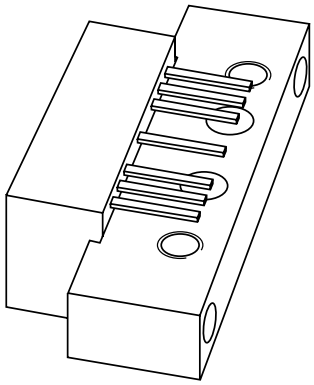
DATA SHEET



CGY887
870 MHz, 21.5 dB gain push-pull amplifier

Product specification
Supersedes data of 2002 June 07

2002 Jun 27

Philips Semiconductors

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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	$+V_B$
7	common
8	common
9	output

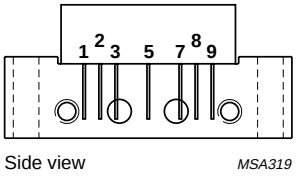


Fig.1 Simplified outline.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
G_p	power gain	f = 50 MHz	21.2	21.8	dB
		f = 870 MHz	22	23	dB
I_{tot}	total current consumption (DC)	V_B = 24 V	–	240	mA

LIMITING VALUES

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

SYMBOL	PARAMETER	MIN.	MAX.	UNIT
V_i	RF input voltage	–	75	dBmV
T_{stg}	storage temperature	–40	+100	°C
T_{mb}	operating mounting base temperature	–20	+100	°C

CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
G_p	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_{11}	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_{22}	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_{21}	phase response	f = 50 MHz	–45	+45	deg
CTB	composite triple beat	79 chs flat; V_o = 44 dBmV; f_m = 547.25 MHz	–	–57	dB
		112 chs flat; V_o = 44 dBmV; f_m = 745.25 MHz	–	–55	dB
		132 chs flat; V_o = 42 dBmV; f_m = 859.25 MHz	–	–55	dB
X_{mod}	cross modulation	79 chs flat; V_o = 44 dBmV; f_m = 55.25 MHz	–	–53	dB
		112 chs flat; V_o = 44 dBmV; f_m = 55.25 MHz	–	–50	dB
		132 chs flat; V_o = 42 dBmV; f_m = 55.25 MHz	–	–52	dB
CSO	composite second order distortion	79 chs flat; V_o = 44 dBmV; f_m = 548.5 MHz	–	–60	dB
		CSO_{sum} 112 chs flat; V_o = 44 dBmV; f_m = 746.5 MHz	–	–55	dB
		CSO_{dif} 112 chs flat; V_o = 44 dBmV; f_m = 150 MHz	–	–65	dB
		CSO_{sum} 132 chs flat; V_o = 42 dBmV; f_m = 860.5 MHz	–	–55	dB
		CSO_{dif} 132 chs flat; V_o = 42 dBmV; f_m = 150 MHz	–	–65	dB
d_2	second order distortion	note 2	–	–58	dB
		note 3	–	–57	dB
		note 4	–	–57	dB
V_o	output voltage	d_{im} = –60 dB; note 5	64	–	dBmV
		d_{im} = –60 dB; note 6	63	–	dBmV
		d_{im} = –60 dB; note 7	62	–	dBmV

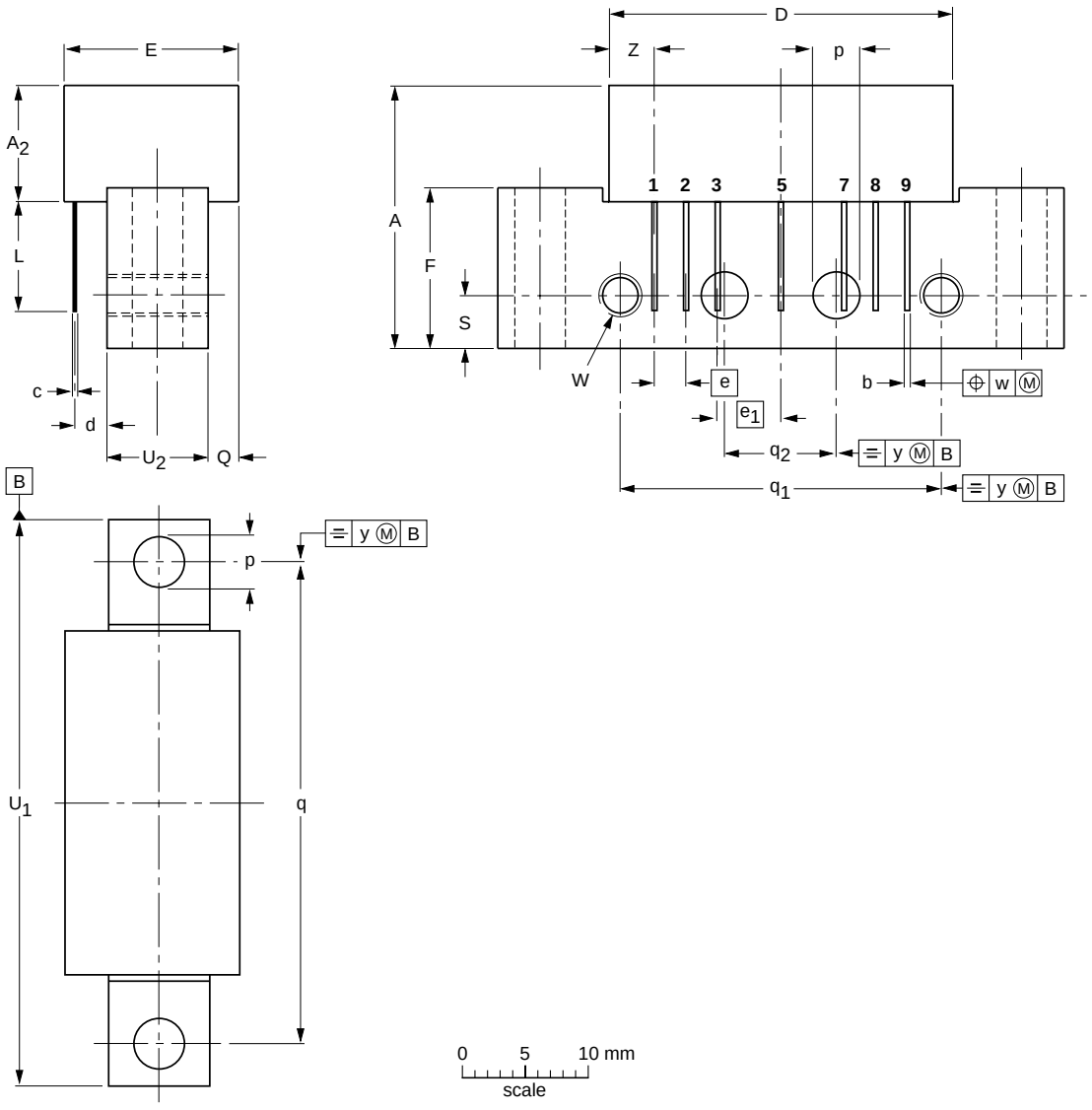
SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
NF	noise figure	f = 50 MHz	–	5.5	dB
		f = 100 MHz to f = 870 MHz	–	5	dB
I_{tot}	total current consumption (DC)	note 8	–	240	mA

Notes

1. Slope straight line is defined as gain at 870 MHz against gain at 45 MHz.
2. f_p = 55.25 MHz; V_p = 60 dBmV;
   f_q = 493.25 MHz; V_q = 60 dBmV;
   measured at $f_p + f_q$ = 548.5 MHz.
3. f_p = 55.25 MHz; V_p = 60 dBmV;
   f_q = 691.25 MHz; V_q = 60 dBmV;
   measured at $f_p + f_q$ = 746.5 MHz.
4. f_p = 55.25 MHz; V_p = 60 dBmV;
   f_q = 805.25 MHz; V_q = 60 dBmV;
   measured at $f_p + f_q$ = 860.5 MHz.
5. 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.
6. 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.
7. 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.
8. The module normally operates at V_B = 24 V, but is able to withstand supply transients up to 30 V.

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

DATA SHEET STATUS

DATA SHEET STATUS[1]	PRODUCT STATUS[2]	DEFINITIONS
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.
Preliminary data	Qualification	This data sheet contains data from the preliminary specification. Supplementary data will be published at a later date. Philips Semiconductors reserves the right to change the specification without notice, in order to improve the design and supply the best possible product.
Product data	Production	This data sheet contains data from the product specification. Philips Semiconductors reserves the right to make changes at any time in order to improve the design, manufacturing and supply. Changes will be communicated according to the Customer Product/Process Change Notification (CPCN) procedure SNW-SQ-650A.

Notes

1. Please consult the most recently issued data sheet before initiating or completing a design.
2. The product status of the device(s) described in this data sheet may have changed since this data sheet was published. The latest information is available on the Internet at URL http://www.semiconductors.philips.com.

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Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). 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.

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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.

NOTES

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