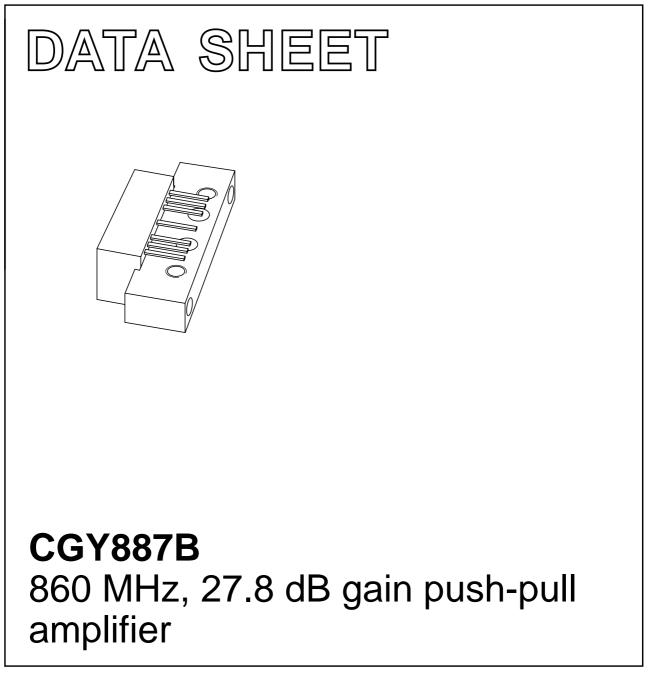
DISCRETE SEMICONDUCTORS



Product specification

2001 Nov 27



FEATURES

- Excellent linearity
- High gain
- Extremely low noise
- Excellent return loss properties
- Rugged construction
- Gold metallization ensures excellent reliability.

APPLICATIONS

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

DESCRIPTION

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

PINNING - SOT115J

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

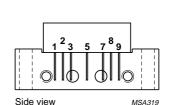


Fig.1 Simplified outline.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
G _p	power gain	f = 45 MHz	27.2	27.8	dB
		f = 870 MHz	28	29	dB
I _{tot}	total current consumption (DC)	V _B = 24 V	295	325	mA

LIMITING VALUES

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

SYMBOL	PARAMETER		MAX.	UNIT
V _B	supply voltage	_	30	V
V _i	RF input voltage (single tone)		70	dBmV
T _{stg}	storage temperature		+100	°C
T _{mb}	operating mounting base temperature	-20	+100	°C

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CHARACTERISTICS

Bandwidth 45 to 870 MHz; V_B = 24 V; T_mb = 35 °C; Z_S = Z_L = 75 $\Omega.$

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Gp	power gain	f = 45 MHz	27.2	27.5	27.8	dB
·		f = 870 MHz	28	28.5	29	dB
SL	slope straight line	f = 45 to 870 MHz		1	1.5	dB
FL	flatness straight line	f = 45 to 100 MHz	-0.25	-	+0.25	dB
		f = 100 to 800 MHz	-0.5	-	+0.5	dB
		f = 800 to 870 MHz	-0.4	-	+0.1	dB
s ₁₁	input return losses	f = 40 to 80 MHz	24	_	_	dB
		f = 80 to 160 MHz	22	_	_	dB
		f = 160 to 320 MHz	19	-	_	dB
		f = 320 to 550 MHz	18	_	_	dB
		f = 550 to 650 MHz	17	-	_	dB
		f = 650 to 750 MHz	16	-	-	dB
		f = 750 to 870 MHz	14	_	_	dB
		f = 870 to 914 MHz	12	-	_	dB
\$ ₂₂	output return losses	f = 40 to 80 MHz	23	-	-	dB
		f = 80 to 160 MHz	22	_	_	dB
		f = 160 to 320 MHz	18	-	_	dB
		f = 320 to 550 MHz	17	-	-	dB
		f = 550 to 650 MHz	17	_	_	dB
		f = 650 to 750 MHz	17	-	_	dB
		f = 750 to 870 MHz	14	-	-	dB
		f = 870 to 914 MHz	12	-	_	dB
s ₂₁	phase response	f = 50 MHz	-45	-	+45	deg
СТВ	composite triple beat	79 chs flat; $V_0 = 44 \text{ dBmV}$; $f_m = 331.25 \text{ MHz}$	-	-	-63.5	dB
		132 chs flat; $V_0 = 44 \text{ dBmV}$; $f_m = 445.25 \text{ MHz}$	-	-	-57.5	dB
X _{mod}	cross modulation	79 chs flat; $V_o = 44 \text{ dBmV}$; $f_m = 55.25 \text{ MHz}$	-	-	-57	dB
		132 chs flat; $V_o = 44 \text{ dBmV}$; $f_m = 55.25 \text{ MHz}$	-	-	-51	dB
CSO	composite second order distortion	79 chs flat; $V_0 = 44 \text{ dBmV}$; $f_m = 54.0 \text{ MHz}$	-	-	-64	dB
		132 chs flat; V _o = 44 dBmV; f _m = 860.5 MHz	-	-	-58	dB
NF	noise figure	f = 50 MHz	-	-	5	dB
		f = 550 MHz	-	-	5	dB
		f = 750 MHz	-	-	5	dB
		f = 870 MHz	-	_	5	dB
d ₂	second order distortion	note 1	-	_	-60	dB
		note 2	_	_	-57	dB

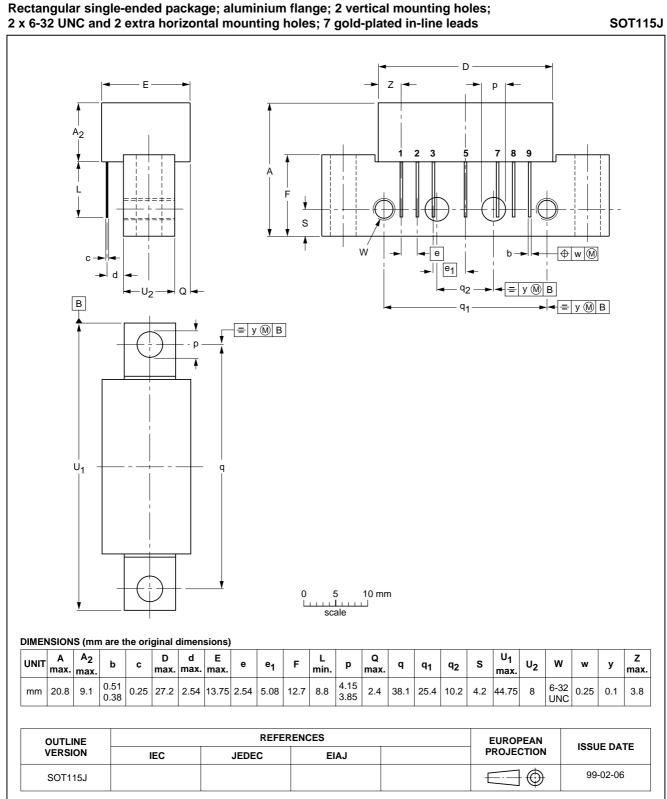
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SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Vo	output voltage	$d_{im} = -60 \text{ dB}; \text{ note } 3$	66	_	_	dBmV
		$d_{im} = -60 \text{ dB}; \text{ note } 4$	64	—	_	dBmV
I _{tot}	total current consumption (DC)	note 5	295	310	325	mA

Notes

- 1. $f_p = 55.25 \text{ MHz}$; $V_p = 60 \text{ dBmV}$; $f_q = 493.25 \text{ MHz}$; $V_q = 60 \text{ dBmV}$; measured at $f_p + f_q = 548.5 \text{ MHz}$.
- 2. $f_p = 55.25 \text{ MHz}; V_p = 60 \text{ dBmV}; f_q = 805.25 \text{ MHz}; V_q = 60 \text{ dBmV}; \text{ measured at } f_p + f_q = 860.5 \text{ MHz}.$
- 3. 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.
- 4. 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.
- 5. The module normally operates at $V_B = 24$ V, but is able to withstand supply transients up to 30 V.

PACKAGE OUTLINE



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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.
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Notes

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- 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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Short-form specification — The data in a short-form specification is extracted from a full data sheet with the same type number and title. For detailed information see the relevant data sheet or data handbook.

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.

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NOTES

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