

# BGY585A

550 MHz, 18.2 dB gain push-pull amplifier

Rev. 05 — 24 January 2005

Product data sheet

## 1. Product profile

### 1.1 General description

Hybrid amplifier module for CATV systems operating over a frequency range of 40 MHz to 550 MHz at a voltage supply of 24 V (DC). Intended for use as a final amplifier.

### 1.2 Features

- Excellent linearity
- Extremely low noise
- Silicon nitride passivation
- Rugged construction
- Optimal reliability ensured by TiPtAu metallized crystals

### 1.3 Quick reference data

Table 1: Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$G_p$	power gain	$f = 50 \text{ MHz}$	17.7	-	18.7	dB
		$f = 550 \text{ MHz}$	18.8	-	20	dB
$I_{\text{tot}}$	total current consumption (DC)	$V_B = 24 \text{ V}$	-	220	240	mA

## 2. Pinning information

Table 2: Pinning

Pin	Description	Simplified outline	Symbol
1	input		
2	common		
3	common		
5	+ $V_B$		
7	common		
8	common		
9	output		

### 3. Ordering information

**Table 3: Ordering information**

Type number	Package		Version
	Name	Description	
BGY585A	-	rectangular single-ended package; aluminium flange; 2 vertical mounting holes; 2 × 6-32 UNC and 2 extra horizontal mounting holes; 7 gold-plated in-line leads	SOT115J

### 4. Limiting values

**Table 4: Limiting values**

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

Symbol	Parameter	Conditions	Min	Max	Unit
$V_i$	RF input voltage		-	65	dBmV
$T_{stg}$	storage temperature		-40	+100	°C
$T_{case}$	case operating temperature		-20	+100	°C

### 5. Characteristics

**Table 5: Characteristics**

$T_{case} = 30\text{ °C}$ ;  $Z_S = Z_L = 75\ \Omega$ .

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Bandwidth 40 MHz to 550 MHz</b>						
$G_p$	power gain	$f = 50\text{ MHz}$	17.7	-	18.7	dB
		$f = 550\text{ MHz}$	18.8	-	20	dB
SL	slope cable equivalent	$f = 40\text{ MHz to }550\text{ MHz}$	0.5	-	2	dB
FL	flatness of frequency response	$f = 40\text{ MHz to }550\text{ MHz}$	-	-	±0.2	dB
$S_{11}$	input return losses	$f = 40\text{ MHz to }80\text{ MHz}$	20	-	-	dB
		$f = 80\text{ MHz to }160\text{ MHz}$	19	-	-	dB
		$f = 160\text{ MHz to }550\text{ MHz}$	18	-	-	dB
$S_{22}$	output return losses	$f = 40\text{ MHz to }80\text{ MHz}$	20	-	-	dB
		$f = 80\text{ MHz to }160\text{ MHz}$	19	-	-	dB
		$f = 160\text{ MHz to }550\text{ MHz}$	18	-	-	dB
CTB	composite triple beat	77 channels flat; $V_o = 44\text{ dBmV}$ ; measured at 547.25 MHz	-	-	-59	dB
$X_{mod}$	cross modulation	77 channels flat; $V_o = 44\text{ dBmV}$ ; measured at 55.25 MHz	-	-	-62	dB
CSO	composite second order distortion	77 channels flat; $V_o = 44\text{ dBmV}$ ; measured at 548.5 MHz	-	-	-59	dB
$d_2$	second order distortion		[1] -	-	-72	dB
$V_o$	output voltage	$d_{im} = -60\text{ dB}$	[2] 61.5	-	-	dBmV
F	noise figure	$f = 550\text{ MHz}$	-	-	8	dB
$I_{tot}$	total current consumption (DC)	$V_B = 24\text{ V}$	[3] -	220	240	mA

**Table 5: Characteristics ...continued**

$T_{case} = 30\text{ }^{\circ}\text{C}$ ;  $Z_S = Z_L = 75\ \Omega$ .

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Bandwidth 40 MHz to 450 MHz</b>						
$G_p$	power gain	$f = 50\text{ MHz}$	17.7	-	18.7	dB
		$f = 450\text{ MHz}$	18.6	-	19.8	dB
SL	slope cable equivalent	$f = 40\text{ MHz to }450\text{ MHz}$	0.5	-	1.8	dB
FL	flatness of frequency response	$f = 40\text{ MHz to }450\text{ MHz}$	-	-	$\pm 0.2$	dB
$S_{11}$	input return losses	$f = 40\text{ MHz to }80\text{ MHz}$	20	-	-	dB
		$f = 80\text{ MHz to }160\text{ MHz}$	19	-	-	dB
		$f = 160\text{ MHz to }450\text{ MHz}$	18	-	-	dB
$S_{22}$	output return losses	$f = 40\text{ MHz to }80\text{ MHz}$	20	-	-	dB
		$f = 80\text{ MHz to }160\text{ MHz}$	19	-	-	dB
		$f = 160\text{ MHz to }450\text{ MHz}$	18	-	-	dB
CTB	composite triple beat	60 channels flat; $V_o = 46\text{ dBmV}$ ; measured at 445.25 MHz	-	-	-61	dB
$X_{mod}$	cross modulation	60 channels flat; $V_o = 46\text{ dBmV}$ ; measured at 55.25 MHz	-	-	-61	dB
CSO	composite second order distortion	60 channels flat; $V_o = 46\text{ dBmV}$ ; measured at 446.5 MHz	-	-	-61	dB
$d_2$	second order distortion		[4] -	-	-75	dB
$V_o$	output voltage	$d_{im} = -60\text{ dB}$	[5] 64	-	-	dBmV
F	noise figure	$f = 450\text{ MHz}$	-	-	7	dB
$I_{tot}$	total current consumption (DC)	$V_B = 24\text{ V}$	[3] -	220	240	mA

[1]  $f_p = 55.25\text{ MHz}$ ;  $V_p = 44\text{ dBmV}$ ;  $f_q = 493.25\text{ MHz}$ ;  $V_q = 44\text{ dBmV}$ ; measured at  $f_p + f_q = 548.5\text{ MHz}$ .

[2] Measured according to DIN45004B;  $f_p = 540.25\text{ MHz}$ ;  $V_p = V_o$ ;  $f_q = 547.25\text{ MHz}$ ;  $V_q = V_o - 6\text{ dB}$ ;  $f_r = 549.25\text{ MHz}$ ;  $V_r = V_o - 6\text{ dB}$ ; measured at  $f_p + f_q - f_r = 538.25\text{ MHz}$ .

[3] The module normally operates at  $V_B = 24\text{ V}$ , but is able to withstand supply transients up to 30 V.

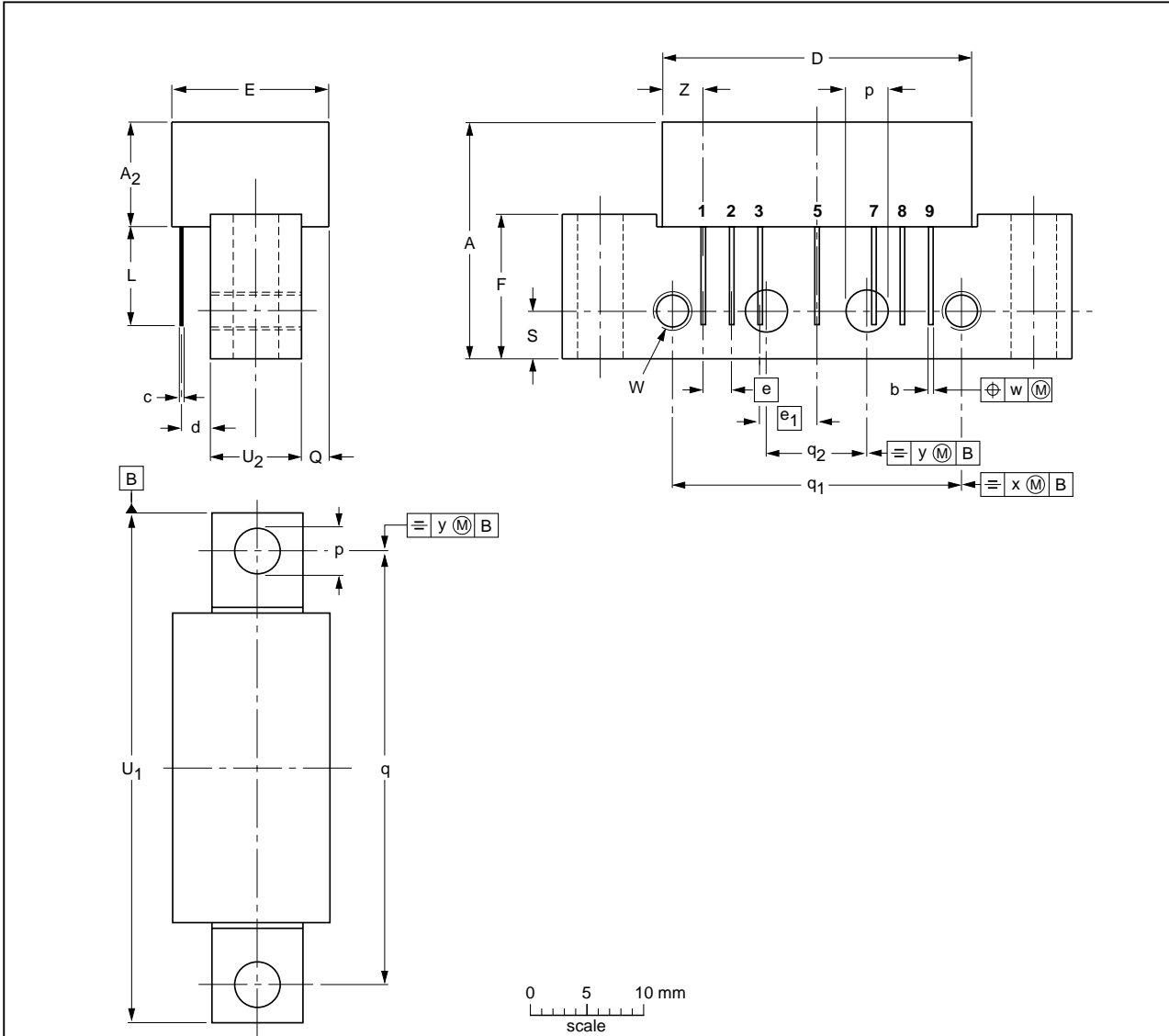
[4]  $f_p = 55.25\text{ MHz}$ ;  $V_p = 46\text{ dBmV}$ ;  $f_q = 391.25\text{ MHz}$ ;  $V_q = 46\text{ dBmV}$ ; measured at  $f_p + f_q = 446.5\text{ MHz}$ .

[5] Measured according to DIN45004B;  $f_p = 440.25\text{ MHz}$ ;  $V_p = V_o$ ;  $f_q = 447.25\text{ MHz}$ ;  $V_q = V_o - 6\text{ dB}$ ;  $f_r = 449.25\text{ MHz}$ ;  $V_r = V_o - 6\text{ dB}$ ; measured at  $f_p + f_q - f_r = 438.25\text{ MHz}$ .

**6. 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>	U <sub>2</sub>	W	w	x	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 44.25	8.2 7.8	6-32 UNC	0.25	0.7	0.1	3.8

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT115J						99-02-06 04-02-04

Fig 1. Package outline SOT115J

## 7. Revision history

**Table 6: Revision history**

Document ID	Release date	Data sheet status	Change notice	Doc. number	Supersedes
BGY585A_5	20050124	Product data sheet	-	9397 750 14432	BGY585A_4
Modifications:	<ul style="list-style-type: none"><li>The format of this data sheet has been redesigned to comply with the new presentation and information standard of Philips Semiconductors.</li></ul>				
BGY585A_4	20011018	Product specification	-	9397 750 08802	BGY585A_3
BGY585A_3	19990326	Product specification	-	9397 750 06341	BGY585A_2

## 8. Data sheet status

Level	Data sheet status <sup>[1]</sup>	Product status <sup>[2]</sup> <sup>[3]</sup>	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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[3] For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

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For sales office addresses, send an email to: [sales.addresses@www.semiconductors.philips.com](mailto:sales.addresses@www.semiconductors.philips.com)

## 12. Contents

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<b>1</b>	<b>Product profile</b> .....	<b>1</b>
1.1	General description .....	1
1.2	Features .....	1
1.3	Quick reference data .....	1
<b>2</b>	<b>Pinning information</b> .....	<b>1</b>
<b>3</b>	<b>Ordering information</b> .....	<b>2</b>
<b>4</b>	<b>Limiting values</b> .....	<b>2</b>
<b>5</b>	<b>Characteristics</b> .....	<b>2</b>
<b>6</b>	<b>Package outline</b> .....	<b>4</b>
<b>7</b>	<b>Revision history</b> .....	<b>5</b>
<b>8</b>	<b>Data sheet status</b> .....	<b>6</b>
<b>9</b>	<b>Definitions</b> .....	<b>6</b>
<b>10</b>	<b>Disclaimers</b> .....	<b>6</b>
<b>11</b>	<b>Contact information</b> .....	<b>6</b>



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