

# BGY585A

550 MHz, 18.2 dB gain push-pull amplifier

Rev. 6 — 29 September 2010

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 and benefits

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

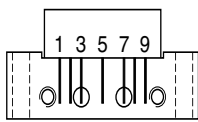
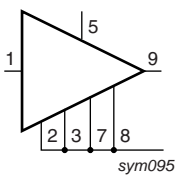
### 1.3 Quick reference data

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		 <small>sym095</small>
2	common		
3	common		
5	+V <sub>B</sub>		
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.

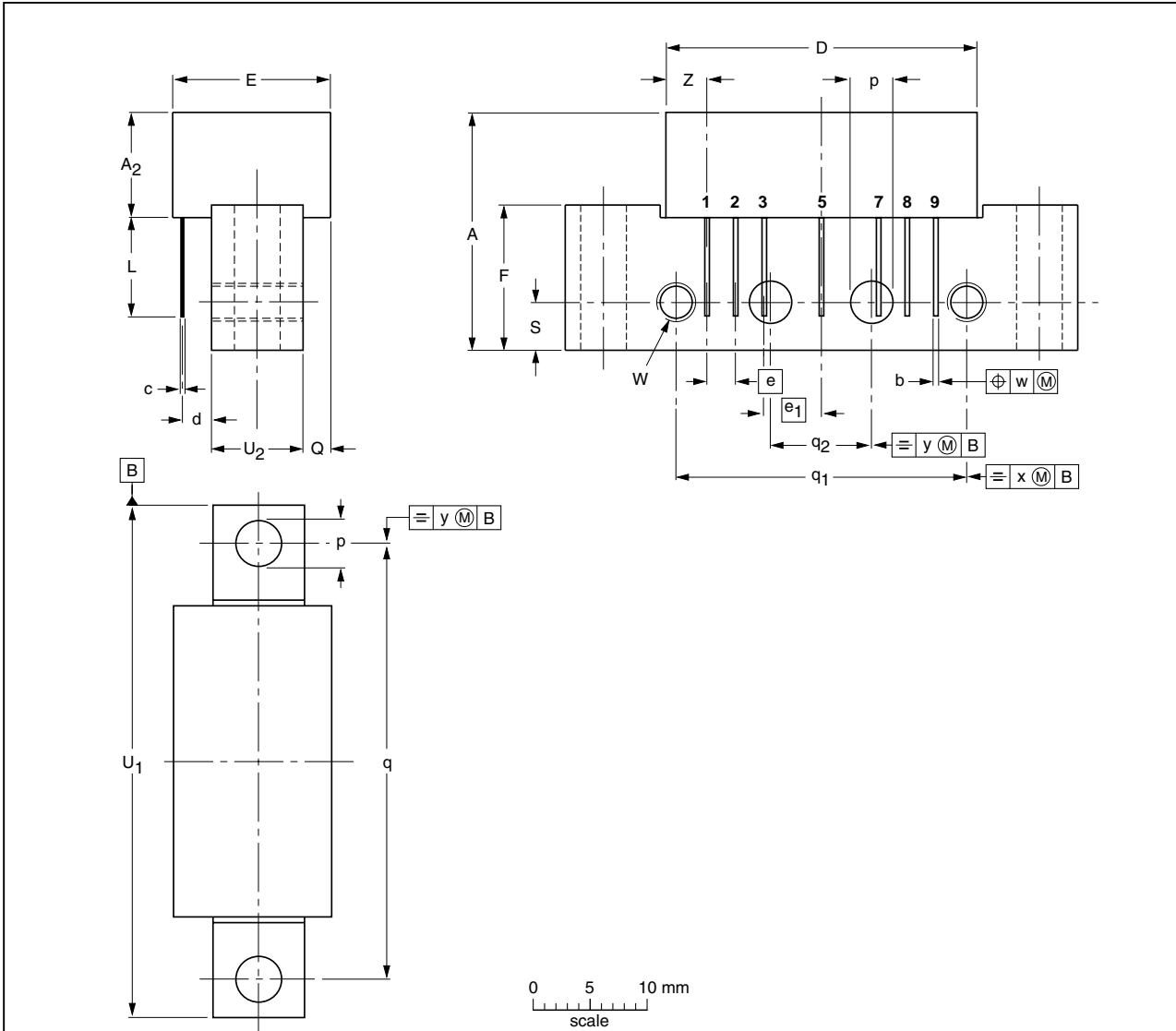
[4]  $f_p = 55.25\text{ MHz}$ ;  $V_p = 46\text{ dBmV}$ ;  $f_q = 391.25\text{ MHz}$ ;  $V_q = 46\text{ dBmV}$ ; measured at  $f_p + f_q = 446.5\text{ MHz}$ .

[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	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	9.5	0.51 0.38	0.25	27.2	2.04 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						04-02-04- 10-06-18

Fig 1. Package outline SOT115J

## 7. Revision history

Table 6. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BGY585A v.6	20100929	Product data sheet	-	BGY585A v.5
Modifications:		<ul style="list-style-type: none"><li>• The format of this data sheet has been redesigned to comply with the new identity guidelines of NXP Semiconductors.</li><li>• Legal texts have been adapted to the new company name where appropriate.</li><li>• Package outline drawings have been updated to the latest version.</li></ul>		
BGY585A v.5 (9397 750 14432)	20050124	Product data sheet	-	BGY585A v.4
BGY585A v.4 (9397 750 08802)	20011018	Product specification	-	BGY585A v.3
BGY585A v.3 (9397 750 06341)	19990326	Product specification	-	BGY585A v.2

## 8. Legal information

### 8.1 Data sheet status

Document status <sup>[1][2]</sup>	Product status <sup>[3]</sup>	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

[1] Please consult the most recently issued document before initiating or completing a design.

[2] The term 'short data sheet' is explained in section "Definitions".

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