

# 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	$f = 50$ MHz	17.7	-	18.7	dB
		$f = 550$ MHz	18.8	-	20	dB
$I_{tot}$	total current consumption (DC)	$V_B = 24$ V	-	220	240	mA

## 2. Pinning information

Table 2. Pinning

Pin	Description	Simplified outline	Symbol
1	input		
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		<a href="#">[1]</a> -	-	-72	dB
$V_o$	output voltage	$d_{im} = -60\text{ dB}$	<a href="#">[2]</a> 61.5	-	-	dBmV
F	noise figure	$f = 550\text{ MHz}$	-	-	8	dB
$I_{tot}$	total current consumption (DC)	$V_B = 24\text{ V}$	<a href="#">[3]</a> -	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 <sub>p</sub>	power gain	f = 50 MHz	17.7	-	18.7	dB	
		f = 450 MHz	18.6	-	19.8	dB	
SL	slope cable equivalent	f = 40 MHz to 450 MHz	0.5	-	1.8	dB	
FL	flatness of frequency response	f = 40 MHz to 450 MHz	-	-	±0.2	dB	
S <sub>11</sub>	input return losses	f = 40 MHz to 80 MHz	20	-	-	dB	
		f = 80 MHz to 160 MHz	19	-	-	dB	
		f = 160 MHz to 450 MHz	18	-	-	dB	
S <sub>22</sub>	output return losses	f = 40 MHz to 80 MHz	20	-	-	dB	
		f = 80 MHz to 160 MHz	19	-	-	dB	
		f = 160 MHz to 450 MHz	18	-	-	dB	
CTB	composite triple beat	60 channels flat; V <sub>o</sub> = 46 dBmV; measured at 445.25 MHz	-	-	-61	dB	
X <sub>mod</sub>	cross modulation	60 channels flat; V <sub>o</sub> = 46 dBmV; measured at 55.25 MHz	-	-	-61	dB	
CSO	composite second order distortion	60 channels flat; V <sub>o</sub> = 46 dBmV; measured at 446.5 MHz	-	-	-61	dB	
d <sub>2</sub>	second order distortion		[4]	-	-	-75	dB
V <sub>o</sub>	output voltage	d <sub>im</sub> = -60 dB	[5]	64	-	-	dBmV
F	noise figure	f = 450 MHz	-	-	7	dB	
I <sub>tot</sub>	total current consumption (DC)	V <sub>B</sub> = 24 V	[3]	-	220	240	mA

[1] f<sub>p</sub> = 55.25 MHz; V<sub>p</sub> = 44 dBmV; f<sub>q</sub> = 493.25 MHz; V<sub>q</sub> = 44 dBmV; measured at f<sub>p</sub> + f<sub>q</sub> = 548.5 MHz.

[2] 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.

[3] The module normally operates at V<sub>B</sub> = 24 V, but is able to withstand supply transients up to 30 V.

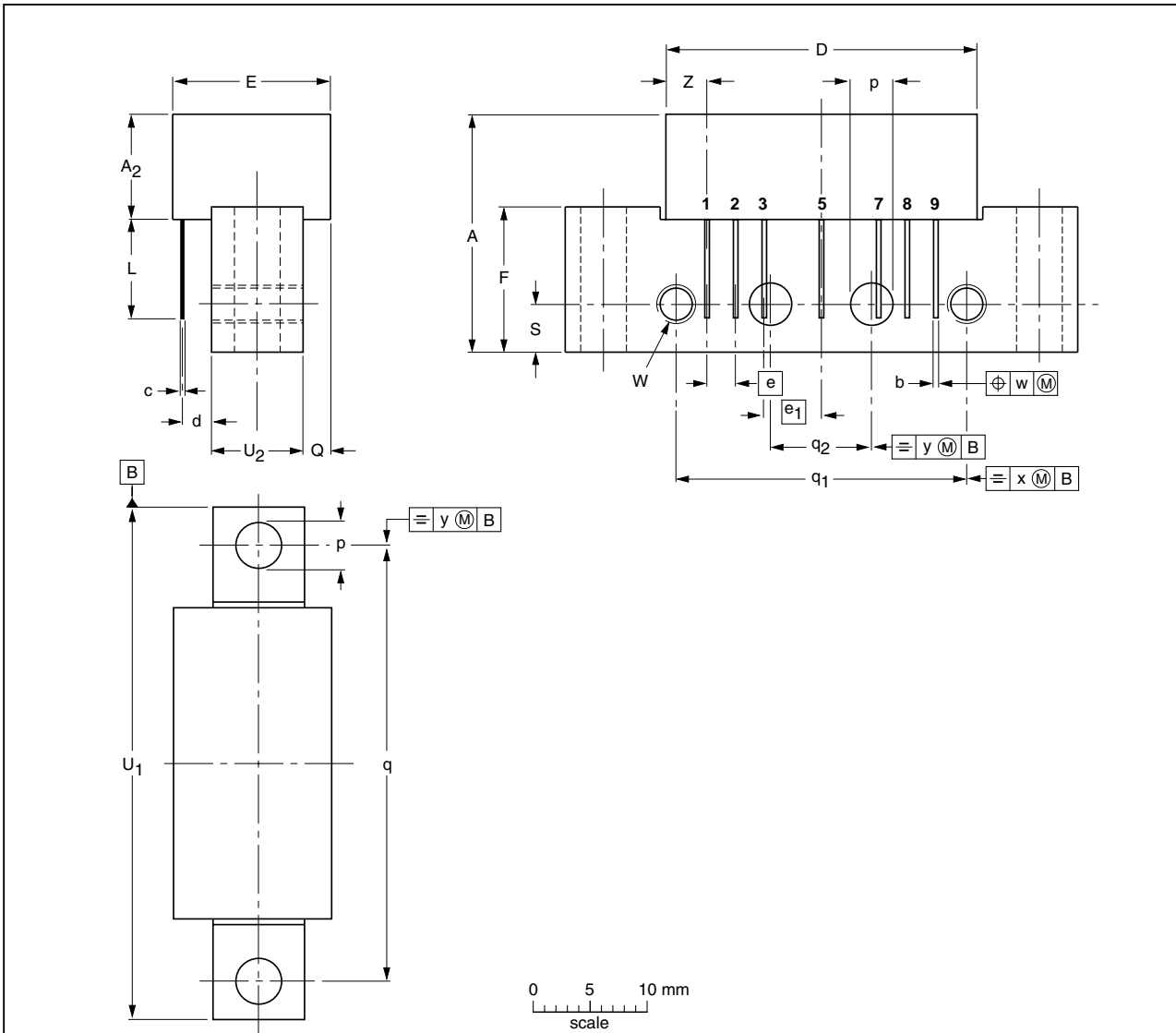
[4] f<sub>p</sub> = 55.25 MHz; V<sub>p</sub> = 46 dBmV; f<sub>q</sub> = 391.25 MHz; V<sub>q</sub> = 46 dBmV; measured at f<sub>p</sub> + f<sub>q</sub> = 446.5 MHz.

[5] Measured according to DIN45004B; f<sub>p</sub> = 440.25 MHz; V<sub>p</sub> = V<sub>o</sub>; f<sub>q</sub> = 447.25 MHz; V<sub>q</sub> = V<sub>o</sub> -6 dB; f<sub>r</sub> = 449.25 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> = 438.25 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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