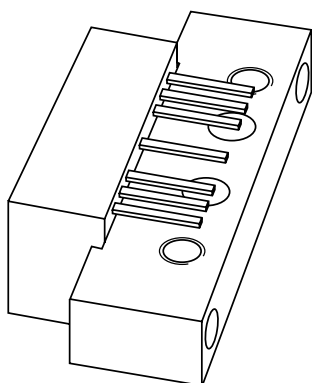


# DATA SHEET



## **BGY585A**

550 MHz, 18.2 dB gain push-pull  
amplifier

Product specification  
Supersedes data of 1999 Mar 26

2001 Oct 18

550 MHz, 18.2 dB gain push-pull amplifier

BGY585A

FEATURES

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

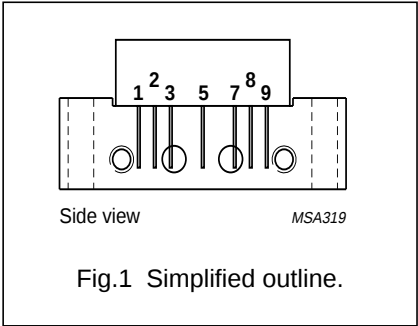
DESCRIPTION

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

PINNING - SOT115J

| PIN | DESCRIPTION     |
|-----|-----------------|
| 1   | input           |
| 2   | common          |
| 3   | common          |
| 5   | +V <sub>B</sub> |
| 7   | common          |
| 8   | common          |
| 9   | output          |

PIN CONFIGURATION



QUICK REFERENCE DATA

| SYMBOL           | PARAMETER                      | CONDITIONS            | MIN. | TYP. | MAX. | UNIT |
|------------------|--------------------------------|-----------------------|------|------|------|------|
| G <sub>p</sub>   | power gain                     | f = 50 MHz            | 17.7 | –    | 18.7 | dB   |
|                  |                                | f = 550 MHz           | 18.8 | –    | 20   | dB   |
| I <sub>tot</sub> | total current consumption (DC) | V <sub>B</sub> = 24 V | –    | 220  | 240  | mA   |

LIMITING VALUES

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

| SYMBOL            | PARAMETER                  | MIN. | MAX. | UNIT |
|-------------------|----------------------------|------|------|------|
| V <sub>i</sub>    | RF input voltage           | –    | 65   | dBmV |
| T <sub>stg</sub>  | storage temperature        | –40  | +100 | °C   |
| T <sub>case</sub> | case operating temperature | –20  | +100 | °C   |

## 550 MHz, 18.2 dB gain push-pull amplifier

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## CHARACTERISTICS

**Table 1** Bandwidth 40 to 550 MHz;  $T_{\text{case}} = 30\text{ }^{\circ}\text{C}$ ;  $Z_S = Z_L = 75\text{ }\Omega$ 

| 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   |
| SL               | slope cable equivalent            | $f = 40\text{ to }550\text{ MHz}$                                 | 0.5  | –    | 2         | dB   |
| FL               | flatness of frequency response    | $f = 40\text{ to }550\text{ MHz}$                                 | –    | –    | $\pm 0.2$ | dB   |
| $S_{11}$         | input return losses               | $f = 40\text{ to }80\text{ MHz}$                                  | 20   | –    | –         | dB   |
|                  |                                   | $f = 80\text{ to }160\text{ MHz}$                                 | 19   | –    | –         | dB   |
|                  |                                   | $f = 160\text{ to }550\text{ MHz}$                                | 18   | –    | –         | dB   |
| $S_{22}$         | output return losses              | $f = 40\text{ to }80\text{ MHz}$                                  | 20   | –    | –         | dB   |
|                  |                                   | $f = 80\text{ to }160\text{ MHz}$                                 | 19   | –    | –         | dB   |
|                  |                                   | $f = 160\text{ to }550\text{ MHz}$                                | 18   | –    | –         | dB   |
| CTB              | composite triple beat             | 77 channels flat; $V_o = 44\text{ dBmV}$ ; measured at 547.25 MHz | –    | –    | –59       | dB   |
| $X_{\text{mod}}$ | 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           | note 1                                                            | –    | –    | –72       | dB   |
| $V_o$            | output voltage                    | $d_{\text{im}} = -60\text{ dB}$ ; note 2                          | 61.5 | –    | –         | dBmV |
| F                | noise figure                      | $f = 550\text{ MHz}$                                              | –    | –    | 8         | dB   |
| $I_{\text{tot}}$ | total current consumption (DC)    | $V_B = 24\text{ V}$ ; note 3                                      | –    | 220  | 240       | mA   |

## Notes

- $f_p = 55.25\text{ MHz}$ ;  $V_p = 44\text{ dBmV}$ ;  
 $f_q = 493.25\text{ MHz}$ ;  $V_q = 44\text{ dBmV}$ ;  
measured at  $f_p + f_q = 548.5\text{ MHz}$ .
- 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  $f_p + f_q - f_r = 538.25\text{ MHz}$ .
- The module normally operates at  $V_B = 24\text{ V}$ , but is able to withstand supply transients up to 30 V.

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**Table 2** Bandwidth 40 to 450 MHz;  $T_{\text{case}} = 30\text{ }^{\circ}\text{C}$ ;  $Z_S = Z_L = 75\text{ }\Omega$ 

| SYMBOL           | PARAMETER                         | CONDITIONS                                                        | MIN. | TYP. | MAX.      | UNIT |
|------------------|-----------------------------------|-------------------------------------------------------------------|------|------|-----------|------|
| $G_p$            | power gain                        | $f = 50\text{ MHz}$                                               | 17.7 | –    | 18.7      | dB   |
|                  |                                   | $f = 450\text{ MHz}$                                              | 18.6 | –    | 19.8      | dB   |
| SL               | slope cable equivalent            | $f = 40\text{ to }450\text{ MHz}$                                 | 0.5  | –    | 1.8       | dB   |
| FL               | flatness of frequency response    | $f = 40\text{ to }450\text{ MHz}$                                 | –    | –    | $\pm 0.2$ | dB   |
| $S_{11}$         | input return losses               | $f = 40\text{ to }80\text{ MHz}$                                  | 20   | –    | –         | dB   |
|                  |                                   | $f = 80\text{ to }160\text{ MHz}$                                 | 19   | –    | –         | dB   |
|                  |                                   | $f = 160\text{ to }450\text{ MHz}$                                | 18   | –    | –         | dB   |
| $S_{22}$         | output return losses              | $f = 40\text{ to }80\text{ MHz}$                                  | 20   | –    | –         | dB   |
|                  |                                   | $f = 80\text{ to }160\text{ MHz}$                                 | 19   | –    | –         | dB   |
|                  |                                   | $f = 160\text{ to }450\text{ MHz}$                                | 18   | –    | –         | dB   |
| CTB              | composite triple beat             | 60 channels flat; $V_o = 46\text{ dBmV}$ ; measured at 445.25 MHz | –    | –    | –61       | dB   |
| $X_{\text{mod}}$ | 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           | note 1                                                            | –    | –    | –75       | dB   |
| $V_o$            | output voltage                    | $d_{\text{im}} = -60\text{ dB}$ ; note 2                          | 64   | –    | –         | dBmV |
| F                | noise figure                      | $f = 450\text{ MHz}$                                              | –    | –    | 7         | dB   |
| $I_{\text{tot}}$ | total current consumption (DC)    | $V_B = 24\text{ V}$ ; note 3                                      | –    | 220  | 240       | mA   |

**Notes**

- $f_p = 55.25\text{ MHz}$ ;  $V_p = 46\text{ dBmV}$ ;  
 $f_q = 391.25\text{ MHz}$ ;  $V_q = 46\text{ dBmV}$ ;  
measured at  $f_p + f_q = 446.5\text{ MHz}$ .
- 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  $f_p + f_q - f_r = 438.25\text{ MHz}$ .
- The module normally operates at  $V_B = 24\text{ V}$ , but is able to withstand supply transients up to 30 V.

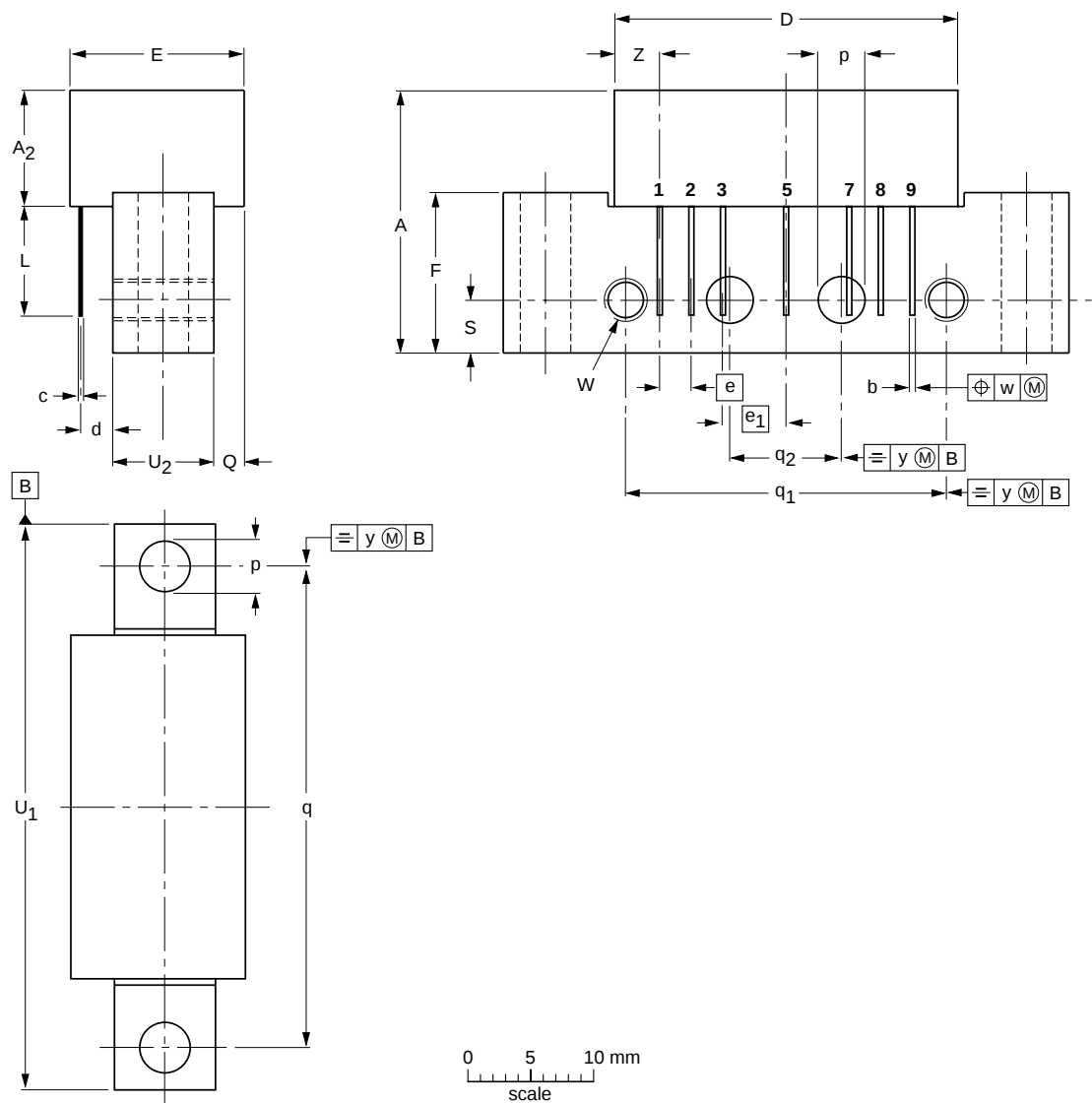
550 MHz, 18.2 dB gain push-pull amplifier

BGY585A

PACKAGE OUTLINE

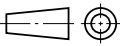
Rectangular single-ended package; aluminium flange; 2 vertical mounting holes;  
2 x 6-32 UNC and 2 extra horizontal mounting holes; 7 gold-plated in-line leads

SOT115J



DIMENSIONS (mm are the original dimensions)

| UNIT | A<br>max. | A <sub>2</sub><br>max. | b            | c    | D<br>max. | d<br>max. | E<br>max. | e    | e <sub>1</sub> | F    | L<br>min. | p            | Q<br>max. | q    | q <sub>1</sub> | q <sub>2</sub> | S   | U <sub>1</sub><br>max. | U <sub>2</sub> | W           | w    | y   | Z<br>max. |
|------|-----------|------------------------|--------------|------|-----------|-----------|-----------|------|----------------|------|-----------|--------------|-----------|------|----------------|----------------|-----|------------------------|----------------|-------------|------|-----|-----------|
| mm   | 20.8      | 9.1                    | 0.51<br>0.38 | 0.25 | 27.2      | 2.54      | 13.75     | 2.54 | 5.08           | 12.7 | 8.8       | 4.15<br>3.85 | 2.4       | 38.1 | 25.4           | 10.2           | 4.2 | 44.75                  | 8              | 6-32<br>UNC | 0.25 | 0.1 | 3.8       |

| OUTLINE<br>VERSION | REFERENCES |       |      |  | EUROPEAN<br>PROJECTION                                                                | ISSUE DATE |
|--------------------|------------|-------|------|--|---------------------------------------------------------------------------------------|------------|
|                    | IEC        | JEDEC | EIAJ |  |                                                                                       |            |
| SOT115J            |            |       |      |  |  | 99-02-06   |

## 550 MHz, 18.2 dB gain push-pull amplifier

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## DATA SHEET STATUS

| DATA SHEET STATUS <sup>(1)</sup> | PRODUCT STATUS <sup>(2)</sup> | DEFINITIONS                                                                                                                                                                                                                                                                                                            |
|----------------------------------|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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550 MHz, 18.2 dB gain push-pull amplifier

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**NOTES**

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## **Contact information**

For additional information please visit <http://www.semiconductors.philips.com>. Fax: **+31 40 27 24825**

For sales offices addresses send e-mail to: [sales.addresses@www.semiconductors.philips.com](mailto:sales.addresses@www.semiconductors.philips.com).

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