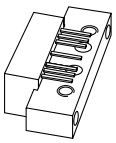

# BGY66B

## 120 MHz, 25 dB gain reverse amplifier

Rev. 04 — 29 March 2005 Product data sheet

## 1. Product profile

### 1.1 General description

Hybrid high dynamic range amplifier module designed for applications in CATV systems with a bandwidth of 5 MHz to 120 MHz operating with a voltage supply of 24 V (DC).

**CAUTION**

This device is sensitive to ElectroStatic Discharge (ESD). Therefore care should be taken during transport and handling.

### 1.2 Features

- Excellent linearity
- Extremely low noise
- Silicon nitride passivation
- Rugged construction
- Gold metallization ensures excellent reliability

### 1.3 Applications

- Intended as a reverse amplifier for use in two-way systems

### 1.4 Quick reference data

**Table 1: Quick reference data**

| Symbol | Parameter | Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| $G_p$ | power gain | f = 10 MHz | | 24.5 | - | 25.5 | dB |
| $I_{tot}$ | total current consumption (DC) | $V_B$ = 24 V | [1] | 115 | - | 135 | mA |

[1] The module normally operates at $V_B$ = 24 V, but is able to withstand supply transients up to 30 V.

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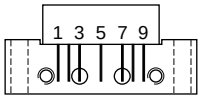
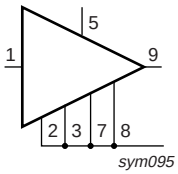
## 2. Pinning information

**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 | | |
|---|---|---|---|
| | Name | Description | Version |
| BGY66B | - | 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 |
| $T_{mb}$ | mounting base temperature | | –20 | +100 | °C |

## 5. Characteristics

**Table 5: Characteristics**

*Bandwidth 5 MHz to 120 MHz; $V_B$ = 24 V; $T_{mb}$ = 30 °C; $Z_S = Z_L$ = 75 Ω; unless otherwise specified.*

| Symbol | Parameter | Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| $G_p$ | power gain | f = 10 MHz | | 24.5 | - | 25.5 | dB |
| SL | slope cable equivalent | | | –0.2 | - | +0.5 | dB |
| FL | flatness of frequency response | | | - | - | ±0.2 | dB |
| $s_{11}$ | input return losses | | | 20 | - | - | dB |
| $s_{22}$ | output return losses | | | 20 | - | - | dB |
| CTB | composite triple beat | 14 channels flat; $V_o$ = 48 dBmV; measured at 67.25 MHz | | - | - | –66 | dB |
| $X_{mod}$ | cross modulation | 14 channels flat; $V_o$ = 48 dBmV; measured at 67.25 MHz | | - | - | –54 | dB |
| $d_2$ | second order distortion | | [1] | - | - | –70 | dB |
| $V_o$ | output voltage | $d_{im}$ = –60 dB | [2] | 60 | - | - | dBmV |
| F | noise figure | f = 120 MHz | | - | - | 5 | dB |
| $I_{tot}$ | total current consumption (DC) | | [3] | 115 | - | 135 | mA |

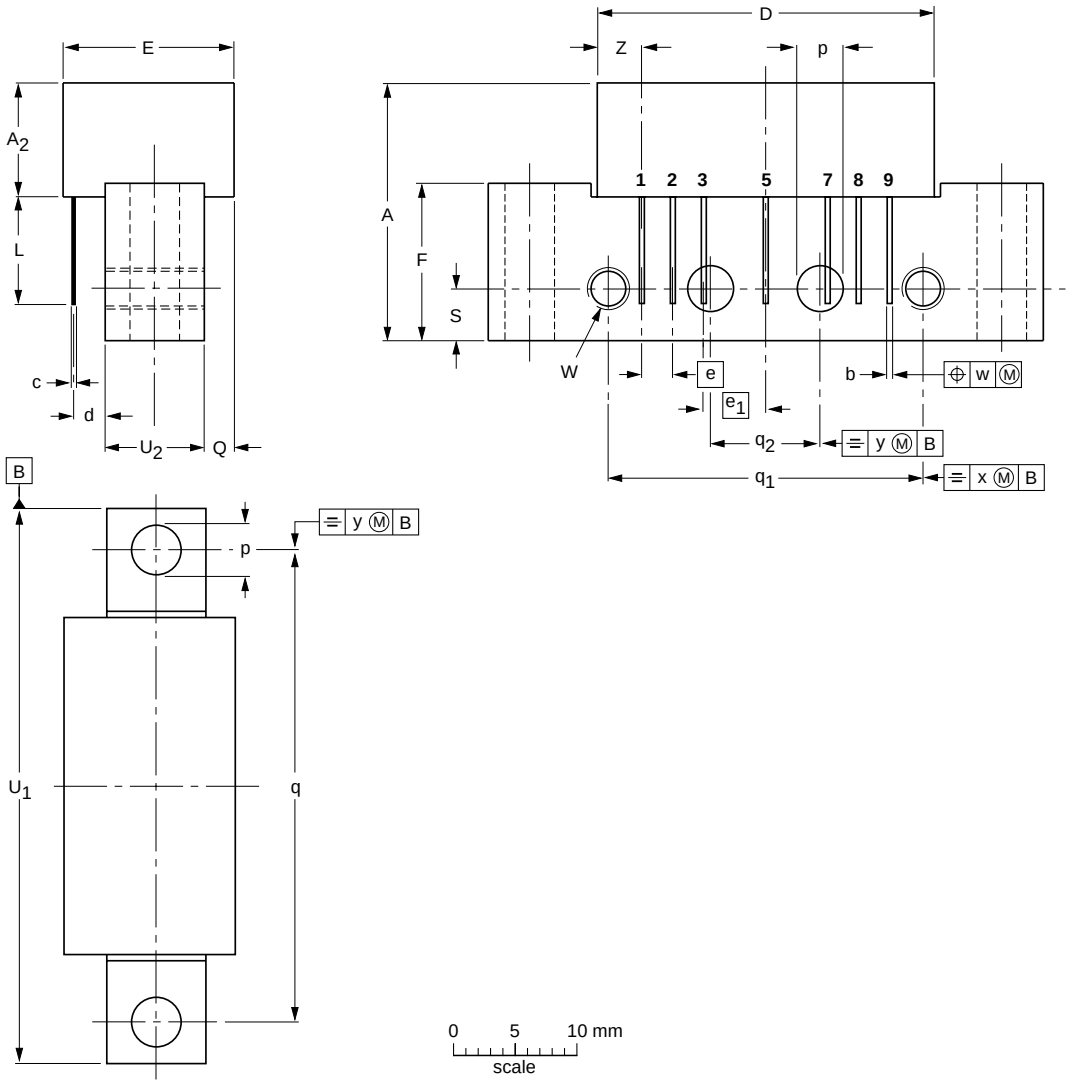
[1] $f_p$ = 55.25 MHz; $V_p$ = 48 dBmV; $f_q$ = 61.25 MHz; $V_q$ = 48 dBmV; measured at $f_p + f_q$ = 116.5 MHz.

[2] Measured according to DIN45004B;
$f_p$ = 111.25 MHz; $V_p = V_o$; $f_q$ = 118.25 MHz; $V_q = V_o$ – 6 dB; $f_r$ = 120.25 MHz; $V_r = V_o$ – 6 dB; measured at $f_p + f_q - f_r$ = 109.25 MHz.

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

## 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. | $A_2$ max. | b | c | D max. | d max. | E max. | e | $e_1$ | F | L min. | p | Q max. | q | $q_1$ | $q_2$ | S | $U_1$ | $U_2$ | W | w | x | y | Z 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<br>44.25 | 8.2<br>7.8 | 6-32<br>UNC | 0.25 | 0.7 | 0.1 | 3.8 |

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|---|---|---|---|---|---|---|
| | IEC | JEDEC | JEITA | | | |
| SOT115J | | | | | | ~~99-02-06~~<br>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 |
|---|---|---|---|---|---|
| BGY66B_4 | 20050329 | Product data sheet | - | 9397 750 14739 | BGY66B_3 |
| Modifications: | • The format of this data sheet has been redesigned to comply with the new presentation and information standard of Philips Semiconductors. | | | | |
| BGY66B_3 | 20011018 | Product specification | - | 9397 750 08798 | BGY66B_2 |
| BGY66B_2 | 19970414 | Product specification | - | 9397 750 02145 | BGY66B_1 |
| BGY66B_1 | 19950922 | Product specification | - | - | BGY66B04_1 |
| BGY66B04_1 | 19940915 | Preliminary specification | - | 9397 738 70011 | - |

## 8. Data sheet status

| Level | Data sheet status [1] | Product status [2] [3] | 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. |
| II | 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. |
| III | Product data | Production | This data sheet contains data from the product specification. Philips Semiconductors reserves the right to make changes at any time in order to improve the design, manufacturing and supply. Relevant changes will be communicated via a Customer Product/Process Change Notification (CPCN). |

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

[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.

[3] For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

## 9. Definitions

**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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## 11. Contact information

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**Date of release: 29 March 2005**
**Document number: 9397 750 14739**

**Published in The Netherlands**