

# DATA SHEET

## **BGX881** CATV amplifier module

Product specification  
File under Discrete Semiconductors, SC16

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**Philips Semiconductors**



**PHILIPS**

# CATV amplifier module

# BGX881

## FEATURES

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

## DESCRIPTION

Hybrid amplifier module for CATV/MATV systems operating over a frequency range of 40 to 860 MHz at a voltage supply of 24 V (DC).

## PINNING - SOT115D

| PIN | DESCRIPTION                 |
|-----|-----------------------------|
| 1   | input; note1                |
| 2   | common                      |
| 3   | common                      |
| 4   | 12 V, 60 mA supply terminal |
| 5   | common                      |
| 6   | common                      |
| 7   | common                      |
| 8   | +V <sub>B</sub>             |
| 9   | output; note1               |

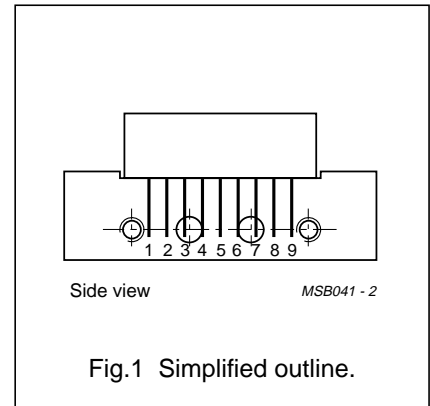


Fig.1 Simplified outline.

## Note

1. Pins 1 and 9 carry DC voltages.

## QUICK REFERENCE DATA

| SYMBOL           | PARAMETER                      | CONDITIONS            | MIN. | MAX. | UNIT |
|------------------|--------------------------------|-----------------------|------|------|------|
| G <sub>p</sub>   | power gain                     | f = 50 MHz            | 12   | 13   | dB   |
| I <sub>tot</sub> | total current consumption (DC) | V <sub>B</sub> = 24 V | –    | 240  | mA   |

## LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

| SYMBOL           | PARAMETER                           | MIN. | MAX. | UNIT |
|------------------|-------------------------------------|------|------|------|
| V <sub>B</sub>   | DC supply voltage                   | –    | 26   | V    |
| V <sub>i</sub>   | RF input voltage                    | –    | 65   | dBmV |
| T <sub>stg</sub> | storage temperature                 | –40  | +100 | °C   |
| T <sub>mb</sub>  | operating mounting base temperature | –20  | +100 | °C   |

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**CHARACTERISTICS**Bandwidth 40 to 860 MHz;  $V_B = 24\text{ V}$ ;  $T_{mb} = 30\text{ °C}$ ;  $Z_S = Z_L = 75\ \Omega$ .

| SYMBOL    | PARAMETER                      | CONDITIONS                         | MIN. | MAX.      | UNIT |
|-----------|--------------------------------|------------------------------------|------|-----------|------|
| $G_p$     | power gain                     | $f = 50\text{ MHz}$                | 12   | 13        | dB   |
| SL        | slope cable equivalent         | $f = 40\text{ to }860\text{ MHz}$  | 0.2  | 1.2       | dB   |
| FL        | flatness of frequency response | $f = 40\text{ to }860\text{ MHz}$  | –    | $\pm 0.3$ | dB   |
| $S_{11}$  | input return losses            | $f = 40\text{ MHz}$ ; note 1       | 20   | –         | dB   |
|           |                                | $f = 800\text{ to }860\text{ MHz}$ | 10   | –         | dB   |
| $S_{22}$  | output return losses           | $f = 40\text{ MHz}$ ; note 1       | 20   | –         | dB   |
|           |                                | $f = 640\text{ to }860\text{ MHz}$ | 15   | –         | dB   |
| $d_2$     | second order distortion        | note 2                             | –    | –53       | dB   |
| $V_o$     | output voltage                 | $d_{im} = -60\text{ dB}$ ; note 3  | 60.5 | –         | dBmV |
|           |                                | $d_{im} = -60\text{ dB}$ ; note 4  | 59.5 | –         | dBmV |
| F         | noise figure                   | $f = 350\text{ MHz}$               | –    | 8.5       | dB   |
|           |                                | $f = 860\text{ MHz}$               | –    | 9         | dB   |
| $I_{tot}$ | total current consumption (DC) | note 5                             | –    | 240       | mA   |

**Notes**

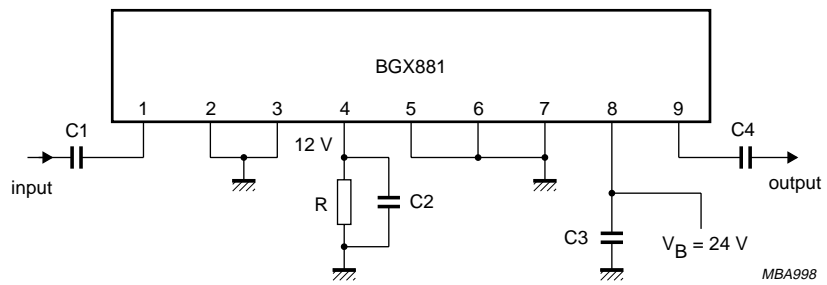
- Decreases 1.5 dB per octave.
- $f_p = 349.25\text{ MHz}$ ;  $V_p = 59\text{ dBmV}$ ;  
 $f_q = 403.25\text{ MHz}$ ;  $V_q = 59\text{ dBmV}$ ;  
measured at  $f_p + f_q = 752.5\text{ MHz}$ .
- Measured according to DIN45004B:  
 $f_p = 341.25\text{ MHz}$ ;  $V_p = V_o$ ;  
 $f_q = 348.25\text{ MHz}$ ;  $V_q = V_o - 6\text{ dB}$ ;  
 $f_r = 350.25\text{ MHz}$ ;  $V_r = V_o - 6\text{ dB}$ ;  
measured at  $f_p + f_q - f_r = 339.25\text{ MHz}$ .
- Measured according to DIN45004B:  
 $f_p = 851.25\text{ MHz}$ ;  $V_p = V_o$ ;  
 $f_q = 858.25\text{ MHz}$ ;  $V_q = V_o - 6\text{ dB}$ ;  
 $f_r = 860.25\text{ MHz}$ ;  $V_r = V_o - 6\text{ dB}$ ;  
measured at  $f_p + f_q - f_r = 849.25\text{ MHz}$ .
- 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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List of components (see Fig.2)

| COMPONENT  | DESCRIPTION                  | VALUE       |
|------------|------------------------------|-------------|
| C1, C3, C4 | ceramic multilayer capacitor | 1 nF        |
| C2         | ceramic multilayer capacitor | 1 nF (max.) |
| R          | resistor                     | 200 Ω, 1 W  |



Pins 1 and 9 carry DC voltages.

Fig.2 Test circuit.

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**DEFINITIONS**

|   |   |
|---|---|
| <b>Data sheet status</b>  |   |
| Objective specification   | This data sheet contains target or goal specifications for product development.       |
| Preliminary specification   | This data sheet contains preliminary data; supplementary data may be published later. |
| Product specification   | This data sheet contains final product specifications.                                |
| <b>Limiting values</b>  |   |
| Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). 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. |   |
| <b>Application information</b>  |   |
| Where application information is given, it is advisory and does not form part of the specification.   |   |

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