

### 1000MHz 22dB Gain With GaAs Power Double Amplifier Module

## 1. Product profile

### 1.1 General description

High dynamic range power doubler amplifier module operating at a supply voltage of 24VDC in an SOT115 package, using a cascaded power doubler GaAs MMIC , matching with SMT transformer at input and output port adding ESD and surge protective devices.

#### CAUTION



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

### 1.2 Features and benefits

- Excellent linearity
- Low noise
- Low return loss
- Rugged construction
- High reliability

### 1.3 Applications

- CATV systems operating in the 40MHz to 1000MHz frequency range.

### 1.4 Quick reference data

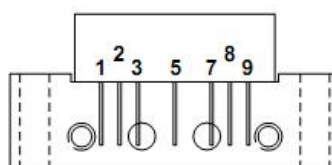
Bandwidth 40MHz to 1000MHz;  $V_B = 24\text{ V}$ ;  $T_{mb} = 30\text{ }^\circ\text{C}$ ;  $Z_S = Z_L = 75\ \Omega$ .

| Symbol    | Parameter     | Conditions           | Min  | Typ  | Max  | Unit |
|-----------|---------------|----------------------|------|------|------|------|
| $G_p$     | power gain    | $f = 50\text{MHz}$   | 21.5 | 22.0 | 23.0 | dB   |
|           |               | $f = 1000\text{MHz}$ | 22.5 | -    | -    | dB   |
| $I_{tot}$ | total current | $V_B = 24\text{ V}$  | 340  | 360  | 380  | mA   |

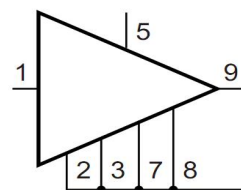
## 2. Pin information

| Pin | Description |
|-----|-------------|
| 1   | input       |
| 2   | common      |
| 3   | common      |
| 5   | + $V_B$     |
| 7   | common      |
| 8   | common      |
| 9   | output      |

Simplified Outline



Graphic Symbol



### 3. Operating conditions

#### 3.1 Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134) (TA = +25°C)

| Parameter                  | Symbol           | Min | Max  | Unit |
|----------------------------|------------------|-----|------|------|
| Supply Voltage             | V <sub>B</sub>   | -   | 25   | V    |
| Input Voltage [1]          | V <sub>i</sub>   | -   | 67   | dBmV |
| Operating Case Temperature | T <sub>c</sub>   | -20 | +90  | °C   |
| Storage Temperature        | T <sub>stg</sub> | -40 | +100 | °C   |

[1] In case of single tone

#### 3.2 Recommended operating conditions (Z<sub>s</sub> = Z<sub>L</sub> = 75 Ω)

| Parameter                  | Symbol         | Test Conditions | MIN  | TYP  | MA   | Unit |
|----------------------------|----------------|-----------------|------|------|------|------|
| Supply Voltage             | V <sub>B</sub> |                 | 23.5 | 24.0 | 24.5 | V    |
| Operating Case Temperature | T <sub>c</sub> |                 | -20  | +30  | +80  | °C   |

### 4. Electrical characteristics

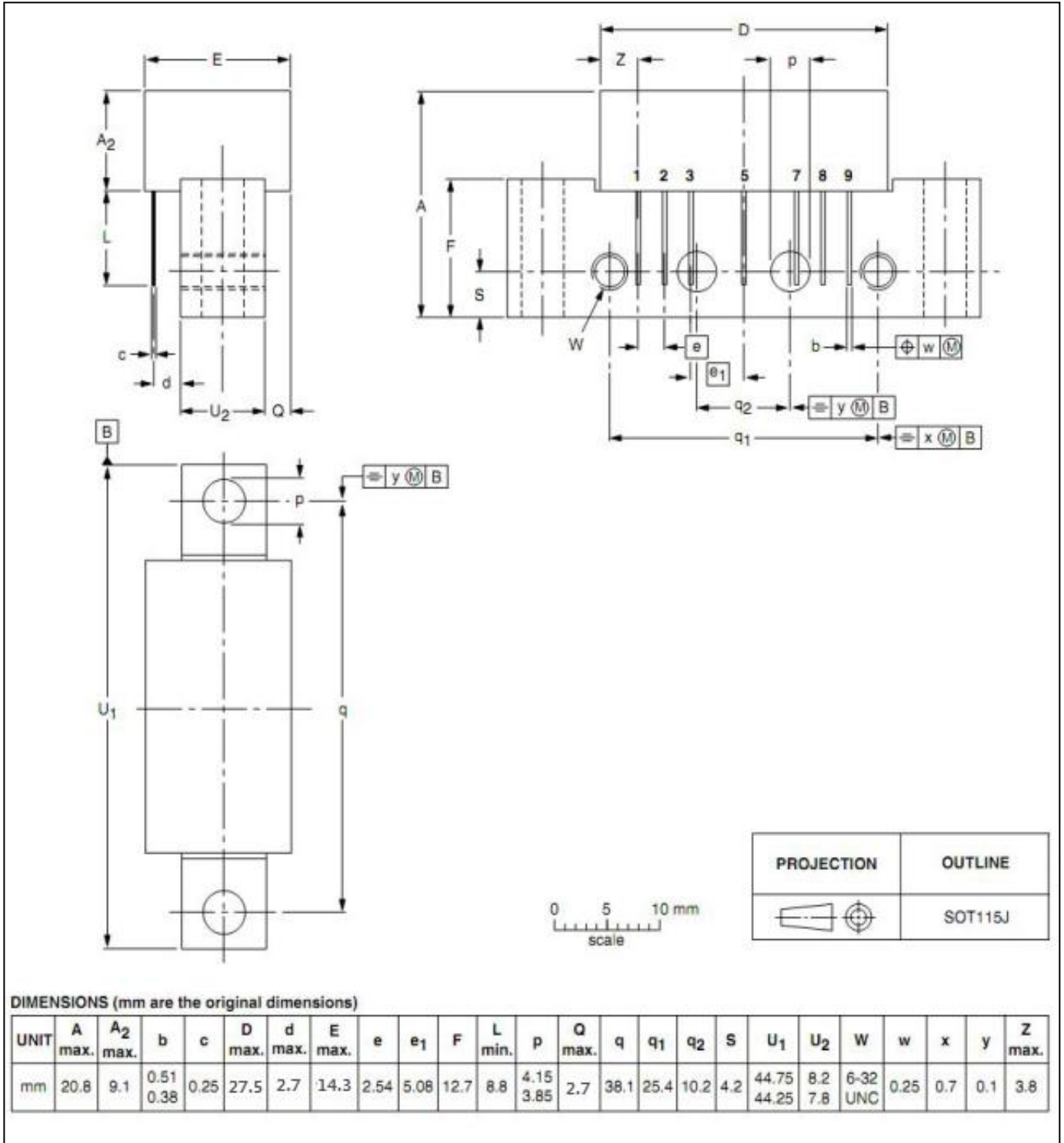
(T<sub>c</sub> = 30±5°C, V<sub>B</sub> = 24 V, Z<sub>s</sub> = Z<sub>L</sub> = 75 Ω)

| Parameter                | Symbol          | Test Conditions   | MIN  | TYP  | MAX  | Unit |
|--------------------------|-----------------|---|------|------|------|------|
| Power Gain               | G <sub>p</sub>  | f = 50MHz   | 21.5 | 22.0 | 23.0 | dB   |
| Gain Slope               | SL              | f = 50 to 1000MHz   | 1.0  | 1.5  | 2.5  | dB   |
| Gain Flatness            | FL              | f = 50 to 1000MHz   | -    | -    | ±0.5 | dB   |
| Noise Figure             | NF              | f = 1000MHz   | -    | 5.0  | 6.0  | dB   |
| Operating Current        | I <sub>B</sub>  | V <sub>B</sub> =24VDC, RF OFF   | 340  | 360  | 380  | mA   |
| Composite Triple Beat    | CTB             | 98 channels,<br>V <sub>O</sub> = 48dBmV at 743.25 MHz,<br>flat output level across the band | -    | -64  | -    | dB   |
| Cross Modulation         | XM              |   | -    | -62  | -    | dB   |
| Composite 2nd Order Beat | CSO             |   | -    | -66  | -    | dB   |
| Input Return Loss        | S <sub>11</sub> | f = 40 to 700MHz  | 17   | -    | -    | dB   |
|                          |                 | f = 700 to 1000MHz  | 17   | -    | -    | dB   |
| Output Return Loss       | S <sub>22</sub> | f = 40 to 700MHz  | 17   | -    | -    | dB   |
|                          |                 | f = 700 to 1000MHz  | 17   | -    | -    | dB   |

5. Package outline

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

SOT115J



UNIT: mm