

1000MHz 20dB 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 SOT115J package, using a cascaded power doubler MMIC with GaAs Technology from USA , 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

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

1.3 Applications

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

1.4 Quick reference data

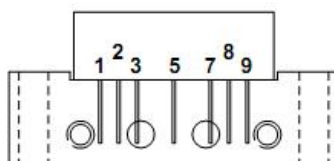
Bandwidth 40MHz to 1000MHz; $V_B = 24\text{ V}$; $T_{mb} = 30\text{ }^\circ\text{C}$; $Z_S = Z_L = 75\text{ W}$.

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|-----------|---------------|----------------------|------|------|------|------|
| G_p | power gain | $f = 50\text{MHz}$ | 19.5 | 20.0 | 21.0 | dB |
| | | $f = 1000\text{MHz}$ | 20.5 | - | - | dB |
| I_{tot} | total current | $V_B = 24\text{ V}$ | 330 | 350 | 380 | mA |

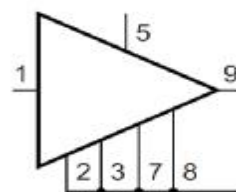
2. Pin information

| 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 _B | - | 25 | V |
| Input Voltage [1] | V _i | - | 65 | dBmV |
| Operating Case Temperature | T _C | -20 | +90 | °C |
| Storage Temperature | T _{stg} | -40 | +100 | °C |

[1] In case of single tone

3.2 Recommended operating conditions (Z_S = Z_L = 75 Ω)

| Parameter | Symbol | Test Conditions | MIN | TYP | MAX | Unit |
|----------------------------|----------------|-----------------|------|------|------|------|
| Supply Voltage | V _B | | 23.5 | 24.0 | 24.5 | V |
| Operating Case Temperature | T _C | | -20 | +30 | +80 | °C |

4. Electrical characteristics

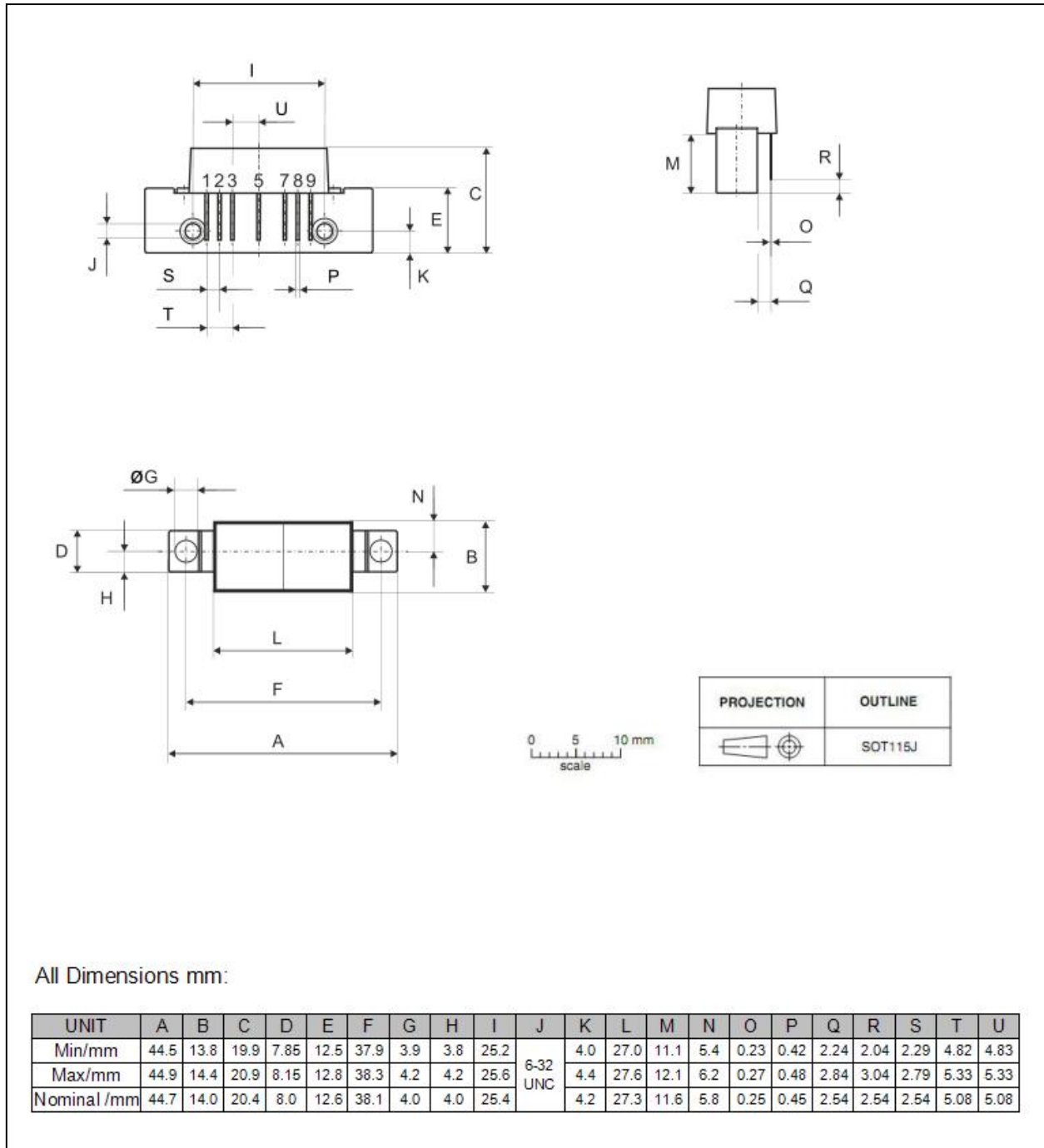
(T_C = 30±5°C, V_B = 24 V, Z_S = Z_L = 75 Ω)

| Parameter | Symbol | Test Conditions | MIN | TYP | MAX | Unit |
|--------------------------|----------------|---|------|------|------|------|
| Power Gain | G _p | f = 50MHz | 19.5 | 20.0 | 21.0 | 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 | - | 6.0 | 6.5 | dB |
| Operating Current | I _B | V _B =24VDC, RF OFF | 330 | 350 | 380 | mA |
| Composite Triple Beat | CTB | 98 channels, V _O = 48dBmV at 743.25 MHz, flat output level across the band | - | -64 | - | dB |
| Cross Modulation | XM | | - | -62 | - | dB |
| Composite 2nd Order Beat | CSO | | - | -66 | - | dB |
| Input Return Loss | S11 | f = 40 to 550MHz | 18 | - | - | dB |
| | | f = 550 to 1000MHz | 16 | - | - | dB |
| Output Return Loss | S22 | f = 40 to 550MHz | 16 | - | - | dB |
| | | f = 550 to 1000MHz | 16 | - | - | 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



All Dimensions mm:

| UNIT | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U |
|-------------|------|------|------|------|------|------|-----|-----|------|-------------|-----|------|------|-----|------|------|------|------|------|------|------|
| Min/mm | 44.5 | 13.8 | 19.9 | 7.85 | 12.5 | 37.9 | 3.9 | 3.8 | 25.2 | 6-32 UNC | 4.0 | 27.0 | 11.1 | 5.4 | 0.23 | 0.42 | 2.24 | 2.04 | 2.29 | 4.82 | 4.83 |
| Max/mm | 44.9 | 14.4 | 20.9 | 8.15 | 12.8 | 38.3 | 4.2 | 4.2 | 25.6 | | 4.4 | 27.6 | 12.1 | 6.2 | 0.27 | 0.48 | 2.84 | 3.04 | 2.79 | 5.33 | 5.33 |
| Nominal /mm | 44.7 | 14.0 | 20.4 | 8.0 | 12.6 | 38.1 | 4.0 | 4.0 | 25.4 | | 4.2 | 27.3 | 11.6 | 5.8 | 0.25 | 0.45 | 2.54 | 2.54 | 2.54 | 5.08 | 5.08 |