

870MHz 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 870MHz frequency range.

1.4 Quick reference data

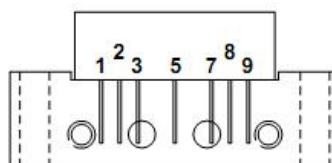
Bandwidth 40MHz to 870MHz; $V_B = 24\text{ V}$; $T_{mb} = 30\text{ }^\circ\text{C}$; $Z_S = Z_L = 75\ \Omega$.

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|-----------|---------------|----------------------|------|------|------|------|
| G_p | power gain | $f = 50\text{ MHz}$ | 21.5 | 22.0 | 23.0 | dB |
| | | $f = 870\text{ MHz}$ | 22.5 | - | - | dB |
| I_{tot} | total current | $V_B = 24\text{ V}$ | 340 | 360 | 380 | mA |

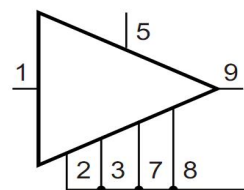
2. Pin information

| 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 _B | - | 25 | V |
| Input Voltage [1] | V _i | - | 67 | 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

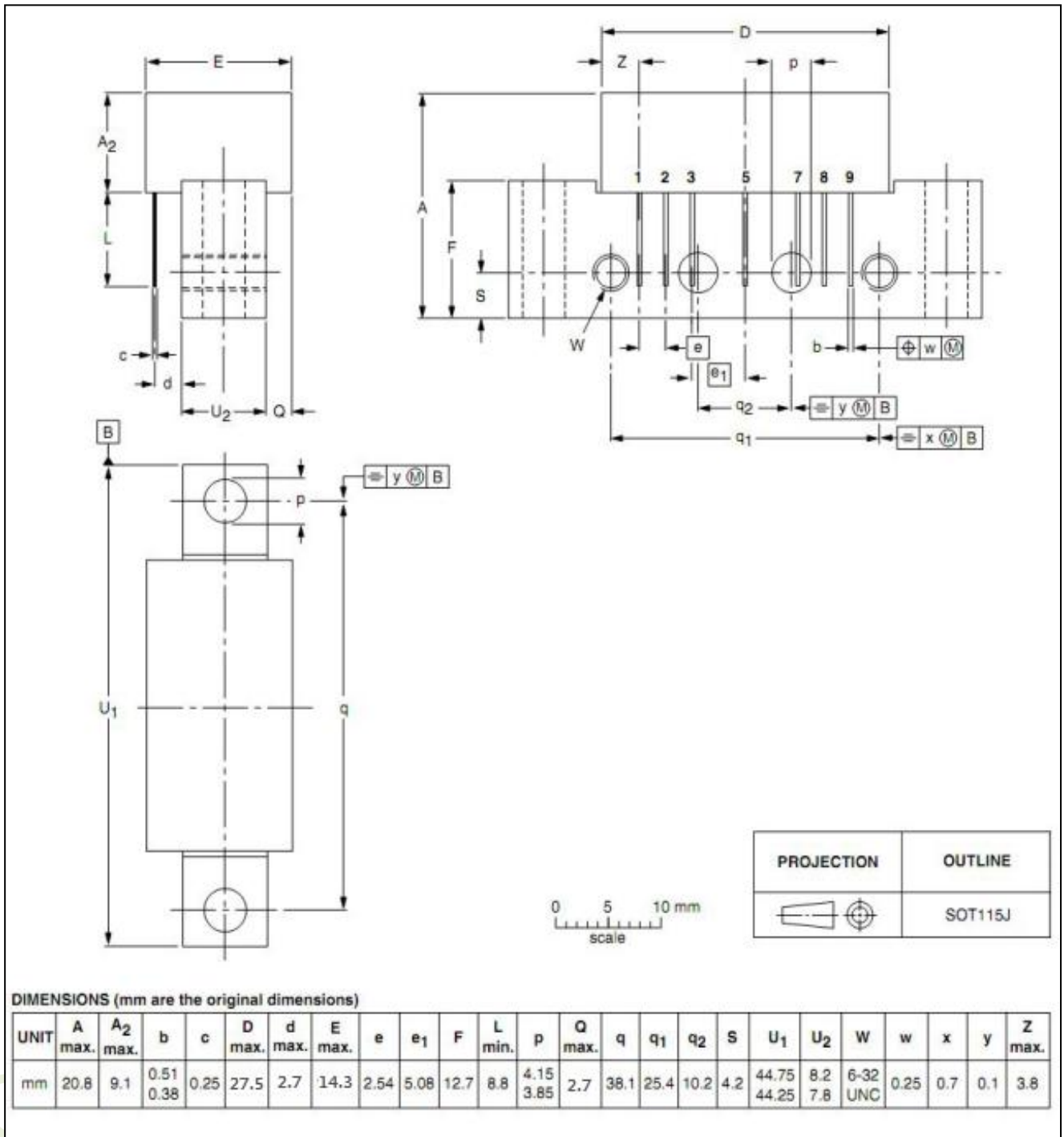
(T_c = 30±5°C, V_B = 24 V, Z_s = Z_L = 75 Ω)

| Parameter | Symbol | Test Conditions | MIN | TYP | MAX | Unit |
|--------------------------|----------------|---|------|------|------|------|
| Power Gain | G _p | f = 50MHz | 21.5 | 22.0 | 23.0 | dB |
| Gain Slope | SL | f = 50 to 870MHz | 1.0 | 1.5 | 2.2 | dB |
| Gain Flatness | FL | f = 50 to 870MHz | - | - | ±0.5 | dB |
| Noise Figure | NF | f = 870MHz | - | 5.0 | 6.0 | dB |
| Operating Current | I _B | V _B =24VDC, RF OFF | 340 | 360 | 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 700MHz | 17 | - | - | dB |
| | | f = 700 to 870MHz | 17 | - | - | dB |
| Output Return Loss | S22 | f = 40 to 700MHz | 17 | - | - | dB |
| | | f = 700 to 870MHz | 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

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