

1.2GHz 23dB Gain With GaN Power Double Amplifier Module

1. Product profile

1.1 General description

Ultra-low distortion power doubler amplifier module operating at a supply voltage of 24VDC in an SOT115J package, using a GaN amplifier MMIC, matching with SMT transformers 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

- n Excellent linearity
- n Low noise
- n Ultra-low CSO/CTB/XMOD
- n Rugged construction
- n High reliability

1.3 Applications

- n CATV systems operating in the 40MHz to 1.2GHz frequency range.

1.4 Quick reference data

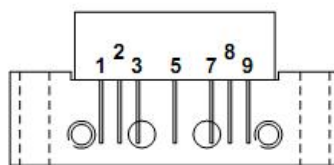
Bandwidth 40MHz to 1.2GHz; $V_B = 24\text{ V}$; $T_{mb} = 30\text{ }^\circ\text{C}$; $Z_S = Z_L = 75\text{ } \Omega$.

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|-----------|---------------|----------------------|------|------|------|------|
| G_p | power gain | $f = 50\text{ MHz}$ | 22.5 | 23.0 | 24.0 | dB |
| | | $f = 1.2\text{ GHz}$ | 23.5 | - | - | dB |
| I_{tot} | total current | $V_B = 24\text{ V}$ | 410 | 430 | 460 | mA |

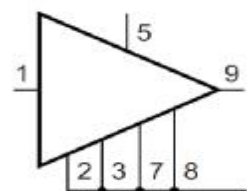
2. Pin information

| 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 |

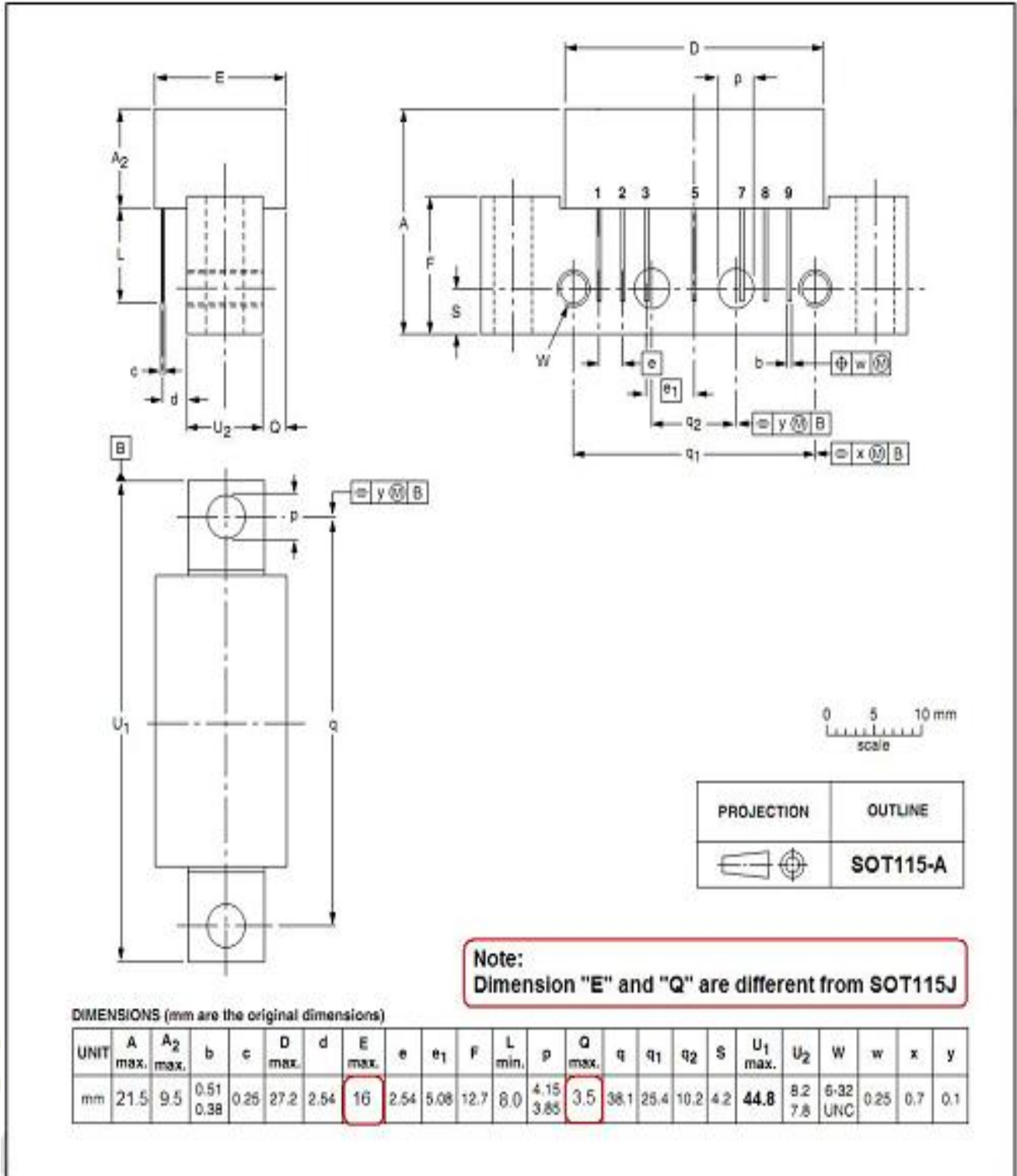
4. Electrical characteristics

(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 | 22.5 | 23.0 | 24.0 | dB |
| Gain Slope | SL | f = 50 to 1.2GHz | 1.0 | 1.5 | 2.5 | dB |
| Gain Flatness | FL | f = 50 to 1.2GHz | - | - | ±0.5 | dB |
| Noise Figure | NF | f = 1.2GHz | - | 4.8 | 5.5 | dB |
| Operating Current | I _B | V _B =24VDC, RF OFF | 410 | 430 | 460 | mA |
| Composite Triple Beat | CTB | 98 channels, V _o = 50dBmV at 855.25 MHz, flat output level across the band | - | -66 | - | dB |
| Cross Modulation | XM | | - | -65 | - | dB |
| Composite 2nd Order Beat | CSO | | - | -67 | - | dB |
| Input Return Loss | S11 | f = 40 to 700MHz | 16 | - | - | dB |
| | | f = 700MHz to 1.2GHz | 12 | - | - | dB |
| Output Return Loss | S22 | f = 40 to 700MHz | 16 | - | - | dB |
| | | f = 700MHz to 1.2GHz | 12 | - | - | 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.



UNIT: mm

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