870MHz 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 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

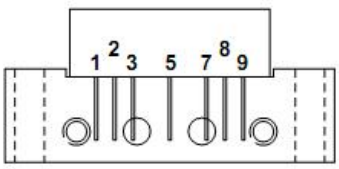
Bandwidth 40MHz to 870MHz; V_B = 24 V; T_{mb} = 30 °C; $Z_S = Z_L$ = 75 Ω .

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
G_p	power gain	f = 50MHz	19.5	20.0	21.0	dB
		f = 870MHz	20.5	-	-	dB
I_{tot}	total current	V_B = 24 V	340	360	380	mA

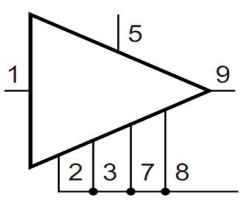
2. Pin information

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]	Vi	-	67	dBmV
Operating Case Temperature	Tc	–20	+90	°C
Storage Temperature	Tstg	–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	Tc		−20	+30	+80	°C

4. Electrical characteristics

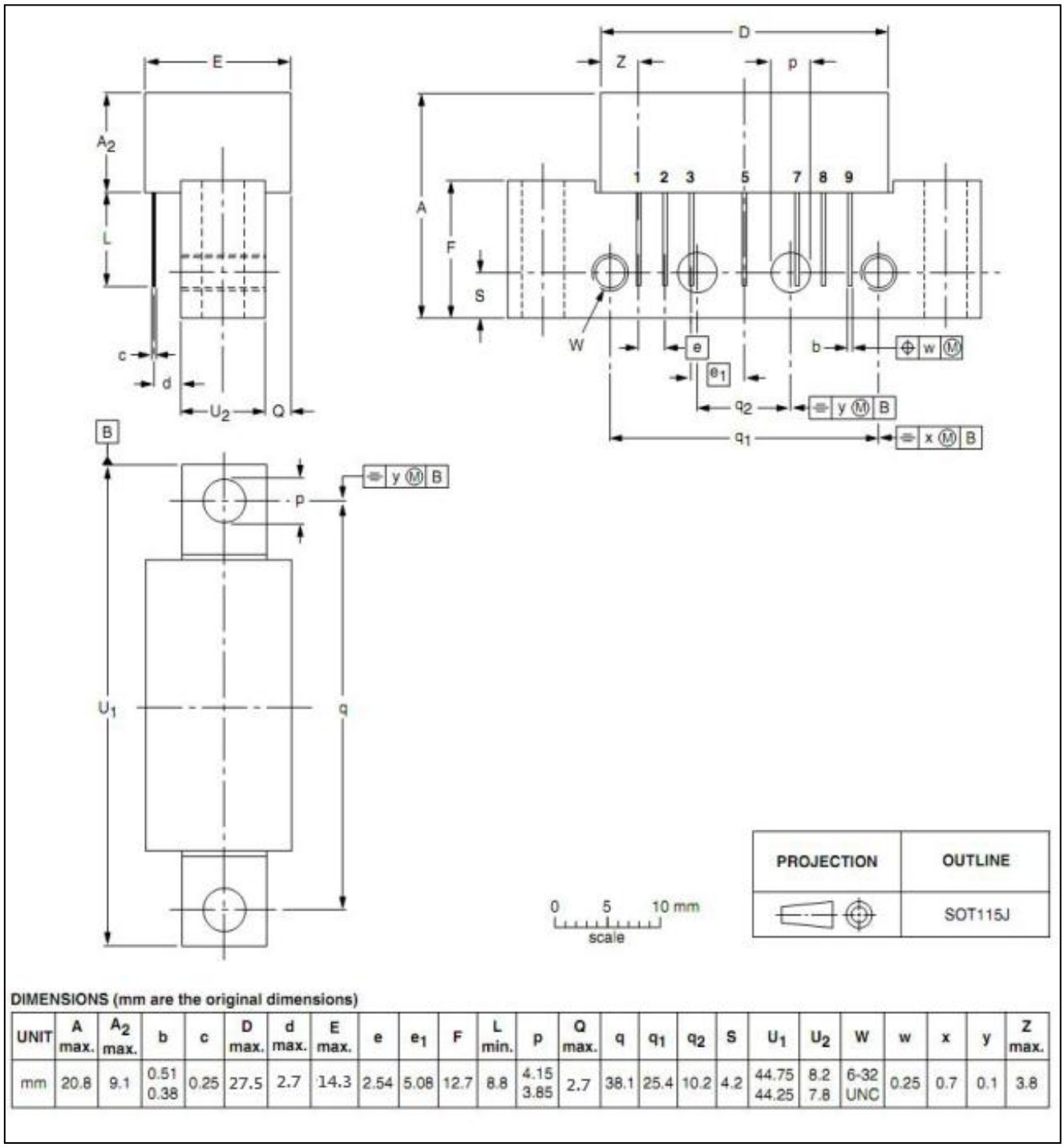
(T_C = 30±5°C, V_B = 24 V, Z_S = Z_L = 75 Ω)

Parameter	Symbol	Test Conditions	MIN	TYP	MAX	Unit
Power Gain	Gp	f = 50MHz	19.5	20.0	21.0	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	IB	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



DIMENSIONS (mm are the original dimensions)

UNIT	A max.	A_2 max.	b	c	D max.	d max.	E max.	e	e_1	F	L min.	p	Q max.	q	q_1	q_2	S	U_1	U_2	W	w	x	y	Z max.
mm	20.8	9.1	0.51 0.38	0.25	27.5	2.7	14.3	2.54	5.08	12.7	8.8	4.15 3.85	2.7	38.1	25.4	10.2	4.2	44.75 44.25	8.2 7.8	6-32 UNC	0.25	0.7	0.1	3.8

UNIT: mm