1000MHz 18dB Gain with GaAs Push-Pull 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 GaAs 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

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

1.3 Applications

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

1.4 Quick reference data

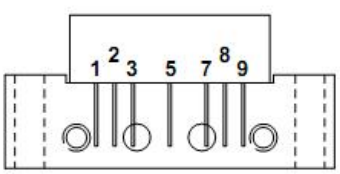
Bandwidth 40 MHz to 1000MHz; V_B = 24 V; T_{mb} = 30 °C; $Z_S = Z_L$ = 75 Ω .

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
G_p	power gain	f = 50 MHz	17.5	18.0	19.0	dB
		f = 1000MHz	18.5	-	-	dB
I_{tot}	total current	V_B = 24 V	260	280	300	mA

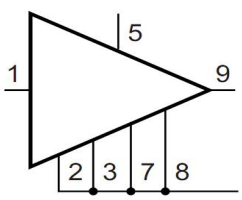
2. Pin information

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	T_{stg}	–40	+100	°C

[1] In case of single tone

3.2 Recommended operating conditions ($Z_S = Z_L = 75\ \Omega$)

Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Supply Voltage	V_B		23.0	24.0	24.5	V
Operating Case Temperature	Tc		−20	+30	+80	°C

4. Electrical characteristics

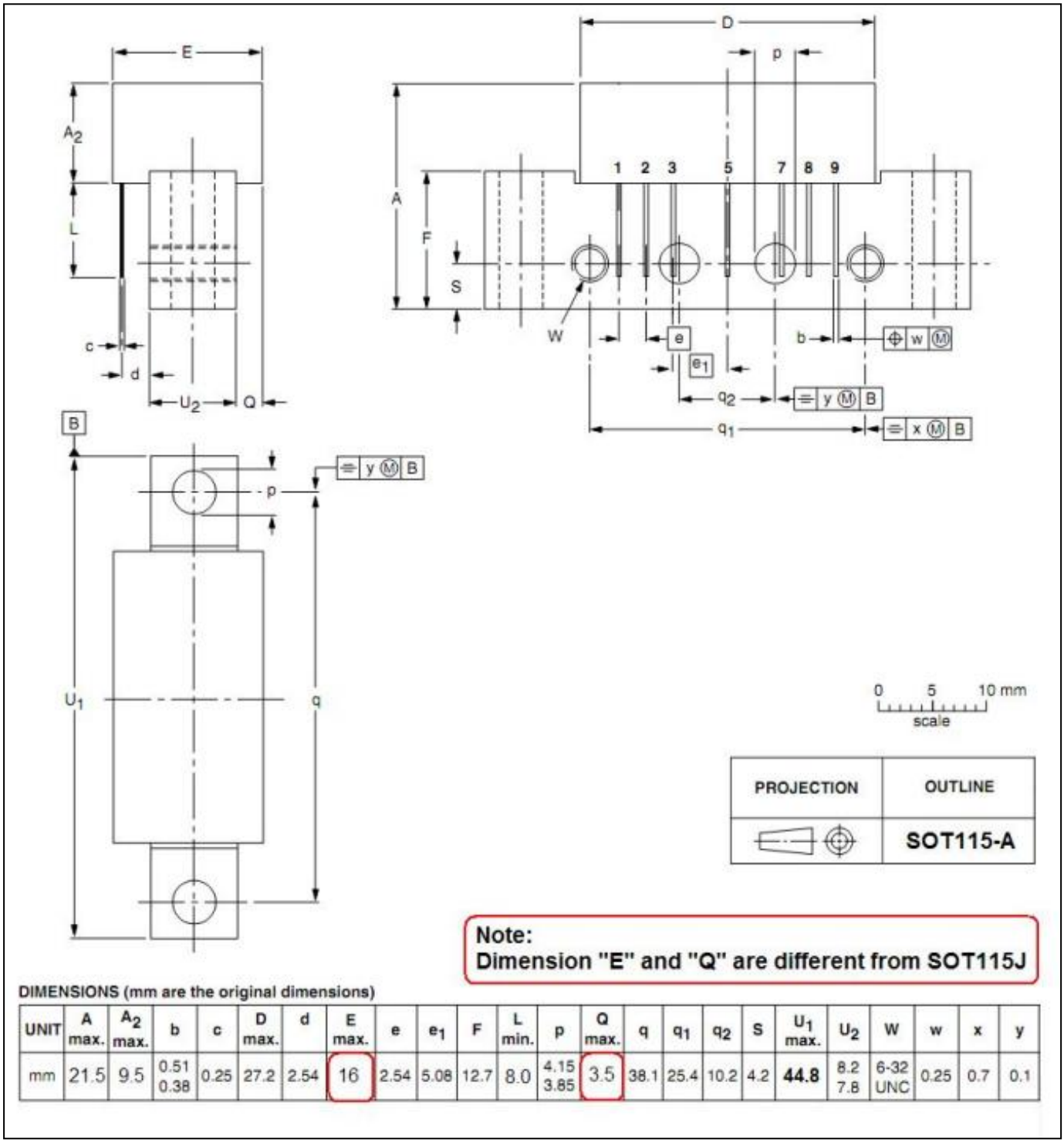
(T_C = 30±5°C, V_B = 24 V, $Z_S = Z_L$ = 75 Ω)

Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Power Gain	G_p	f = 50 MHz	17.5	18.0	19.0	dB
Gain Slope	S_L	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 = 50 to 1000MHz	–	5.0	6.0	dB
Operating Current	I_B	V_B=24VDC，RF OFF	260	280	300	mA
Composite Triple Beat	CTB	98 channels, V_O = 48dBmV at 743.25 MHz, flat output level across the band	–	−62	–	dB
Cross Modulation	XM		–	−60	–	dB
Composite 2nd Order Beat	CSO		–	−64	–	dB
Input Return Loss	S11	f = 40 to 700MHz	17	–	–	dB
		f = 700 to 1000MHz	17	–	–	dB
Output Return Loss	S22	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.

SOT115-A



DIMENSIONS (mm are the original dimensions)

UNIT	A max.	A_2 max.	b	c	D max.	d	E max.	e	e_1	F	L min.	p	Q max.	q	q_1	q_2	S	U_1 max.	U_2	W	w	x	y
mm	21.5	9.5	0.51 0.38	0.25	27.2	2.54	16	2.54	5.08	12.7	8.0	4.15 3.85	3.5	38.1	25.4	10.2	4.2	**44.8**	8.2 7.8	6-32 UNC	0.25	0.7	0.1

UNIT: mm