

1000 MHz CATV 20 dB POWER DOUBLER 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 MMIC with GaAs pHEMT & MESFET Technology, 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 1000 MHz frequency range.

1.4 Quick reference data

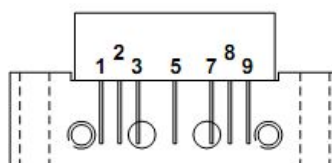
Bandwidth 40 MHz to 1000 MHz; $V_B = 24\text{ V}$; $T_{mb} = 30\text{ }^\circ\text{C}$; $Z_S = Z_L = 75\ \Omega$.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
G_p	power gain	$f = 50\text{ MHz}$	19.5	20.0	21.0	dB
		$f = 1000\text{ MHz}$	20.0	-	-	dB
I_{tot}	total current	$V_B = 24\text{ V}$	340	360	390	mA

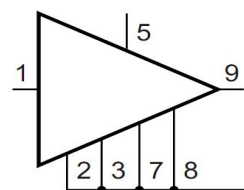
2. Pin information

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	+80	°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

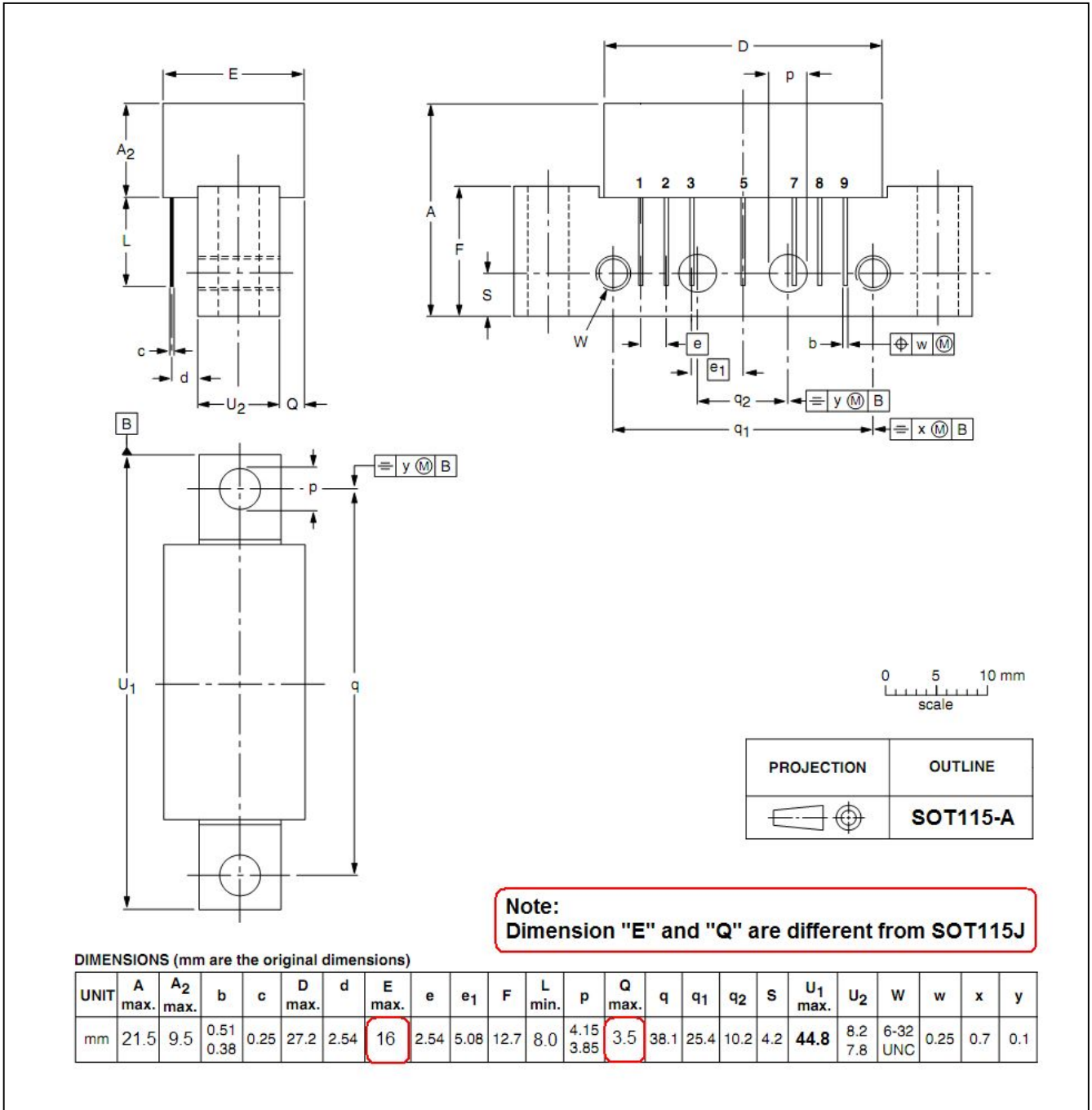
(T_c = 30±5°C, V_B = 24 V, Z_s = Z_L = 75 Ω)

Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Power Gain	G _p	f = 50 MHz	19.5	20.0	21.0	dB
Gain Slope	S _L	f = 50 to 1000 MHz	0.5	1.0	2.5	dB
Gain Flatness	FL	f = 50 to 1000 MHz	-	-	±0.5	dB
Noise Figure	NF	f = 1000 MHz	-	4.0	7.0	dB
Operating Current	I _B	V _B =24VDC, RF OFF	340	360	390	mA
Composite Triple Beat	CTB	84 channels, V _O = 47 dBmV at 743.25 MHz, flat output level across the band	-	-67	-	dB
Cross Modulation	XM		-	-65	-	dB
Composite 2nd Order Beat	CSO		-	-68	-	dB
Input Return Loss	S ₁₁	f = 50 to 550 MHz	18	-	-	dB
		f = 550 to 1000 MHz	16	-	-	dB
Output Return Loss	S ₂₂	f = 50 to 550 MHz	16	-	-	dB
		f = 550 to 1000 MHz	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.

SOT115-A



6. Appendix

6.1 Gain and return loss (S11)

