

1000MHz 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 1000MHz frequency range.

1.4 Quick reference data

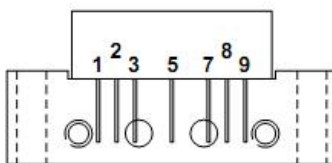
Bandwidth 40MHz to 1000MHz; $V_B = 24\text{ V}$; $T_{mb} = 30\text{ }^\circ\text{C}$; $Z_S = Z_L = 75\text{ }\Omega$.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
G_p	power gain	$f = 50\text{MHz}$	22.3	23.0	23.7	dB
		$f = 1000\text{MHz}$	23.0	-	-	dB
I_{tot}	total current	$V_B = 24\text{ V}$	420	440	460	mA

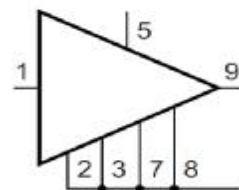
2. Pin information

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	-	24.5	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		23.0	24.0	24.5	V
Operating Case Temperature	T _C		-20	+30	+80	°C

4. Electrical characteristics

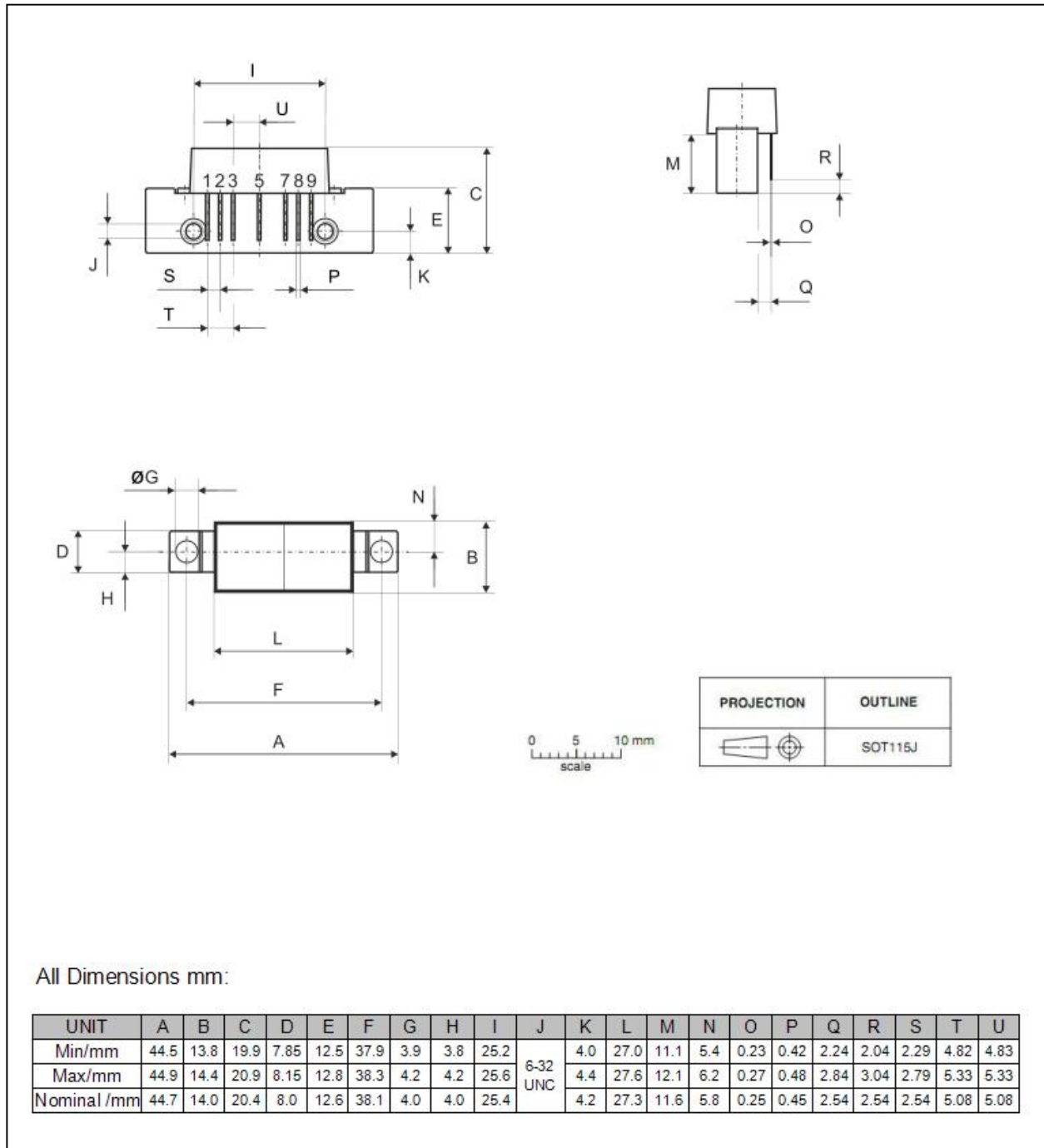
(T_C = 30±5°C, V_B = 24 V, Z_S = Z_L = 75 Ω)

Parameter	Symbol	Test Conditions	MIN	TYP	MAX	Unit
Power Gain	G _p	f = 50MHz	22.3	23.0	23.7	dB
Gain Slope	SL	f = 50 to 1000MHz	0.5	1.5	2.0	dB
Gain Flatness	FL	f = 50 to 1000MHz	-	-	±0.5	dB
Noise Figure	NF	f = 1000MHz	-	4.8	5.5	dB
Operating Current	I _B	V _B =24VDC, RF OFF	420	440	460	mA
Composite Triple Beat	CTB	98 channels, V _o = 48dBmV at 743.25 MHz, flat output level across the band	-	-70	-	dB
Cross Modulation	XM		-	-66	-	dB
Composite 2nd Order Beat	CSO		-	-68	-	dB
Input Return Loss	S11	f = 40 to 550MHz	16	-	-	dB
		f = 550 to 1000MHz	16	-	-	dB
Output Return Loss	S22	f = 40 to 550MHz	16	-	-	dB
		f = 550 to 1000MHz	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.

SOT115J



All Dimensions mm:

UNIT	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
Min/mm	44.5	13.8	19.9	7.85	12.5	37.9	3.9	3.8	25.2	6-32 UNC	4.0	27.0	11.1	5.4	0.23	0.42	2.24	2.04	2.29	4.82	4.83
Max/mm	44.9	14.4	20.9	8.15	12.8	38.3	4.2	4.2	25.6		4.4	27.6	12.1	6.2	0.27	0.48	2.84	3.04	2.79	5.33	5.33
Nominal /mm	44.7	14.0	20.4	8.0	12.6	38.1	4.0	4.0	25.4		4.2	27.3	11.6	5.8	0.25	0.45	2.54	2.54	2.54	5.08	5.08