

### 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

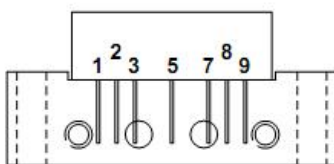
Bandwidth 40MHz to 1.2GHz;  $V_B = 24\text{ V}$ ;  $T_{mb} = 30\text{ }^\circ\text{C}$ ;  $Z_S = Z_L = 75\text{ }\Omega$ .

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$G_p$	power gain	$f = 50\text{MHz}$	22.3	23.0	23.7	dB
		$f = 1.2\text{GHz}$	23.0	-	-	dB
$I_{tot}$	total current	$V_B = 24\text{ V}$	420	440	460	mA

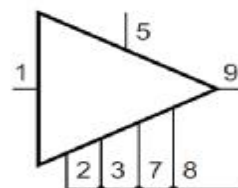
## 2. Pin information

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 <sub>B</sub>	-	24.5	V
Input Voltage [1]	V <sub>i</sub>	-	65	dBmV
Operating Case Temperature	T <sub>C</sub>	-20	+90	°C
Storage Temperature	T <sub>stg</sub>	-40	+100	°C

[1] In case of single tone

#### 3.2 Recommended operating conditions (Z<sub>S</sub> = Z<sub>L</sub> = 75 Ω)

Parameter	Symbol	Test Conditions	MIN	TYP	MAX	Unit
Supply Voltage	V <sub>B</sub>		23.0	24.0	24.5	V
Operating Case Temperature	T <sub>C</sub>		-20	+30	+80	°C

### 4. Electrical characteristics

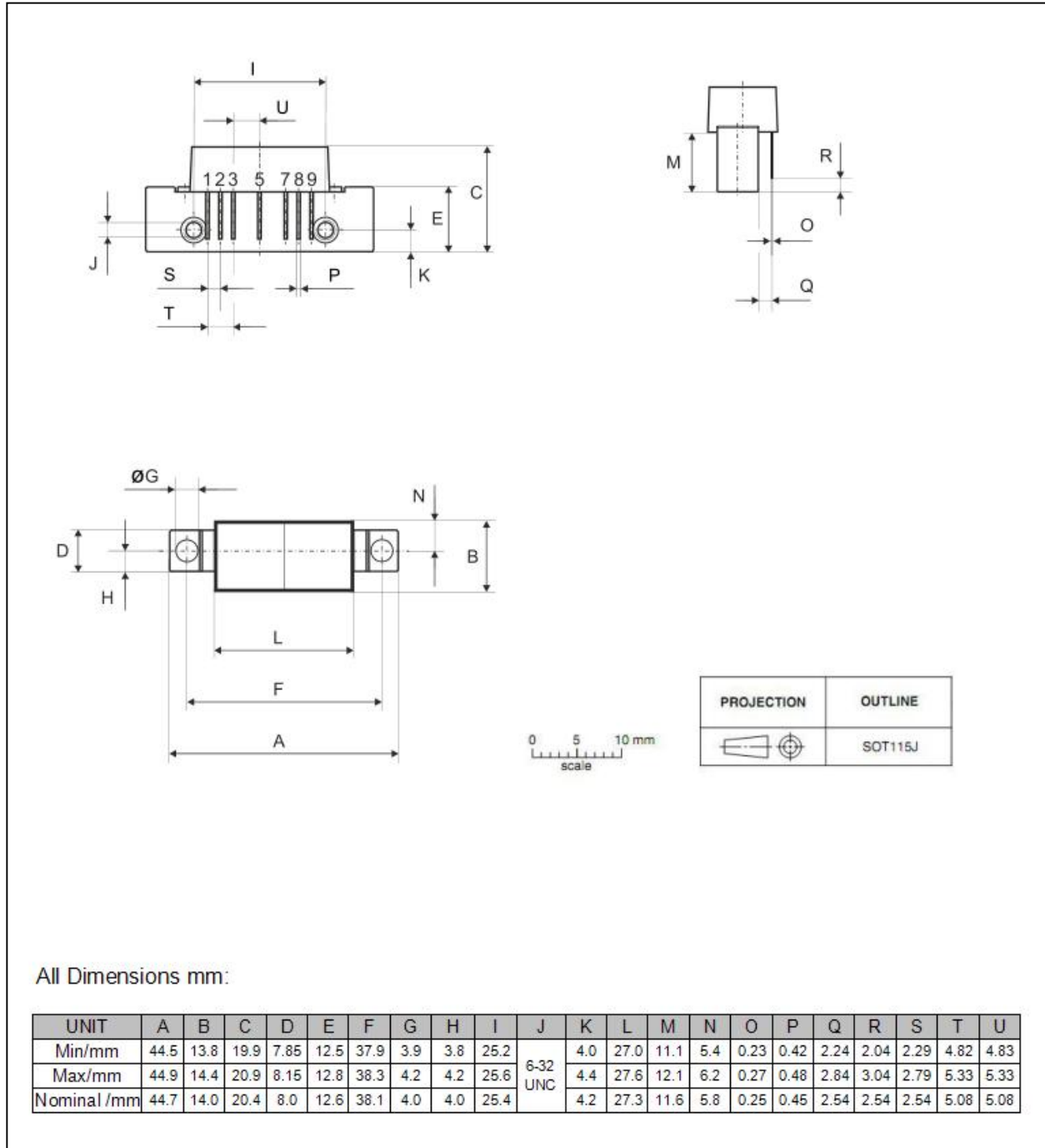
(T<sub>C</sub> = 30±5°C, V<sub>B</sub> = 24 V, Z<sub>S</sub> = Z<sub>L</sub> = 75 Ω)

Parameter	Symbol	Test Conditions	MIN	TYP	MAX	Unit
Power Gain	G <sub>p</sub>	f = 50MHz	22.3	23.0	23.7	dB
Gain Slope	SL	f = 50MHz to 1.2GHz	0.5	1.5	2.0	dB
Gain Flatness	FL	f = 50MHz to 1.2GHz	-	-	±0.5	dB
Noise Figure	NF	f = 1000MHz	-	4.8	5.5	dB
Operating Current	I <sub>B</sub>	V <sub>B</sub> =24VDC, RF OFF	420	440	460	mA
Composite Triple Beat	CTB	98 channels, V <sub>o</sub> = 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 700MHz	16	-	-	dB
		f = 700MHz to 1.2GHz	16	-	-	dB
Output Return Loss	S22	f = 40 to 700MHz	16	-	-	dB
		f = 700MHz to 1.2GHz	14	-	-	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