Low Noise Amplifier TAMP-242LN+

50Ω 1710 to 2400 MHz

The Big Deal

- Ultra Low Noise Figure, 0.65 dB typ.
- High IP3, 33.5dBm typ.
- Low Current, 40mA at +5V
- Integrated Bias Matching and Stabilization Circuits

CASE STYLE: JQ1382

Product Overview

The TAMP-242LN+ (RoHS compliant) utilizes advanced E-PHEMT technology in a single stage low noise amplifier design built into a shielded case (size: .591”x.394”x.118”). The drop-in module offers ultra low noise figure and high output IP3 with good input and output return loss over the entire frequency range and without the need of external matching components.

Key Features

Feature	Advantages
Ultra Low NF	With only 0.65 dB NF, the TAMP-242LN+ enables greater sensitivity for receiver applications. It includes all matching and stability circuits making this Drop-in LNA module a turn-key solution for ensuring low system sensitivity in demanding applications.
High Output IP3, 33.5dBm typ.	At +33.5 dBm IP3, in combination with its low noise performance, the TAMP-242LN+ can improve a systems’ spur-free dynamic range which is often the critical driver in many receiver applications.
High P1dB: 17dBm typ.	High P1dB enables the amplifier to operate in linear region in the presence of strong interfering signals.
Low Current, 40mA typ.	At only 40mA, the TAMP-242LN+ is ideal for applications with limited available power or densely packed applications where termal and power management is critical.
Well Matched input/ output ports	With typical input & output VSWR of 1.4:1, the TAMP-242LN+ can be used in cascade with many 50 Ohm components and maintain minimal interaction or reflections.
Drop-in Module	Eliminates the need for designers to optimize low noise transistor bias and matching circuitry. The TAMP-242LN+ provides the outstanding combined performance and does not require any external elements. The case PCB area is smaller than most LNA transistor designs with external circuitry.
Metal Case	Provides a protective enclosure improving handling robustness in addition to shielding the sensitive high gain devices from close by circuitry.
Unconditionally stable	No adverse effects due to reactive loads at the input and output ports avoiding potential instability which can be a critical requirement when integrating high gain, high frequency devices on an open PCB assembly.

Surface Mount

Low Noise Amplifier

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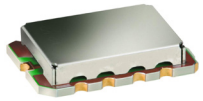


CASE STYLE: JQ1382

Features

- Ultra low noise figure, 0.65 dB typ.
- Output power, up to +17 dBm typ.
- Good output IP3, 33.5 dBm typ.
- Low current consumption
- Good VSWR, 1.4:1 typ.
- Unconditionally stable

Applications

- Base station transceiver, tower mounted amplifier, repeater
- WCDMA
- TD SCDMA
- PCS Rx / PCS Tx
- General purpose low noise amplifier

+RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

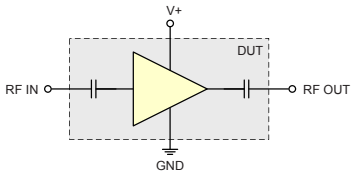
Electrical Specifications at 25°C

Parameter	Condition (MHz)	Min.	Typ.	Max.	Units
Frequency Range		1710		2400	MHz
Noise Figure	1710 - 1880		0.60	0.85	dB
	1850 - 1990		0.60	0.85	
	1990 - 2200		0.65	0.85	
	2200 - 2400		0.65	0.90	
Gain	1710 - 1880	12.0	14.0		dB
	1850 - 1990	11.5	13.5		
	1990 - 2200	10.5	12.5		
	2200 - 2400	10.0	11.5		
Gain Flatness	1710 - 1880		± 0.5	± 1.0	dB
	1850 - 1990		± 0.3	± 0.7	
	1990 - 2200		± 0.5	± 1.0	
	2200 - 2400		± 0.4	± 0.8	
Output Power at 1dB compression	1710 - 1880	15.5	17.0		dBm
	1850 - 1990	15.5	17.0		
	1990 - 2200	15.5	17.0		
	2200 - 2400	15.5	17.0		
Output third order intercept point (OIP3)	1710 - 1880		32.5		dBm
	1850 - 1990		33.5		
	1990 - 2200		34.5		
	2200 - 2400		34.5		
Input VSWR	1710 - 1880		1.4		:1
	1850 - 1990		1.5		
	1990 - 2200		1.6		
	2200 - 2400		1.7		
Output VSWR	1710 - 1880		1.2		:1
	1850 - 1990		1.2		
	1990 - 2200		1.2		
	2200 - 2400		1.2		
DC Supply Voltage			5.0		V
DC Supply Current			40	46	mA

Pin Connections

RF IN	10
RF OUT	5
V+	7
GROUND	1,2,3,4,6,8,9,11

Simplified Schematic



Maximum Ratings

Parameter	Ratings
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Operating Voltage	5.5 V
Input RF Power (no damage)	+10 dBm
Power Consumption	250 mW

Permanent damage may occur if any of these limits are exceeded.

ESD Rating

Human Body Model (HBM): Class 1A (250 V to < 500 V) in accordance with ANSI/ESD STM 5.1 - 2001
Machine Model (MM): Class M1 (40 V) in accordance with ANSI/ESD STM 5.2 - 1999

Notes

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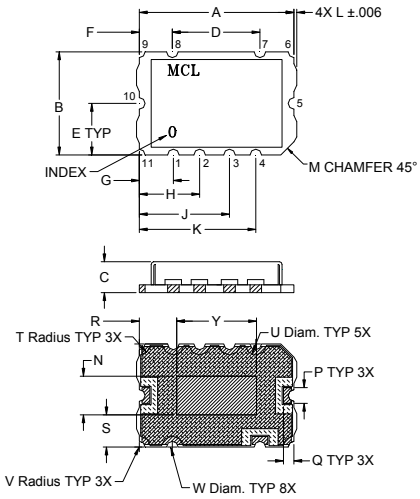
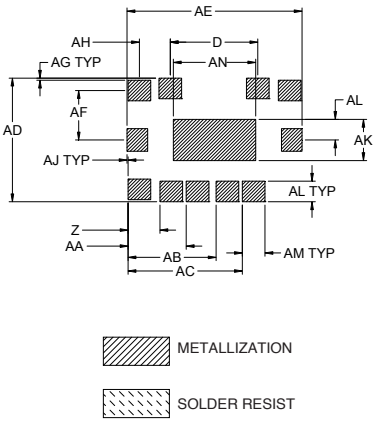
www.minicircuits.com P.O. Box 350166, Brooklyn, NY 11235-0003 (718) 934-4500 sales@minicircuits.com

Outline Drawing



PCB Land Pattern

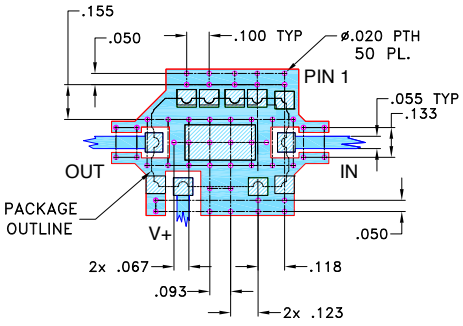


Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U
.591	.394	.118	.335	.197	.126	.130	.230	.344	.445	.011	.050	.148	.060	.040	.143	.123	.042	.084
15.0	10.0	3.0	8.5	5.0	3.2	3.3	5.85	8.75	11.3	.28	1.27	3.75	1.52	1.02	3.63	3.13	1.07	2.13

V	W	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AJ	AK	AL	AM	AN	wt.
.022	.044	.305	.122	.222	.337	.437	.472	.669	.189	.008	.118	.004	.158	.079	.087	.315	grams
.56	1.12	7.75	3.1	5.65	8.55	11.1	12.0	17.0	4.8	.20	3.0	.10	4.0	2.0	2.2	8.0	0.8

Demo Board MCL P/N: TB-468+
Suggested PCB Layout (PL-293)

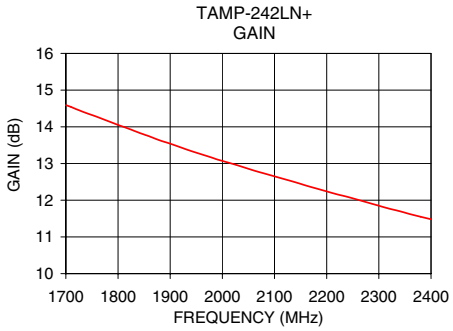


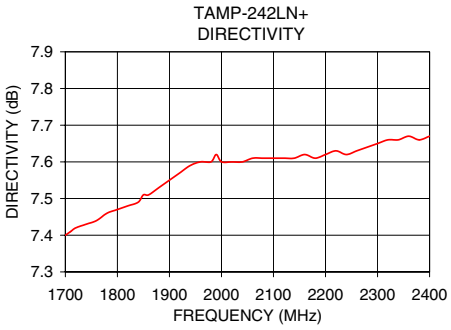
NOTES:
1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .030" ± .002; COPPER 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

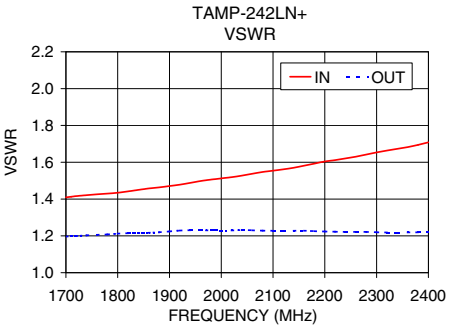
DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

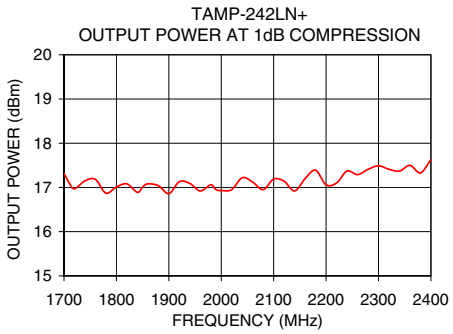
DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

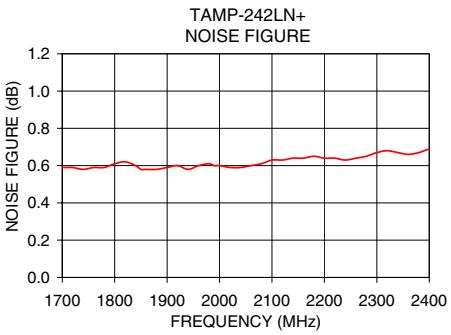
FREQUENCY (MHz)	GAIN (dB)	DIRECTIVITY (dB)	VSWR IN (:1)	VSWR OUT (:1)	NOISE FIGURE (dB)	P. OUT @ 1dB COMPR. (dBm)	OUTPUT IP3 (dBm)
1710.00	14.54	7.41	1.41	1.19	0.59	17.10	31.29
1740.00	14.37	7.43	1.42	1.19	0.58	17.15	31.77
1760.00	14.27	7.44	1.42	1.20	0.59	17.18	31.59
1785.00	14.13	7.47	1.43	1.20	0.60	16.87	32.06
1800.00	14.05	7.47	1.43	1.20	0.61	17.01	32.29
1850.00	13.79	7.51	1.45	1.21	0.58	17.01	32.54
1880.00	13.63	7.53	1.46	1.21	0.58	17.04	32.81
1900.00	13.54	7.55	1.46	1.21	0.59	16.86	33.07
1940.00	13.34	7.59	1.48	1.22	0.58	17.09	33.32
1960.00	13.25	7.60	1.49	1.22	0.60	16.92	33.44
1990.00	13.11	7.62	1.50	1.22	0.60	16.95	33.75
2000.00	13.07	7.60	1.51	1.22	0.60	16.93	33.57
2050.00	12.86	7.60	1.53	1.22	0.59	17.12	34.05
2100.00	12.65	7.61	1.55	1.22	0.63	17.19	34.33
2150.00	12.46	7.62	1.56	1.22	0.64	16.92	34.80
2200.00	12.24	7.62	1.59	1.22	0.64	17.06	34.56
2250.00	12.05	7.62	1.61	1.21	0.63	17.34	34.83
2300.00	11.85	7.65	1.64	1.21	0.67	17.49	34.53
2350.00	11.68	7.66	1.66	1.21	0.67	17.37	33.62
2400.00	11.48	7.67	1.69	1.21	0.69	17.63	34.55

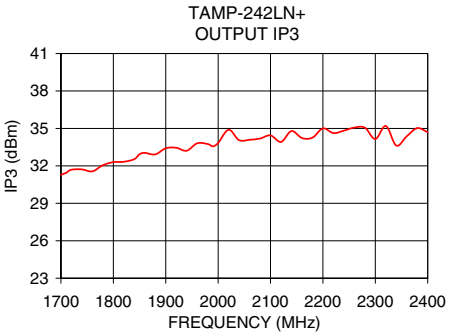












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