

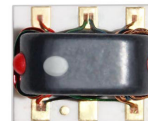
Surface Mount RF Transformer

TX4-62HP+

50Ω 20 to 600 MHz

The Big Deal

- High power/high DC Current (10W, 30mA)
- High impedance ratio 4:1
- Low insertion loss, 0.8 dB
- Leadless surface mount design



CASE STYLE: TT597

Product Overview

The TX4-62HP+ is a high-power, surface-mount balanced transmission line transformer with a high impedance ratio (4:1) covering the 20 to 600 MHz band. It achieves 10W power handling with low insertion loss and good phase and amplitude unbalance (4°, 0.7 dB respectively). This model is ideal for applications including impedance matching of amplifiers, push-pull amplifiers and more. Featuring core and wire construction on a leadless base with gold over nickel plate terminations, the unit measures just 0.31 x 0.25 x 0.20", ideal for dense circuit board layouts.

Feature	Advantages
High RF Power, 10W High DC Current, 30mA	Supports systems with high power and DC current requirements.
Low insertion loss, 0.8 dB	Excellent transmission of signal power from input to output.
Leadless design	Minimizes losses due to transmission line length.
Small footprint, 0.31 x 0.25 x .20"	Accommodates tight space requirements for dense PCB layouts.

Notes

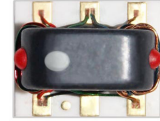
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B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp



Surface Mount RF Transformer

TX4-62HP+

50Ω 20 to 600 MHz



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Maximum Ratings

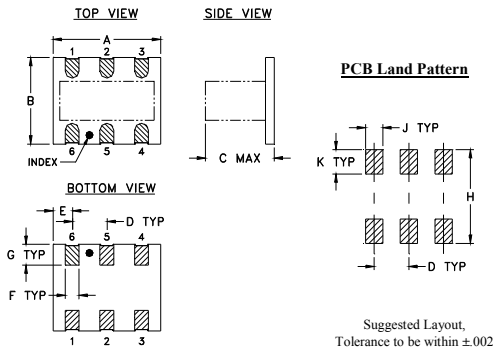
Operating Temperature	-20°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	10W
DC Current	30mA

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

Pin Connections

PRIMARY DOT	4
PRIMARY	6
SECONDARY DOT	3
SECONDARY	1
SECONDARY CT	2
NOT USED	5

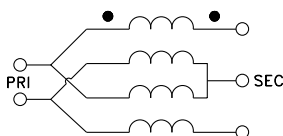
Outline Drawing



Outline Dimensions (Inch/mm)

A	B	C	D	E	F
.310	.250	.20	.100	.055	.040
7.87	6.35	5.08	2.54	1.40	1.02
G	H	J	K	wt.	
.060	.270	.050	.070	grams	
1.52	6.86	1.27	1.78	0.4	

Config. H



Features

- high power/high DC current
- wideband 20 to 600 MHz
- high impedance ratio 4:1
- leadless surface mount

Applications

- impedance matching of amplifiers
- push-pull amplifiers
- VHF/UHF receivers/transmitters

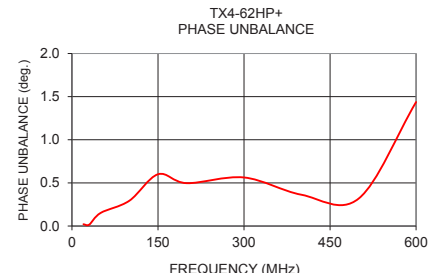
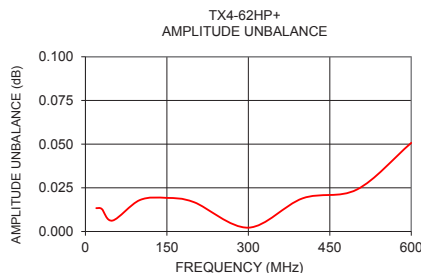
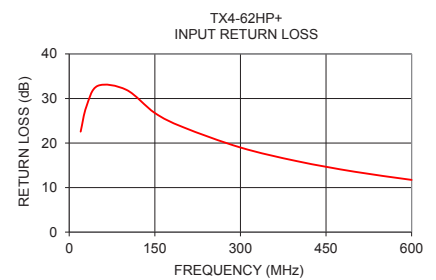
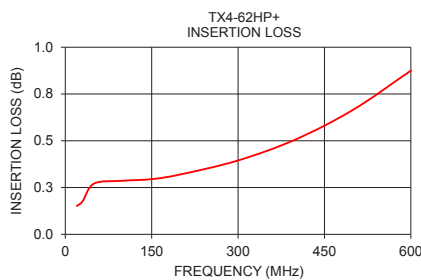
Electrical Specifications at 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Impedance Ratio (secondary/primary)			4		
Frequency Range		20	—	600	MHz
Insertion Loss*	30-400	—	0.4	1	dB
	20-600	—	0.8	2	
Amplitude Unbalance	30-400	—	0.3	0.8	dB
	20-600	—	0.7	1.7	
Phase Unbalance	30-400	—	2.0	7	Degree
	20-600	—	4.0	10	

* Insertion Loss is referenced to mid-band loss, 0.2 dB typ. The user must provide adequate means of heat removal to limit the temperature of PCB to 85°C, in order to ensure proper performance. At 25°C ambient this requires thermal resistance of the user's PCB heat sink to be less of 30°C/W.

Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB)	INPUT R. LOSS (dB)	AMPLITUDE UNBALANCE (dB)	PHASE UNBALANCE (Deg.)
20	0.15	22.56	0.01	0.02
30	0.18	28.15	0.01	0.02
50	0.27	32.84	0.01	0.15
100	0.29	31.95	0.02	0.29
150	0.29	26.75	0.02	0.60
200	0.32	23.54	0.02	0.50
300	0.39	19.00	0.00	0.56
400	0.51	15.91	0.02	0.36
500	0.67	13.56	0.02	0.32
600	0.87	11.73	0.05	1.44



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RF Transformer

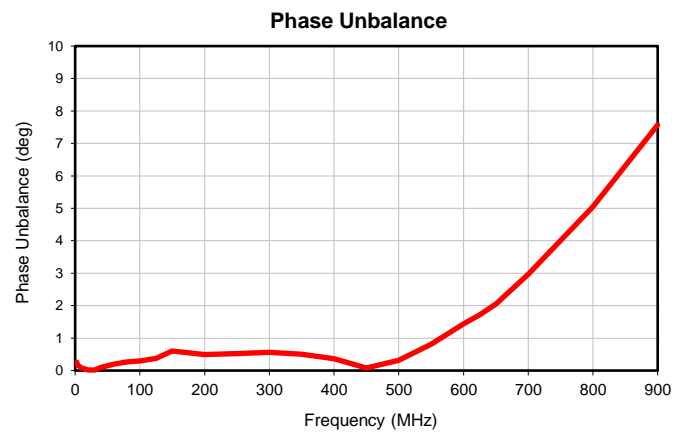
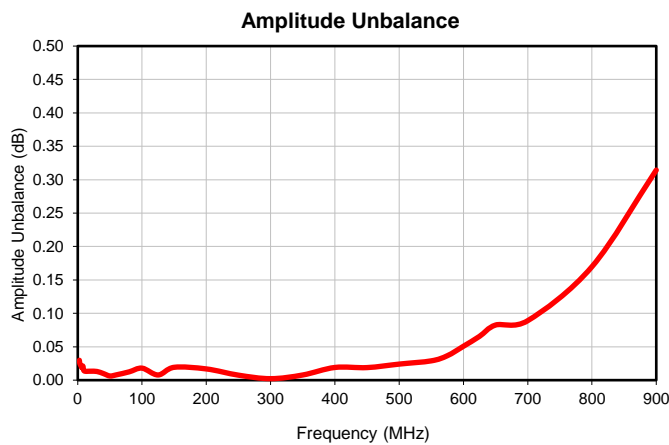
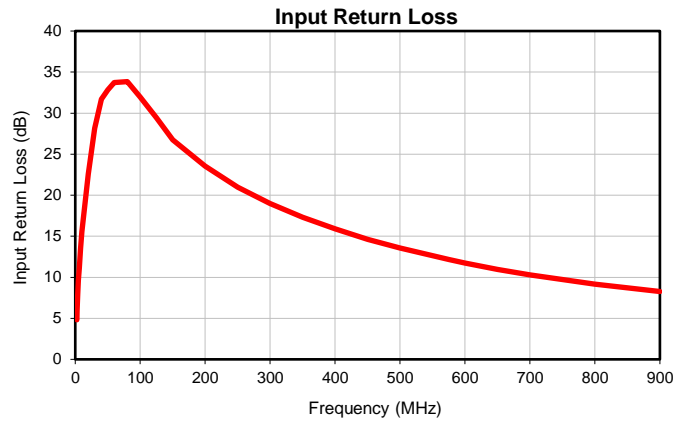
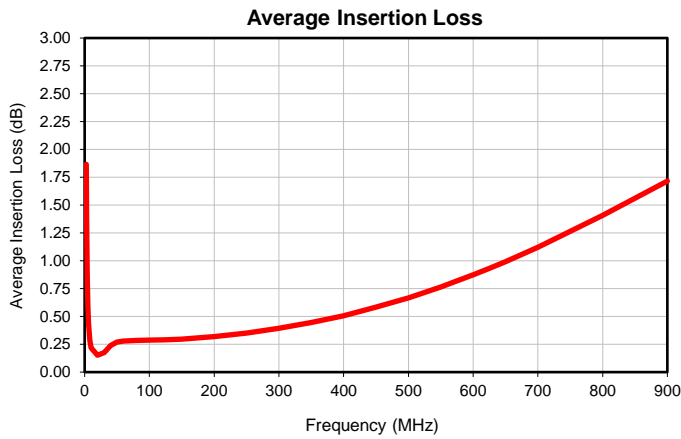
TX4-62HP+

Typical Performance Data

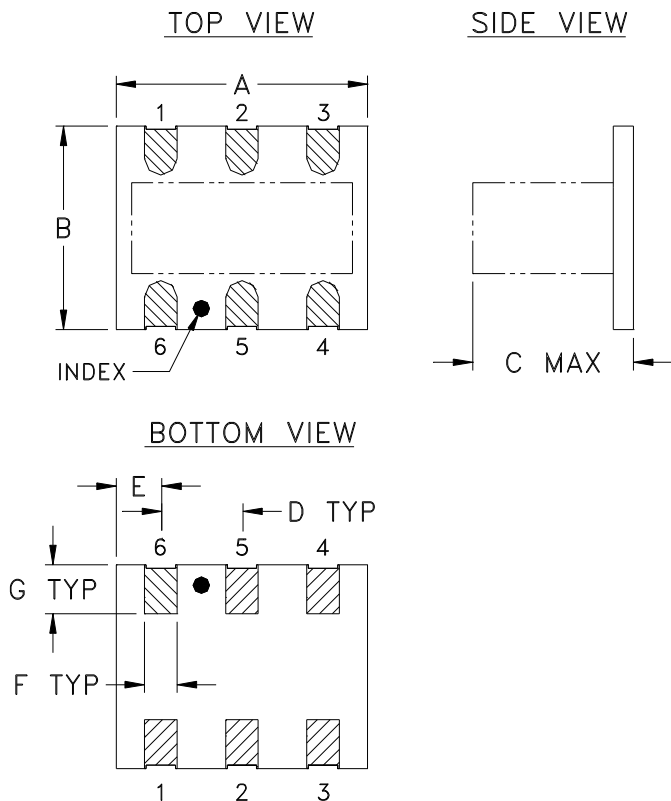
FREQUENCY MHz	AVERAGE INSERTION LOSS (dB)	INPUT RETURN LOSS (dB)	AMPLITUDE UNBALANCE (dB)	PHASE UNBALANCE (deg.)
2.5	1.87	4.82	0.03	0.26
3	1.39	5.94	0.03	0.20
4	0.87	7.93	0.02	0.17
5	0.60	9.63	0.02	0.14
6	0.44	11.10	0.02	0.13
8	0.29	13.55	0.02	0.11
10	0.22	15.54	0.01	0.08
20	0.15	22.56	0.01	0.02
30	0.18	28.15	0.01	0.02
40	0.24	31.69	0.01	0.10
50	0.27	32.84	0.01	0.15
60	0.28	33.71	0.01	0.20
80	0.28	33.84	0.01	0.26
100	0.29	31.95	0.02	0.29
125	0.29	29.43	0.01	0.38
150	0.29	26.75	0.02	0.60
200	0.32	23.54	0.02	0.50
250	0.35	20.99	0.01	0.52
300	0.39	19.00	0.00	0.56
350	0.45	17.32	0.01	0.50
400	0.51	15.91	0.02	0.36
450	0.58	14.64	0.02	0.08
500	0.67	13.56	0.02	0.32
550	0.76	12.62	0.03	0.81
575	0.82	12.16	0.04	1.13
600	0.87	11.73	0.05	1.44
625	0.93	11.33	0.07	1.72
650	0.99	10.97	0.08	2.05
700	1.12	10.28	0.09	2.96
800	1.41	9.15	0.17	5.05
900	1.72	8.25	0.31	7.57



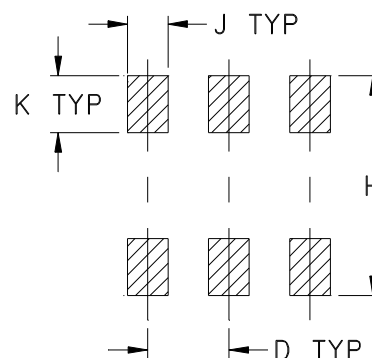
Typical Performance Data



Outline Dimensions



PCB Land Pattern



Suggested Layout,
Tolerance to be within $\pm .002$

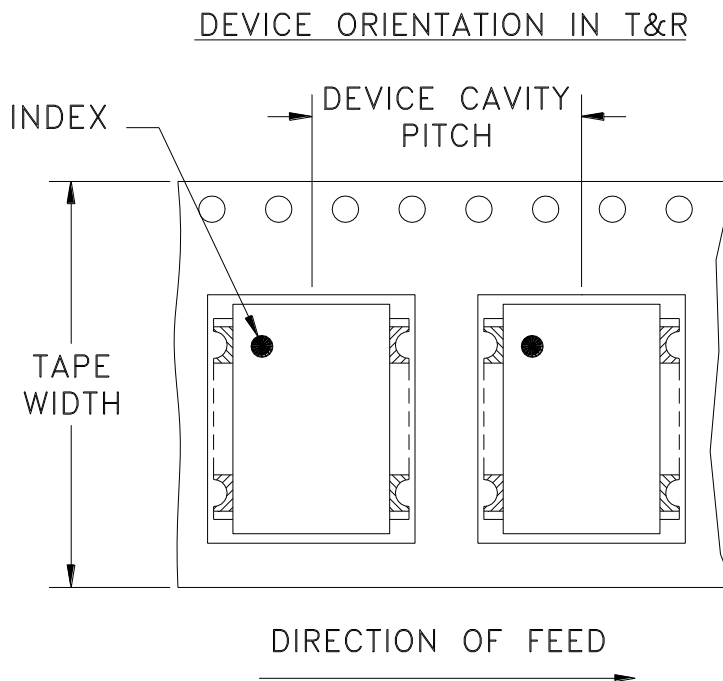
CASE #	A	B	C	D	E	F	G	H	J	K	WT, GRAM
TT597	.310 (7.87)	.250 (6.35)	.20 (5.08)	.100 (2.54)	.055 (1.40)	.040 (1.02)	.060 (1.52)	.270 (6.86)	.050 (1.27)	.070 (1.78)	.40

Dimensions are in inches (mm). Tolerances: 2Pl. $\pm .01$; 3 Pl. $\pm .005$

Notes:

1. Open style, base material: Printed wiring board.
2. Terminations: 2-10 μ inch (.05-.25 microns) Gold over 100-300 μ inch (2.54-7.62 microns) Nickel plate.

Tape & Reel Packaging TR-F2



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel See note
16	12	7	10
			20
			50
			100
		200	
		13	500

Note: Please consult individual model data sheet to determine device per reel availability

Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.

Go to: www.minicircuits.com/pages/pdfs/tape.pdf



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All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-20° to 85°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Humidity	90 to 95% RH, 240 hours, 50°C	MIL-STD-202, Method 103, Condition A, Except 50°C and end-point electrical test done within 12 hours
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
Solder Reflow Heat	Sn-Pb Eutetic Process: 225°C peak Pb-Free Process 245° - 250°C peak	J-STD-020, Table 4-1, 4-2 and 5-2, Figure 5-1
Solderability	10X Magnification	J-STD-002, 95% Coverage
Vibration (High Frequency)	20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36)	MIL-STD-202, Method 204, Condition D
Mechanical Shock	50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes	MIL-STD-202, Method 213, Condition A
Marking Resistance to Solvents	Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C; distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C	MIL-STD-202, Method 215