SURFACE MOUNT

RF Transformer

TXA4-512HP+

50/12.5Ω 30 to 512 MHz 5 W

THE BIG DEAL

- High Power Input, 5 W Max
- Wide Bandwidth, 30 to 512 MHz
- Good Amplitude Unbalance, 0.3 dB Typ.
- Excellent Phase Unbalance, 2 Deg. Typ.
- Balanced Transmission Line

Generic photo used for illustration purposes only

CASE STYLE: PE1259

+RoHS Compliant
The +Suffix identifies RoHS Compliance.
See our website for methodologies and qualifications

APPLICATIONS

- PCS
- Cellular

PRODUCT OVERVIEW

Mini-Circuits' TXA4-512HP+ is a high-power, surface-mount balanced transmission line transformer supporting applications from 30 to 512 MHz. This model provides a primary/secondary impedance ratio of 1/4 and RF input power handling up to 5 W. The transformer is constructed on printed wire laminate with a Nickel-Silver alloy case (0.72x0.55x0.23") and wraparound terminations for excellent solderability.

KEY FEATURES

Features	Advantages
Wide Bandwidth, 30 to 512 MHz	TXA4-512HP+ covers primary application bands for PCS and cellular systems.
High Input Power, 5 W	The transformer supports systems with high operating power requirements.
Low Insertion Loss, 0.6 dB	Excellent transmission of signal power from input to output.
Small Footprint, (0.72x0.55x0.23")	Accommodates tight space requirements for dense PCB layouts.

REV. A
ECO-017642
TXA4-512HP+
MCL NY
260204

RF Transformer

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ELECTRICAL SPECIFICATIONS AT +25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Impedance Ratio (Primary/Secondary)			50/12.5		
Frequency Range		30		512	MHz
Insertion Loss[1]	30-200 200-512		0.5 0.7	1.0 1.5	dB
Amplitude Unbalance	30-200 200-512		0.2 0.2	0.5 0.5	dB
Phase Unbalance	30-200 200-512		2 1	5 5	Degree

1. Insertion Loss is referenced to mid-band loss 0.4 dB typ.
The user must provide adequate means of heat removal to limit the temperature of ground connections under the PCB to +65°C, in order to ensure proper performance. At +25°C ambient temperature this requres thermal resistance of the user's PC board heat sink to be 10°C/W.

ABSOLUTE MAXIMUM RATINGS

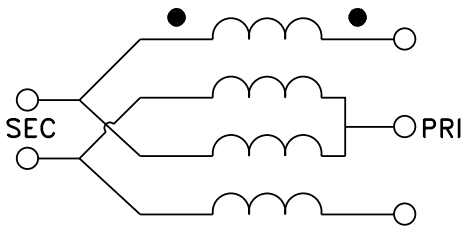
Parameter	Ratings
Operating Temperature	-40°C to +65°C
Storage Temperature	-55°C to +100°C
RF Power	5 W
DC Current	30 mA

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

PIN CONNECTIONS

PRIMARY DOT	2
PRIMARY	1
SECONDARY DOT	7
SECONDARY	8
GROUND	All others

CONFIG. H



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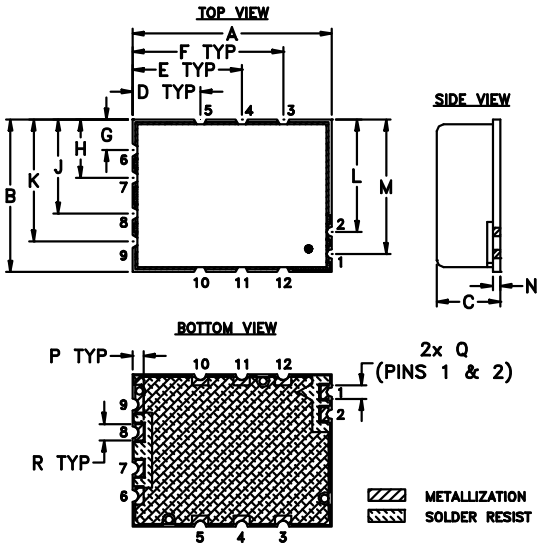
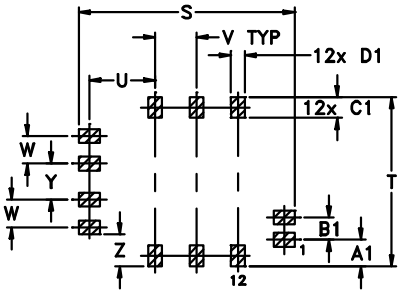
OUTLINE DRAWING



PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

OUTLINE DIMENSIONS (Inch / mm)

A	B	C	D	E	F	G	H	J	K
.720	.550	.23	.245	.395	.545	.110	.210	.340	.440
-18.29	13.97	5.84	6.22	10.03	13.84	2.79	5.33	8.64	11.18

L	M	N	P	Q	R	S	T	U	V
.405	.485	.028	.040	.050	.060	.780	.610	.238	.150
-10.29	12.32	0.71	1.02	1.27	1.52	19.81	15.49	6.05	3.81

W	Y	Z	A1	B1	C1	D1			wt
.100	.130	.115	.095	.080	.075	0.05			grams
2.54	3.30	2.92	2.41	2.03	1.91	1.27			1.20

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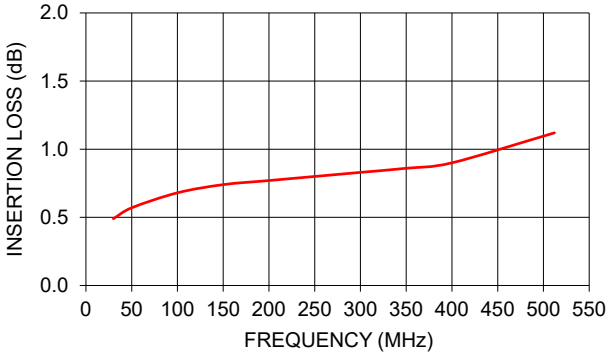
50/12.5Ω 30 to 512 MHz 5 W

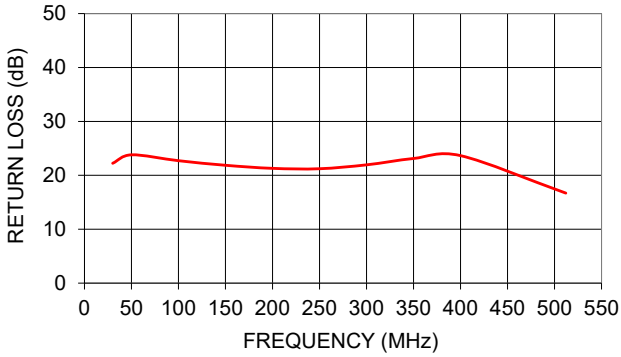
TYPICAL PERFORMANCE DATA

FREQUENCY (MHz)	INSERTION LOSS (dB)	INPUT R. LOSS (dB)	AMPLITUDE UNBALANCE (dB)	PHASE UNBALANCE (Deg.)
30	0.49	22.23	0.17	1.95
50	0.57	23.80	0.21	0.93
100	0.68	22.71	0.20	0.36
150	0.74	21.86	0.19	0.01
200	0.77	21.29	0.17	0.20
250	0.80	21.22	0.14	0.34
300	0.83	21.94	0.11	0.48
350	0.86	23.12	0.07	0.62
400	0.90	23.65	0.03	0.71
512	1.12	16.70	0.06	0.95

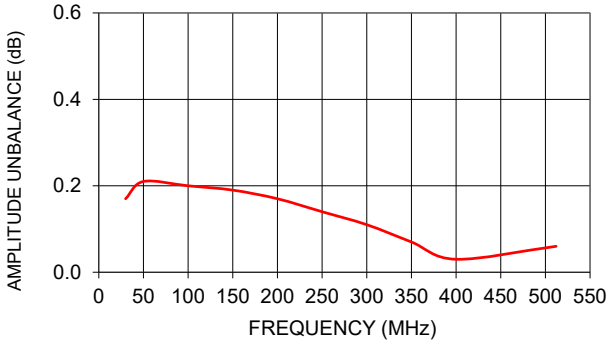
INSERTION LOSS



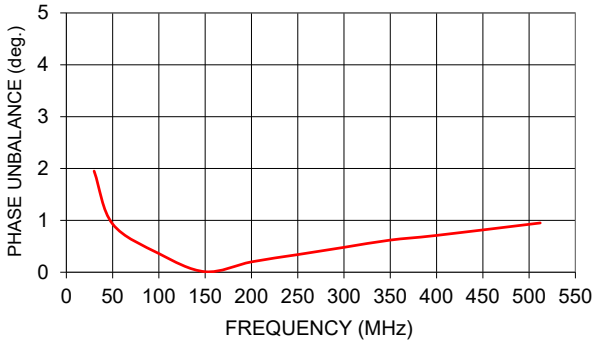
INPUT RETURN LOSS



AMPLITUDE UNBALANCE



PHASE UNBALANCE



NOTES

A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.

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/terms/viewterm.html

RF Transformer TXA4-512HP+

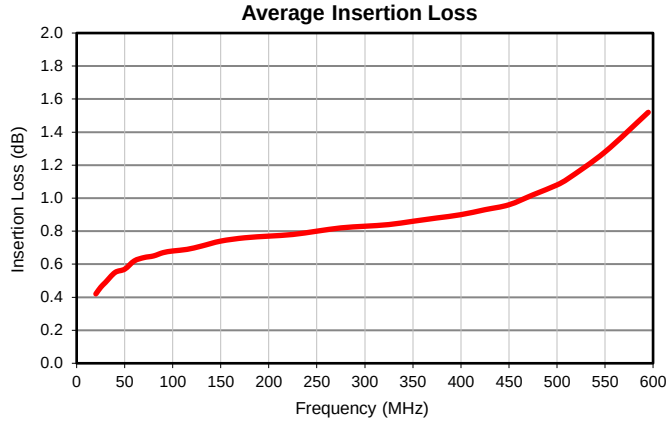
Typical Performance Data

FREQUENCY (MHz)	AVERAGE INSERTION LOSS (dB)	INPUT RETURN LOSS (dB)	AMPLITUDE UNBALANCE (dB)	PHASE UNBALANCE (deg.)
20	0.42	19.70	0.16	3.18
25	0.46	21.24	0.17	2.44
30	0.49	22.23	0.17	1.95
40	0.55	23.08	0.19	1.34
50	0.57	23.80	0.21	0.93
60	0.62	23.45	0.21	0.83
70	0.64	23.35	0.20	0.70
80	0.65	23.12	0.20	0.57
90	0.67	22.93	0.20	0.45
100	0.68	22.71	0.20	0.36
115	0.69	22.40	0.19	0.23
130	0.71	22.07	0.19	0.14
150	0.74	21.86	0.19	0.01
175	0.76	21.51	0.18	0.09
200	0.77	21.29	0.17	0.20
225	0.78	21.17	0.15	0.28
250	0.80	21.22	0.14	0.34
275	0.82	21.56	0.12	0.43
300	0.83	21.94	0.11	0.48
325	0.84	22.48	0.09	0.56
350	0.86	23.12	0.07	0.62
375	0.88	23.55	0.05	0.66
400	0.90	23.65	0.03	0.71
425	0.93	23.02	0.01	0.76
450	0.96	21.53	0.01	0.82
475	1.02	19.60	0.04	0.88
500	1.08	17.61	0.06	0.92
512	1.12	16.70	0.06	0.95
550	1.28	14.02	0.09	0.91
595	1.52	11.34	0.15	1.04

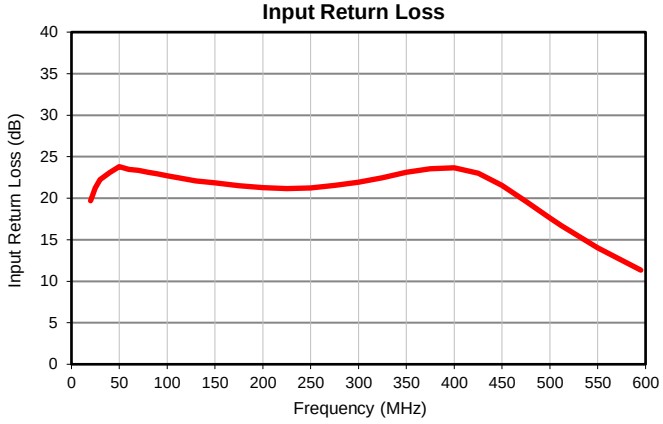
RF Transformer TXA4-512HP+

Typical Performance Data

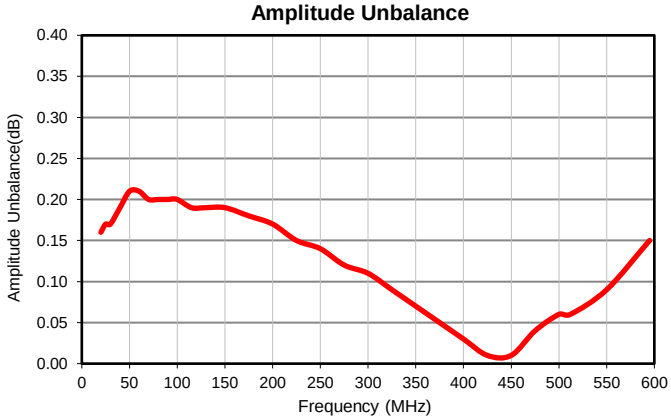
Average Insertion Loss



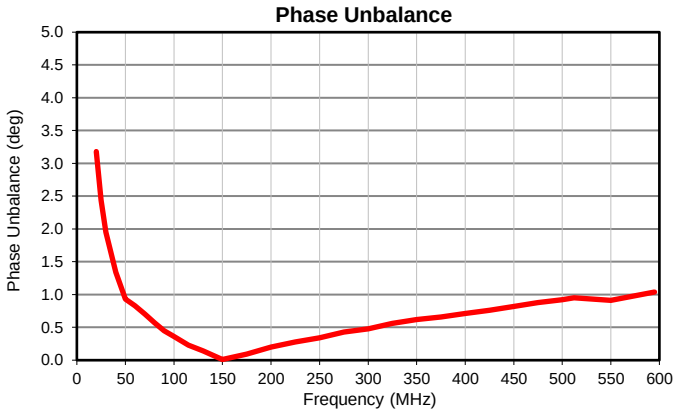
Input Return Loss



Amplitude Unbalance



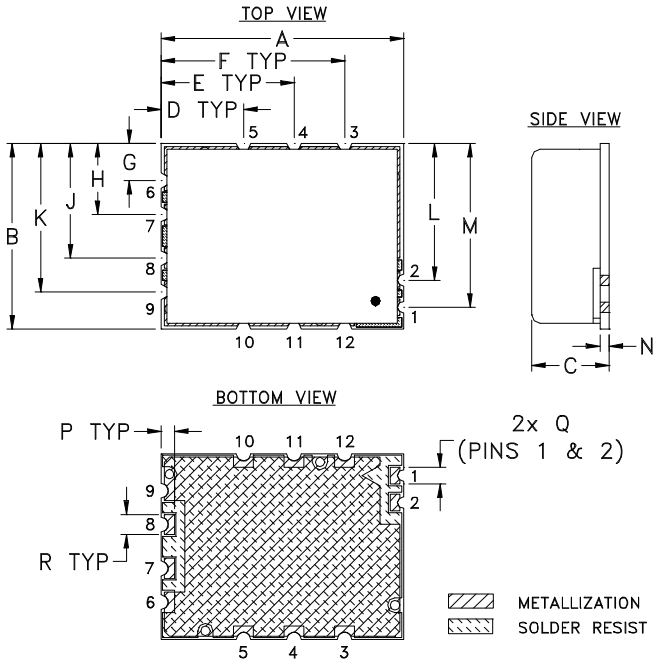
Phase Unbalance



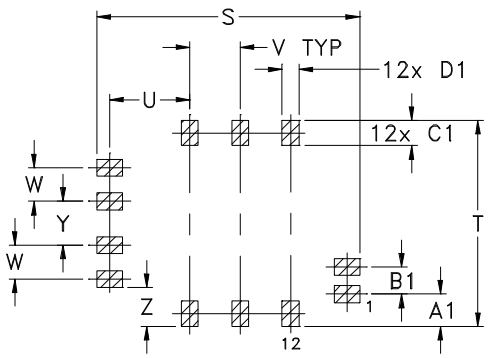
Case Style PE

Outline Dimensions

PE1259



PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

CASE #	A	B	C	D	E	F	G	H	J	K	L	M	N
PE1259	.720 (18.29)	.550 (13.97)	.23 (5.84)	.245 (6.22)	.395 (10.03)	.545 (13.84)	.110 (2.79)	.210 (5.33)	.340 (8.64)	.440 (11.12)	.405 (10.29)	.485 (12.32)	.028 (.71)

CASE #	P	Q	R	S	T	U	V	W	Y	Z	A1	B1	C1
PE1259	.040 (1.02)	.050 (1.27)	.060 (1.52)	.780 (19.81)	.610 (15.49)	.238 (6.05)	.150 (3.81)	.100 (2.54)	.130 (3.30)	.115 (2.92)	.095 (2.41)	.080 (2.03)	.075 (1.90)

CASE #	D1	WT. GRAMS
PE1259	.050 (1.27)	1.2

Dimensions are in inches (mm). Tolerances: 2Pl. ± .03; 3 Pl. ± .015

Notes:

1. Case material: Nickel-Silver alloy.
2. Header: Printed wiring laminate.
3. Termination finish:
   For For RoHS Case Styles: Tin plate over Nickel plate. All models, (+) suffix.
   For RoHS-5 Case Styles: Tin-Lead plate. All models, no (+) suffix.

Mini-Circuits®
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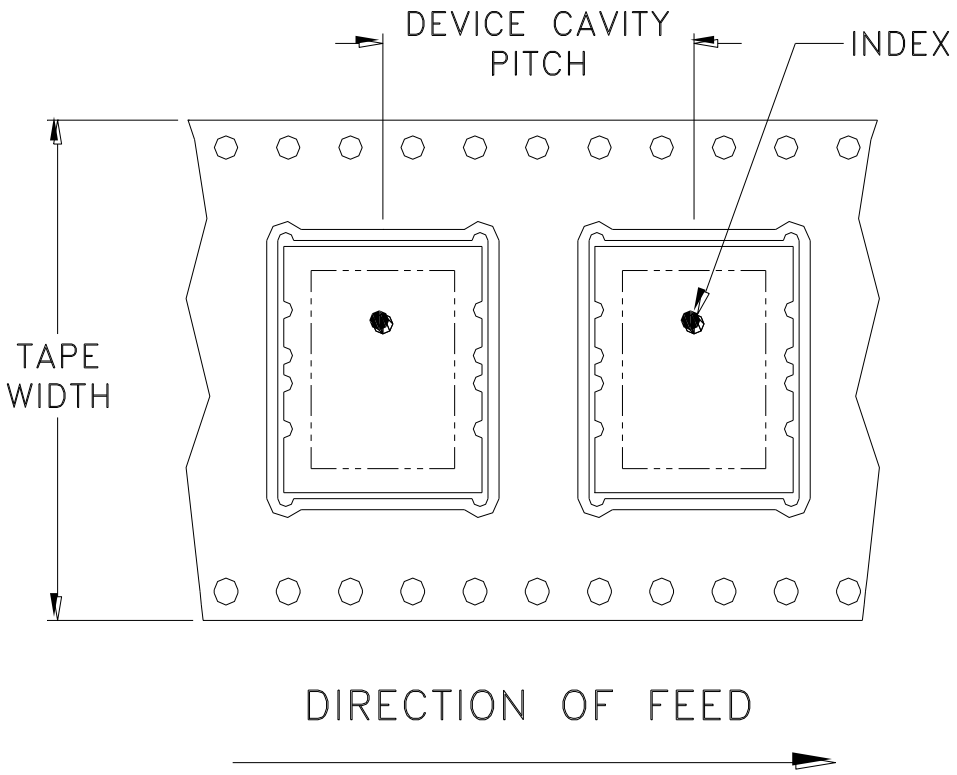
Tape & Reel Packaging TR-F107

DEVICE ORIENTATION IN T&R



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel	
32	20	7	Small quantity standards (see note)	10
				20
				50
				100
		13	Standard	200

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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Environmental Specifications **ENV02T4**

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	-40° to 65° C Case 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, Para 4.2.5, Test S, 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