



**SURFACE MOUNT**

# RF Transformer

## SCTX1.33-33-2W+

Mini-Circuits

75Ω 10 to 3000 MHz 1:1.33 Ratio

### THE BIG DEAL

- 75 ohm single-ended to 100 ohm differential outputs
- Super Wideband, 10 to 3000 MHz
- Low Insertion Loss, 2.0 dB typ. up to 3 GHz
- Amplitude Unbalance,  $\pm 0.3$  dB typ. up to 3 GHz
- Good Input Return Loss, 14 dB typ.
- Low Phase Unbalance,  $\pm 3^\circ$  typ.
- Common Mode Rejection, 28 dB typ.



Generic photo used for illustration purposes only

CASE STYLE: SN2595

### +RoHS Compliant

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

### APPLICATIONS

- Defense Communication
- DOCSIS 3.1
- Line of sight links
- Cellular
- Wideband push-pull amplifiers
- CATV

### PRODUCT OVERVIEW

Mini-Circuits' SCTX1.33-33-2W+ is a surface-mount transmission line transformer (core and Semi-Rigid cable) covering a very wide frequency range from 10 to 3000 MHz. The transformer provides low insertion loss with excellent phase and amplitude performance. Featuring core and cable construction on a 12-lead PCB unit measures 0.60 x 0.60 x 0.15" accommodating dense circuit board layouts.

### KEY FEATURES

Feature	Advantages
Wideband, 10 to 3000 MHz	Super wide frequency range covers bandwidth requirements for many broadband applications.
Low insertion loss, 2.0 dB	SCTX1.33-33-2W+ provides excellent signal transmission from input to output with consistent performance across its entire frequency range.
Good Phase and Amplitude Unbalance	Provides good CMRR and IP2.
Small size (0.60 x 0.60 x 0.15")	Provide good solderability and tight layouts.

REV. B  
ECO-020468  
SCTX1.33-33-2W+  
MCL NY  
240410





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### ELECTRICAL SPECIFICATIONS AT 25°C

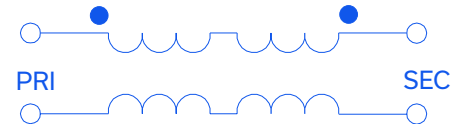
Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Impedance Ratio (secondary/primary)			1.33		
Frequency Range		10		3000	MHz
Insertion Loss (Average)	10-50	—	1.8	2.4	dB
	50-1250	—	1.9	2.5	
	1250-3000	—	2.1	2.8	
Amplitude Unbalance (±)	10-50	—	0.05	0.2	dB
	50-1250	—	0.1	0.3	
	1250-3000	—	0.3	0.7	
Phase Unbalance (±)	10-50	—	2	5	Degree
	50-1250	—	1.5	3	
	1250-3000	—	3	6	
Common mode rejection	10-3000	21	28	—	dB

### ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	2W

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

### CONFIGURATION G





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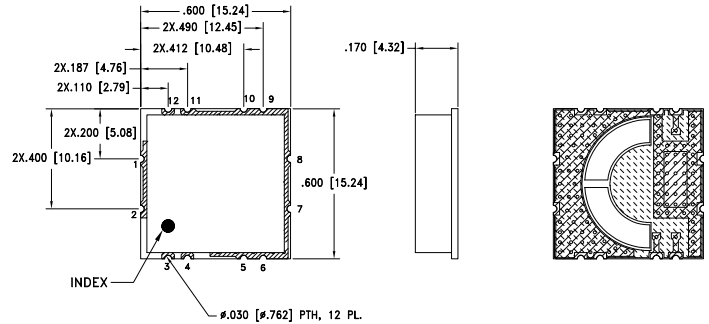


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## PIN CONNECTIONS

PRIMARY DOT	12
PRIMARY (GND)	11
SECONDARY DOT	3
SECONDARY	4
GROUND	1,2,5,6,7,8,9,10

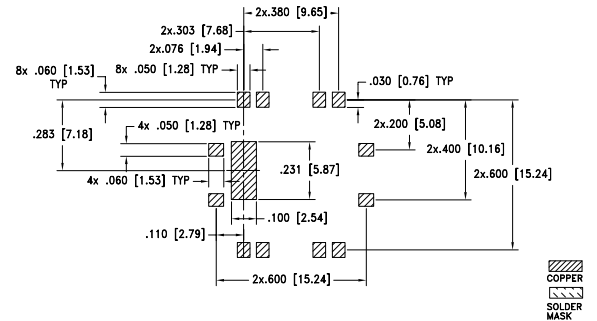
## OUTLINE DRAWING



PRODUCT MARKING: N/A

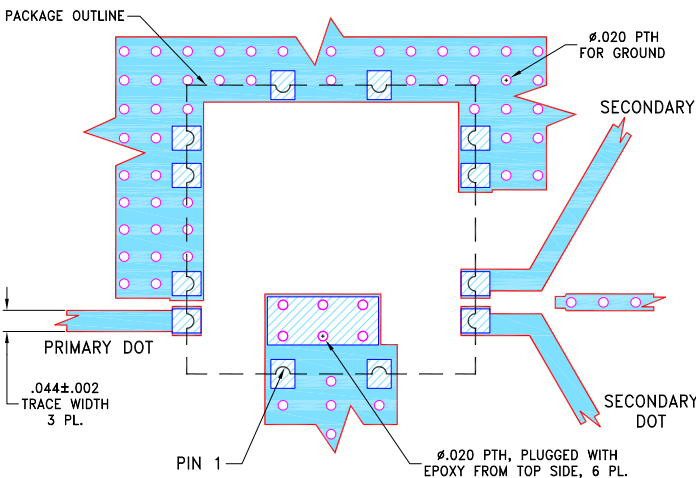
## TOP VIEW

## BOTTOM VIEW



PCB LAND PATTERN SUGGESTED LAYOUT TOLERANCE TO BE WITHIN ±.002

## DEMO BOARD MCL P/N: TB-SCTX1.33-33-2W+ SUGGESTED PCB LAYOUT (PL-595)



### NOTES:

- TRACE WIDTH IS SHOWN FOR ROGERS R04350B, WITH DIELECTRIC THICKNESS .020"±.0015". COPPER: 1/2 Oz. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
- 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 SOLDERMASK

Weight: 1.2 gram  
Dimensions are in inches [mm]. Tolerances: 3 PL ±.005 Inch

## TAPE & REEL INFORMATION: F95





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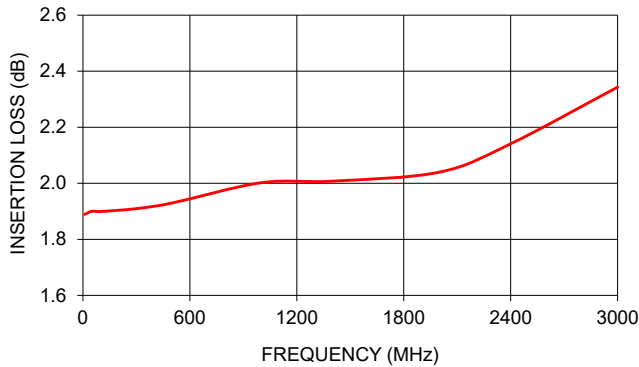
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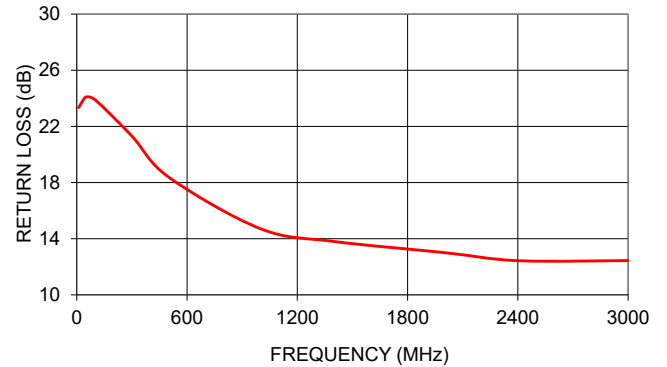
### TYPICAL PERFORMANCE DATA

Frequency (MHz)	Insertion Loss (dB)	Input Return Loss (dB)	Amplitude Unbalance (dB)	Phase Unbalance (deg)
10	1.89	23.34	0.16	5.67
50	1.90	24.10	0.14	1.14
100	1.90	23.89	0.11	0.81
300	1.91	21.31	0.02	0.66
500	1.93	18.38	0.04	0.31
1000	2.00	14.71	0.07	0.07
1400	2.01	13.80	0.16	0.04
2000	2.04	13.01	0.38	0.86
2400	2.14	12.43	0.47	2.50
3000	2.34	12.44	0.28	5.78

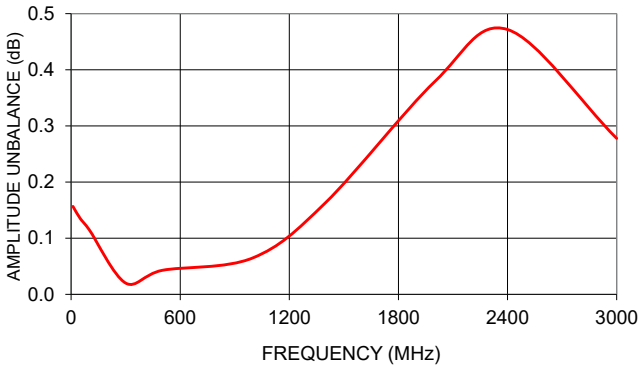
SCTX1.33-33-2W+  
INSERTION LOSS



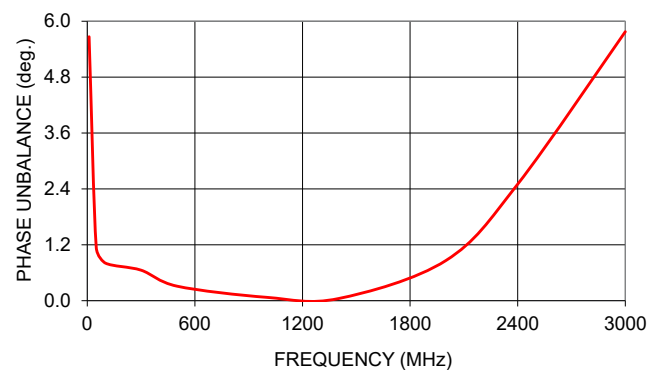
SCTX1.33-33-2W+  
INPUT RETURN LOSS



SCTX1.33-33-2W+  
AMPLITUDE UNBALANCE



SCTX1.33-33-2W+  
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](http://www.minicircuits.com/terms/viewterm.html)

