

# Surface Mount RF Transformer

## SBTX2-113-2W+

50Ω 2.6 to 11.0 GHz

### The Big Deal

- Super wideband, 2.6 to 11.0 GHz
- Low insertion loss, 1.4 dB typ.
- Amplitude Unbalance,  $\pm 0.9$  dB typ.
- Low phase unbalance,  $\pm 6^\circ$  typ.
- Common mode rejection, 22 dB typ.



CASE STYLE: AH2765

### Product Overview

Mini-Circuits' SBTX2-113-2W+ is a surface-mount transmission line transformer (core and Semi-Rigid cable) covering a very wide frequency range from 2.6 to 11.0 GHz. The transformer provides low insertion loss with excellent phase and amplitude performance. Featuring core and cable construction on a 8-lead PCB unit measures 0.32 x 0.32 x 0.69 accommodating dense circuit board layouts.

### Key Features

Feature	Advantages
Wideband, 2.6 to 11.0 GHz	Super wide frequency range covers bandwidth requirements for many broadband applications.
Low insertion loss, 1.4dB	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 (0.32 x 0.32 x 0.69)	Provide good solderability and tight layouts.

# Surface Mount RF Transformer

## SBTX2-113-2W+

50Ω      2.6 to 11.0 GHz      1:2 Ratio

### Features

- wide bandwidth 2.6 to 11.0 GHz
- unbalanced to balanced transformer
- excellent amplitude and phase unbalance
- aqueous washable

### Applications

- defense communication
- defense radar
- line of sight links
- PCS
- cellular
- wideband push-pull amplifiers
- ADC (Analog to Digital Converter)
- Balanced Receivers



Generic photo used for illustration purposes only

CASE STYLE: AH2765

**+RoHS Compliant**

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

### Electrical Specifications at 25°C

Parameter	Frequency (GHz)	Min.	Typ.	Max.	Unit
Impedance Ratio (secondary/primary)			2		
Frequency Range		2.6		11.0	GHz
Insertion Loss (Average) (above theoretical 3 dB)	2.6 - 6.0	—	1.4	1.9	dB
	6.0 - 10.0	—	1.5	2.2	
	10.0 - 11.0	—	1.7	2.5	
Amplitude Unbalance (±)	2.6 - 11.0	—	0.9	1.3	dB
	4.0 - 9.0	—	0.7	1.0	
Phase Unbalance (±)	4.0 - 9.0	—	4	8	Degree
	2.6 - 11.0	—	6	12	
Common mode rejection	4.0 - 9.0	18	24	—	dB
	2.6 - 11.0	15	22	—	

### Maximum Ratings

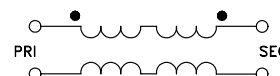
Parameter	Ratings
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	2W

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

### Pin Connections

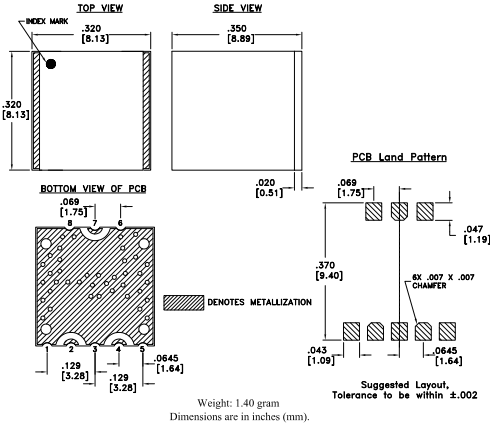
Function	Pin Number
PRIMARY DOT	7
PRIMARY (GND)	6,8
SECONDARY DOT	4
SECONDARY	2
GND	1,3,5,6,8

### Config. G

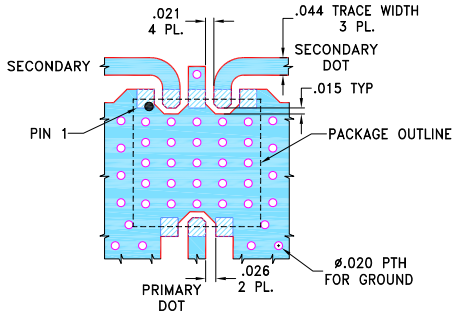


# SBTX2-113-2W+

## Outline Drawing



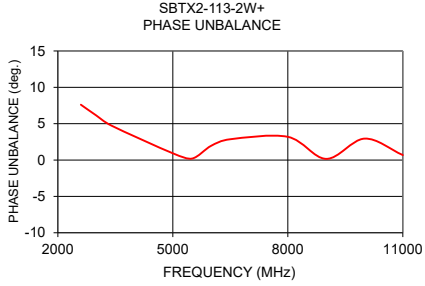
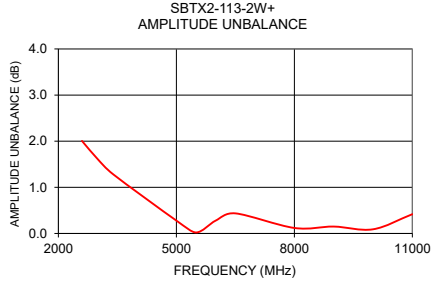
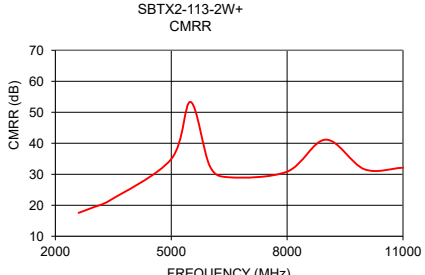
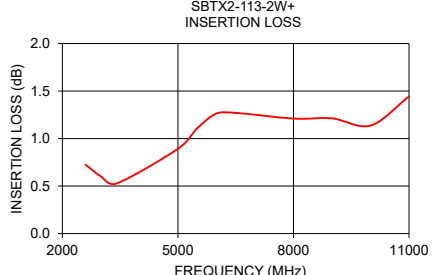
## Demo Board MCL P/N: TB-1081+ Suggested PCB Layout (PL-629)



- NOTES:
- TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS .010+.001. COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS LINE WIDTH & GAP 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 SOLDER MASK.

## Typical Performance Data

Frequency (MHz)	Avg. Insertion Loss (dB)	CMRR (dB)	Amplitude Unbalance (dB)	Phase Unbalance (Deg.)
2600	0.73	17.53	2.01	7.61
3000	0.60	19.42	1.61	6.14
3400	0.53	21.49	1.28	4.73
5000	0.89	34.90	0.28	0.93
5500	1.11	53.33	0.02	0.20
6000	1.26	32.59	0.28	1.96
6500	1.27	29.02	0.44	2.86
8000	1.21	30.85	0.12	3.19
9000	1.21	41.17	0.15	0.16
10000	1.14	31.62	0.09	2.95
11000	1.44	32.11	0.42	0.69



### Additional Notes

- 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.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuits' applicable established test performance criteria and measurement instructions.
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