

# Ceramic Balun RF Transformer

50Ω 3300 to 3900 MHz 1:1 Ratio

## TCW1-392+



Generic photo used for illustration purposes only

CASE STYLE: JC0603C

**+RoHS Compliant**

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



Available Tape and Reel  
at no extra cost

Reel Size	Devices/Reel
7"	20, 50, 100, 200, 500, 1000, 4000

### Features

- miniature size 0603 (1.6x0.8mm)
- LTCC construction
- low cost

### Applications

- LTE
- 5G
- A/D conversion

### Electrical Specifications at 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Impedance Ratio			1		
Frequency Range		3300	—	3900	MHz
Avg. Insertion Loss <sup>1</sup>	3300-3900	—	0.8	1.5	dB
Amplitude Unbalance	3300-3900	—	0.6	1.5	dB
Phase Unbalance <sup>2</sup>	3300-3900	—	5	15	Degree
VSWR	3300-3900	—	1.7	—	:1

1. Reference demo board TB-828+.

2. Relative to 180°

### Maximum Ratings

Parameter	Ratings
Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
RF Power <sup>3</sup>	1W

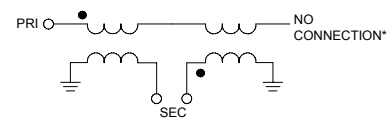
3. Passband rating.

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

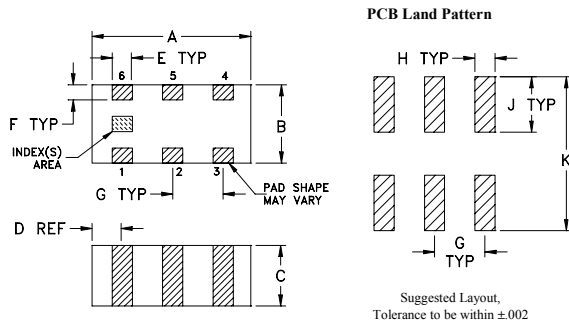
### Pad Connections

Function	Pin Number
PRIMARY DOT	1
PRIMARY	2
SECONDARY DOT	4
SECONDARY	3
NO CONNECTION	6
NOT USED	5

### Configuration J



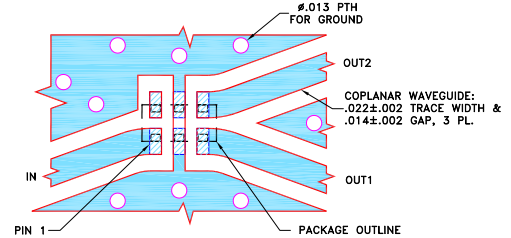
## Outline Drawing



## Outline Dimensions (inch)

A	B	C	D	E	F
.063	.031	.024	.012	.008	.006
1.60	0.79	0.61	0.30	0.20	0.15
G	H	J	K	wt	
.020	.010	.022	.053	grams	
0.51	0.25	0.56	1.35	0.005	

## Demo Board MCL P/N: TB-828+ Suggested PCB Layout (PL-513)



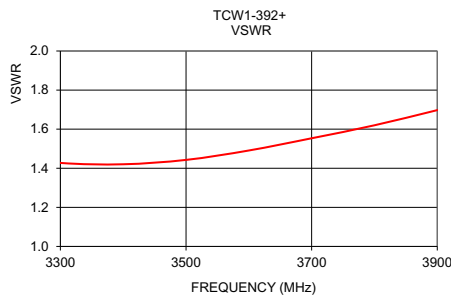
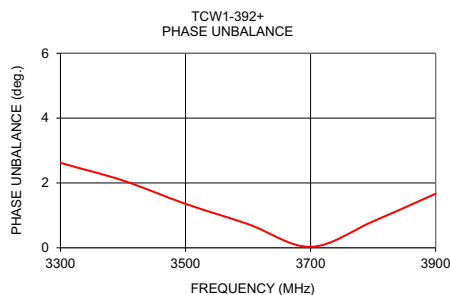
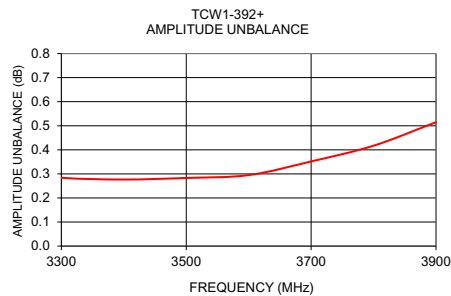
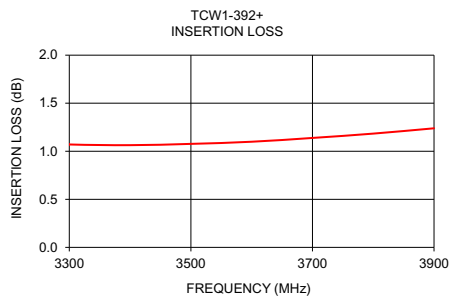
- TRACE WIDTH AND GAP PARAMETERS ARE SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS .010"±.001", COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH AND GAP MAY NEED TO BE MODIFIED.
- BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER).
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK.

## Typical Performance Data<sup>4</sup>

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Amplitude Unbalance (dB)	Phase Unbalance (Deg.)
3300	1.07	1.43	0.28	2.62
3200	1.10	1.47	0.31	3.22
3300	1.07	1.43	0.28	2.62
3400	1.06	1.42	0.28	2.07
3500	1.08	1.44	0.28	1.36
3600	1.10	1.49	0.29	0.73
3700	1.14	1.55	0.35	0.03
3800	1.18	1.62	0.42	0.81
3900	1.24	1.70	0.51	1.67

4. Measured with Agilent N5242A network analyzer using impedance conversion and port extension.



## 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.
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