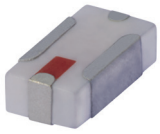
Ceramic
Thru-Line

TPCN-203+

50Ω DC to 20000 MHz



Generic photo used for illustration purposes only
CASE STYLE: FV1206-4

The Big Deal

- Small size 3.2mm x 1.6mm
- Wide pass band (DC-20000 MHz)
- Low Insertion Loss, 0.4 dB typical
- Excellent power handling, up to 30W

Product Overview

TPCN-203+ is a 50 Ohm transmission line which can pass signals with low insertion loss typ 0.4 dB. This can be used as a place holder in system boards in the absence of LTCC filters. In addition, this low loss device provides excellent matching between devices.

Key Features

Feature	Advantages
Excellent power handling	This enables the device to be used in high power applications.
Small size (3.20mm x 1.6mm)	Allows for high layout density of circuit boards, while reducing the effect of parasitics.
Wrap-around terminations	Provides excellent solderability and easy visual inspection capability.
LTCC Construction	Provides a rugged package that is well suited for tough environments such as high humidity and temperature extremes.

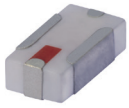
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Ceramic

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TPCN-203+

50Ω DC to 20000 MHz



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+RoHS Compliant

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

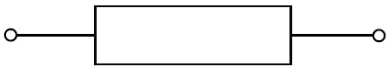
Features

- 0.4 dB typ, IL up to 20GHz
- Excellent power handling, 30W
- Small size, (3.20mm x 1.6mm)
- Temperature stable
- LTCC construction

Applications

- All markets

Functional Schematic



Electrical Specifications[1,2] at 25°C

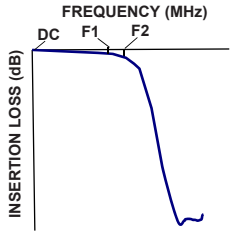
Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Insertion Loss	DC-F1	DC - 18000	—	0.4	1	dB
		F1-F2	18000 - 20000	—	0.8	—	dB
	Return Loss	DC-F2	DC - 20000	—	15	—	dB
	Group Delay	DC-F2	DC - 20000	—	40	—	psec

1 DC de-coupling capacitors are required in Applications where DC voltage and/or current is present at either input or output ports. Please contact Mini-Circuits for alternatives if DC pass from IN-OUT is required.
2 Measured on Mini-Circuits Characterization Test Board TB-1173

Maximum Ratings	
Operating Temperature	-55°C to 125°C
Storage Temperature	-55°C to 125°C
RF Power Input*	30 W max. @25°C

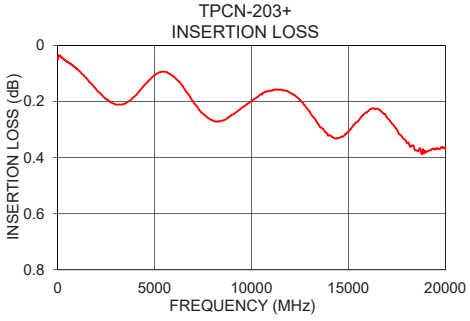
*Passband rating, derate linearly to 15 W at 125°C ambient
Permanent damage may occur if any of these limits are exceeded.
EVB connectors are rated up to 100°C only

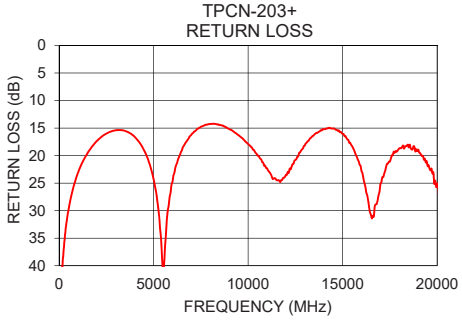
Typical Frequency Response

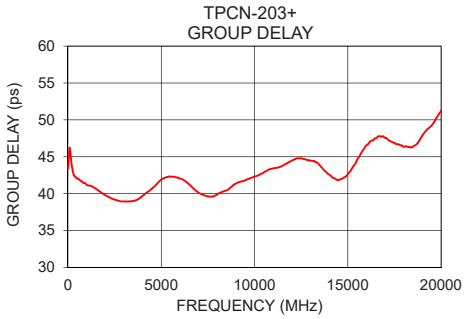


Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	Return Loss (dB)	Frequency (MHz)	Group Delay (pSec)
10	0.05	42.73	10	43.41
100	0.04	44.83	100	46.19
1000	0.08	23.14	1000	41.19
2000	0.16	17.33	2000	39.79
3000	0.21	15.40	3000	38.95
4000	0.18	16.58	4000	39.70
5000	0.11	24.27	5000	41.91
6000	0.11	24.78	6000	42.06
7000	0.20	16.19	7000	40.12
8000	0.27	14.26	8000	39.92
9000	0.25	15.17	9000	41.38
10000	0.20	17.87	10000	42.30
11000	0.16	22.29	11000	43.44
12000	0.17	23.50	12000	44.48
13000	0.24	18.15	13000	44.49
14000	0.32	15.22	14000	42.58
18000	0.35	18.67	18000	46.34
18500	0.37	18.51	18500	46.41
19000	0.38	18.92	19000	47.92
20000	0.37	25.65	20000	51.24







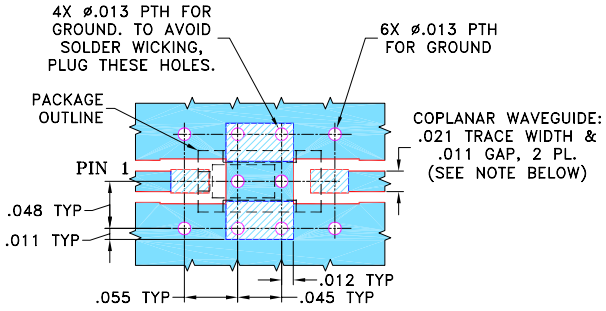
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Pad Connections

INPUT	1
OUTPUT	3
GROUND	2,4

Product Marking: MK

Demo Board MCL P/N: TB-1173
Suggested PCB Layout (PL-363)

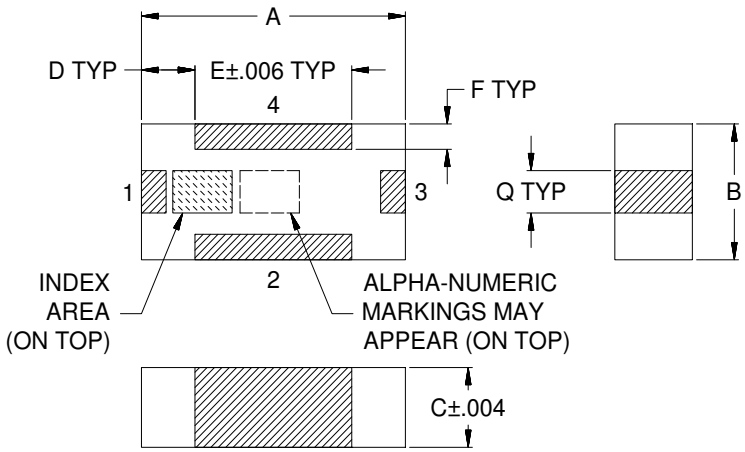


NOTE: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .010" ± .001". COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Outline Drawing



Outline Dimensions (inch / mm)

A	B	C	D	E	F	Q	Wt.
.126	**.063**	**.037**	**.026**	**.075**	**.012**	**.020**	grams
3.20	1.60	0.94	0.66	1.91	0.30	0.51	.020

Note: Please refer to case style drawing for details

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