LTCC SURFACE MOUNT

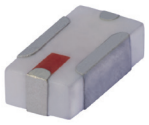
Thru-Line

TPCN-203+

50Ω DC to 20 GHz

THE BIG DEAL

- Low Insertion Loss, 0.4dB Typ.
- Return Loss, 15dB Typ.
- 1206 Surface Mount Footprint
- Versatile "Place Holder" for Mini-Circuits LTCC Filters
- Power Handling: 30 Watts



Generic photo used for illustration purposes only

APPLICATIONS

- All Markets

FUNCTIONAL DIAGRAM

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

Features	Advantages
Footprint Compatible "Thru-Line" for Mini-Circuits, Low Pass (LFCN series), High Pass (HFCN series) and Band Pass (BFCN Series) filters with same Case Style and Pad connections as TPCN-203+	Enables system designers the flexibility to plan to add LTCC filters to the PCB layout at a later stage in the design process, after system test results are available.
Excellent Power Handling, 30W	This enables the device to be used in high power applications.
Small Size, 3.2x1.6mm	Allows for high layout density of circuit boards, while reducing the effect of parasitics.
Wrap-around Terminations	Provides excellent solderability and easy visual inspection.
LTCC Construction	Provides a rugged package that is well suited for tough environments such as high humidity and temperature extremes.

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TPCN-203+

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ELECTRICAL SPECIFICATIONS[1,2,3] AT +25°C

Parameter		F#	Frequency (GHz)	Min.	Typ.	Max.	Units
Pass Band	Insertion Loss	DC-F1	DC - 18	—	0.4	1	dB
		F1-F2	18 - 20	—	0.8	—	
	Return Loss	DC-F2	DC - 20	—	15	—	dB
	Group Delay	DC-F2	DC - 20	—	40	—	psec

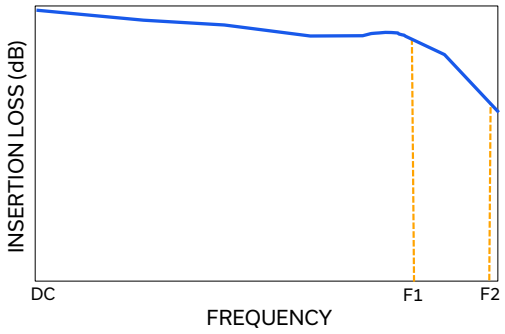
1. DC blocking capacitors are required in applications where DC voltage and/or current is present at either input or output ports. Please contact Mini-Circuits for alternatives if DC pass from IN-OUT is required.
2. Measured on Mini-Circuits Evaluation Board TB-TPCN-203+
2. Bi Directional, INPUT and OUTPUT ports can be interchanged, see S-Parameters for performance

ABSOLUTE MAXIMUM RATINGS[3]

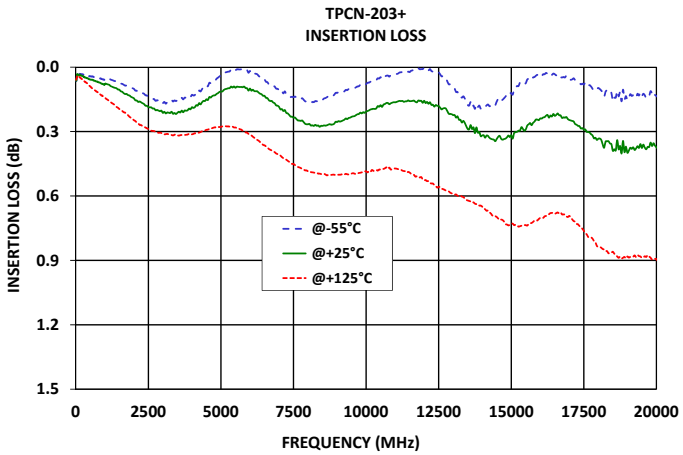
Parameter	Ratings
Operating Temperature	-55 °C to +125 °C
Storage Temperature	-55 °C to +125 °C
Input Power[4]	30W @25°C

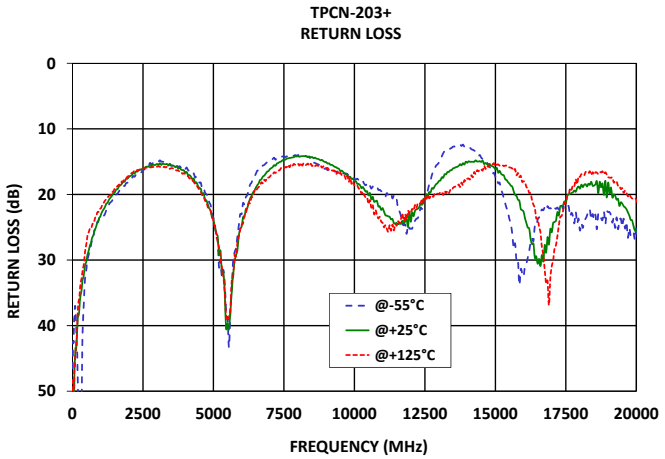
3. Permanent damage may occur if any of these limits are exceeded.
4. Power rating applies only to signals within the passband. Power rating above +25°C operating temperature decreases linearly to 15W at +125°C.

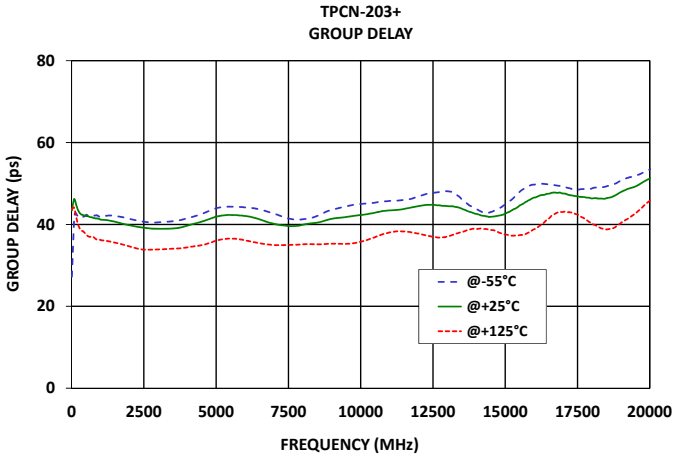
TYPICAL FREQUENCY RESPONSE



TYPICAL PERFORMANCE GRAPHS







FUNCTIONAL DIAGRAM

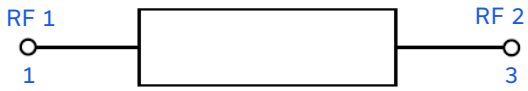


Figure 1. TPCN-203+ Functional Diagram

PAD DESCRIPTION

Function	Pad Number	Description
RF1 (Note 2)	1	Connects to RF Input Port
RF2 (Note 2)	3	Connects to RF Output Port
GROUND	2,4	Connects to Ground on PCB, (See drawing PL-363)
NC	–	No connection, not used internally. See drawing PL-363 for connection to PCB

SUGGESTED PCB LAYOUT (PL-363)

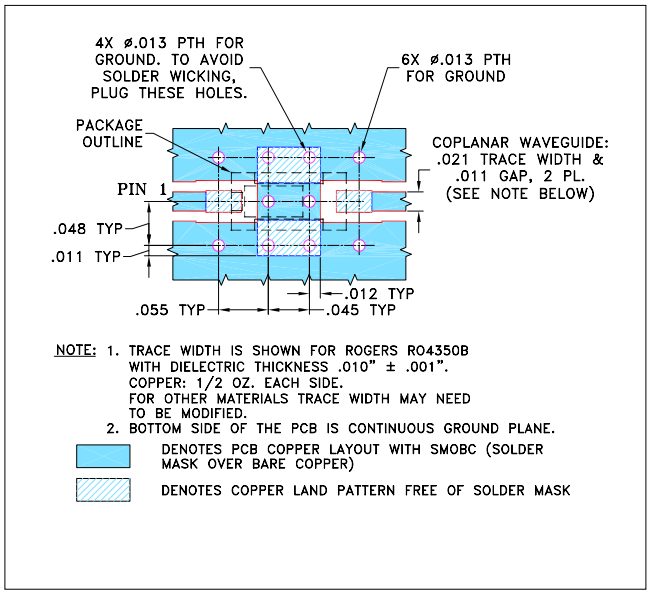
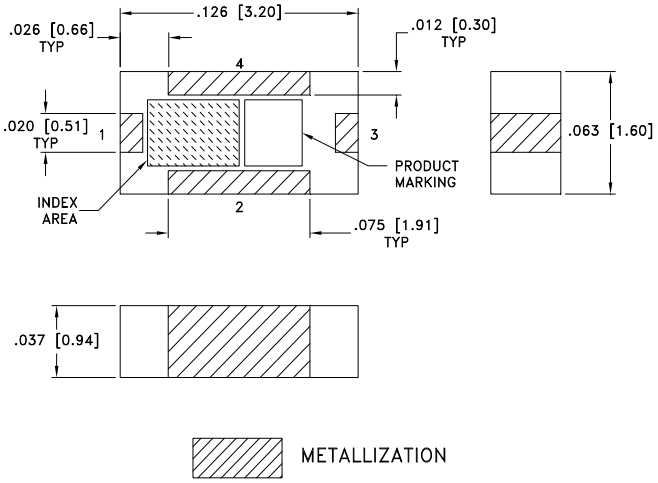


Figure 2. Suggested PCB Layout PL-363

CASE STYLE DRAWING



Weight: .020 grams.
Dimensions are in inches (mm). Tolerances: 2Pl. ± .01; 3 Pl. ± .005

PRODUCT MARKING*: MK

*Marking may contain other features or characters for internal lot control.

ADDITIONAL DETAILED INFORMATION IS AVAILABLE ON OUR DASH BOARD. CLICK HERE

Performance Data and Graphs	Data Graphs S-Parameter (S2P Files) Data Set (.zip file) De-embedded to device pads
Case Style	FV1206-4 Lead Finish: Nickel-Tin
RoHS Status	Compliant
Tape and Reel	TR-F75
Suggested Layout for PCB Design	98-PL-363
Evaluation Board	TB-TPCN-203+
	Gerber File
Environmental Rating	ENV06

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-Circuits' 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