Version:
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(TCPWCH)
Balun Transformers for Digital TV Tuners, WBL

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Product Introduction

Balun-Transformers TCPWCH-2012BL) Provide The Key for Digital TV Tuners Design.

HDMI Common Mode Choke Coils on The Selection :

- Check the characteristic impedance of the antenna side (input side), and select 50 Ω or 75 Ω.
- 75 Ω is generally used for terrestrial wave systems, and 50 Ω for CATV and mobile systems.
- Check the characteristic impedance matching in order to achieve the fullest balun characteristics.
- However, the desired characteristics may not be achieved. This is because the actual impedance on the IC side does not exactly match the ideal impedance (50 Ω/75 Ω). In these cases, the impedance must be matched, or the balun must be reselected. Feel free to contact Token for details and solutions.

Features :

- Wideband Frequency Range for AV equipment.
- Realized balun fuction in a ultra-small SMD design.
- Wound Chip constructure with standard 0805 size.

Applications :

- Digital/Aanalog TV tuners.
- Cable TV tuners and Communication application.

A balun is a type of transformer. Balun transformer is a device which one pair of terminals is balanced, the currents are equal in magnitude and opposite in directions, such as a twisted pair cable. The other pair of terminals is unbalanced; one side is connected to electrical ground and the other carries the signal, such as a coaxial cable.

Token (TCPWCH-2012BL) has commercialized chip transformers (balun transformers), which are used to convert between unbalanced-balanced signals in the antenna inputs of TV tuner circuits for terrestrial digital broadcast compatible compact mobile devices.

By taking advantage of the advanced winding technology which using paired or/and triple wires enabling high uniformity, Token balun transformers for TV tuners have been made by winding wire around a fine ferrite core, and are widely used in large-scale devices such as TVs and desktop PCs.

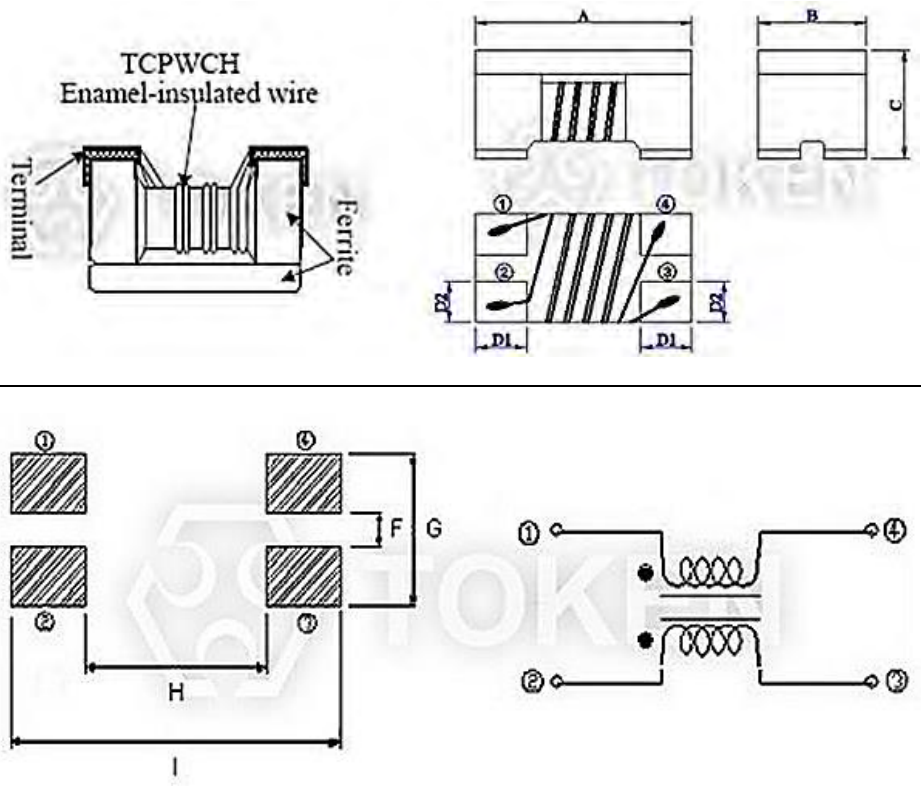
SMD Balun/Wideband Transformers can be used between various parts of a wireless or cable communications system. Balun transformers (TCPWCH-2012BL) provide port impedance with 50 Ω or 75 Ω to match coaxial cables which have characteristic impedances of 50 Ω or 75 Ω. The supported frequencies cover the 45 MHz to 870 MHz range that includes the full terrestrial broadcasting band, and other 50 MHz ~ 1200 MHz, 1000 MHz ~ 1500 MHz, 950 MHz ~ 2150 MHz, and 400 MHz ~ 1800 MHz range to cover a wide variety of applications.

All (TCPWCH-2012BL) series comes a wide variety of options to meet your needs with halogen free and RoHS Directive. Token is able to customize and manufacture your request, with comprehensive application engineering and design support available for customers worldwide. Please contact our sales or link to Token official website "SMD Balun Transformers" for more information.

Config. & Dim.

Configurations & Dimensions (TCPWCH-2012BL)

SIZE CODE	A	B	C	D1 TYP	D2 TYP	F TYP	G TYP	H TYP	I TYP
TCPWCH-2012BL (0805)	2.00±0.20 (0.079±0.008)	1.2±0.20 (0.047±0.008)	1.2±0.20 (0.047±0.008)	0.45 (0.018)	0.40 (0.016)	0.40 (0.016)	1.20 (0.047)	0.80 (0.031)	2.60 (0.102)



Balun-Transformers (TCPWCH-2012BL) Structure diagram Unit: mm (Inch)

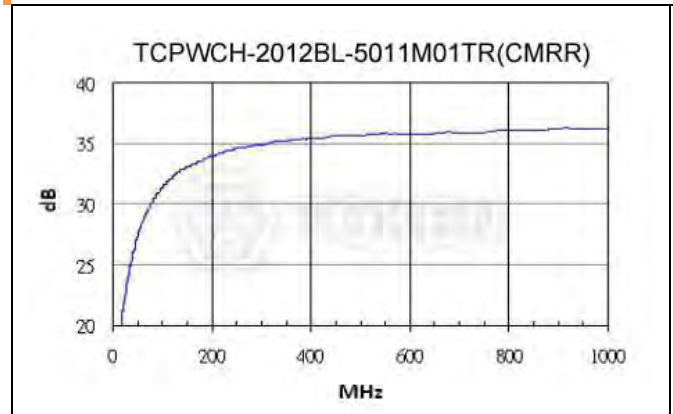
Electrical Characteristics

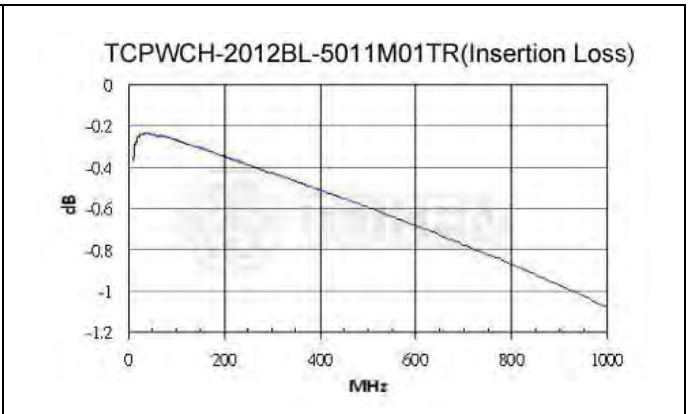
Electrical Characteristics (TCPWCH-2012BL)

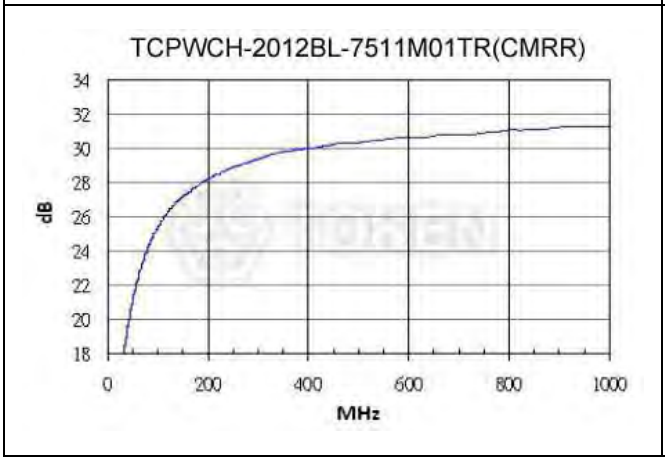
Part Number	Freq Range (MHz)	Port Impedance (Ω)	Insertion Loss (dB) Max.	CMRR (dB) Min.	DC Resistance (Ω) Max.	Rated Current (mA) Max.
TCPWCH-2012BL-5011M01TR	45 ~ 870	50/50	1.2	20	0.80	200
TCPWCH-2012BL-7511M01TR	45 ~ 870	75/75	1.1	18	0.77	200
TCPWCH-2012BL-7511M02TR	50 ~ 1200	75/75	1.6	19	0.40	300
TCPWCH-2012BL-7511G01TR	1000 ~ 1500	75/75	1.4	20	0.42	290
TCPWCH-2012BL-7511G02TR	950 ~ 2150	75/75	1.5	20	0.42	290
TCPWCH-2012BL-7511G03TR	400 ~ 1800	75/75	2.0	10	0.42	290

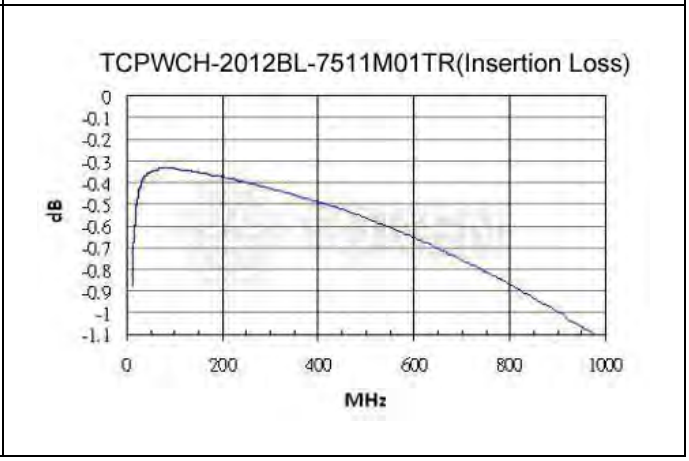
Graph

Typical Characteristics Graph (TCPWCH-2012BL)



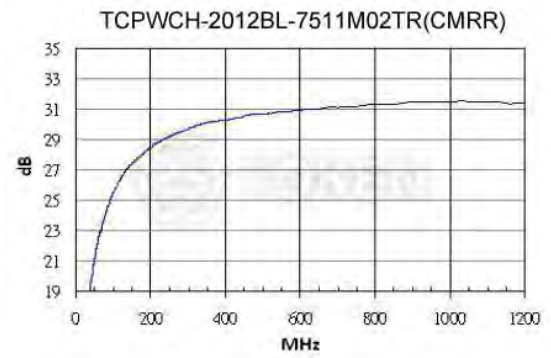




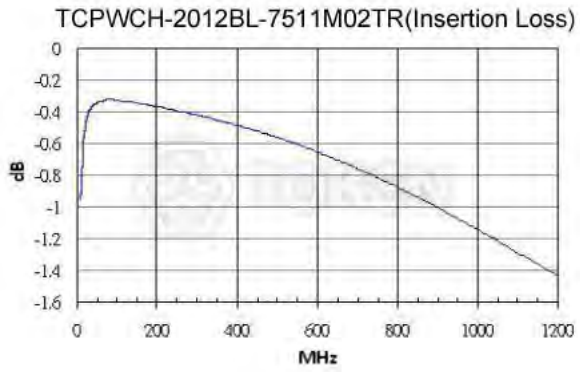


Typical Characteristics Graph (TCPWCH-2012BL)

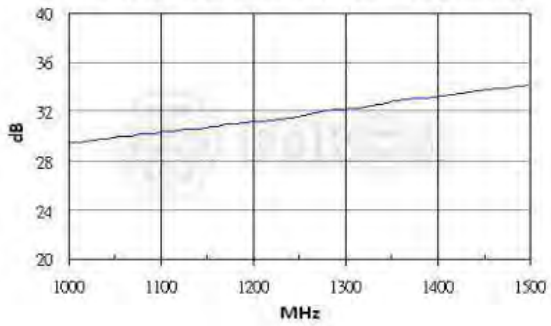
TCPWCH-2012BL-7511M02TR(CMRR)



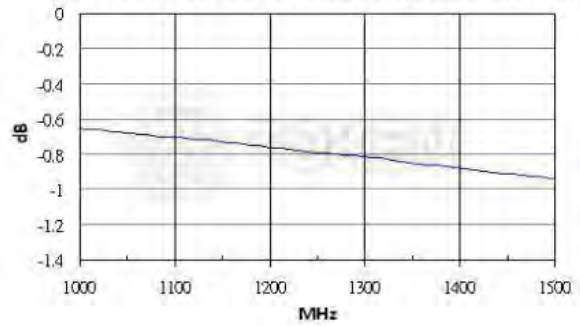
TCPWCH-2012BL-7511M02TR(Insertion Loss)



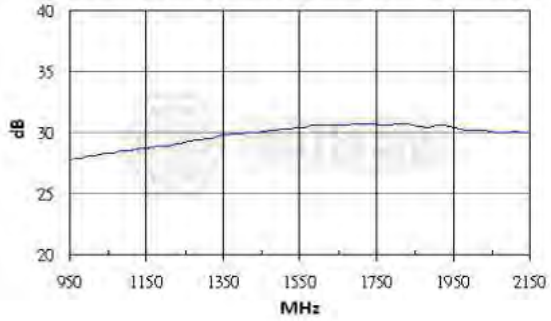
TCPWCH-2012BL-7511G01TR(CMRR)



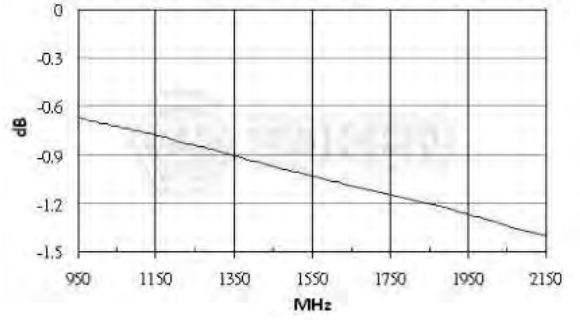
TCPWCH-2012BL-7511G01TR(Insertion Loss)



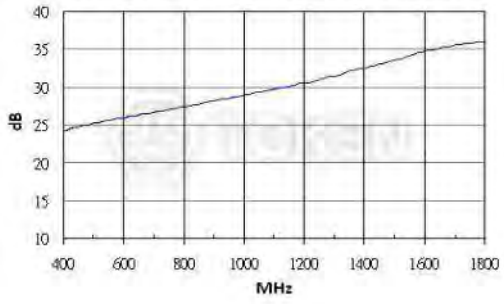
TCPWCH-2012BL-7511G02TR(CMRR)



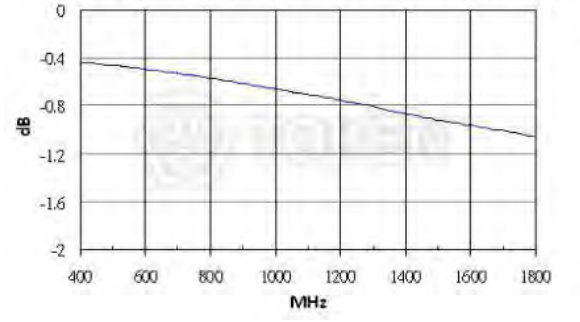
TCPWCH-2012BL-7511G02TR(Insertion Loss)



TCPWCH-2012BL-7511G03TR(CMRR)



TCPWCH-2012BL-7511G03TR(Insertion Loss)



Order Codes

Order Codes (TCPWC)

TCPWC	H	-	2012	BL	-	50	11	M01	TR

Part Number
TCPWC

Shielding Type	
H	Shielding

Dimensions (mm)		
2012	2.00×1.20×1.20	EIA0805

Purpose	
BL	Balun Transformers

Port impedance (Ω)	
50	50/50Ω
75	75/75Ω

Impedance ratio	
11	1:1

Frequency sequence	
M01	45~870
M02	50~1200
G01	1000~1500
G02	950~2150
G03	400~1800

Package	
P	Bulk
TR	Taping Reel

General Information

Applications of Baluns

In a **RF balun transformer**, one pair of terminals is balanced, that is, the currents are equal in magnitude and opposite in phase. The other pair of terminals is unbalanced; one side is connected to electrical ground and the other carries the signal. Balun transformers can be used between various parts of a wireless or cable communications system. Some common applications denotes as following:

- Television receiver (Balanced) - coaxial cable network or Coaxial antenna system (Unbalanced)
- FM broadcast receiver (Balanced) - Coaxial antenna system (Unbalanced)
- Dipole antenna (Balanced) - Coaxial transmission line (Unbalanced)
- Parallel-wire transmission line (Balanced) - Coaxial transmitter output, or Coaxial receiver input (Unbalanced)

Token's baluns provide impedance transformation in addition to conversion between balanced and unbalanced signal modes. Most television and FM broadcast receivers are designed for 300-ohm balanced systems, while coaxial cables have characteristic impedances of 50 or 75 ohms. Impedance-transformer baluns with larger ratios are available and used to match high-impedance balanced antennas to low-impedance unbalanced wireless receivers, transmitters, or transceivers.