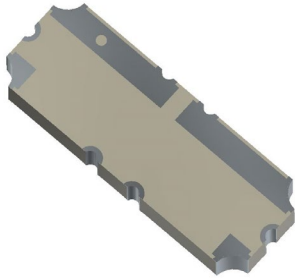




Impedance Transformer 50 Ω to 12.5 Ω



Description:

The XT0010E15012S is a low cost impedance transformer in an easy to use surface mount package. This single component delivers wideband impedance matching from 60MHz to 900MHz. It can be used in high power applications up to 80 watts.

Parts have been subjected to rigorous qualification testing and they are manufactured using materials with coefficients of thermal expansion (CTE) compatible with common substrates such as FR4, G-10, RF-35, RO4003 and polyimide. Produced with 6 of 6 RoHS compliant tin immersion finish.

Electrical Specifications**

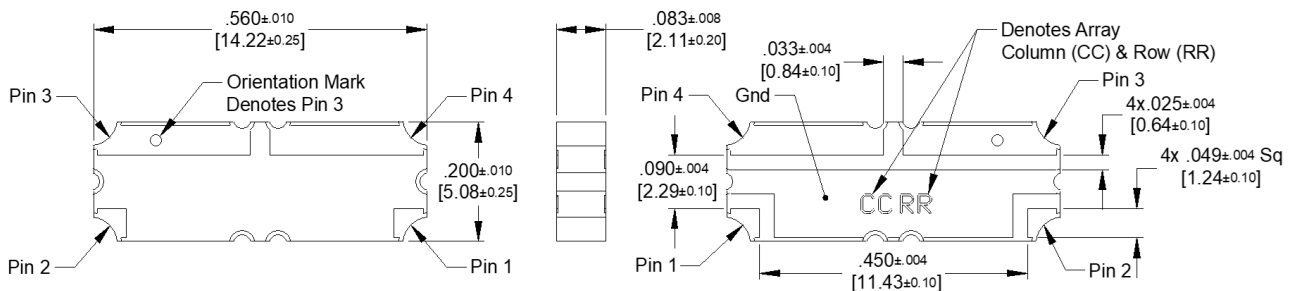
Features:

- Broad Band 60 – 900 MHz
- 50 Ohm to 12.5 Ohm
- Low Insertion Loss
- High Power
- Surface Mountable
- Tape & Reel
- Lead Free

Frequency	Port Impedance1	Port Impedance2	Return Loss
MHz	Ohms	Ohms	dB min
60 - 530	50	12.5	15
60 - 900	50	12.5	15
	Insertion Loss	Power Handling @95°C	Operating Temp.
	dB max	Watts	°C
	0.4	100	-55 to +150
	0.5	75	-55 to +150

** Specifications subject to change without notice. Specification is based on performance of unit properly installed on TTM Test Board with small signal applied. Tuning capacitors are required for the performance above.

Mechanical Outline:



Dimensions Are in Inches [Millimeters]
XT0010E15012S Mechanical Outline

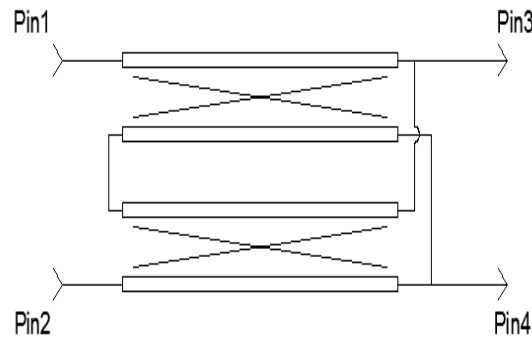
Tolerances are Non-cumulative

Transformer Pin Configuration

The XT0010E15012S has an orientation marker to denote Pin 3. Once Pin 3 has been identified the other ports are known automatically. Please see the chart below for clarification:

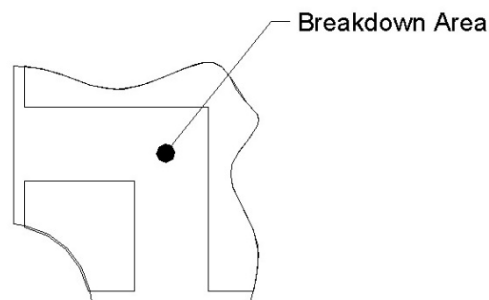
Pin 1	Pin 2	Pin 3	Pin 4
50 Ohm Port	Ground	12.5 Ohm Port	Ground

DC Connectivity

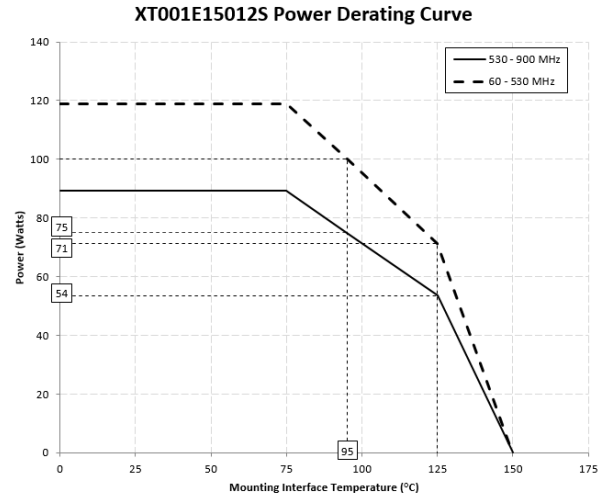
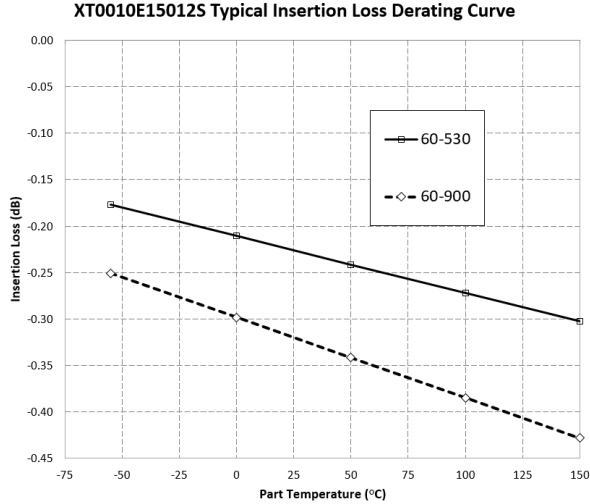


Peak Power Handling

High-Pot testing of these couplers during the qualification procedure resulted in a minimum breakdown voltage of 1.24Kv (minimum recorded value). This voltage level corresponds to a breakdown resistance capable of handling at least 12dB peaks over average power levels, for very short durations. The breakdown location consistently occurred across the air interface at the coupler contact pads (see illustration below). The breakdown levels at these points will be affected by any contamination in the gap area around these pads. These areas must be kept clean for optimum performance. It is recommended that the user test for voltage breakdown under the maximum operating conditions and over worst case modulation induced power peaking. This evaluation should also include extreme environmental conditions (such as high humidity).



Insertion Loss and Power Derating Curves



Insertion Loss Derating

The insertion loss, at a given frequency, of a group of impedance transformers is measured at 25°C and then averaged. The measurements are performed under small signal conditions (i.e. using a Vector Network Analyzer). The process is repeated at 95°C and 150°C. A best-fit line for the measured data is computed and then plotted from -55°C to 150°C.

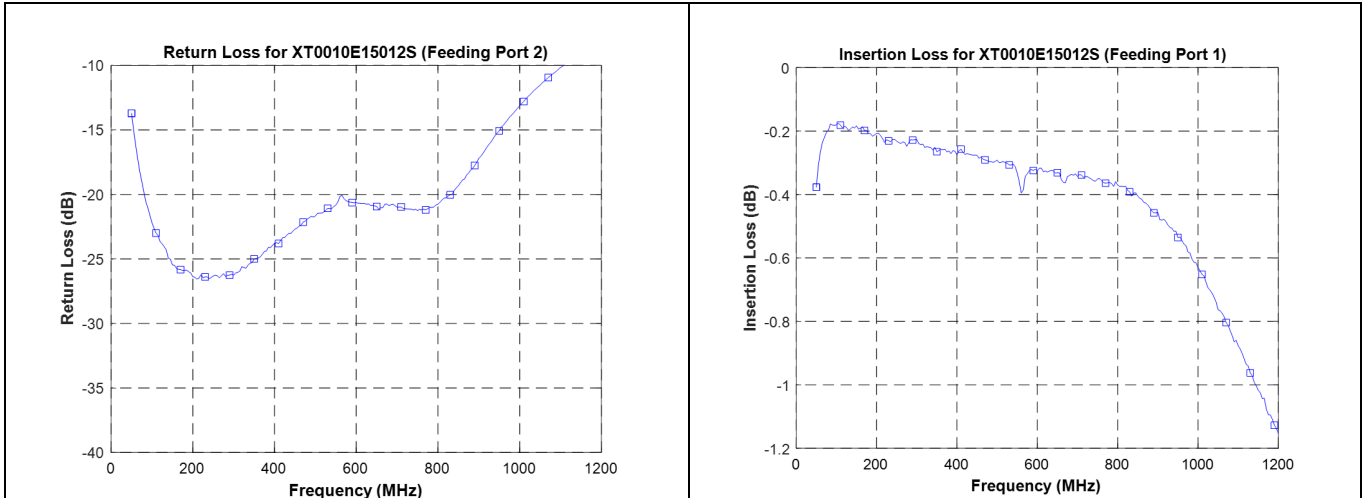
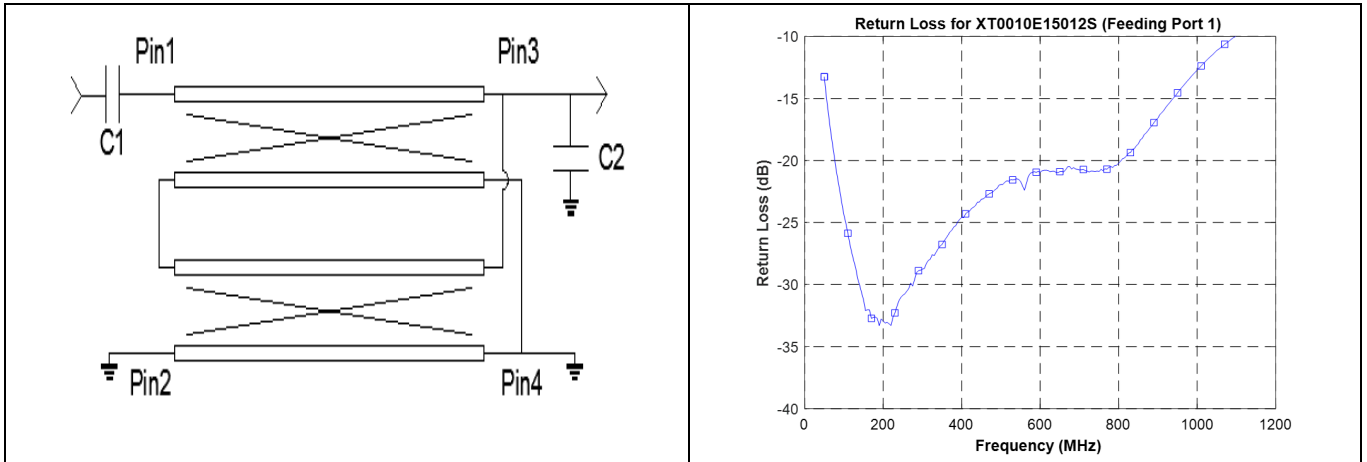
Power Derating

The power handling and corresponding power derating plots are a function of the thermal resistance, mounting surface temperature (base plate temperature), maximum continuous operating temperature of the impedance transformer, and the thermal insertion loss. The thermal insertion loss is defined in the Power Handling section of the data sheet.

As the mounting interface temperature approaches the maximum continuous operating temperature, the power handling decreases to zero.

If mounting temperature is greater than 95°C, Xinger impedance transformer will perform reliably as long as the input power is derated to the curve above.

Typical Performance (25°C): 60MHz to 1200MHz



Note: The performance above is shown with a series capacitor C1 of 110 pF at pin 1 (50 Ohm port). The shunt capacitor C2 at pin 3 is optional for tuning the narrow band.

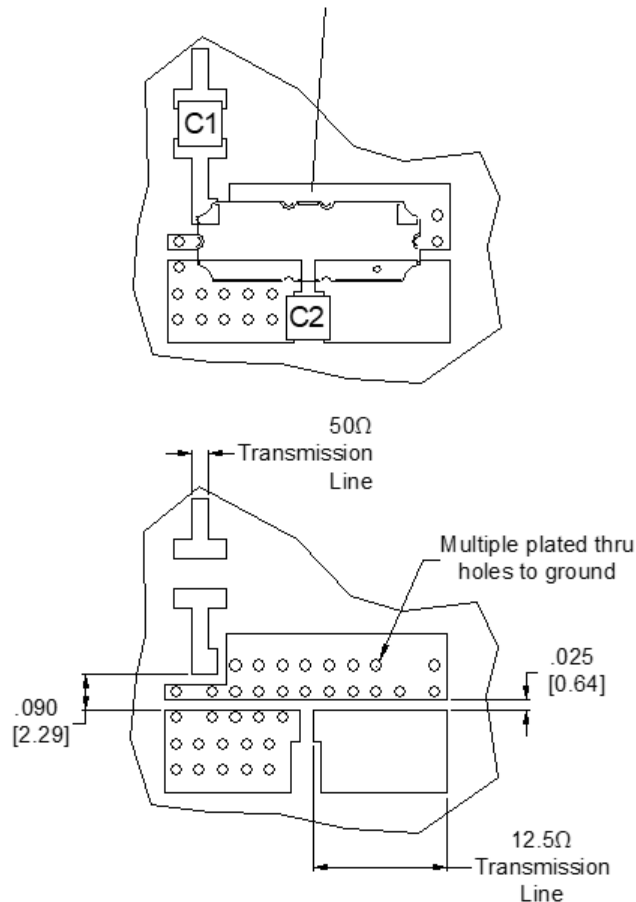
Definition of Measured Specifications

Parameter	Definition	Mathematical Representation
Return Loss	The reflected power divided by the input power when 50 Ω port is terminated with 50 Ω and 12.5 Ω port is terminated with 12.5Ω.	$20 \log_{10}(S_{11})$ $20 \log_{10}(S_{22})$
Insertion Loss	The input power divided by the output power.	$10 \log_{10}(S_{21} ^2)$

For definition above, port 1 is connected to pin 1 as the 50 Ohm port and port 2 is connected to pin 3 as 12.5 Ohm port.

Mounting Footprint

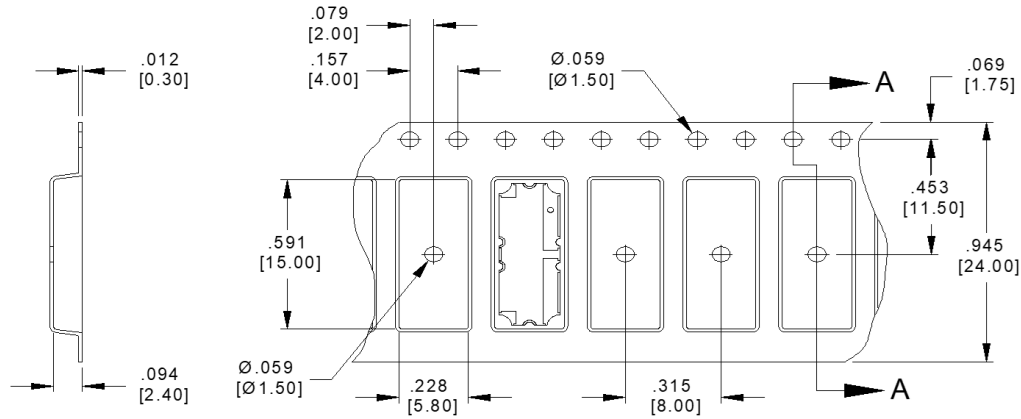
To ensure proper electrical and thermal performance there must be a ground plane with 100% solder connection underneath part orientated as shown



XT0010E15012S Mounting Footprint

Packaging and Ordering Information:

Parts are available in a reel. Packaging follows EIA 481 for reels. Parts are oriented in tape and reel as shown below. Tape and reel is available in 2000 pcs per reel.



SECTION A-A

Dimensions are in Inches [MM]

Direction of Part Feed (Unloading)

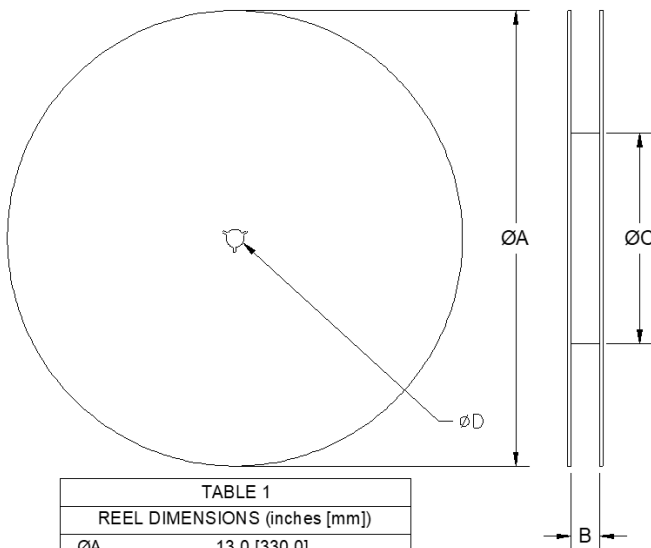


TABLE 1	
REEL DIMENSIONS (inches [mm])	
ØA	13.0 [330.0]
B	.945 [24.0]
ØC	4.017 [102.03]
ØD	0.512 [13.0]

Contact us:
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