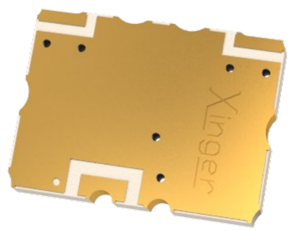
TTM Technologies

XMB1519G2-5050G
Rev A

Xinger®



Low Profile Balun
50Ω to 50Ω Balanced

Description:

The XMB1519G2-5050G is a low-profile, high power, balanced to unbalanced Xinger style balun transformer, with a power rating of 150 Watts AVG and a peak to average ratio of 12dB in an easy-to-use surface mount package for L-band and COTS Mil-Aero applications. These compact components are ideal for high volume manufacturing and are more reliable and repeatable than traditional wire wound and printed baluns. The component has an unbalanced port impedance of 50Ω and balanced port impedances of 25Ω to ground with a 50Ω balance between outputs. Developed to handle modern matching challenges of power transistors, which have low impedance levels. The output ports have equal amplitude (-3dB) with 180-degree phase differential. All parts have been subjected to rigorous Xinger qualification testing and units are 100% RF tested. The ENIG finish of this component is used to meet the challenges of COTS Mil-Aero customer plating needs and expectations and is available on tape and reel for pick and place high volume manufacturing.

Features:

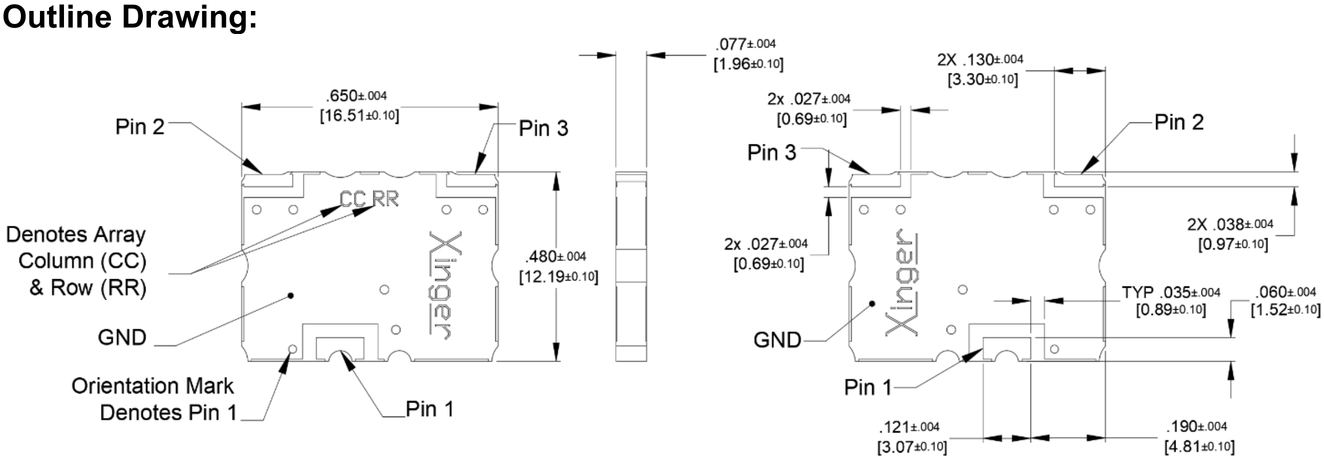
- **1500- 1900 MHz**
- **50 Ohm to 2 x 25 Ohm**
- **L-Band, COTS Mil-Aero applications**
- **Power 150 Watts (AVG)**
- **Peak to Average Ratio 12dB**
- **180° Transformer**
- **Low Insertion Loss (≤0.35dB)**
- **Even Order Suppression**
- **Input to Output DC Isolation**
- **Surface Mountable**
- **Production Friendly**
- **Tape & Reel**
- **RoHS Compliant**
- **ENIG finish**
- **Convenient Package**

Electrical Specifications***:

Frequency	Port Impedance*	Return Loss	Differential Insertion Loss	CMRR
MHz	*Ohms (Unbalanced: Balanced)*	*dB min*	*dB max*	*dB min*
1500 - 1900	50:2 x 25	15	0.35	25
Amplitude Balance	**Phase Balance**	**Power**	**Operating Temp.**	
dB max	*Degrees*	*AVG Watts @ 85°C*	*ºC*	
0.40	180± 5.0	150	-55 to +130	

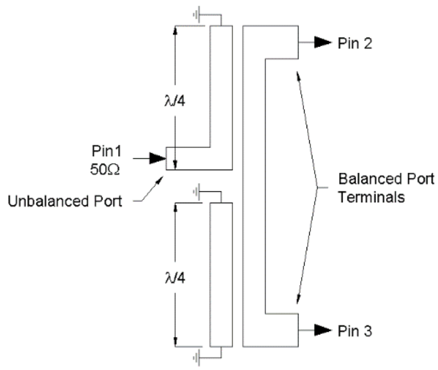
***Specification based on performance of unit properly installed on microstrip printed circuit boards with 50 Ω nominal impedance. Specifications subject to change without notice.
**Insertion Loss excludes reflected power.
* 25 Ω reference to ground

Outline Drawing:

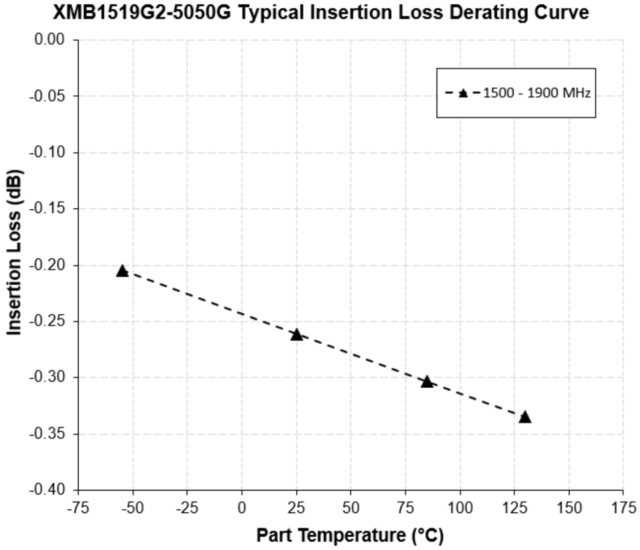


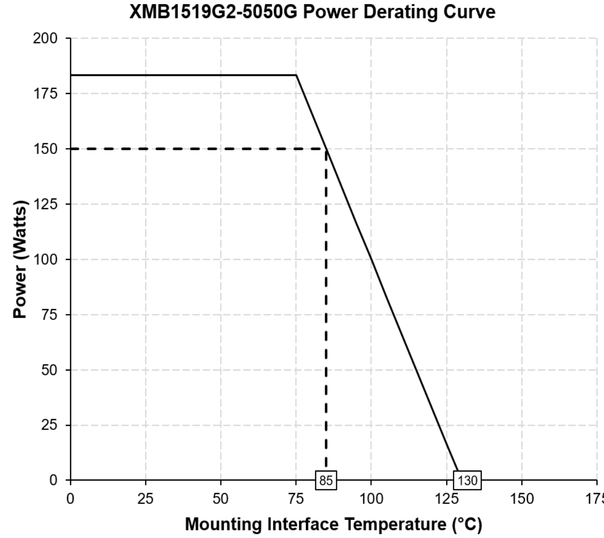
Dimensions are in Inches [Millimeters]   Tolerances are Non-Cumulative

Pin Configuration



Insertion Loss and Power Derating Curves:





Insertion Loss Derating:

The insertion loss, at a given frequency, of the component 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 -55°C, 85°C and 140°C. A best-fit line for the measured data is computed and then plotted from -55°C to 140°C.

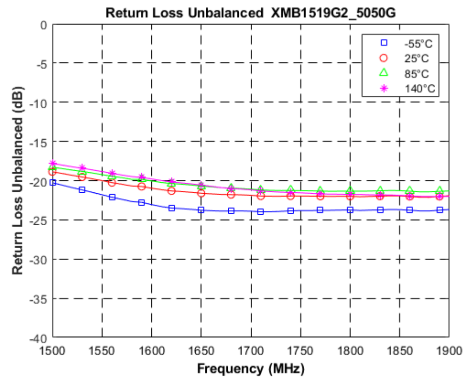
Power Derating:

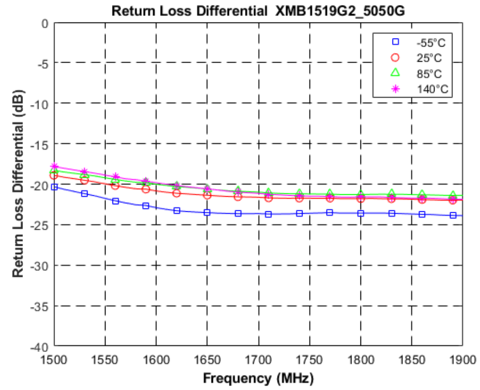
The power handling and corresponding power derating plots are a function of the thermal resistance, mounting surface temperature (base plate temperature), maximum continuous operating temperature of the component, and the thermal insertion loss. The thermal insertion loss is defined in the Power Handling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

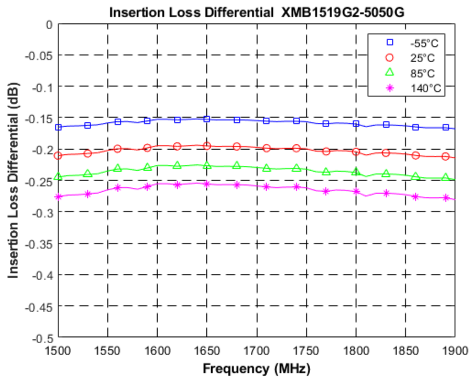
As the mounting interface temperature approaches the maximum continuous operating temperature, the power handling decreases to zero.

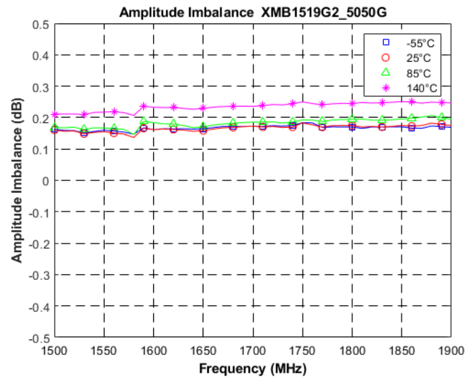
If mounting temperature is greater than 85°C, the component will perform reliably as long as the input power is derated to the curve above.

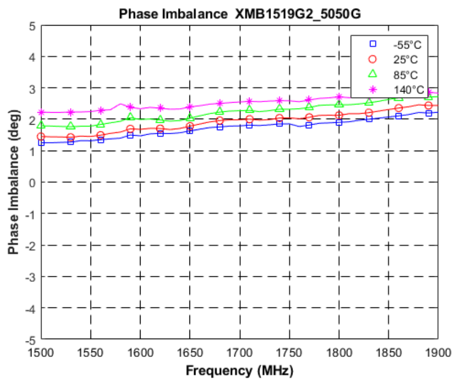
Typical Temperature Performance Plots:

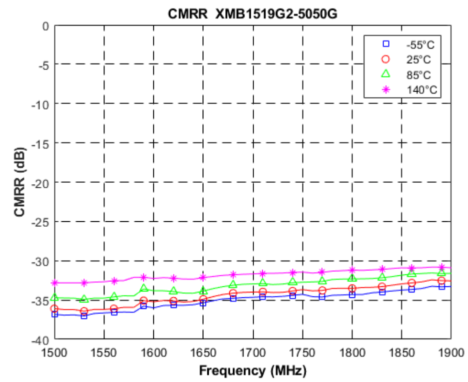


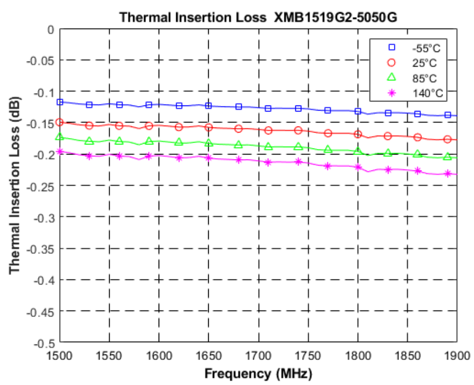










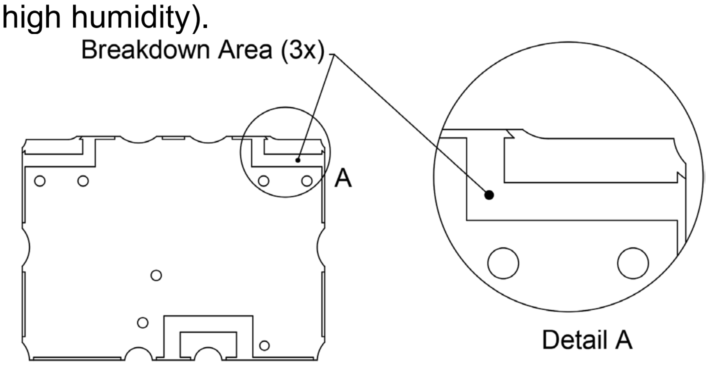


Definition of Measured Specifications:

Parameter	Definition	Mathematical Representation
Return Loss	The impedance match at the single ended port.	$RL = 20Log_{10}(S_{11})$
Differential Port Return Loss	The impedance match at the differential port.	$RLD = 20Log_{10}\|0.5 * (S_{22} - S_{23} - S_{32} + S_{33})\|$
Differential Insertion Loss	Power loss from common mode to differential mode.	$ILD = 20Log_{10}(0.707 * (S_{21} - S_{31}))$
Thermal Insertion Loss	The input power is divided by the sum of the power at the two output ports and the reflected power at the input port.	$THIL = 10Log_{10}(\|S_{11}\|^2 + \|S_{21}\|^2 + \|S_{31}\|^2))$
Phase Imbalance	The difference in phase angle between the two differential ports, offset by 180 deg.	$PB = (\mathrm{Phase}(S_{21}) - \mathrm{Phase}(S_{31}))$
Amplitude Imbalance	The ratio of the power at differential ports.	$AB = 20Log_{10}\left\|\frac{S_{21}}{S_{31}}\right\|$
Common Mode Rejection Ratio	The ratio of powers of the differential gain to the common-mode gain.	$CMRR = 20Log_{10}(S_{21}+S_{31})/(S_{21}-S_{31})$

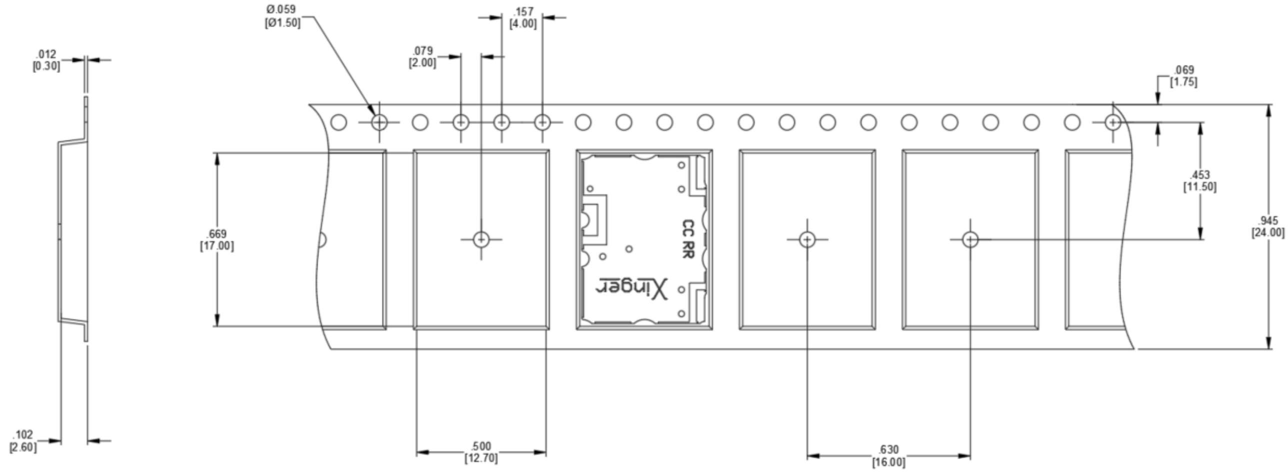
Peak Power Handling:

High-Pot testing of these components during the qualification procedure resulted in a minimum breakdown voltage of 2kV (minimum recorded value). This voltage level corresponds to a breakdown resistance capable of handling at least 12dB peak over average power levels, for very short durations. The breakdown location consistently occurred across the pads and the ground pads. 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).



Packaging and Ordering Information:

Parts are available in reels. Packaging follows EIA 481 for reels. Parts are oriented in tape and reel as shown below. Tape and reel are available in 1000 pcs per reel.



Dimensions are in Inches [Millimeters]

Direction of Part Feed (Unloading)

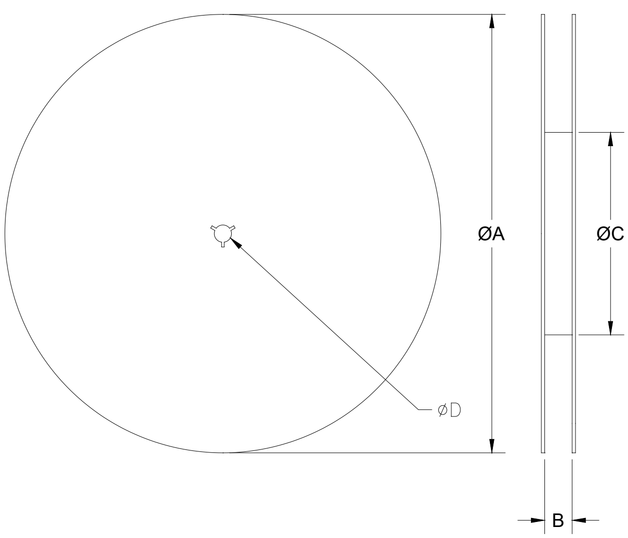


TABLE 1 (1000 pc reel) REEL DIMENSIONS: inches [mm]

∅A	13.0 [330.00]
B	0.945 [24.00]
∅C	4.017 [102.03]
∅D	0.512 [13.00]

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