



## BroadBand Surface Mount (SMT) 4-Way RF Splitter/Combiner, [Version 2](#)

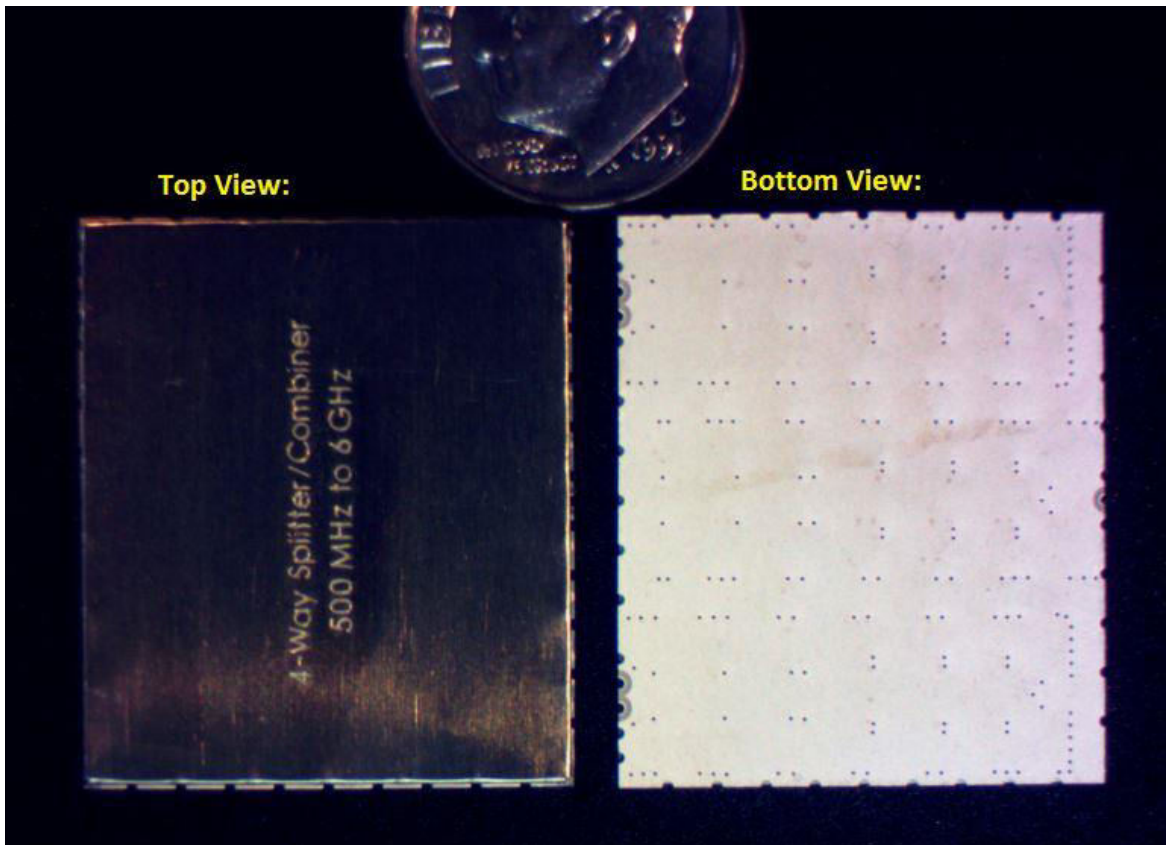
### Features:

- BroadBand 0.5 to 6 GHz Operation
- Low Loss (1.6 dB at 6 GHz)
- Excellent Amplitude/Phase Balance (+/- 0.15 dB, +/-2.5°)
- RoHs Compliant
- High Power (20 watts as splitter)

Datasheet Part Number = [BBTLine\\_4Way\\_Version2\\_SMT](#)

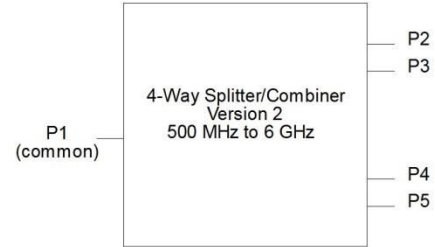
**Note:** The "Version 2" 4-Way has the common port on one side of the device and the other four ports on the opposite side.

**Description:** Shown below is a patented (U.S. Patent 9,570,792) broadband 4-way RF Surface Mount (SMT) RF Splitter/Combiner. This RF splitter is not a typical Wilkinson-style device, but a design which yields a more compact splitter/combiner with excellent low loss RF characteristics and high handling power capability.



**RF Specifications:**

Port Definition:



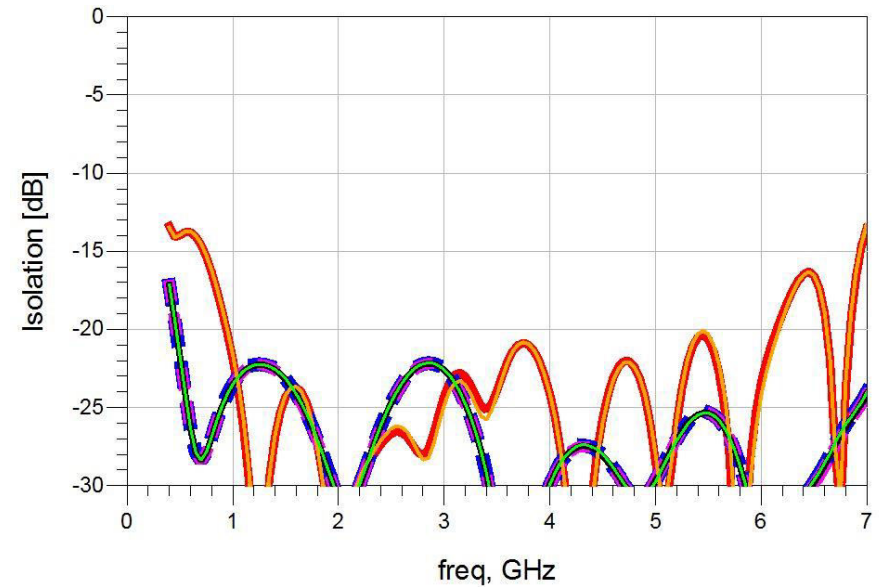
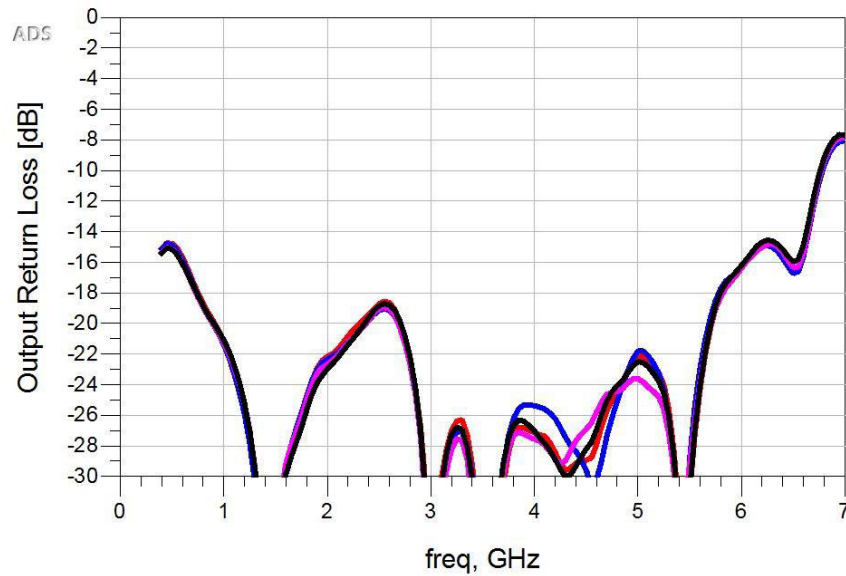
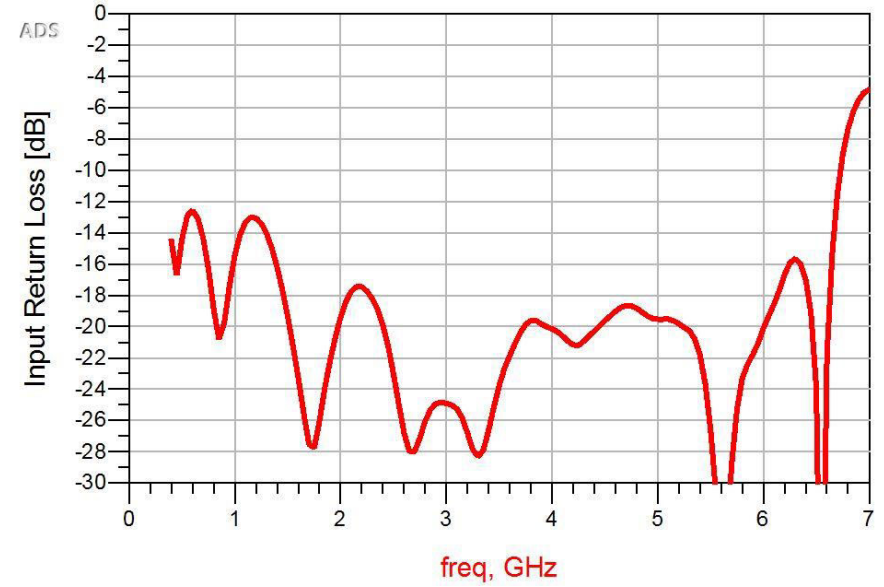
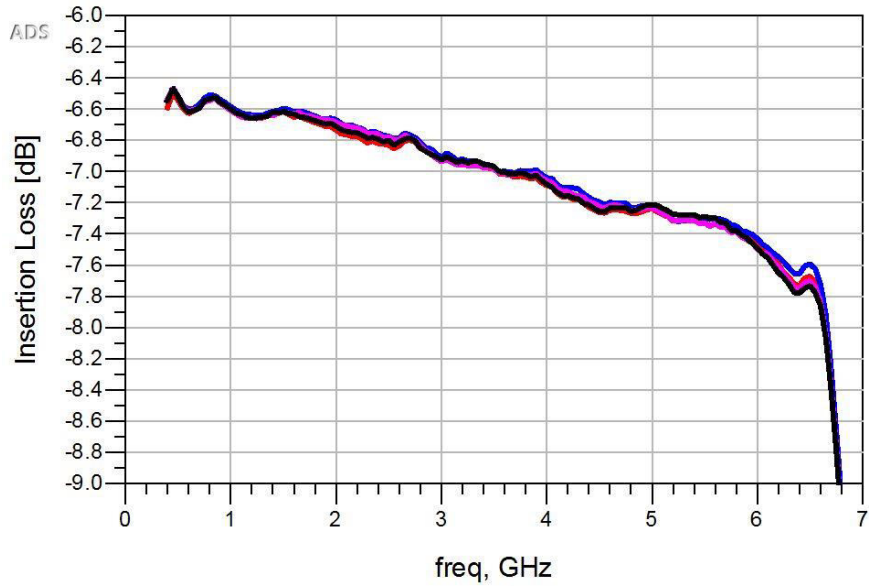
For Isolation Specification:

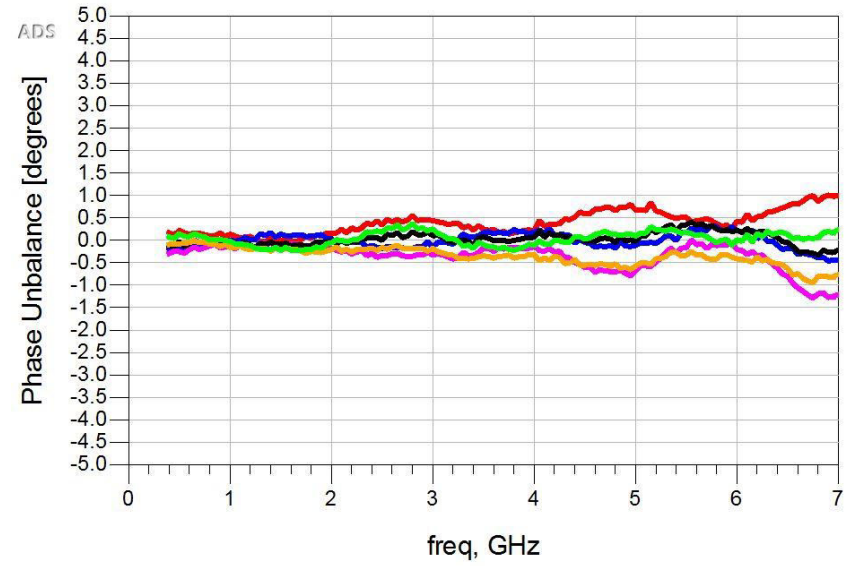
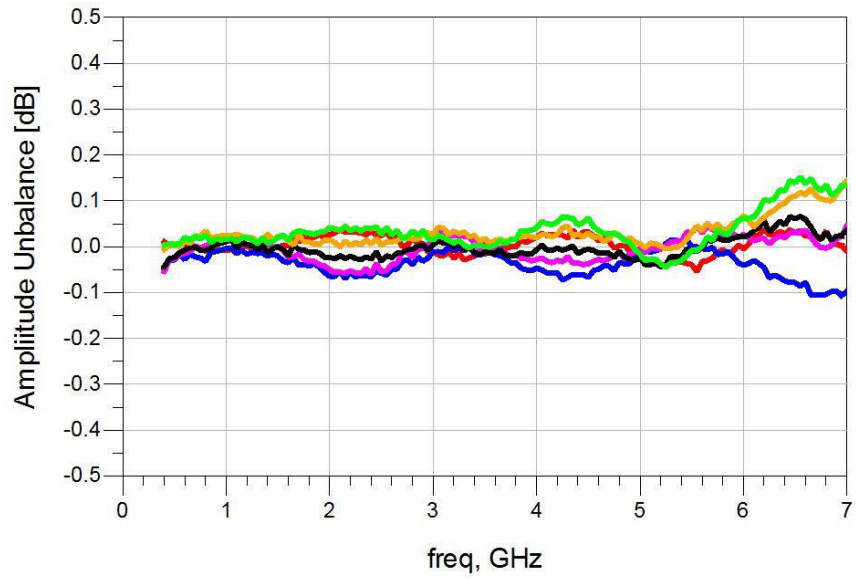
"Near" Ports are P2/P3 and P4/P5  
All other combinations are "Far" Ports

<b>Specifications (at Room Temperature):</b>	
Frequency Range [GHz]	0.5 to 6
Insertion Loss [dB]	< 1.6
Near Port Isolation [dB] (1 to 6 GHz)	> 19
Near Port Isolation [dB] (0.5 to < 1 GHz)	> 13
Far Port Isolation [dB] (1 to 6 GHz)	> 22
Far Port Isolation [dB] (0.5 to < 1 GHz)	> 20
Input (Common Port) Return Loss [dB] (0.5 to 1.4 GHz)	< -12
Input (Common Port) Return Loss [dB] (1.5 to 6 GHz)	< -15
Output Return Loss [dB] (1 to 6 GHz)	< -15
Output Return Loss [dB] (0.5 to < 1 GHz)	< -13
Maximum Power as Splitter [Watts]	> 20*
Maximum Power as Combiner [mWatts]	< 50 **
Phase Unbalance [degrees]	+/- 2.5
Amplitude Unbalance [dB]	+/- 0.15
* maximum test setup power capability at CW frequency of 3.55 GHz	
** internal 0201 isolation resistor limitation when combining perfectly anti-phase signals	

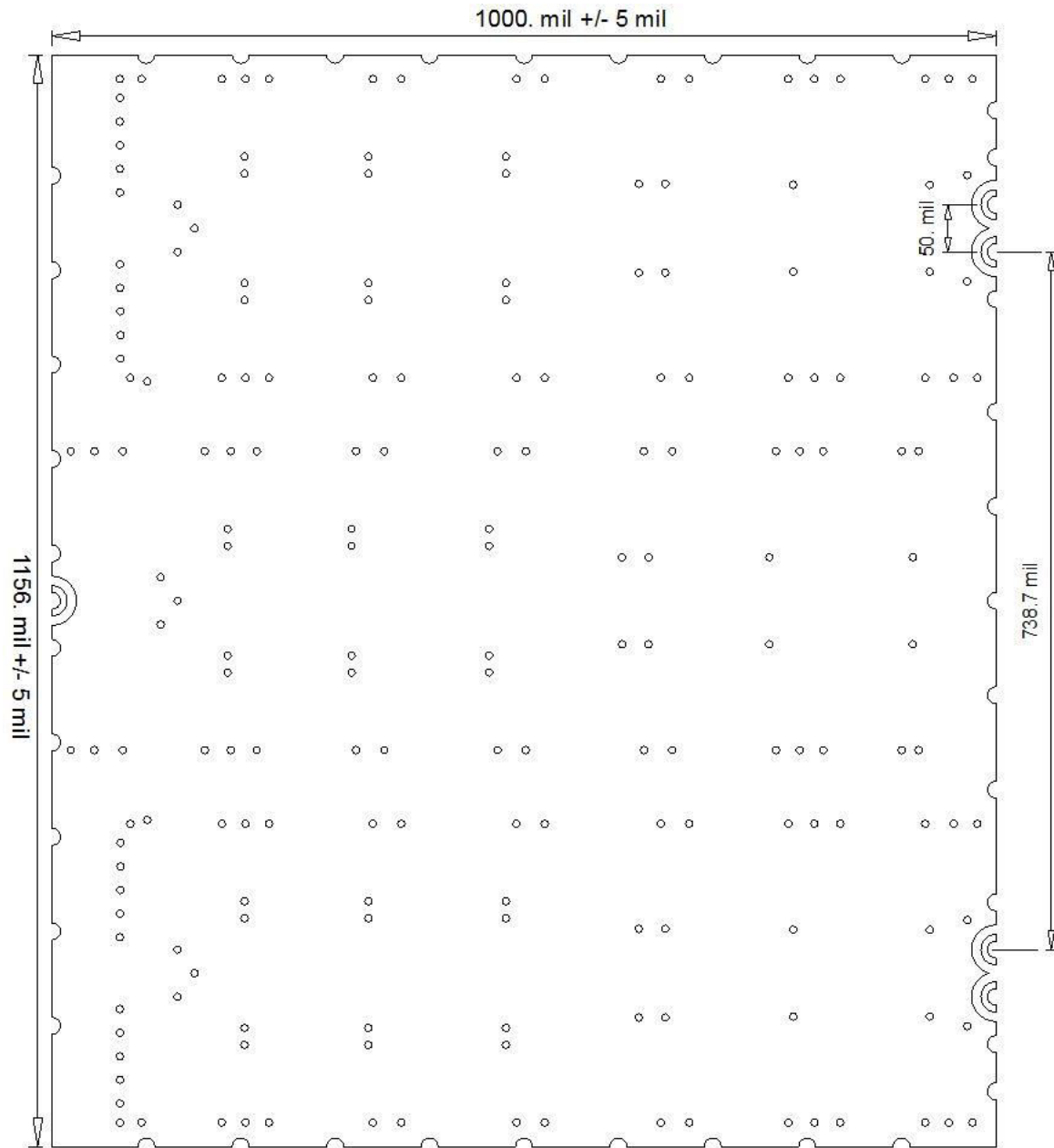
## Typical Device RF Performance:

Note: measurements shown below are taken on a breakout board with short RF traces and two SMP edge-launch connectors...expect Insertion Loss of device to be 0.15 dB better than what is shown below (at 6 GHz) . Insertion Loss shown below includes ideal 4-way split loss of -6.0 dB.

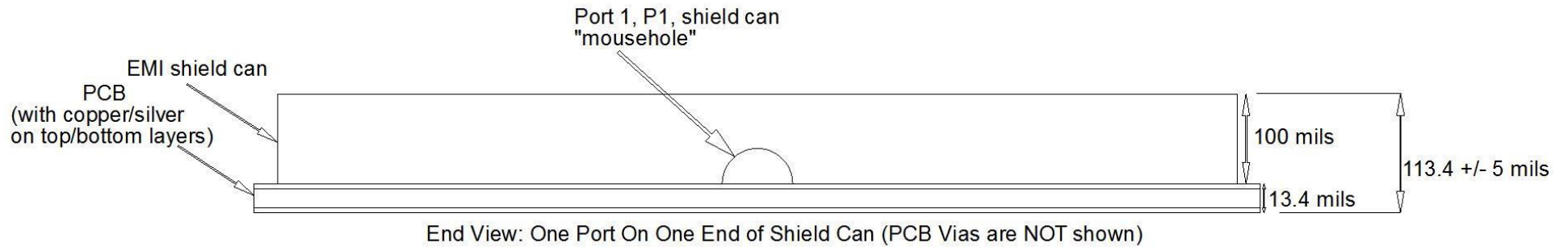




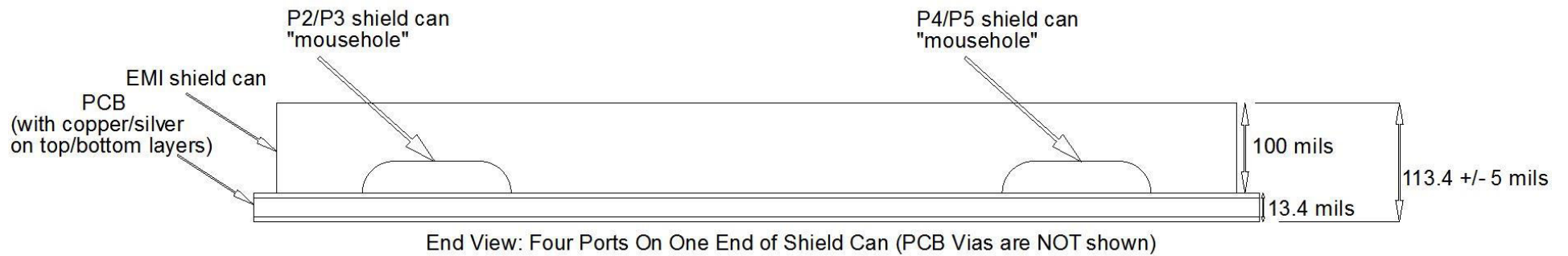
**Mechanical Dimensions, Bottom View:**



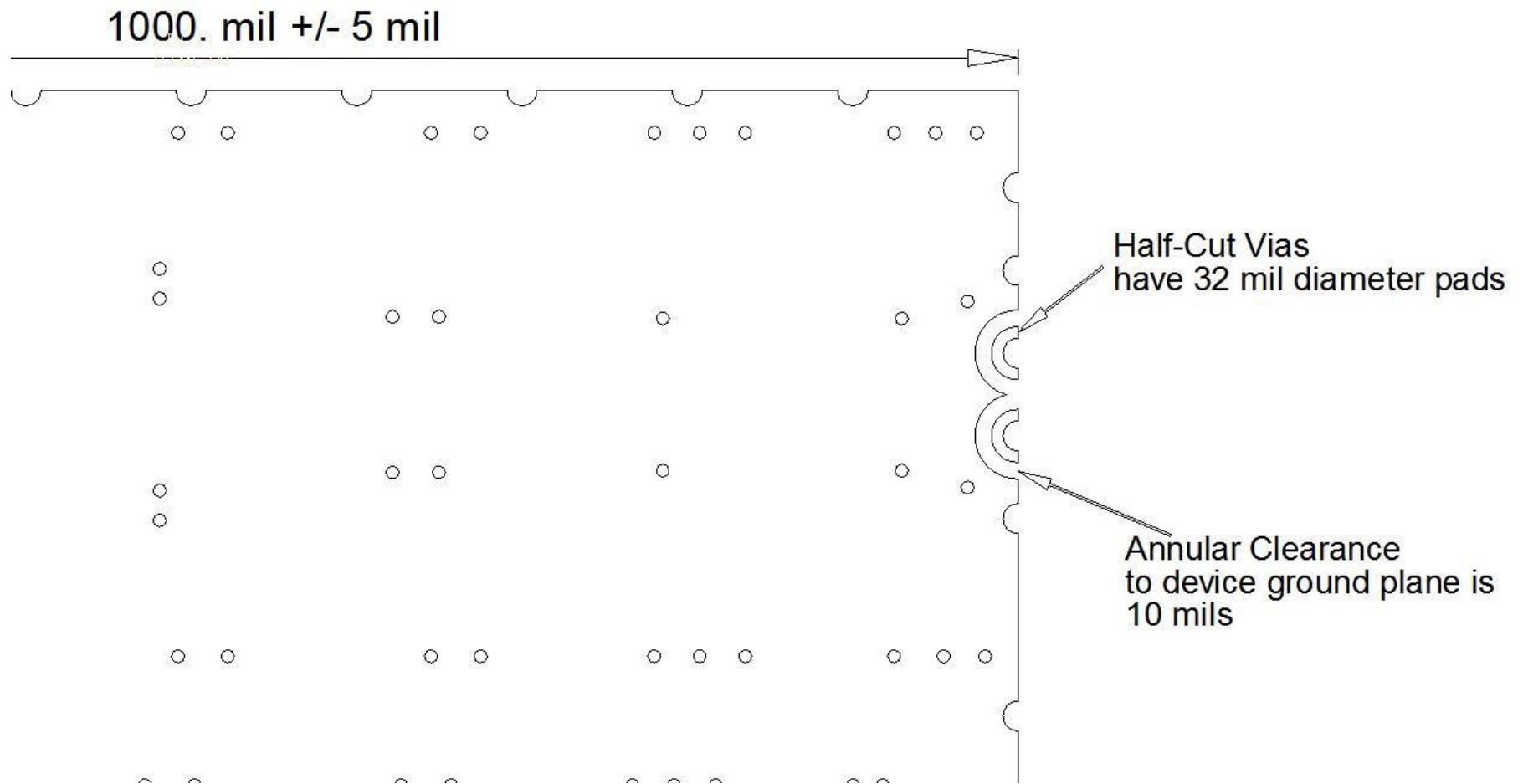
**Mechanical Dimensions, End One View (PCB board vias are not shown):**



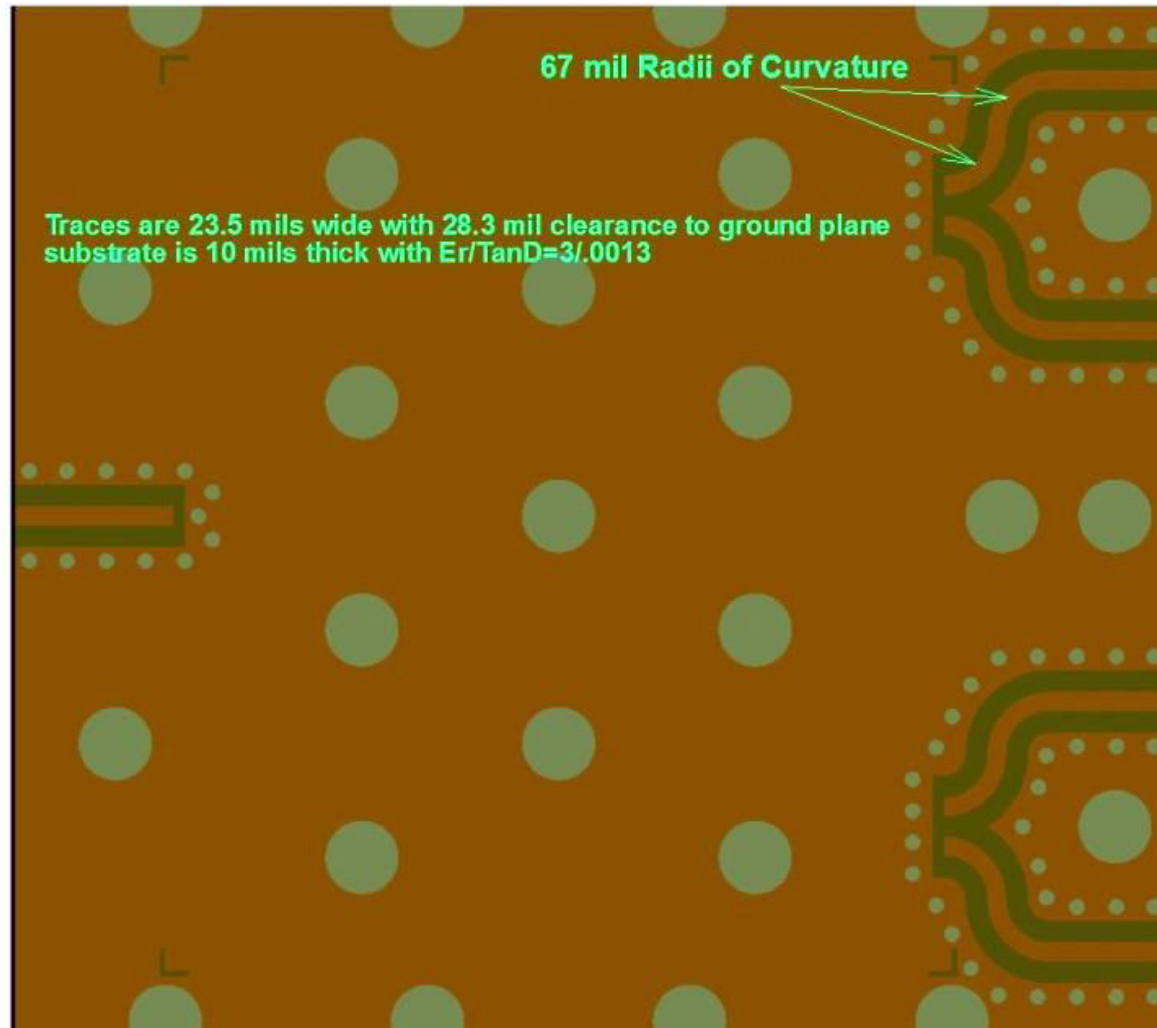
**Mechanical Dimensions, End Two View (PCB board vias are not shown):**



**Mechanical Dimensions, Zoom-In On Device Via Details:**



**Recommended Board Layout on a Rogers 3003 10 mil Thick Core** (For use with Five Edge-Launch SMP-style connectors):



**Note:** As long as the RF trace width (CPWG or Microstrip) is held between 20 and 32 mils and return loss of the Tlines is better than 26 dB, there is negligible Insertion Loss deviation from what is shown above when considering other dielectric substrates (e.g., if you were to design on a 10 or 20 mil thick Rogers 4350B instead of the 10 mil Rogers 3003 shown above).