

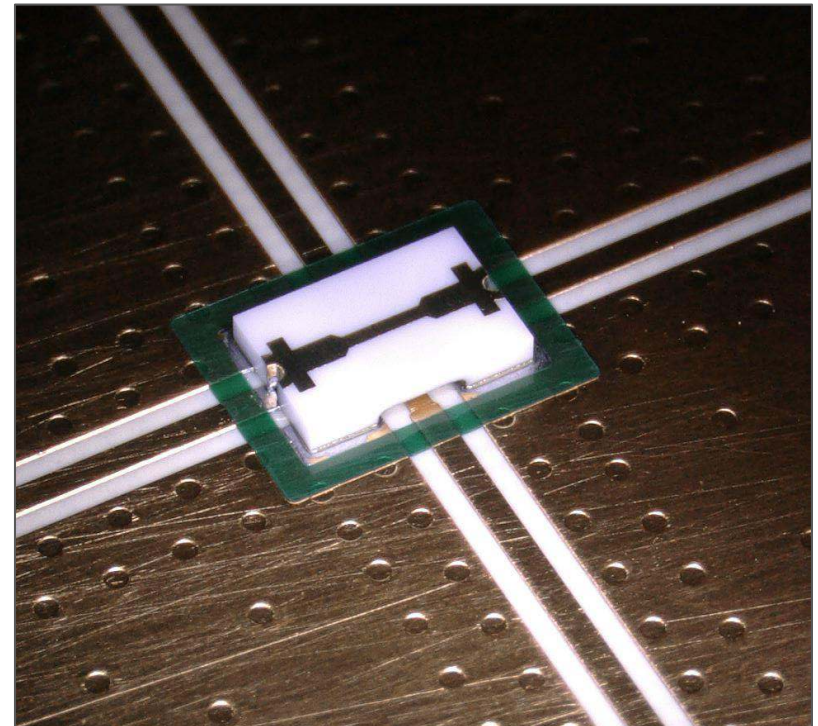


# High Frequency RF Crossover

IMS 2023

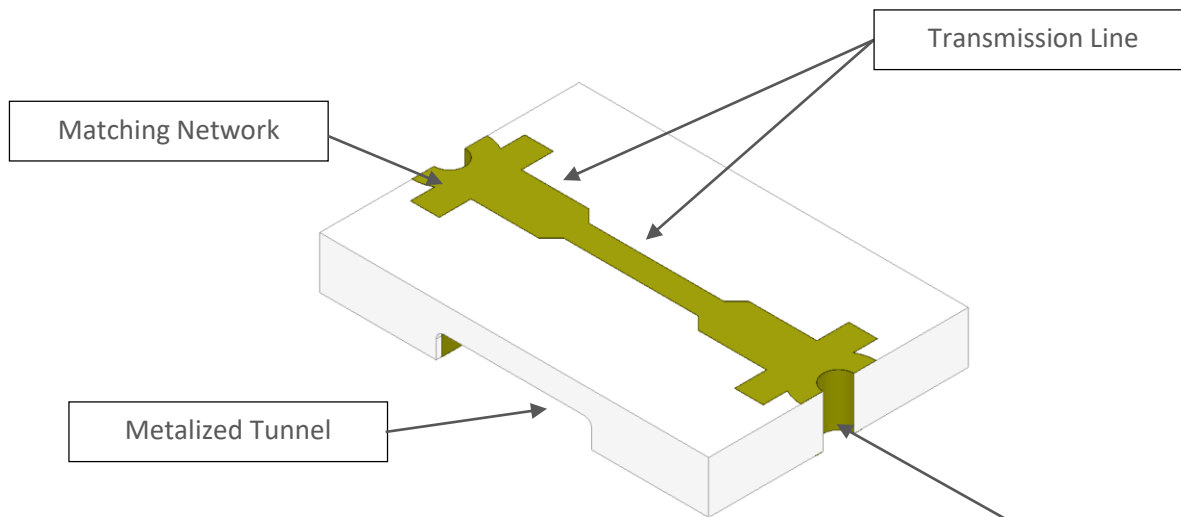
# Introduction

The use of complex multilayer printed circuit boards has become the norm for even the simplest of RF boards in order to cross over an RF or digital trace. The disadvantage to this is the added cost and complexity that multilayer PCB processing incurs. The use of a component style crossover device eliminates the need for multilayer PCB's in some cases. Current crossover devices available today in the market only operate up to ~6GHz. This presentation will focus on a new patented surface mount RF crossover component from Knowles Precision Devices that can operate from DC to 40GHz.

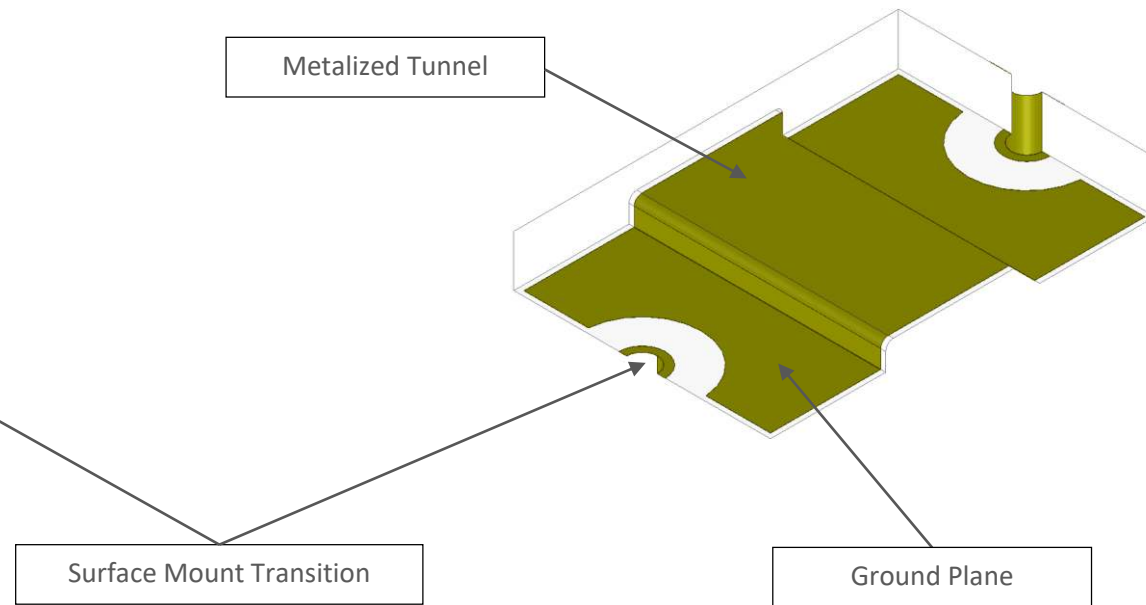


# Device Construction

Crossover (Iso Top View)



Crossover (Iso Bottom View)



Part Size = 0.15" x 0.10" x 0.02" (LxWxH)

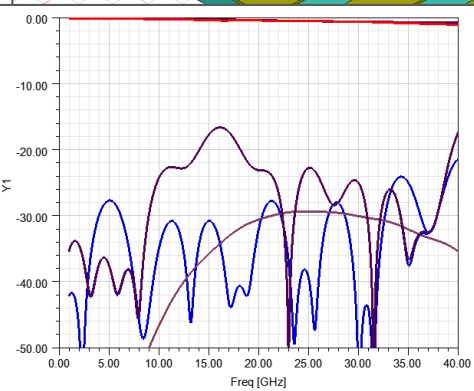
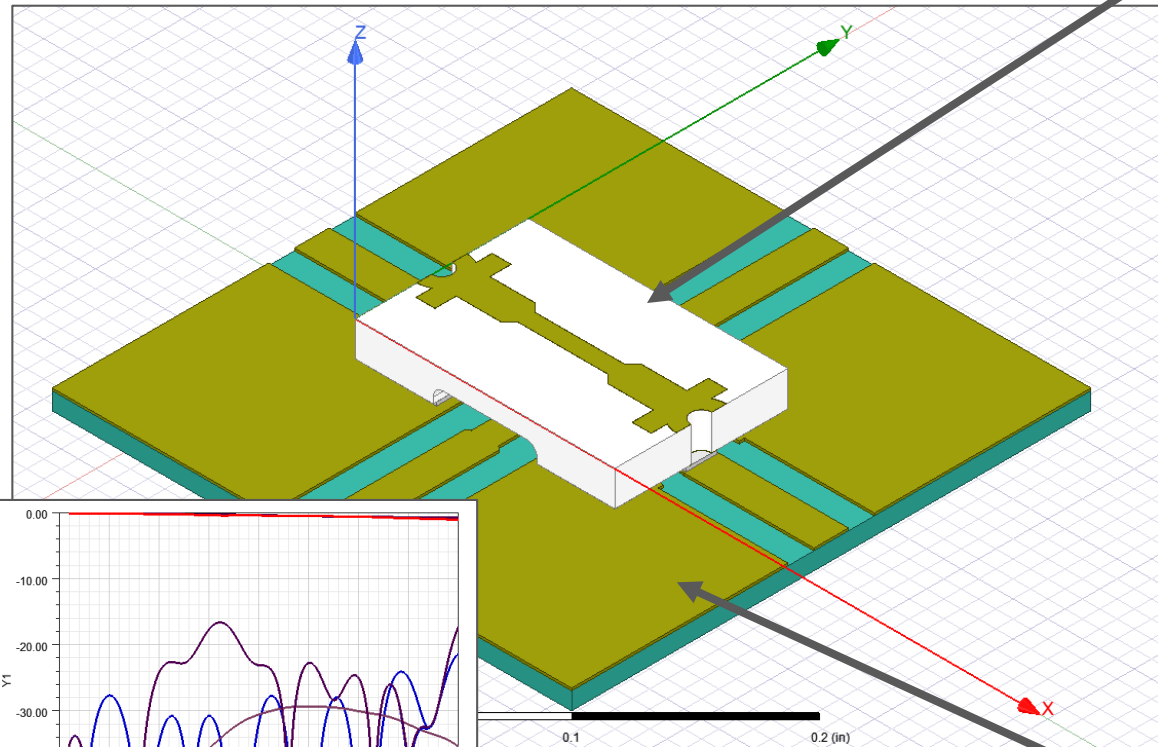
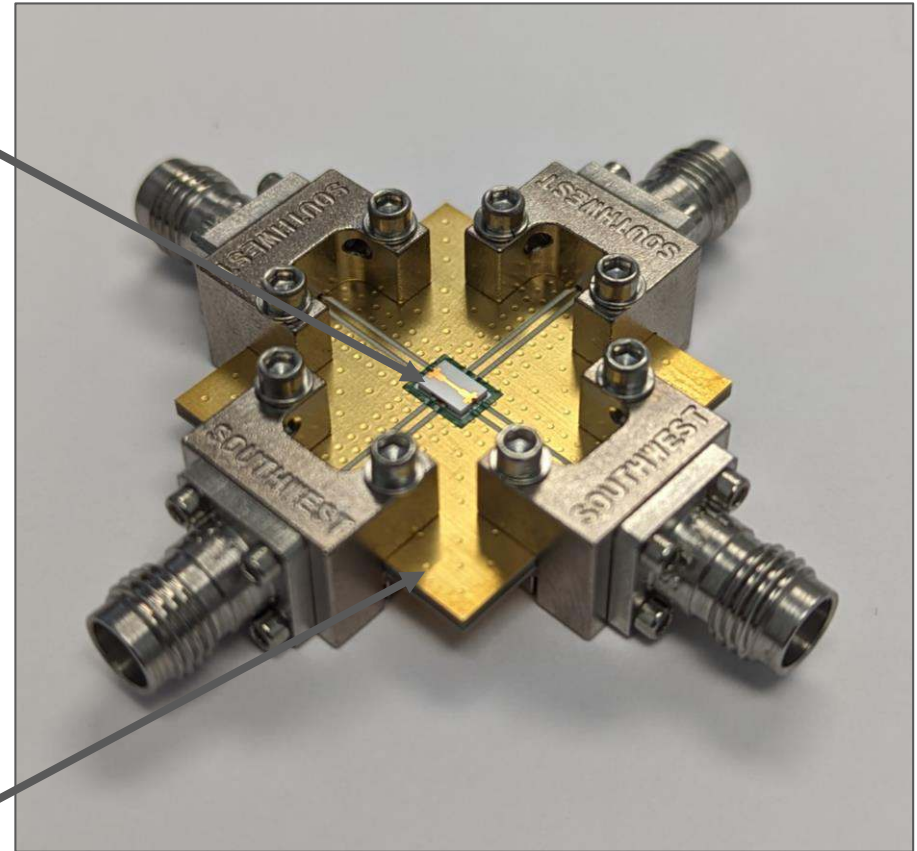


# Design and Test Fixture

HFSS Model

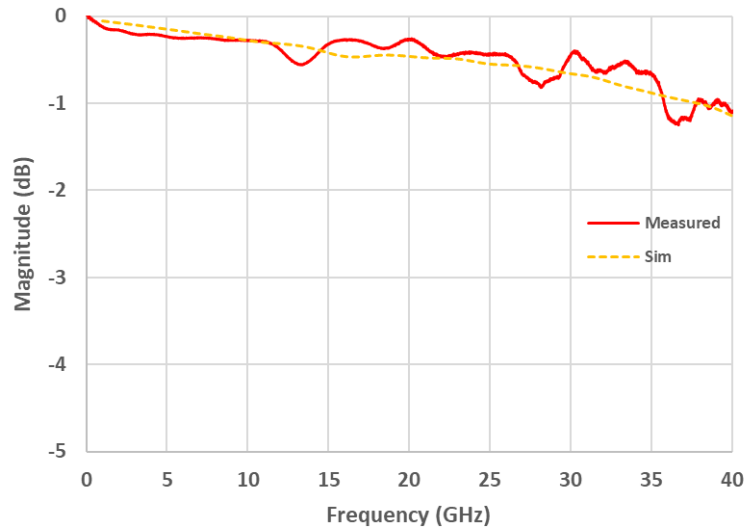
RF Crossover

10mil RO4350B PCB Board

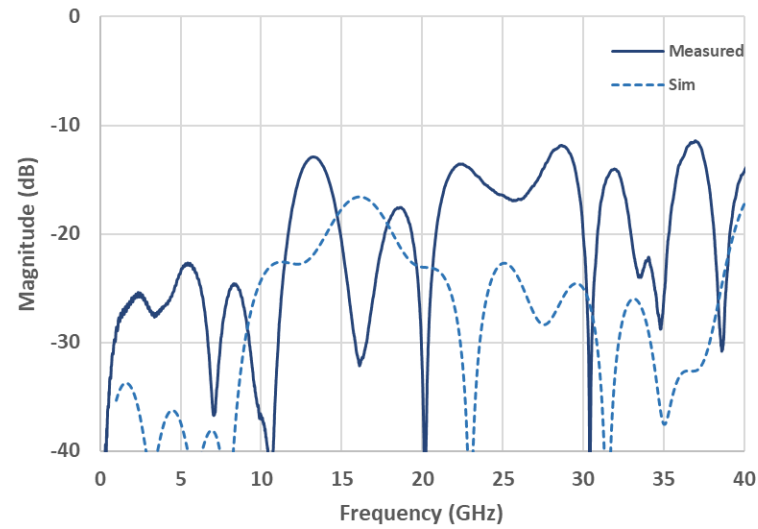


# Measured Results

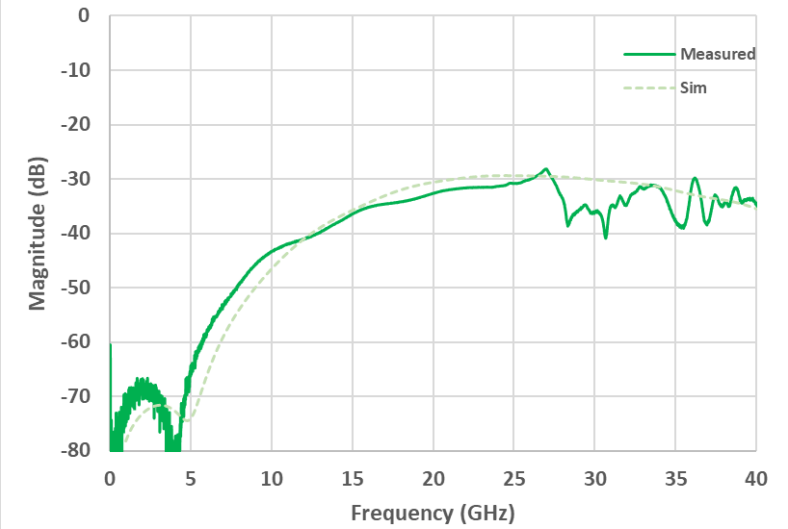
## Insertion Loss



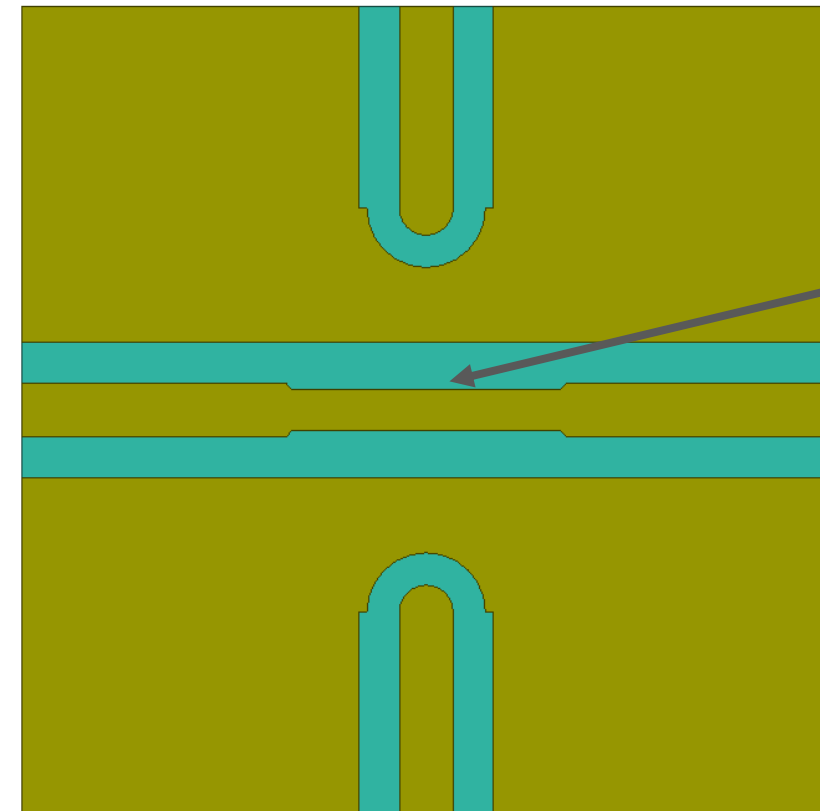
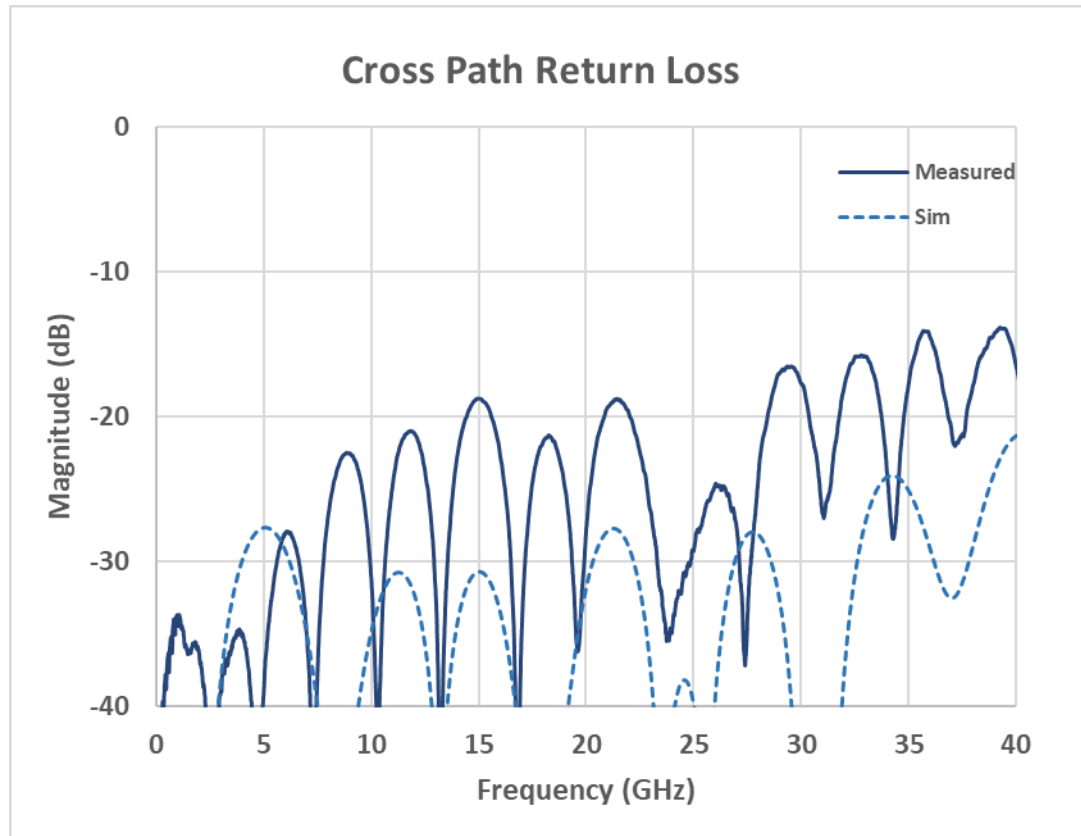
## Return Loss



## Isolation



# Cross Path Performance



Tapper is needed in PCB below crossover to maintain good through path return loss.

# Summary

## Knowles new crossover can be used up to 40GHz

- ▶ Knowles new patented DC-40GHz crossover has excellent wideband performance and ease of implementation as compared to multilayer board construction.
- ▶ Current market available crossover components only operate up to ~6GHz, limiting the applications they can be used in. Knowles new crossover can be used up to 40GHz!

**Visit us at Booth 2427 to learn more about this and other product offerings from Knowles Precision Devices!**



Thank you!