NINETEENTH ANNUAL

BiTS

Burn-in & Test Strategies Workshop

March 4 - 7, 2018

**Hilton Phoenix / Mesa Hotel
Mesa, Arizona**

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www.bitsworkshop.org

BiTS 2018 Burn-in & Test Strategies Workshop

Xcerra measured by your success

Coaxial Contacting

Jim Brandes
Xcerra / Multitest

Technologies that Benefit from Coaxial:
- Data Center
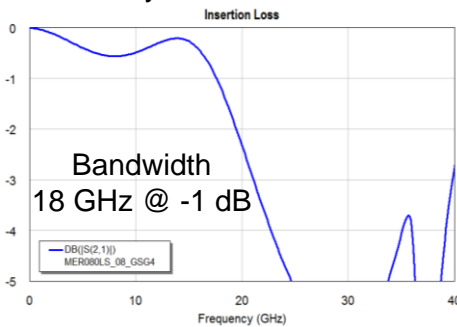- Increasing Processing Speed
- Internet of Things

Image from Facebook

Package Characteristics:
- Array Packages
- Highly Integrated Devices
- Densely Packed, Hi I/O count
- Poor Ground Configurations

Image from Computers4Dummies

Contactor Requirements:
- High Bandwidth
  - >25 GHz to accommodate >50 Gbit/s
- Low Inductance & High Current
  - Clean power delivery at high frequencies
- High Isolation
  - Accommodate large quantities of closely spaced I/O
- High Compliance
  - Accommodate planarity issues of large packages
- Low Force
  - Avoid handler force limitations
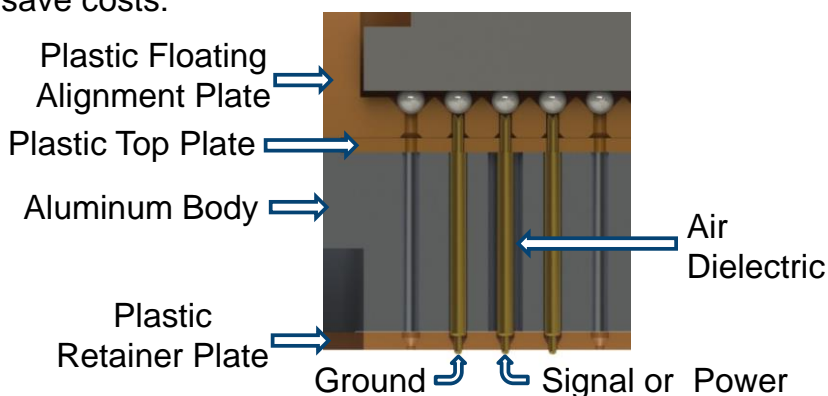
Image from Best Buy

RF performance in contactors has traditionally focused on Bandwidth (Insertion Loss) with impedance matching (Return Loss) being a secondary consideration and little concern about crosstalk
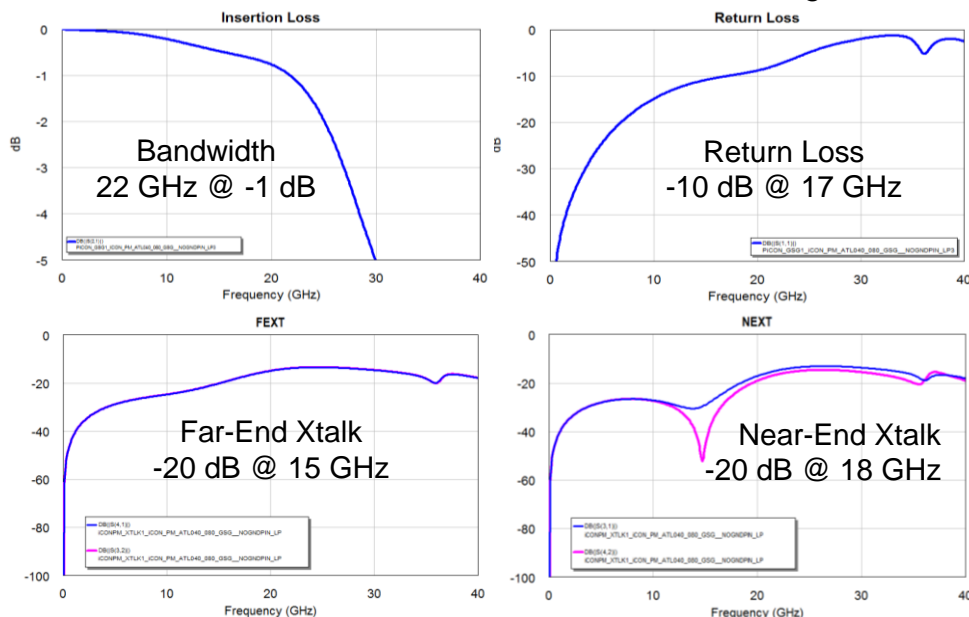
Insertion Loss

Bandwidth
18 GHz @ -1 dB

DB(|S(2,1)|)
MER080LS_08_GSG4

Frequency (GHz)

Return Loss

Return Loss
-10 dB @ 16 GHz

DB(|S(2,2)|)
MER080LS_08_GSG4
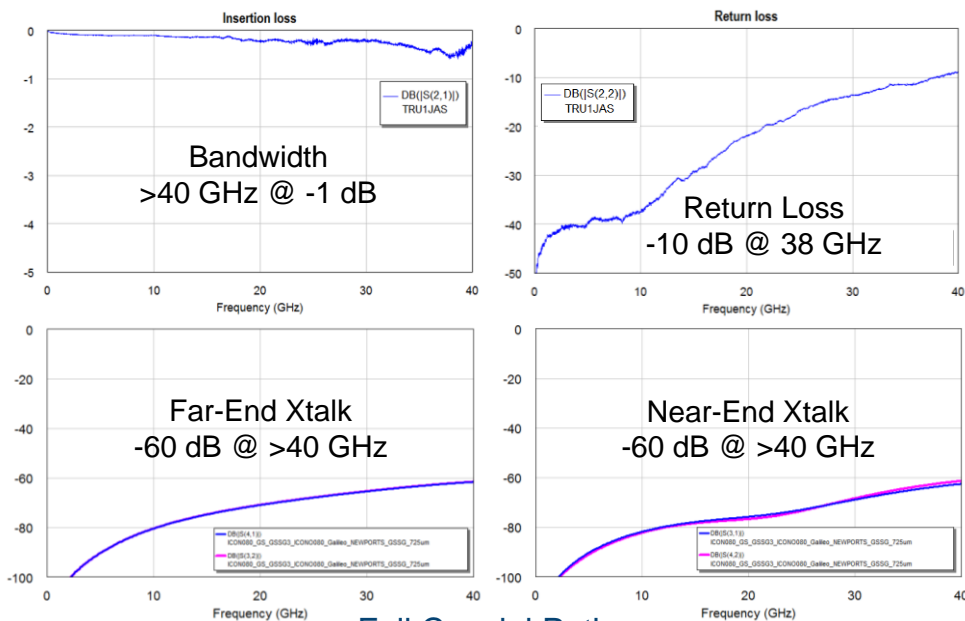
Frequency (GHz)

GSG Performance of Typical, Non-Coaxial Contactor

Coaxial Contacting

To take full advantage of the coaxial path through the contactor, the ground shield must extend from as close to the board as possible to the DUT contact points.

Aluminum Floating Alignment Plate ⇨

Aluminum Body ⇨

⇦ Air Dielectric

Aluminum Retainer Plate ⇨

Ground   Signal or Power
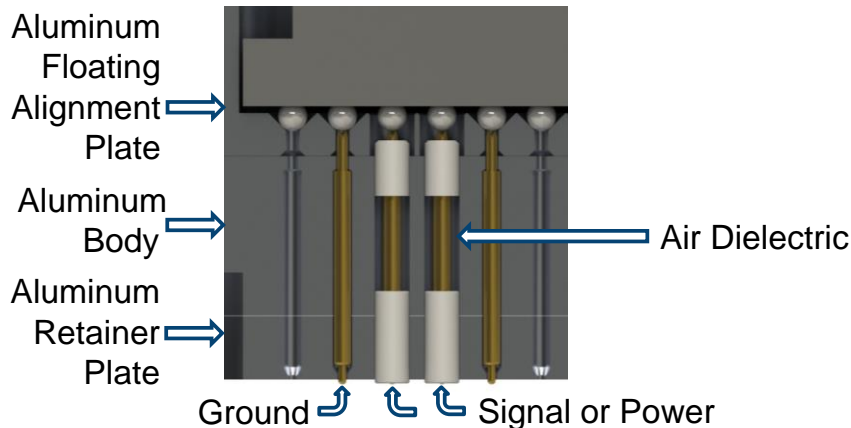
The ICON design includes an all-aluminum body, floating alignment plate, and retainer plate for excellent performance:
Bandwidth,   Return Loss,   Isolation
(as well as thermal properties and rigidity)

Insertion loss

DB(|S(2,1)|)
TRU1JAS

Bandwidth
>40 GHz @ -1 dB

Return loss

DB(|S(2,2)|)
TRU1JAS

Return Loss
-10 dB @ 38 GHz

Far-End Xtalk
-60 dB @ >40 GHz

DB(S(4,1))
ICON080_GS_GSSG3_ICON080_Galileo_NEWPORTS_GSSG_725um
DB(S(3,2))
ICON080_GS_GSSG3_ICON080_Galileo_NEWPORTS_GSSG_725um

Near-End Xtalk
-60 dB @ >40 GHz

DB(S(3,1))
ICON080_GS_GSSG3_ICON080_Galileo_NEWPORTS_GSSG_725um
DB(S(4,2))
ICON080_GS_GSSG3_ICON080_Galileo_NEWPORTS_GSSG_725um

Full Coaxial Path:
Excellent RF Performance Independent of Ground Configuration