Coilcraft S-Parameter Data for
PFD3215 Coupled Inductors

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Coilcraft multiple-port S-parameter data files are based on empirical measurements of Coilcraft PFD3215 Coupled Inductors. The data files are used as "black box" descriptions, thus reducing complexity in circuit modeling.

The data files represent de-embedded measurements. Effects due to customer circuit board traces, board materials, ground planes, or interactions with other components are not included and can have a significant effect when comparing the S-parameters to measurements of the transformers using typical production verification instruments and fixtures.

S-parameter modeling method

The measurements for this part were made using a multiple-trace circuit board on FR-4. The valid frequency range for all parts is 0.10 – 8500 MHz. The board parasitics were removed through simulation by taking a measurement of a trace and creating a model of the trace and associated connectors. This model was negated from the measured S-Parameters prior to generation of the final S-Parameters. By doing this, only the component itself is represented in these S-Parameters.

Port #1 of the model corresponds to pin #1 of the part. Port #2 corresponds to pin #2, port #3 corresponds to pin #3, and port #4 corresponds to pin #4. Each port is referenced to a 50 Ohm measurement but the measurement is not limited to this impedance. Performance will change by connecting ports to different impedances and attaching ports to ground.

How to use the files

The data file names have the format `P/N.SXP`:
          `P/N=` is the part number
          `X`   = the number of ports in the device

S-parameter file description.

All the S-parameter data files are in the TouchStone format. The following is a typical data segment of a four-port file:

```
# MHZ S MA R 50
Stim    Mag(S11)  Angle(S11)  Mag(S12)  Angle(S12)  Mag(S13)  Angle(S13)  Mag(S14)  Angle(S14)
        Mag(S21)  Angle(S21)  Mag(S22)  Angle(S22)  Mag(S23)  Angle(S23)  Mag(S24)  Angle(S24)
        Mag(S31)  Angle(S31)  Mag(S32)  Angle(S32)  Mag(S33)  Angle(S33)  Mag(S34)  Angle(S34)
        Mag(S41)  Angle(S41)  Mag(S42)  Angle(S42)  Mag(S43)  Angle(S43)  Mag(S44)  Angle(S44)
        ....
```

The first line (header) describes the frequency units, parameter, measurement format and characteristic impedance of the measurement (50 Ohms). Each record contains 1 stimulus value and 16 S-parameters (total of 33 values).

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