

Caseless Components

Features

For installation directly in microstrip circuits
 Largest selection of frequency ranges and case styles
 Lowest cost
 Smallest size, lightest weight
 Laminated stripline construction
 High isolation with low VSWR
 Rugged aluminum cases
 Meets MIL-E-5400 Class 3 requirements

Applications

- Inexpensive power dividers and combiners
- Low cost balance amplifier designs
- Matrix amplifiers
- Voltage variable PIN diode attenuators
- Balanced mixers and modulators
- Switching networks
- Balanced detectors
- Antenna feed networks
- Phase shifters and comparators

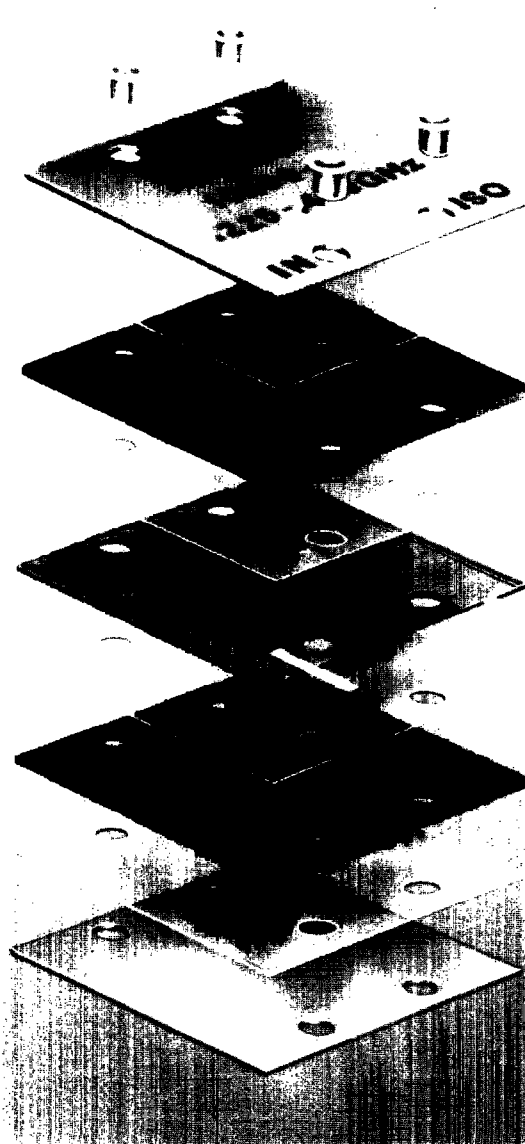
Description

This ultraminiature series of 3 dB, 90° hybrid couplers are available in 34 standard models and 15 case styles to cover the frequency range

30 MHz to 6.0 GHz. The popular 225-400 MHz band is covered by 4 standard case styles.

There are a number of techniques available for constructing microwave quadrature hybrids, but Anaren uses the backward wave 3 dB, 90° hybrid coupler in stripline form. This stripline version is smaller, provides better performance and can cover wider bandwidths than other types. The single-section, backward wave, 3 dB hybrid allows octave bandwidth coverage and multi section versions can easily be designed to cover multi octave and decade bandwidths.

All Anaren ultraminiature couplers are printed on stable teflon-glass substrates using shielded stripline techniques. They are laminated under heat and pressure using a low loss dielectric bonding compound. The package assures high reliability and is capable of withstanding extreme environmental stress.

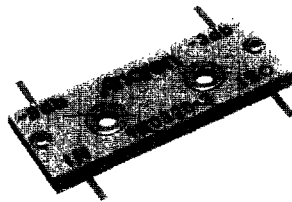


Caseless Components

Coaxial Components

Hybrid Couplers

3 dB, 90°



Package Styles are on Pages 22-23
Installation Details on Page 24

Electrical Specifications

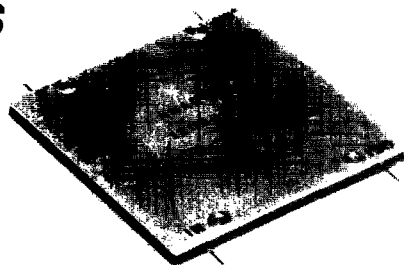
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1 0230-3	.030-.076	15/20	0.40	1.40/1.20	±0.75	±2.0	800	CC 102
1 0270-3	.030-.076	20/25	0.35	1.20/1.10	±0.75	±2.0	800	CC 103
1 D0230-3	.040-.075	15/20	0.40	1.40/1.20	±0.50	±2.0	800	CC 102
1 A0270-3	.040-.080	20/25	0.30	1.20/1.10	±0.50	±2.0	800	CC 103
1 A0230-3	.054-.088	20/22	0.35	1.20/1.10	±0.50	±2.0	700	CC 102
1 0261-3	.0625-.125	20/27	0.35	1.20/1.10	±0.50	±2.0	600	CC 104
1 D0261-3	.070-.110	20/23	0.30	1.20/1.15	±0.30	±2.0	600	CC 104
1 A0280-3	.090-.180	20/27	0.30	1.20/1.10	±0.50	±2.0	400	CC 104
1 H0280-3	.090-.180	18/25	0.30	1.20/1.10	±0.50	±2.0	400	CC116
1 B0261-3	.100-.200	20/25	0.30	1.20/1.10	±0.50	±2.0	400	CC 104
1 J0280-3	.100-.160	20/27	0.30	1.20/1.10	±0.30	±2.0	500	CC 116
1 A0920-3	.100-.500	16/20	0.75	1.35/1.15	±0.85	±2.5	200	CC 117A
1 0280-3	.116-.150	20/27	0.30	1.20/1.10	±0.30	±2.0	500	CC 104
1 0262-3	.125-.250	20/27	0.30	1.20/1.10	±0.50	±2.0	300	CC 105
1 B0920-3	.150-.512	16/18	0.65	1.35/1.25	±0.70	±2.0	200	CC 117A
1 H0262-3	.160-.230	20/25	0.25	1.20/1.15	±0.25	±2.0	400	CC 105
1 0260-3	.225-.400	20/25	0.30	1.20/1.10	±0.50	±2.0	250	CC 106
1 A0260-3	.225-.400	20/25	0.30	1.20/1.10	±0.50	±2.0	250	CC 107
1 B0260-3	.225-.400	20/25	0.30	1.20/1.10	±0.50	±2.0	250	CC 108
1 R0260-3	.225-.400	20/25	0.30	1.20/1.10	±0.50	±2.0	250	CC 110
1 0263-3	.250-.500	20/25	0.30	1.20/1.10	±0.50	±2.0	200	CC 106
1 H0263-3	.250-.500	20/22	0.30	1.20/1.10	±0.50	±2.0	200	CC 110
1 T0263-3	.250-.500	20/22	0.30	1.20/1.10	±0.50	±2.0	200	CC 112
1 D0263-3	.300-.550	20/25	0.30	1.20/1.10	±0.50	±2.0	200	CC 106
1 A0263-3	.400-.600	20/25	0.30	1.20/1.10	±0.50	±2.0	200	CC 106
1 B0263-3	.400-.700	20/25	0.30	1.20/1.10	±0.50	±2.0	200	CC 108
1 H0264-3	.440-.880	20/25	0.30	1.20/1.10	±0.50	±2.0	200	CC 111A
1 0264-3	.500-1.0	20/25	0.30	1.20/1.10	±0.50	±2.0	200	CC 111
1 B0264-3	.500-1.0	20/25	0.30	1.20/1.10	±0.50	±2.0	200	CC 112
1 A0264-3	.600-1.2	18/25	0.30	1.20/1.10	±0.50	±2.0	200	CC 111
1 0330-3	.700-1.4	18/25	0.30	1.25/1.10	±0.50	±2.0	150	CC 113
1 B0330-3	.700-1.4	18/25	0.30	1.25/1.10	±0.50	±2.0	150	CC 112
1 B0890-3	.850-1.45	20/22	0.30	1.25/1.15	±0.50	±2.0	150	CC 112
1 0890-3	.950-1.225	18/25	0.30	1.25/1.15	±0.30	±2.0	150	CC 112
1 D0265-3	.960-1.215	18/25	0.30	1.25/1.10	±0.30	±2.0	150	CC 111
1 L0265-3	1.0-1.4	20/22	0.30	1.25/1.15	±0.30	±2.0	150	CC 112
1 0265-3	1.0-2.0	18/24	0.30	1.25/1.10	±0.50	±2.0	100	CC 113
1 B0265-3	1.0-2.0	18/24	0.30	1.25/1.15	±0.50	±2.0	100	CC 112
1 B0365-3	1.0-2.0	18/24	0.30	1.25/1.15	±0.50	±2.0	100	CC 112
1 K0265-3	1.3-1.7	20/22	0.30	1.25/1.10	±0.30	±2.5	100	CC 112

Model Number	Freq. GHz	Isolation dB Min/Typ	Insert. Loss dB Max	VSWR Max : 1	Amp. Bal. dB Max	Phase Bal. Degrees Max	Power Ave. CW Watts	Package Style
1 E0320-3	1.3-2.6	18/25	0.30	1.30/1.15	±0.50	±2.5	100	CC 113
1 0320-3	1.7-2.5	18/23	0.30	1.30/1.20	±0.50	±2.0	100	CC 113
1 B0320-3	1.7-2.5	18/25	0.30	1.30/1.15	±0.50	±2.0	100	CC 112
1 B0266-3	1.7-3.4	17/21	0.30	1.30/1.15	±0.50	±2.5	80	CC 114
1 0266-3	2.0-4.0	17/21	0.30	1.30/1.20	±0.50	±2.5	60	CC 114
1 C0266-3	2.0-4.0	17/21	0.30	1.30/1.20	±0.50	±2.5	60	CC 112
1 1270-3	2.0-6.0	15/18	0.75	1.50/1.25	±0.60	±3.5	50	CC 122
1 A0266-3	2.1-4.2	18/20	0.30	1.30/1.20	±0.50	±2.5	60	CC 114

Note: Electrical specifications apply only with properly designed test fixtures. Testing is done at ambient temperature only. Sample testing is performed to MIL-Std-105, Level II, AQL 1.0. Test includes coupling, amplitude balance, insertion loss and isolation. If your application requires additional testing, consult Anaren. Power rating applies when solder tab coupler interface has been conformally coated.

Hybrid Couplers

High Power 3 dB, 90°



Package Styles are on Pages 22-23
Installation Details on Page 24

Electrical Specifications

Model Number	Freq. GHz	Isolation dB Min	Insert. Loss dB Max	VSWR Max : 1	Amp. Bal. dB Max	Phase Bal. Degrees Max	Power Ave. CW Watts	Package Style
1 Z0261-3	.088-.108	23	0.25	1.15	±0.30	±2.0	980	CC 118
1 Z0280-3	.100-.160	23	0.25	1.15	±0.40	±2.0	700	CC 118
1 Z0262-3	.160-.230	23	0.25	1.15	±0.30	±2.0	560	CC 120
1 Z0263-3	.200-.400	20	0.25	1.15	±0.50	±2.0	420	CC 120
1 H0360-3	.225-.400	23	0.25	1.15	±0.40	±2.0	420	CC 120
1 Z0364-3	.440-.880	23	0.25	1.15	±0.50	±2.0	280	CC 119
1 B0364-3	.500-1.0	23	0.25	1.15	±0.50	±2.0	280	CC 119

Note: Electrical specifications apply only with properly designed test fixtures. Testing is done at ambient temperature only. Sample testing is performed to MIL-Std-105, Level II, AQL 1.0. Test includes coupling, amplitude balance, insertion loss and isolation. If your application requires additional testing, consult Anaren. Power rating applies when solder tab coupler interface has been conformally coated.

Combiner/Dividers

4-Way



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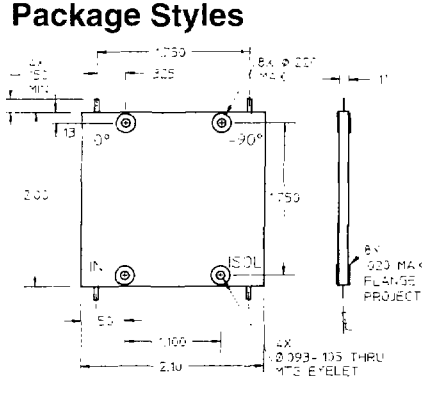
Electrical Specifications

Model Number	Freq. GHz	Isolation dB Min	Insert. Loss dB Max	VSWR Max : 1	Amp. Bal. dB Max	Phase Bal. Degrees Max	Power Ave. CW Watts	Package Style
4 0110	.225-.400	20	0.50	1.20	±0.90	±3.0	250	CC 201
4 0170	.700-1.4	18	0.60	1.30	±1.00	±3.0	100	CC 202
4 0600	.965-1.565	20	0.60	1.30	±0.90	±3.0	100	CC 202
4 0180	1.7-2.5	20	0.60	1.35	±1.00	±3.0	80	CC 202

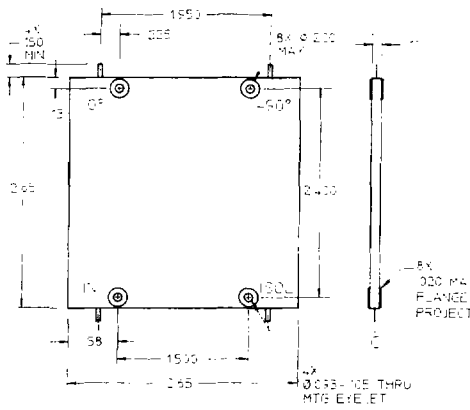
Note: Electrical specifications apply only with properly designed test fixtures. Testing is done at ambient temperature only. Sample testing is performed to MIL-Std-105, Level II, AQL 1.0. Test includes coupling, amplitude balance, insertion loss and isolation. If your application requires additional testing, consult Anaren. Power rating applies when solder tab coupler interface has been conformally coated.

Card Base Dimensions 104

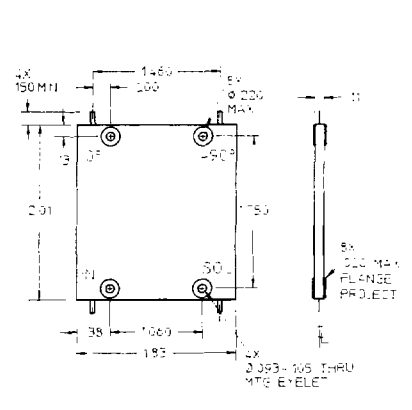
Package Styles



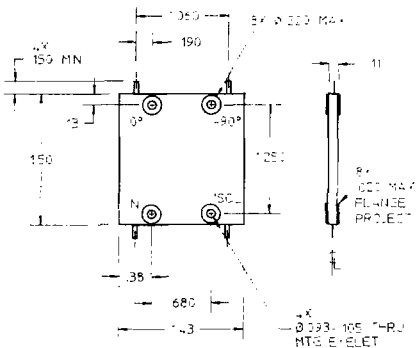
CC 102



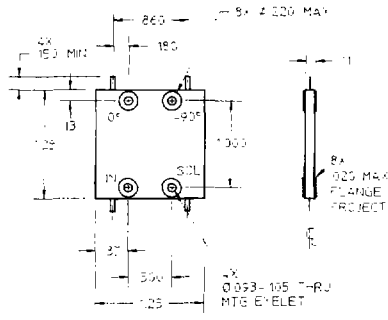
CC 105



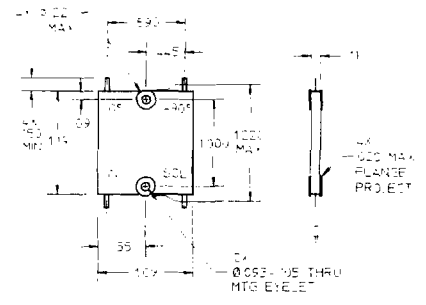
CC 104



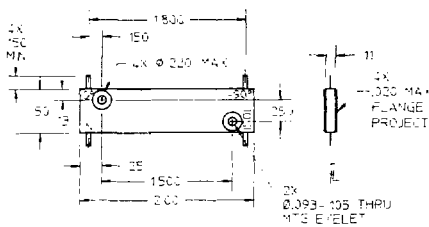
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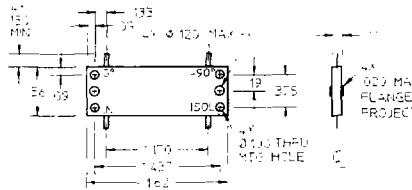
CC 106



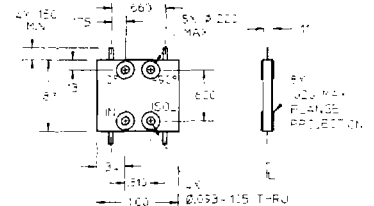
CC 107



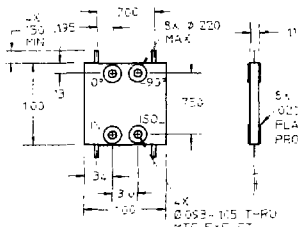
CC 108



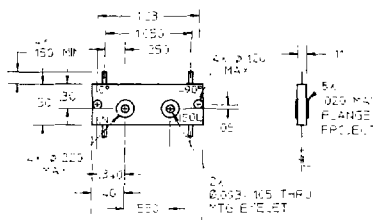
CC 110



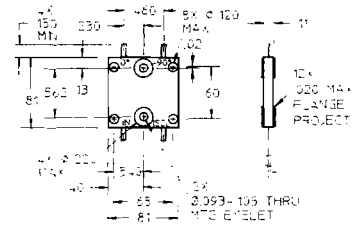
CC 109



CC 111A



CC 112



CC 113

Caseless Components

Installation Details for Caseless Components

Anaren's caseless couplers must be installed with the label up for good case to ground plane contact. Caseless couplers can be installed in microstrip or stripline transmission media. Most units are designed for circuits using .030 inch dielectric material. Note that the ground plane mounting surface must be counterbored to clear the eyelet protrusion on the caseless coupler as shown in Figure 1.

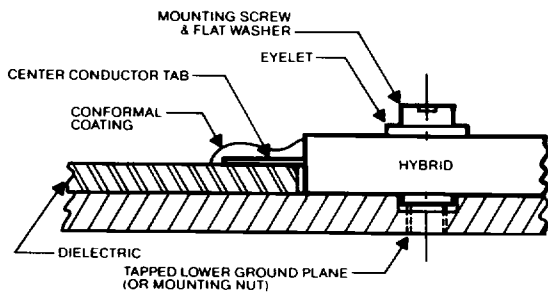


Figure 1 - Basic Mounting, Side View

This counterbore assures that the coupler is well grounded to provide the extremely low inductance ground paths necessary for good high frequency performance. It also promotes heat dissipation in high power applications and ensures flush contact of the coupler conductor tabs to the mating microstrip conductors.

Figure 2 shows the use of a metal spacer to provide good electrical ground contact and flush tab contact when the dielectric board is more than one-half the hybrid thickness.

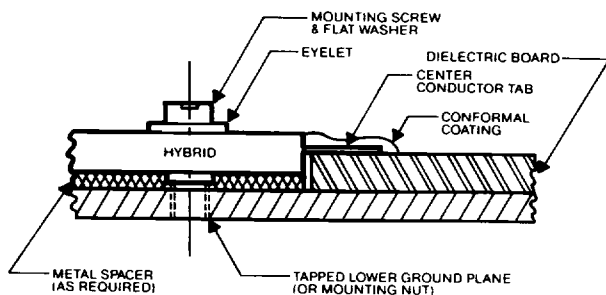


Figure 2 - Mounting with Spacer, Side View

In normal installation, an area is cutout of the dielectric board to accommodate the coupler as shown in figure 3.

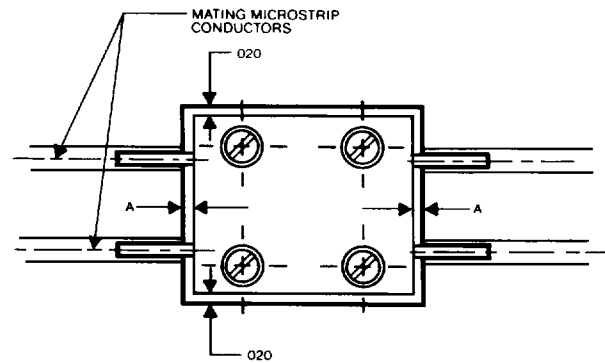


Figure 3 - Basic Mounting, Top View

To permit proper tab alignment to the board's microstrip conductors, approximately .020 inch clearance is allowed on each side of the coupler.

The clearance dimension "A" on the tab sides of the coupler should be minimized to limit the inductance caused by conductor tab spanning an air gap. An "A" dimension of .020 inch is acceptable up to 150 MHz, .010 inch up to 1 GHz and .005 inch up to 2 GHz. Above 2 GHz this dimension becomes very critical and every effort must be made to minimize it.

Screws are normally used to fasten the coupler to the system ground plane. This ground plane may be tapped or it may be drilled with clearance holes for a mounting nut.

Conductor tabs may be attached to the microstrip conductor by soldering, conductive epoxy, welding or any other low contact resistance attaching method.

High Power Considerations

For use in application at or near their rated power, Conformal coating on the tab to coupler interface is required to eliminate arcing and voltage breakdown caused by this sharp transition region. Conformal coating the tabs also is required in high humidity and high altitude application.

Heat sinking, other than normal mounting is not normally required. However, when operating at high power, any effort to improve heat dissipation will minimize the insertion loss due to copper resistance increasing as temperature increases.