

## COAXIAL ISOLATORS AND CIRCULATORS

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## APPLICATION NOTES FOR COAXIAL DEVICES

DORADO coaxial isolators and circulators are designed for a wide range of high performance applications at competitive prices. These devices operate at frequencies from 50MHz to 43.5GHz.

- **Features.**
  - Custom design
  - Wide Range of standard products
  - High Performance
  - SMA, N-Type, 2.4mm and K-type connectors
- **Frequency range.**
  - Standard frequency range of 40MHz to 40GHz
  - Other frequency ranges available
- **Temperature range.**
  - Standard temperature range –30 to 65°C
  - Electrical parameters perform at the standard operating temperature range.
  - Other temperature ranges are available (Please contact DORADO)
- **Mechanical mounting.**
  - Compatible with 50-ohm adjacent devices
- **Custom features.**
  - DORADO has the ability to provide a wide range of solutions to meet most applications

### SPECIAL AND CUSTOM DESIGN COAXIAL DEVICES

- **Cryogenic Coaxial Isolators**
  - Dorado offers a series of Isolators that operate over the frequency range of 1 to 18GHz with up to 2:1 bandwidth. The operating temperature range will be from -269°C to +50°C. The standard connector is SMA type and type N and type K are also available. The maximum insertion loss will be between 0.2 and 0.5dB depending on Bandwidth
- **High Power Coaxial Isolators and Circulators**
  - For operating frequencies up to 1.0GHz coaxial isolators and circulators are available that can handle power up to 3500 watts with bandwidth up to 30% of the center frequency. Dorado circulators Model: 3CCH15-1 covers 1.0 to 2.0GHz and Model 3CCH30-1 for 2.0 to 4.0GHz can handle an average power of 1.0kW and a peak power of 15.0kW.

The power handling of isolators and circulators above 4.0GHz up to 18GHz are usually limited by the power handling capability of the appropriate connectors.

## NARROW BAND COAXIAL LOW POWER ISOLATORS & CIRCULATORS (48MHz to 40GHz)

FREQUENCY RANGE (GHz)	BANDWIDTH GHz	ISOLATOR MODEL	CIRCULATOR MODEL	INS. LOSS dB (max)	ISOLATION dB (min)	VSWR (max)	OPERATING TEMP. RANGE
<b>NARROW BAND COAXIAL ISOLATORS AND CIRCULATORS (0.05-18 GHz) WITH SMA CONNECTORS</b>							
0.048-0.066	Full	1ICS57-2		1.30	15	1.60	-10 to +60° C
0.076-0.100	Full	1ICS88-1		1.20	15	1.60	-10 to +60° C
0.088-0.108	Full	1ICS98-1		1.20	17	1.40	-10 to +60° C
0.100-0.150	Full	2ICS12-1		1.20	15	1.60	-40 to +70° C
0.120-0.180	Full	2ICS15-1		1.20	15	1.60	-40 to +70° C
0.150-0.225	Full	2ICS19-1		1.20	15	1.60	-40 to +70° C
0.180-0.270	Full	2ICS23-1		1.20	15	1.60	-40 to +70° C
0.220-0.330	Full	2ICS28-1		1.00	15	1.60	-40 to +70° C
0.270-0.405	Full	2ICS35-1		1.00	15	1.60	-40 to +70° C
0.330-0.495	Full	2ICS41-1		1.00	15	1.60	-40 to +70° C
0.400-0.600	Full	2ICS50-1		1.00	15	1.60	-40 to +70° C
0.500-0.750	Full	2ICS62-1		1.00	15	1.60	-40 to +70° C
0.650-0.975	Full	2ICS81-1	2CCS81-1	1.00	13	1.50	-60 to +85° C
0.685-1.030	Full	2ICS85-1	2CCS85-1	0.80	14	1.50	-60 to +85° C
0.940-1.410	Full	3ICS12-1	3CCS12-1	0.90	14	1.50	-60 to +85° C
1.350-2.050	Full	3ICS17-2	3CCS17-2	1.00	13	1.50	-60 to +85° C
2.600-3.900	Full	3ICS33-1	3CCS33-1	0.40	15	1.40	-60 to +85° C
3.200-4.800	Full	3ICS40-1	3CCS40-1	0.30	18	1.30	-60 to +85° C
4.600-8.800	Full	3ICS67-1	3CCS67-1	0.30	18	1.30	-60 to +85° C
8.000-12.40	Full	3ICS10-1	3CCS10-1	0.50	18	1.30	-60 to +85° C
12.000-18.00	Full	3ICS15-1	3CCS15-1	0.50	18	1.35	-60 to +85° C
<b>NARROW BAND COAXIAL ISOLATORS AND CIRCULATORS (0.07-23.6 GHz) WITH K OR 2.4MM CONNECTORS</b>							
19.00-34.00	2GHz	4ICS(xx)-1X		1.10	20	1.35	-10 to +60° C
34.00-40.00	2GHz	4ICS(xx)-1X		1.30	20	1.45	-10 to +60° C

**NOTES:**

1. (xx) IDENTIFIES THE CENTER FREQUENCY OF THE DEVICE IN GHz
2. MODIFIED VERSIONS OF ALL DEVICES ARE AVAILABLE
3. CIRCULATION IS CLOCKWISE UNLESS OTHERWISE SPECIFIED
4. MAXIMUM POWER 1.0 WATT

## COAXIAL MEDIUM POWER & BROADBAND ISOLATORS & CIRCULATORS (400MHz to 40GHz)

FREQUENCY RANGE (GHz)	ISOLATOR MODEL	CIRCULATOR MODEL	INS. LOSS dB (max)	ISOLATION dB (min)	VSWR (max)	AVG. POWER (W)	OPERATING TEMP. RANGE	CONNECTORS
<b>MEDIUM POWER COAXIAL CIRCULATORS (0.04-18 GHz) WITH TYPE "N" CONNECTORS</b>								
0.40-0.65		2CCM52-1	1.2	12	1.70	250	-60° to +85° C	N-type
0.47-0.56		2CCM51-2	0.2	23	1.15	600	-10° to +50° C	N-type
0.55-0.66		2CCM60-1	0.2	23	1.15	600	-10° to +50° C	N-type
0.65-1.00		2CCM83-1	1.0	13	1.60	250	-60° to +85° C	N-type
0.75-0.86		2CCM81-2	0.2	23	1.15	600	-10° to +50° C	N-type
1.00-2.00		3CCM15-1	0.8	14	1.60	250	-60° to +55° C	N-type
2.00-4.00		3CCM30-1	0.6	15	1.45	250	-60° to +70° C	N-type
3.00-6.00		3CCM45-1	0.6	15	1.45	150	-60° to +70° C	N-type
4.00-8.00		3CCM60-1	0.6	15	1.45	150	-60° to +70° C	N-type
4.00-12.00		3CCM80-1	1.3	12	1.70	150	-60° to +70° C	N-type
6.00-12.00		3CCM90-1	0.8	15	1.45	150	-60° to +70° C	N-type
8.00-18.0		4CCM13-1	0.9	13	1.60	150	-60° to +70° C	N-type
9.00-18.0		4CCM14-1	0.8	14	1.60	150	-60° to +70° C	N-type
<b>BROADBAND COAXIAL ISOLATORS &amp; CIRCULATORS (0.8-40 GHz)</b>								
0.80-2.00	3ICB14-2	3CCB14-2	1.2	10	1.70	75	+10° to +40° C	SMA
1.00-2.00	3ICB15-1	3CCB15-1	1.0	15	1.50	75	+1° to +70° C	SMA
1.07-2.14	3ICB16-1	3CCB16-1	0.7	16	1.40	75	+1° to +50° C	SMA
2.00-4.00	3ICB30-1	3CCB30-1	0.6	16	1.40	50	-25° to +85° C	SMA
2.00-6.00	3ICB40-1	3CCB40-1	1.2	13	1.60	10	-40° to +85° C	SMA
3.00-6.00	3ICB45-1	3CCB45-1	0.6	16	1.40	35	-60° to +85° C	SMA
4.00-8.00	3ICB60-1	3CCB60-1	0.6	16	1.40	25	-60° to +85° C	SMA
6.00-12.00	3ICB90-1	3CCB90-1	0.6	16	1.40	25	-60° to +85° C	SMA
6.00-18.00	4ICB12-1	3CCB12-1	1.3	12	1.67	1	-60° to +85° C	SMA
9.00-18.00	4ICB13-1	3CCB13-1	0.8	15	1.50	25	-60° to +85° C	SMA
18.00-26.50	4ICB22-3		1.2	18	1.55	1.0	+15° to +35° C	K-type
18.00-26.50		4CCB22-3	1.2	18	1.55	2.0	+15° to +35° C	K-type
26.50-40.00	4ICB33-3		1.2	17	1.55	1.0	+15° to +35° C	K-type
26.50-40.00		4CCB33-3	1.2	17	1.55	2.0	+15° to +35° C	K-type
<b>COAXIAL PERIPHERAL MODE ISOLATORS (1.0-18 GHz) WITH SMA CONNECTORS</b>								
1.00-4.30	3ICP27-1		3.5	13	1.60	1.0	-10° to +60° C	SMA
2.00-8.20	3ICP51-1		1.8	17	1.60	1.0	-10° to +60° C	SMA
3.20-8.30	3ICP58-1		1.2	20	1.50	1.0	-10° to +60° C	SMA
8.00-18.00	4ICP13-1		1.1	20	1.50	1.0	-10° to +60° C	SMA

**NOTES:**

1. MODIFIED VERSIONS OF ALL DEVICES ARE AVAILABLE