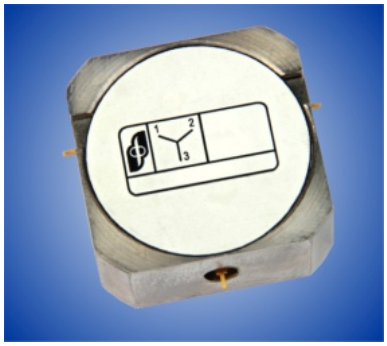
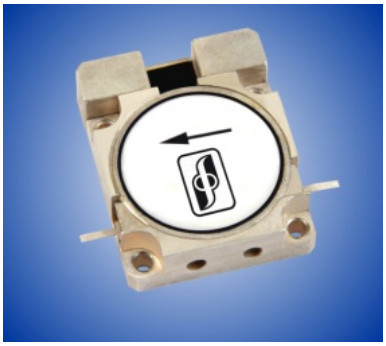
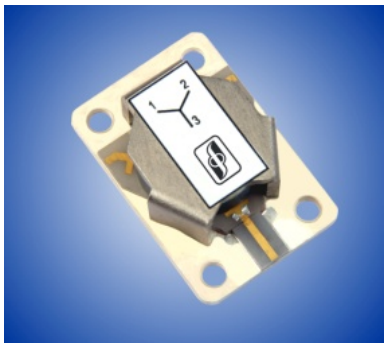
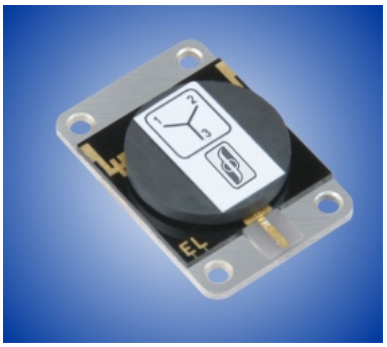
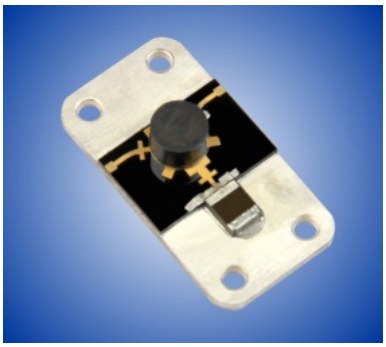
# Drop-in and Microstrip Circulators & Isolators

**FERRITE DOMEN Co.**
**Since 1959**

**Ferrite Domen Co. provides microwave drop-in and microstrip circulators & isolators to military, aerospace and commercial markets. Our devices covering the frequency range of 150 MHz to 18 GHz. These ones feature low insertion loss, high isolation, wide spectrum operating power and temperature range.**

## CONTENTS



**FERRITE DOMEN Co.**
25, Tsvetochnaya st., Bld. 3
196084 St. Petersburg, Russia
Fax +7 (812) 676 2929
E-mail: info@domen.ru
www.ferrite-domen.com

## 1. Drop-In Broadband Circulators and Isolators
## 1.2 to 1.4 GHz



| Frequency range GHz | Model | Bandwidth | Insertion loss dB, max | Isolation dB, min | VSWR max | Power, W | |
|---|---|---|---|---|---|---|---|
| | | | | | | Average | Peak |
| 1.2 - 1.4 | 3CDS14-1 | Full | 0.5 | 20 | 1.25 | 40 | 400 |
| 1.2 - 1.4 | 3IDS14-1 | Full | 0.5 | 20 | 1.25 | 40 | 400 |
| **Note.** Operating temperature:(-50 to +85) °C | | | | | | | |

### Package Size (mm)

| Model | L | W | H |
|---|---|---|---|
| 3CDS14-1 | 25 | 32 | 12 |
| 3IDS14-1 | 25 | 32 | 12 |

## 2. High Power Drop-In Narrowband Circulators and Isolators
## 1 to 4 GHz


| Frequency range GHz | Model | Bandwidth %, min | Insertion loss dB, max | Isolation dB, min | VSWR max | Power, kW | |
|---|---|---|---|---|---|---|---|
| | | | | | | Average | Peak |
| 1.0 - 2.0 | 3CDH[10-20]-1 | 10 | 0.5 | 20 | 1.25 | 0.29 | 2 |
| 2.0 - 4.0 | 3CDH[20-40]-1 | 10 | 0.5 | 20 | 1.25 | 0.29 | 2 |
| **Note.** Operating temperature:(-50 to +85) °C | | | | | | | |

**[X-X] - Group of Models, each for a definite central frequency of the range. While ordering a particular Model, central frequency of the range should be stated (see "Device Application. How to Order", page 4-8).**

### Package Size (mm)

| Model | L | W | H |
|---|---|---|---|
| 3CDH[10-20]-1 | 31.8 | 31.8 | 13 |
| 3CDH[20-40]-1 | 31.8 | 31.8 | 17 |

## 3. Low Power Microstrip Narrowband Y- Type Circulators and Isolators
**1 to 12 GHz**





| Frequency range GHz | Model | Bandwidth %, min | Insertion loss dB, max | Isolation dB, min | VSWR max | Average Power, W |
|---|---|---|---|---|---|---|
| 1.0 - 2.0 | 3IMS[10-20]-1 | 10 | 0.5 | 20 | 1.25 | 30 |
| 1.0 - 2.0 | 3CMS[10-20]-1 | 10 | 0.5 | 20 | 1.25 | 30 |
| 2.0 - 4.0 | 3IMS[20-40]-1 | 10 | 0.5 | 20 | 1.25 | 30 |
| 2.0 - 4.0 | 3CMS[20-40]-1 | 10 | 0.5 | 20 | 1.25 | 30 |
| 4.0 - 8.0 | 3IMM[40-80]-1 | 10 | 0.5 | 18 | 1.25 | 30 |
| 4.0 - 8.0 | 3CMM[40-80]-1 | 10 | 0.5 | 20 | 1.25 | 30 |
| 8.0 - 9.0 | 3IMM[80-90]-1 | 10 | 0.5 | 20 | 1.25 | 30 |
| 8.0 - 9.0 | 3CMM[80-90]-1 | 10 | 0.5 | 20 | 1.25 | 30 |
| 10.0 - 12.0 | 4IMM[10-12]-1 | 10 | 0.5 | 20 | 1.25 | 30 |
| 10.0 - 12.0 | 4CMM[10-12]-1 | 10 | 0.5 | 20 | 1.25 | 30 |

**Note.** Operating temperature:(-50 to +85) °C

**[X-X] - Group of Models, each for a definite central frequency of the range. While ordering a particular Model, central frequency of the range should be stated (see "Device Application. How to Order", page 4-8).**

### Package Size (mm)

| Model | L | W | H |
|---|---|---|---|
| 3IMS[10-20]-1 | 30 | 40 | 10 |
| 3CMS[10-20]-1 | 30 | 40 | 10 |
| 3IMS[20-40]-1 | 15 | 28 | 5.5 |
| 3CMS[20-40]-1 | 15 | 28 | 5.5 |
| 3IMM[40-80]-1 | 24 | 30 | 8.7 |
| 3CMM[40-80]-1 | 24 | 30 | 8.7 |
| 3IMM[80-90]-1 | 24 | 30 | 8.7 |
| 3CMM[80-90]-1 | 24 | 30 | 8.7 |
| 4IMM[10-12]-1 | 24 | 30 | 8.7 |
| 4CMM[10-12]-1 | 24 | 30 | 8.7 |

## 4. Middle Power Microstrip Narrowband Circulators & Isolators
## 1 to 4 GHz





| Frequency range GHz | Model | Bandwidth %, min | Insertion loss dB, max | Isolation dB, min | VSWR max | Power, W | |
|---|---|---|---|---|---|---|---|
| | | | | | | Average | Peak |
| 1.0 - 2.0 | 3CMS[10-20]-2 | 10 | 0.5 | 20 | 1.25 | 50 | 800 |
| 2.0 - 4.0 | 3IMS[10-20]-2 | 10 | 0.5 | 20 | 1.25 | 50 | 400 |
| 2.0 - 4.0 | 3CMS[20-40]-3 | 10 | 0.5 | 20 | 1.25 | 50 | 400 |
| 2.0 - 4.0 | 3CMS[20-40]-2 | 10 | 0.5 | 20 | 1.25 | 50 | 300 |

**Note.** Operating temperature:(-50 to +85) °C

**[X-X] - Group of Models, each for a definite central frequency of the range. While ordering a particular Model, central frequency of the range should be stated (see "Device Application. How to Order", page 4-8).**

### Package Size (mm)

| Model | L | W | H |
|---|---|---|---|
| 3CMS[10-20]-2 | 30 | 40 | 10 |
| 3IMS[10-20]-2 | 15 | 28 | 5.5 |
| 3CMS[20-40]-3 | 15 | 28 | 5.5 |
| 3CMS[20-40]-2 | 15 | 28 | 5.5 |

## 5. Broadband Microstrip Circulators & Isolators
## 0.15 to 3.4 GHz



| Frequency range GHz | Model | Bandwidth %, min | Insertion loss dB, max | Isolation dB, min | VSWR max | Power, W | |
|---|---|---|---|---|---|---|---|
| | | | | | | Average | Peak |
| 0.15 - 0.175 | 2CMS17-1 | Full | 0.7 | 18 | 1.35 | 40 | 400 |
| 0.15 - 0.175 | 2IMS17-1 | Full | 0.6 | 20 | 1.3 | 40 | 400 |
| 3.0 - 3.4 | 3CMS34-1 | Full | 0.6 | 20 | 1.3 | 30 | 300 |
| **Note.** Operating temperature:(-50 to +85) °C | | | | | | | |

### Package Size (mm)

| Model | L | W | H |
|---|---|---|---|
| 2CMS17-1 | 50 | 55 | 15 |
| 2IMS17-1 | 50 | 55 | 15 |
| 3CDS14-1 | 25 | 32 | 12 |
| 3IDS14-1 | 25 | 32 | 12 |
| 3CMS34-1 | 20 | 30 | 6 |

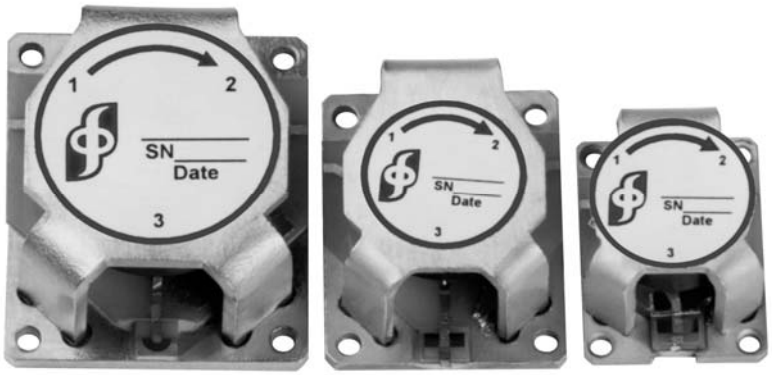
## 6. High Power Broadband Microstrip Circulators & Isolators
## 180 to 220 MHz


| Frequency range MHz | Model | Bandwidth %, min | Insertion loss dB, max | Isolation dB, min | VSWR max | Power, kW | |
|---|---|---|---|---|---|---|---|
| | | | | | | Average | Peak |
| 180 - 220 | 2CMH22-1 | Full | 0.6 | 20 | 1.3 | 0.15 | 1.5 |
| 180 - 220 | 2IMH22-1 | Full | 0.6 | 20 | 1.3 | 0.15 | 1.5 |
| **Note.** Operating temperature:(-50 to +85) °C | | | | | | | |

### Package Size (mm)

| Model | L | W | H |
|---|---|---|---|
| 2CMH22-1 | 45 | 50 | 18 |
| 2IMH22-1 | 45 | 50 | 18 |

## 7. Lumped Element Isolators
## 220 to 1218 MHz



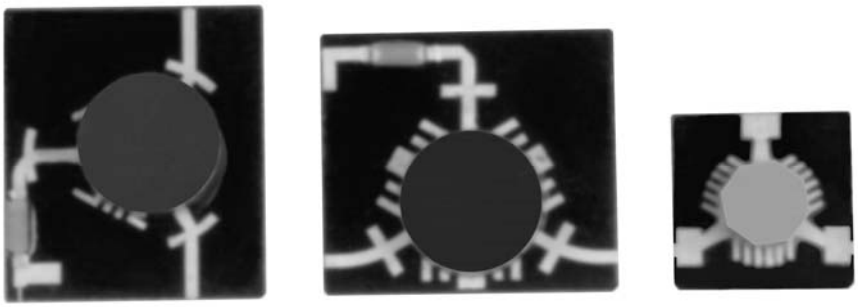

| Frequency range MHz | Model | Bandwidth %, min | Insertion loss dB, max | Isolation dB, min | VSWR max |
|---|---|---|---|---|---|
| 220 to 310 | 2IMS[22-31]-1 | 10 | 0.7 | 18 | 1.35 |
| 290 to 360 | 2IMS[29-36] -1 | 10 | 0.6 | 20 | 1.3 |
| 350 to 550 | 2IMS[35-55] -1 | 10 | 0.6 | 20 | 1.3 |
| 530 to 620 | 2IMS[53-62] -1 | 10 | 0.6 | 20 | 1.3 |
| 600 to 990 | 2IMS[60-99] -1 | 15 | 0.6 | 20 | 1.3 |
| 957 to 1218 | 3IMS11-1 | 20 | 0.6 | 20 | 1.3 |
| **Note.** Operating temperature: -30 to +70 °C. Power handling: average power - 15 W, average reverse power - 4 W. | | | | | |

**[X-X] - Group of Models, each for a definite central frequency of the range. While ordering a particular Model, central frequency of the range should be stated (see "Device Application. How to Order", page 4-8).**

### Package Size (mm)

| Model | L | W | H |
|---|---|---|---|
| 2IMS[22-31]-1 | 32 | 50 | 17 |
| 2IMS[29-36] -1 | 32 | 40 | 17 |
| 2IMS[35-55] -1 | 30 | 36 | 16 |
| 2IMS[53-62] -1 | 24 | 30 | 15 |
| 2IMS[60-99] -1 | 24 | 30 | 15 |
| 3IMS11-1 | 24 | 30 | 15 |

## 8. Substrate Type Circulators and Isolators
## 2 to 18 GHz



| Frequency range GHz | Model | Insertion loss dB, max | Isolation dB, min | VSWR max | Operating temperature °C |
|---|---|---|---|---|---|
| 2.0 to 3.0 | 3❑MM[20-30]-1 | 0.5 | 20 | 1.3 | -20 to +60 |
| 3.0 to 5.0 | 3❑MM[30-50] -1 | 0.5 | 20 | 1.3 | -20 to +60 |
| 5.0 to 9.0 | 3❑MM[50-90] -1 | 0.5 | 20 | 1.3 | -20 to +60 |
| 8.0 to 10.0 | 3❑MM[80-99] -1 | 0.5 | 20 | 1.3 | -20 to +60 |
| 10.0 to 13.0 | 4❑MM[10-13] -1 | 0.5 | 20 | 1.3 | -30 to +60 |
| 13.0 to 18.0 | 4❑MM[13-18] -1 | 0.6 | 20 | 1.3 | -30 to +60 |

**Note.** Handling power 5 W. Reflected power for isolators 1 W. Band width = 15% max.

**In blank ❑: I - Isolator, C- Circulator.**
**At ordering please specify type of device in the model number (see page 4-8).**

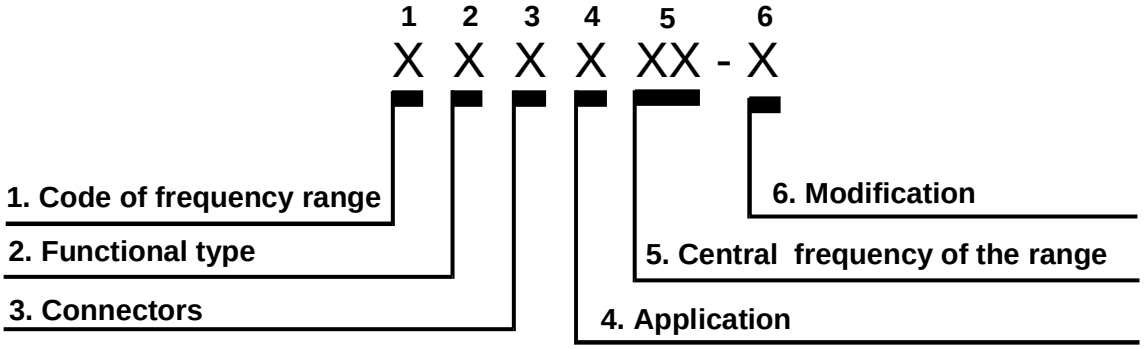
**[X-X] - Group of Models, each for a definite central frequency of the range. While ordering a particular Model, central frequency of the range should be stated (see "Device Application. How to Order", page 4-8).**

### Package Size (mm)

| Model | L | W | H |
|---|---|---|---|
| 3❑MM[20-30]-1 | 20.0 | 20.0 | 5.0 |
| 3❑MM[30-50] -1 | 12.0 | 15.0 | 5.0 |
| 3❑MM[50-90] -1 | 10.0 | 10.0 | 5.0 |
| 3❑MM[80-99] -1 | 9.0 | 9.0 | 5.0 |
| 4❑MM[10-13] -1 | 7.0 | 7.0 | 5.0 |
| 4❑MM[13-18] -1 | 7.0 | 7.0 | 5.0 |

**Drop-in and Microstrip Isolator & Circulator model numbering system describes many options. Adapting our basic catalog models to your specific needs will frequently result in lower costs and prompt delivery.**

## Product identification




### 1. Code of frequency range and its Central frequency

| 1<br>Code of frequency range | Frequency range | 5<br>Central frequency of the range |
|---|---|---|
| 2 | 100 to 999 MHz | XX · 10 MHz |
| 3 | 1 to 9 GHz | XX · 100 MHz |
| 4 | 10 to 99 GHz | XX · 1 GHz |

### 2. Functional type

| Code of the type | Product type |
|---|---|
| C | Circulator |
| I | Isolator |
| ❑ | Circulator or Isolator |

### 3. Connectors

| Code of connectors | Type |
|---|---|
| D | Drop-in |
| M | Microstrip |

### 4. Application

| Code of application | Application |
|---|---|
| H | High Power |
| M | Miniature |
| S | Standard |

### 5. Central frequency of the range

### 6. Modification