

# WAVEGUIDE CIRCULATOR

- Broad Selection of Frequency and Bandwidth (7.7GHz-120GHz, from 3% to Full Bandwidth)
- Military, Space and Commercial Applications
- High Power Design
- High Isolation, Low Insertion Loss
- Wide Operation Temperature Range
- Custom Design Available Upon Request



## WAVEGUIDE CIRCULATOR

| FREQUENCY (GHz) |        | MODEL                 | BANDWIDTH   | ISOLATION | INS LOSS | VSWR | OPERATING | POWER  | SIZE L*W*H | WAVEGUIDE | PACKAGE |
|-----------------|--------|-----------------------|-------------|-----------|----------|------|-----------|--------|------------|-----------|---------|
| F1              | F2     | NUMBER                | UP TO (MHz) | (dB) MIN  | (dB) MAX | MAX  | TEMP(°C)  | AVG(W) | (mm)       | TYPE      | CODE    |
| <b>WR 112</b>   |        |                       |             |           |          |      |           |        |            |           |         |
| 7.700           | 8.400  | JCWR112-60-7700T8400  | FULL        | 25        | 0.30     | 1.15 | -40~+80   | 10     | 60*65*47.8 | WR112     | CW01    |
| <b>WR 90</b>    |        |                       |             |           |          |      |           |        |            |           |         |
| 8.000           | 12.400 | JCWR90-27-TBD         | 100         | 35        | 0.20     | 1.10 | -40~+80   | 10     | 27*46.5*42 | WR90      | CW02    |
|                 |        |                       | 500         | 25        | 0.30     | 1.15 |           |        |            |           |         |
| 8.000           | 12.400 | JCWR90-48-TBD         | 1000        | 23        | 0.30     | 1.15 | -40~+80   | 10     | 48*53*42   | WR90      | CW03    |
| 8.700           | 9.700  | JCWR90-48-8700T9700   | FULL        | 23        | 0.30     | 1.15 | -40~+80   | 15     | 48*53*42   | WR90      | CW03    |
| 9.000           | 9.200  | JCWR90-27-9000T9200   | FULL        | 25        | 0.20     | 1.15 | -40~+80   | 10     | 27*46.5*42 | WR90      | CW02    |
| 9.000           | 9.200  | JCWR90-48-9000T9200   | FULL        | 25        | 0.20     | 1.15 | -40~+80   | 15     | 48*53*42   | WR90      | CW03    |
| 10.400          | 10.800 | JCWR90-27-10K4T10K8   | FULL        | 25        | 0.30     | 1.15 | -40~+80   | 10     | 27*46.5*42 | WR90      | CW02    |
| 10.400          | 10.800 | JCWR90-48-10K4T10K8   | FULL        | 25        | 0.30     | 1.15 | -40~+80   | 15     | 48*53*42   | WR90      | CW03    |
| 10.250          | 10.750 | JCWR90-27-10K25T10K75 | FULL        | 25        | 0.20     | 1.15 | -40~+80   | 10     | 27*46.5*42 | WR90      | CW02    |
| 10.250          | 10.750 | JCWR90-48-10K25T10K75 | FULL        | 25        | 0.20     | 1.15 | -40~+80   | 15     | 48*53*42   | WR90      | CW03    |
| 10.500          | 11.800 | JCWR90-27-10K5T11K8   | FULL        | 25        | 0.20     | 1.15 | -40~+80   | 10     | 27*46.5*42 | WR90      | CW02    |
| 10.500          | 11.800 | JCWR90-48-10K5T11K8   | FULL        | 25        | 0.20     | 1.15 | -40~+80   | 15     | 48*53*42   | WR90      | CW03    |
| 10.700          | 11.700 | JCWR90-48-10K7T11K7   | FULL        | 23        | 0.30     | 1.15 | -40~+80   | 15     | 48*53*42   | WR90      | CW03    |
| <b>WR 75</b>    |        |                       |             |           |          |      |           |        |            |           |         |
| 10.000          | 16.000 | JCWR75-42-TBD         | 300         | 26        | 0.20     | 1.10 | -40~+80   | 10     | 42*48*38   | WR75      | CW04    |
|                 |        |                       | 1000        | 25        | 0.30     | 1.15 |           |        |            |           |         |
| 10.700          | 11.700 | JCWR75-42-10K7T11K7   | FULL        | 25        | 0.30     | 1.15 | -40~+80   | 10     | 42*48*38   | WR75      | CW04    |
| 10.700          | 12.800 | JCWR75-42-10K7T12K8   | FULL        | 20        | 0.40     | 1.25 | -40~+80   | 10     | 42*48*38   | WR75      | CW04    |
| 10.700          | 12.950 | JCWR75-42-10K7T12K95  | FULL        | 20        | 0.40     | 1.25 | -40~+80   | 10     | 42*48*38   | WR75      | CW04    |
| 10.950          | 12.750 | JCWR75-42-10K95T12K75 | FULL        | 20        | 0.40     | 1.25 | -40~+80   | 10     | 42*48*38   | WR75      | CW04    |
| 11.700          | 12.200 | JCWR75-42-11K7T12K2   | FULL        | 25        | 0.20     | 1.15 | -40~+80   | 10     | 42*48*38   | WR75      | CW04    |
| 11.700          | 12.750 | JCWR75-42-11K7T12K75  | FULL        | 22        | 0.30     | 1.15 | -40~+80   | 10     | 42*48*38   | WR75      | CW04    |
| 12.000          | 13.000 | JCWR75-42-12K0T13K0   | FULL        | 25        | 0.30     | 1.15 | -40~+80   | 10     | 42*48*38   | WR75      | CW04    |
| 12.000          | 13.700 | JCWR75-42-12K0T13K7   | FULL        | 20        | 0.40     | 1.25 | -40~+80   | 10     | 42*48*38   | WR75      | CW04    |
| 12.200          | 12.800 | JCWR75-42-12K2T12K8   | FULL        | 25        | 0.20     | 1.15 | -40~+80   | 10     | 42*48*38   | WR75      | CW04    |
| 13.700          | 14.500 | JCWR75-42-13K7T14K5   | FULL        | 25        | 0.30     | 1.15 | -40~+80   | 10     | 42*48*38   | WR75      | CW04    |
| 13.800          | 14.700 | JCWR75-42-13K8T14K7   | FULL        | 25        | 0.30     | 1.15 | -40~+80   | 10     | 42*48*38   | WR75      | CW04    |
| 14.000          | 14.500 | JCWR75-42-14K0T14K5   | FULL        | 25        | 0.30     | 1.15 | -40~+80   | 10     | 42*48*38   | WR75      | CW04    |
| <b>WR 62</b>    |        |                       |             |           |          |      |           |        |            |           |         |
| 12.400          | 18.000 | JCWR62-40-TBD         | 500         | 25        | 0.30     | 1.15 | -40~+80   | 10     | 40*40*33.3 | WR62      | CW05    |
|                 |        |                       | 1000        | 23        | 0.40     | 1.20 |           |        |            |           |         |
| 14.000          | 15.300 | JCWR62-40-14K0T15K3   | FULL        | 20        | 0.40     | 1.25 | -40~+80   | 10     | 40*40*33.3 | WR62      | CW05    |
| 14.200          | 15.600 | JCWR62-40-14K2T15K6   | FULL        | 20        | 0.40     | 1.25 | -40~+80   | 10     | 40*40*33.3 | WR62      | CW05    |
| 16.000          | 17.000 | JCWR62-40-16K0T17K0   | FULL        | 23        | 0.40     | 1.20 | -40~+80   | 10     | 40*40*33.3 | WR62      | CW05    |

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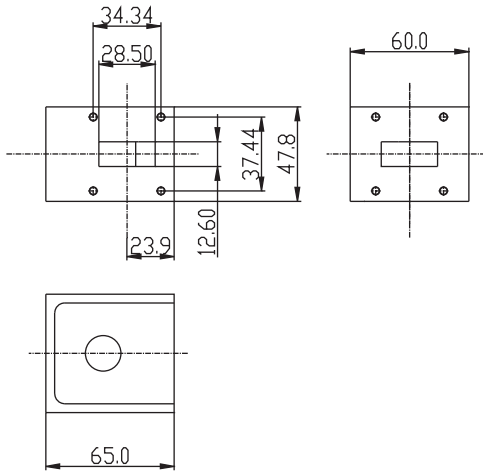
## WAVEGUIDE CIRCULATOR

| FREQUENCY (GHz)                        |        | MODEL                 | BANDWIDTH   | ISOLATION | INS LOSS | VSWR | OPERATING | POWER  | SIZE L*W*H      | WAVEGUIDE | PACKAGE |
|--|--------|-----------------------|-------------|-----------|----------|------|-----------|--------|-----------------|-----------|---------|
| F1                                     | F2     | NUMBER                | UP TO (MHz) | (dB) MIN  | (dB) MAX | MAX  | TEMP( °C) | AVG(W) | (mm)            | TYPE      | CODE    |
| <b>WR 51</b>                           |        |                       |             |           |          |      |           |        |                 |           |         |
| 14.500                                 | 22.000 | JCWR51-14D5-TBD       | 1000        | 23        | 0.30     | 1.20 | -40~+80   | 10     | 32*35*30.2      | WR51      | CW06    |
| 18.500                                 | 19.500 | JCWR51-14D5-18K5T19K5 | FULL        | 23        | 0.30     | 1.20 | -40~+80   | 10     | 32*35*30.2      | WR51      | CW06    |
| <b>WR 42</b>                           |        |                       |             |           |          |      |           |        |                 |           |         |
| 18.500                                 | 26.500 | JCWR42-22D2-TBD       | 2000        | 20        | 0.40     | 1.25 | -40~+80   | 10     | 22.2*31.75*22.4 | WR42      | CW07    |
| 18.500                                 | 26.500 | JCWR42-24-TBD         | 1000        | 23        | 0.30     | 1.20 | -40~+80   | 10     | 24*27*22.4      | WR42      | CW08    |
|  |        |                       | 2000        | 20        | 0.40     | 1.25 |           |        |                 |           |         |
| 17.700                                 | 19.700 | JCWR42-24-17K7T19K7   | FULL        | 20        | 0.40     | 1.25 | -40~+80   | 10     | 24*27*22.4      | WR42      | CW08    |
| 18.400                                 | 19.100 | JCWR42-24-18K4T19K1   | FULL        | 22        | 0.40     | 1.25 | -40~+80   | 10     | 24*27*22.4      | WR42      | CW08    |
| 21.000                                 | 23.000 | JCWR42-24-21K0T23K0   | FULL        | 20        | 0.40     | 1.25 | -40~+80   | 10     | 24*27*22.4      | WR42      | CW08    |
| 21.200                                 | 23.600 | JCWR42-24-21K2T23K6   | FULL        | 20        | 0.40     | 1.25 | -40~+80   | 10     | 24*27*22.4      | WR42      | CW08    |
| 24.500                                 | 26.500 | JCWR42-24-24K5T26K5   | FULL        | 20        | 0.40     | 1.25 | -40~+80   | 10     | 24*27*22.4      | WR42      | CW08    |
| <b>WR 34</b>                           |        |                       |             |           |          |      |           |        |                 |           |         |
| 21.700                                 | 33.000 | JCWR34-22D3-TBD       | 1000        | 23        | 0.30     | 1.20 | -40~+80   | 5      | 22.3*27*21.2    | WR34      | CW09    |
| 24.400                                 | 26.500 | JCWR34-22D3-24K4T26K5 | FULL        | 20        | 0.40     | 1.20 | -40~+80   | 5      | 22.3*27*21.2    | WR34      | CW09    |
| 26.200                                 | 26.700 | JCWR34-22D3-26K2T26K7 | FULL        | 23        | 0.30     | 1.20 | -40~+80   | 5      | 22.3*27*21.2    | WR34      | CW09    |
| 30.000                                 | 31.000 | JCWR34-22D3-30K0T31K0 | FULL        | 23        | 0.30     | 1.20 | -40~+80   | 5      | 22.3*27*21.2    | WR34      | CW09    |
| <b>WR 28</b>                           |        |                       |             |           |          |      |           |        |                 |           |         |
| 26.500                                 | 40.000 | JCWR28-10-TBD         | 500         | 25        | 0.30     | 1.15 | -40~+80   | 5      | 10*24.5*19.1    | WR28      | CW10    |
|  |        |                       | 1000        | 20        | 0.30     | 1.25 |           |        |                 |           |         |
| 26.500                                 | 40.000 | JCWR28-15-TBD         | 1000        | 23        | 0.30     | 1.20 | -40~+80   | 5      | 15*25.4*19.1    | WR28      | CW11    |
| 26.500                                 | 40.000 | JCWR28-8-TBD          | 1000        | 20        | 0.30     | 1.25 | -40~+80   | 5      | 8*16*23         | WR28      | CW12    |
| 26.500                                 | 40.000 | JCWR28-21-TBD         | 500         | 25        | 0.30     | 1.15 | -40~+80   | 5      | 21*24*19.1      | WR28      | CW13    |
|  |        |                       | 1000        | 23        | 0.30     | 1.20 |           |        |                 |           |         |
| 26.500                                 | 40.000 | JCWR28-10Y-TBD        | 1000        | 23        | 0.30     | 1.20 | -40~+80   | 10     | 10*30.2*9.9     | WR28      | CW19    |
|  |        |                       | 2000        | 20        | 0.40     | 1.25 |           |        |                 |           |         |
| 27.000                                 | 29.000 | JCWR28-21-27K0T29K0   | FULL        | 21        | 0.35     | 1.25 | -40~+80   | 5      | 21*24*19.1      | WR28      | CW13    |
| 30.000                                 | 32.000 | JCWR28-21-30K0T32K0   | FULL        | 21        | 0.35     | 1.25 | -40~+80   | 5      | 21*24*19.1      | WR28      | CW13    |
| 32.000                                 | 34.000 | JCWR28-21-32K0T34K0   | FULL        | 21        | 0.35     | 1.25 | -40~+80   | 5      | 21*24*19.1      | WR28      | CW13    |
| 33.000                                 | 35.000 | JCWR28-21-33K0T35K0   | FULL        | 21        | 0.35     | 1.25 | -40~+80   | 5      | 21*24*19.1      | WR28      | CW13    |
| 35.000                                 | 37.000 | JCWR28-21-35K0T37K0   | FULL        | 21        | 0.35     | 1.25 | -40~+80   | 5      | 21*24*19.1      | WR28      | CW13    |
| 36.000                                 | 38.000 | JCWR28-21-36K0T38K0   | FULL        | 21        | 0.35     | 1.25 | -40~+80   | 5      | 21*24*19.1      | WR28      | CW13    |
| 37.000                                 | 40.000 | JCWR28-21-37K0T40K0   | FULL        | 20        | 0.40     | 1.25 | -40~+80   | 5      | 21*24*19.1      | WR28      | CW13    |
| 37.500                                 | 38.500 | JCWR28-21-37K5T38K5   | FULL        | 21        | 0.40     | 1.25 | -40~+80   | 5      | 21*24*19.1      | WR28      | CW13    |
| <b>WR 22</b>                           |        |                       |             |           |          |      |           |        |                 |           |         |
| 32.900                                 | 50.100 | JCWR22-19-TBD         | 1000        | 23        | 0.60     | 1.20 | -40~+80   | 1      | 19*20*19.1      | WR22      | CW14    |
|  |        |                       | 2000        | 20        | 0.60     | 1.25 |           |        |                 |           |         |
| <b>WR 18</b>                           |        |                       |             |           |          |      |           |        |                 |           |         |
| 39.200                                 | 59.600 | JCWR18-10-TBD         | 1000        | 23        | 0.60     | 1.20 | -40~+80   | 1      | 10*24.5*19.1    | WR18      | CW15    |
|  |        |                       | 2000        | 20        | 0.60     | 1.25 |           |        |                 |           |         |
| 39.200                                 | 59.60  | JCWR18-19-TBD         | 1000        | 23        | 0.60     | 1.20 | -40~+80   | 1      | 19*19.1*19.1    | WR18      | CW16    |
|  |        |                       | 2000        | 20        | 0.60     | 1.25 |           |        |                 |           |         |
| <b>WR 14</b>                           |        |                       |             |           |          |      |           |        |                 |           |         |
| 60.500                                 | 91.90  | JCWR14-12D7-TBD       | 500         | 20        | 0.60     | 1.25 | -40~+80   | 1      | 12.7*23*19.1    | WR14      | CW17    |
|  |        |                       | 1000        | 18        | 1.00     | 1.30 |           |        |                 |           |         |
| <b>WR 10</b>                           |        |                       |             |           |          |      |           |        |                 |           |         |
| 84.000                                 | 100.00 | JCWR10-10-TBD         | 1000        | 23        | 0.80     | 1.20 | -40~+80   | 0.5    | 10*25*19.1      | WR10      | CW18    |
|  |        |                       | 2000        | 18        | 1.00     | 1.30 |           |        |                 |           |         |
| <b>HIGH POWER WAVEGUIDE CIRCULATOR</b> |        |                       |             |           |          |      |           |        |                 |           |         |
| FREQUENCY (GHz)                        |        | MODEL                 | BANDWIDTH   | ISOLATION | INS LOSS | VSWR | OPERATING | POWER  | SIZE L*W*H      | WAVEGUIDE | PACKAGE |
| F1                                     | F2     | NUMBER                | UP TO (MHz) | (dB) MIN  | (dB) MAX | MAX  | TEMP( °C) | (W)    | (mm)            | TYPE      | CODE    |
| <b>WR 112</b>                          |        |                       |             |           |          |      |           |        |                 |           |         |
| 7.800                                  | 8.400  | JCWR112-6-HP          | FULL        | 23        | 0.40     | 1.25 | -55~+85   | 350    | 60*65*47.8      | WR112     | CW20    |
| <b>WR 90</b>                           |        |                       |             |           |          |      |           |        |                 |           |         |
| 9.400                                  | 9.800  | JCWR90-36-HP          | FULL        | 40        | 0.40     | 1.15 | -40~+80   | 150    | 36*90*33        | WR90      | CW21    |

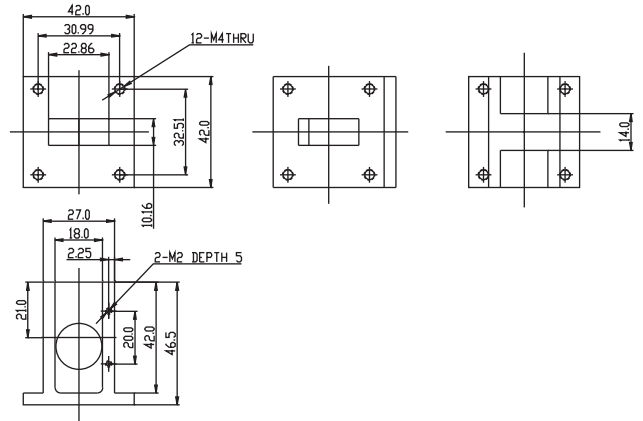


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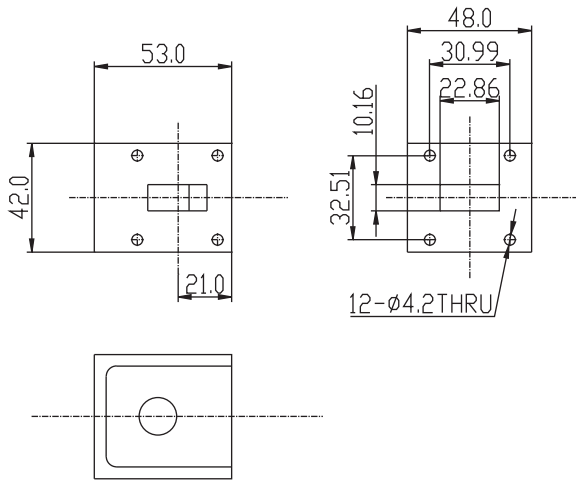
# WAVEGUIDE CIRCULATOR



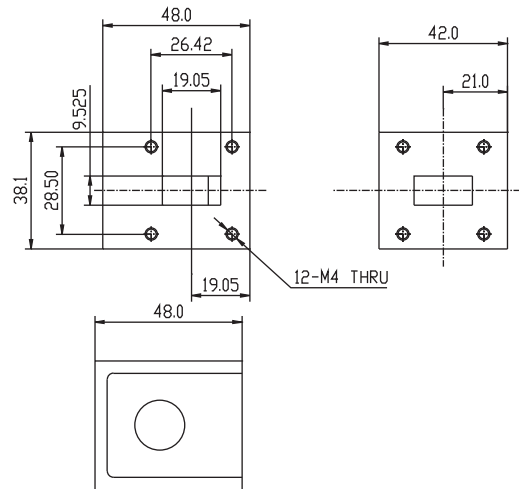
CW01-WAVEGUIDE CIRCULATOR



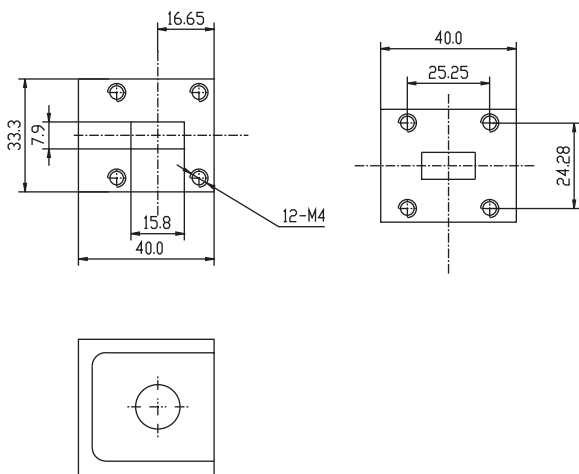
CW02-WAVEGUIDE CIRCULATOR



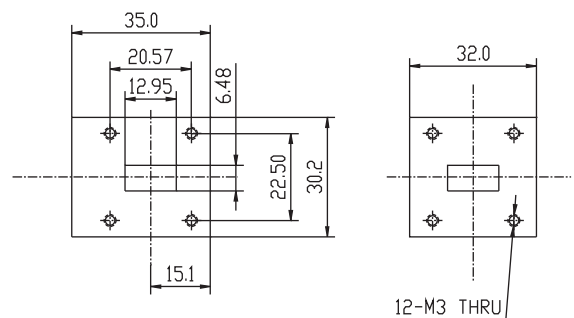
CW03-WAVEGUIDE CIRCULATOR



CW04-WAVEGUIDE CIRCULATOR

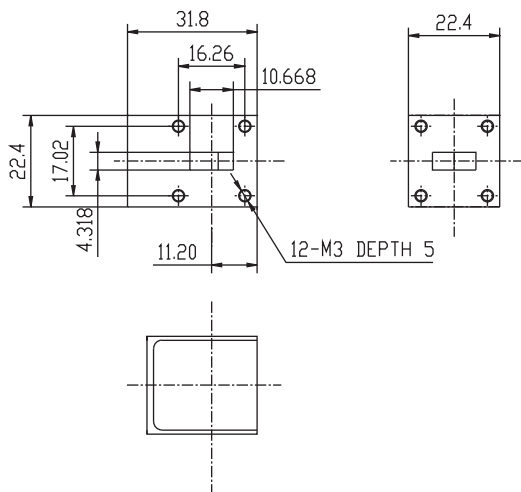


CW05-WAVEGUIDE CIRCULATOR

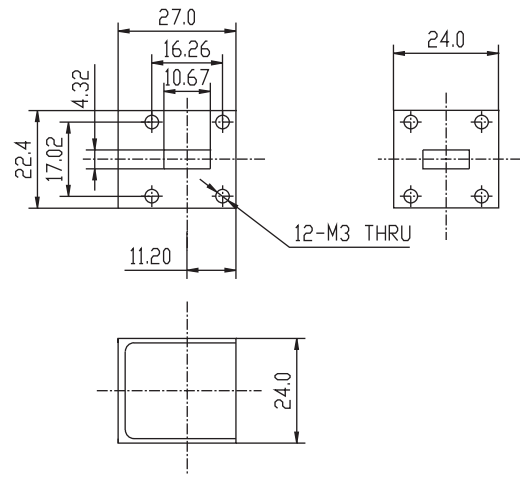


CW06-WAVEGUIDE CIRCULATOR

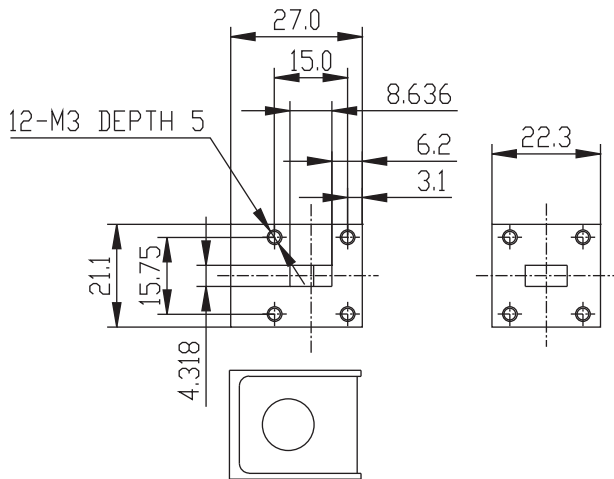
# WAVEGUIDE CIRCULATOR



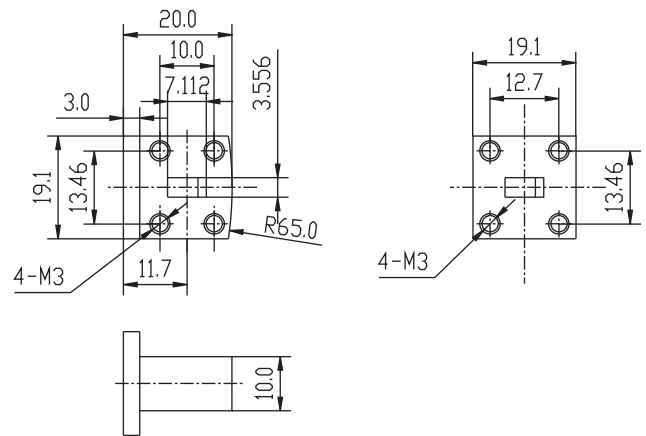
CW07-WAVEGUIDE CIRCULATOR



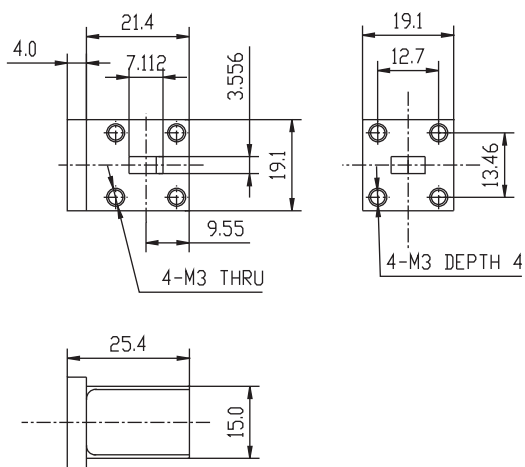
CW08-WAVEGUIDE CIRCULATOR



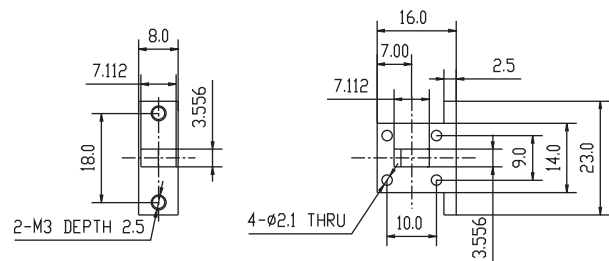
CW09-WAVEGUIDE CIRCULATOR



CW10-WAVEGUIDE CIRCULATOR

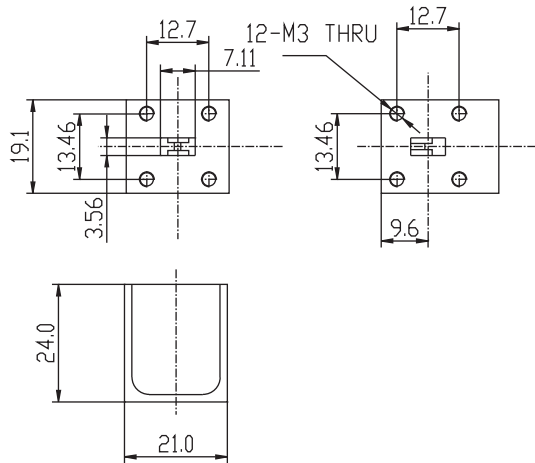


CW11-WAVEGUIDE CIRCULATOR

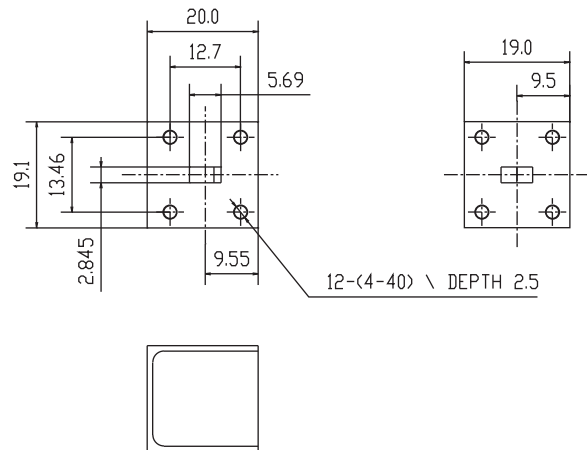


CW12-WAVEGUIDE CIRCULATOR

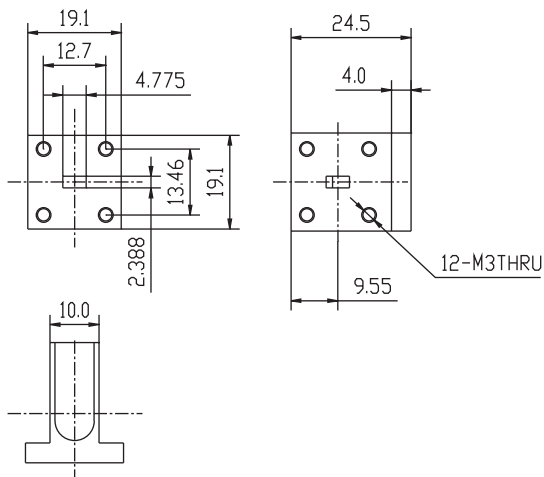
# WAVEGUIDE CIRCULATOR



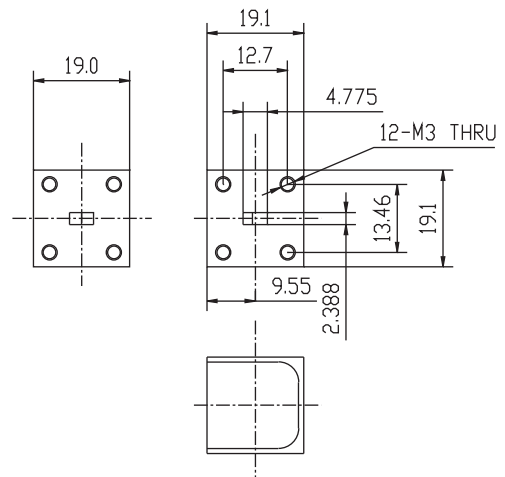
CW13-WAVEGUIDE CIRCULATOR



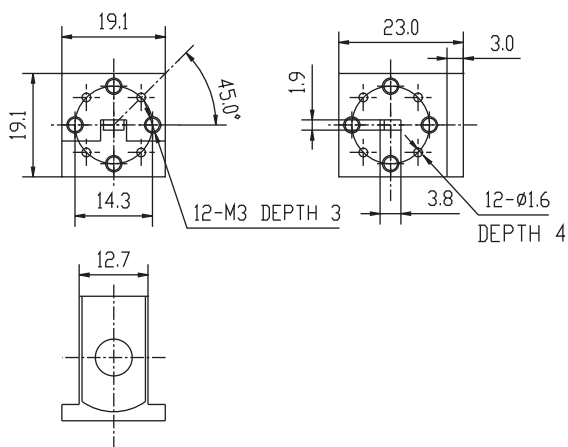
CW14-WAVEGUIDE CIRCULATOR



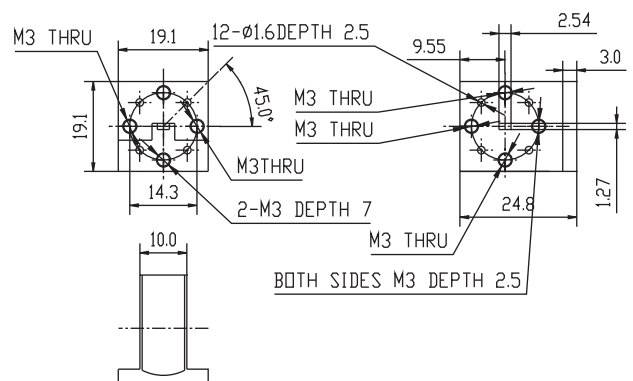
CW15-WAVEGUIDE CIRCULATOR



CW16-WAVEGUIDE CIRCULATOR

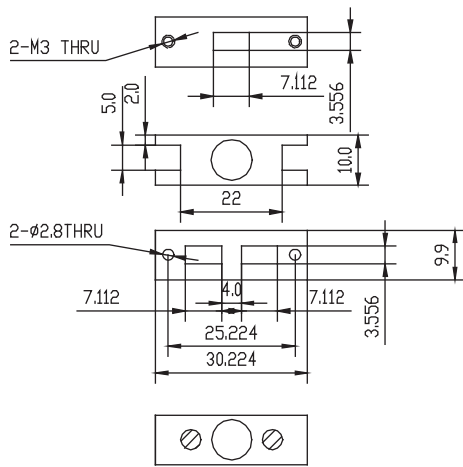


CW17-WAVEGUIDE CIRCULATOR

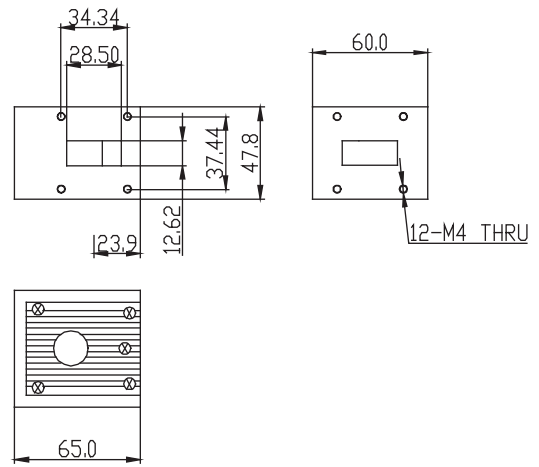


CW18-WAVEGUIDE CIRCULATOR

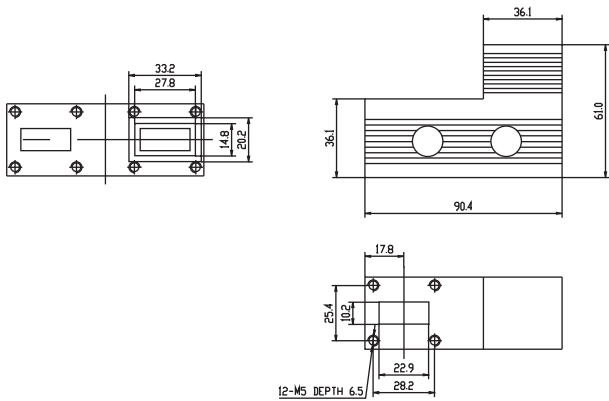
# WAVEGUIDE CIRCULATOR



CW19-WAVEGUIDE CIRCULATOR



CW20-WAVEGUIDE CIRCULATOR



CW21-WAVEGUIDE CIRCULATOR

