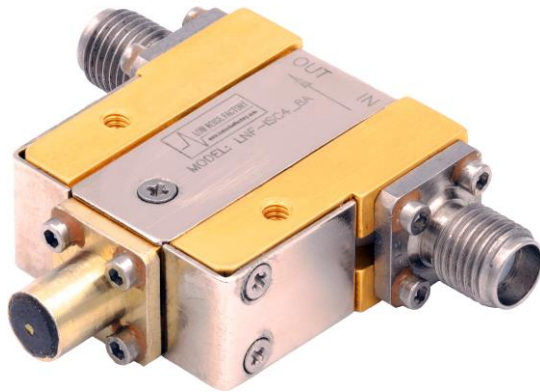


LNF-ISC4_12A



LNF-CIC4_12A



Product features

- RF bandwidth: 4-12 GHz
- Insertion loss: 0.2 dB typical
- Isolation: 20 dB typical
- Port match: 20 dB typical
- RF-connectors: SMA

Product description

The LNF-ISC4_12A and LNF-CIC4_12A are ultra-low insertion loss cryogenic isolators and circulators operating in the 4-12 GHz frequency range. They have been designed from ground up to meet the strict requirements of ultra-low temperature physics research. The gold plated OFHC copper body ensures minimum loss and that this loss reaches the lowest possible temperature to minimize thermal noise. The isolator/circulator is packaged in a slim coaxial module using industry standard SMA connectors. The module measures 22.3*24.6*10.2 mm excluding the connectors.

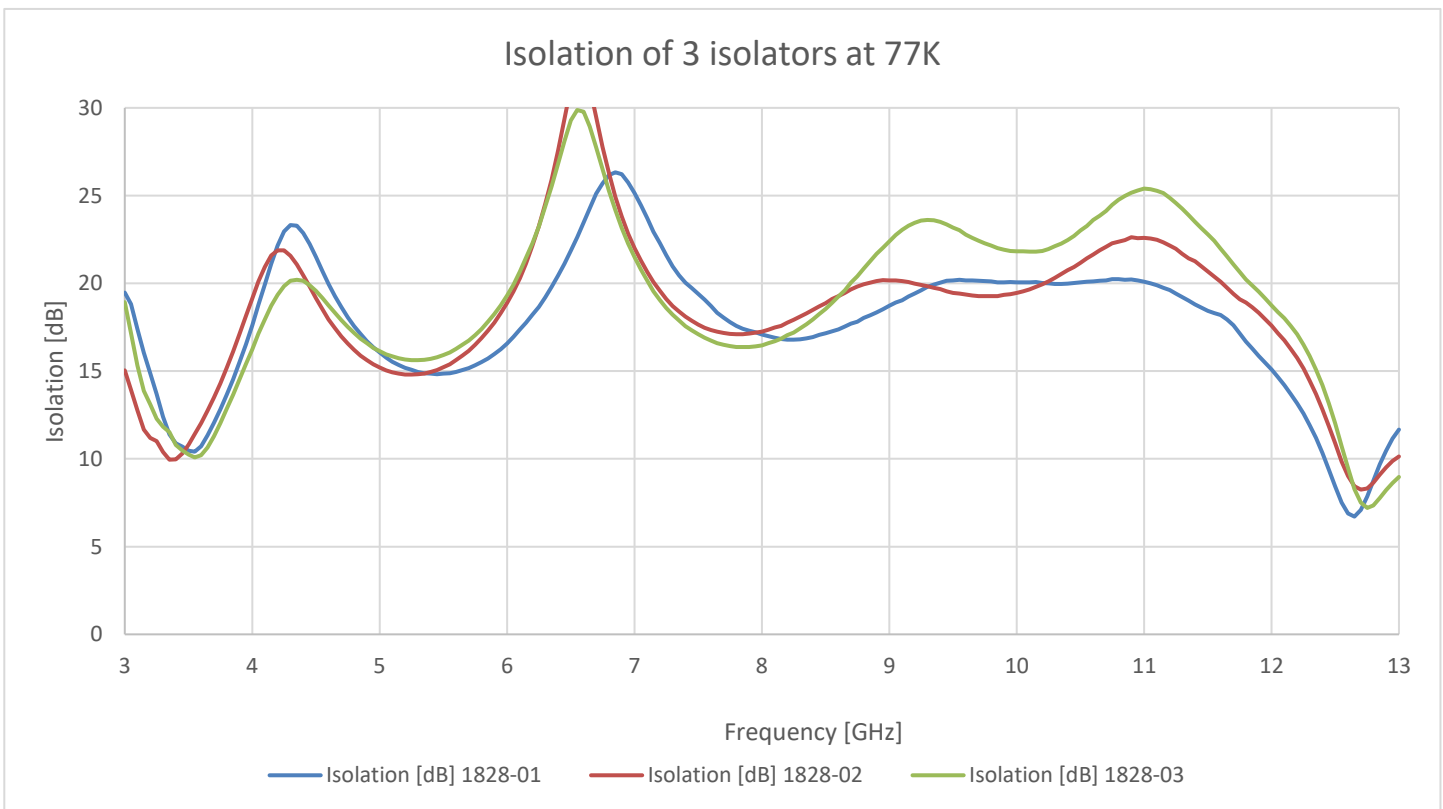
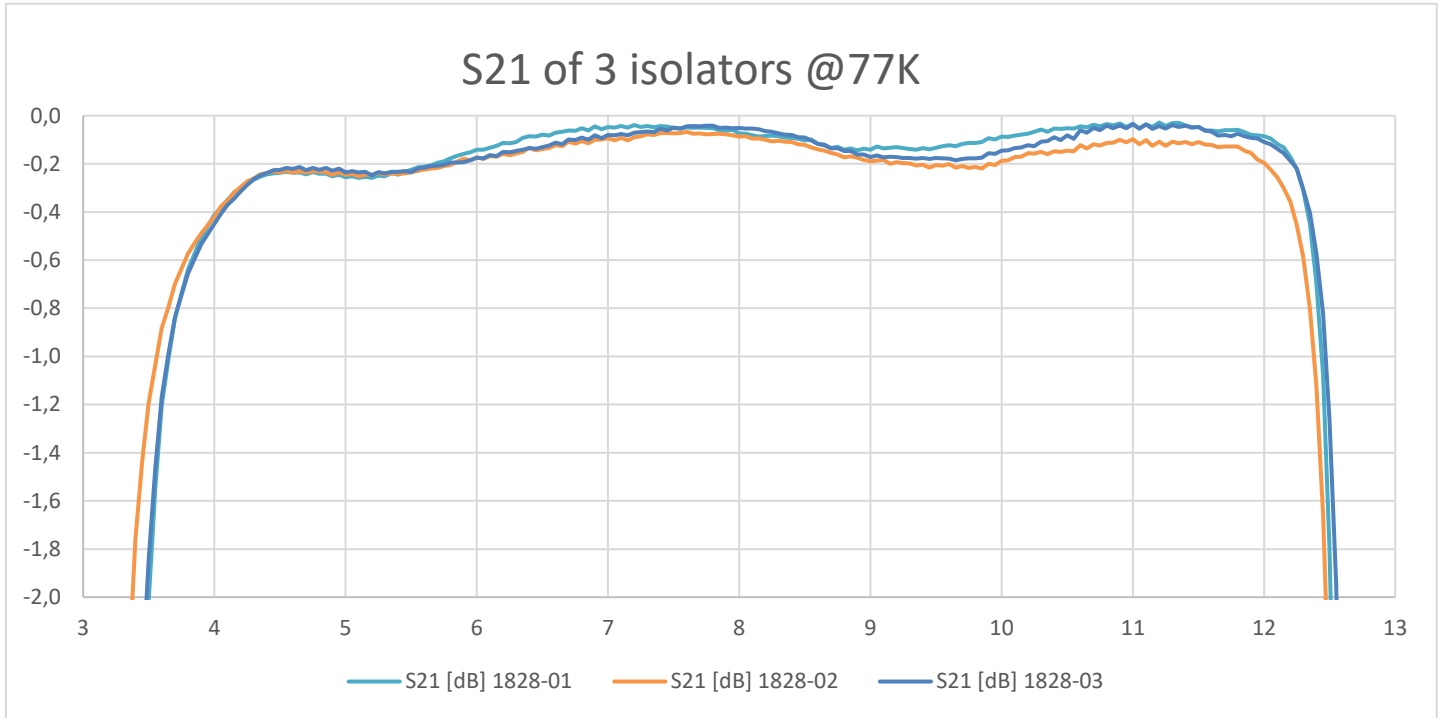
Absolute maximum ratings

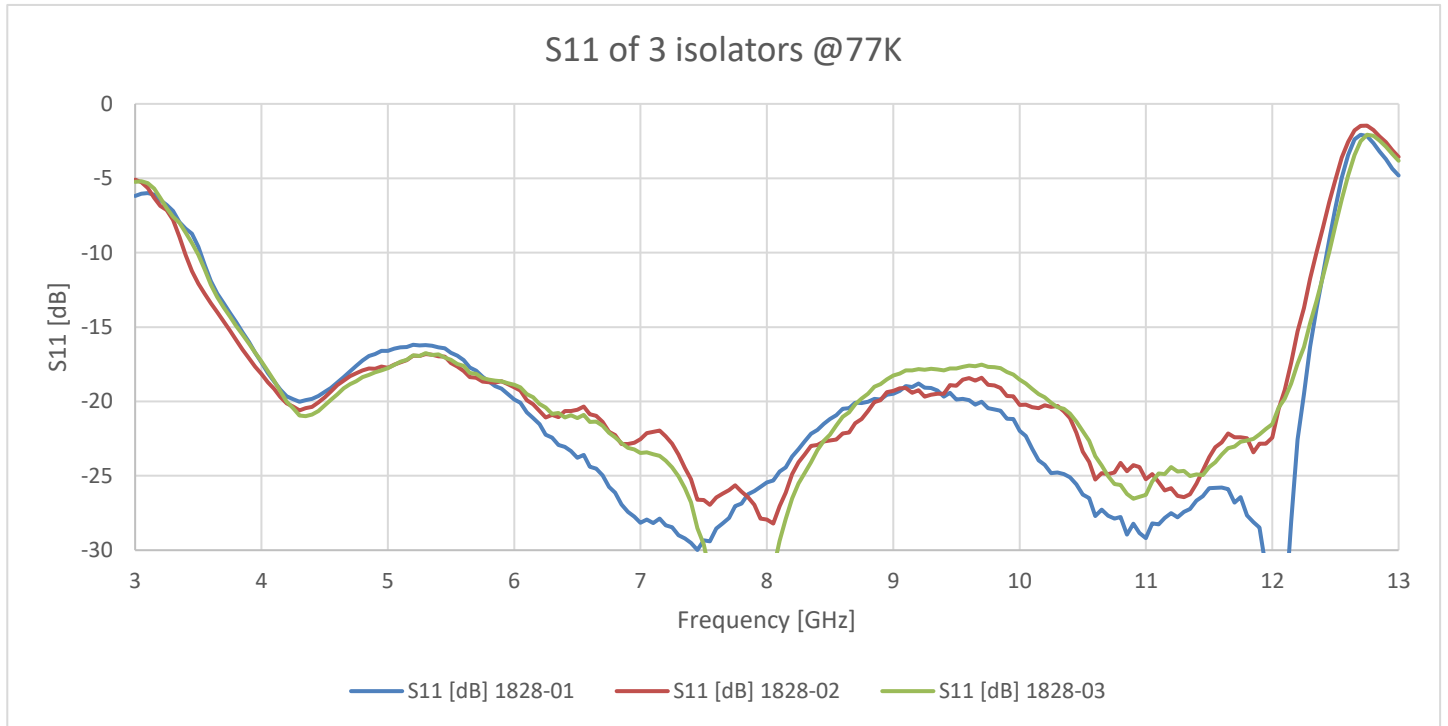
| Parameter | Min | Max |
|-----------------------------------|------|--------|
| RF drive level | | 30 dBm |
| DC voltage on RF input and output | -50V | 50V |

Typical RF Characteristics at 77 K

| Parameter | Condition | Value | Unit |
|----------------|-----------|-------|------|
| Insertion loss | 4-12 GHz | 0.2 | dB |
| Isolation | 4-12 GHz | 20 | dB |
| Port match | 4-12 GHz | 20 | dB |

Measured typical data $T_{amb}=77\text{ K}$





Insertion loss improves slightly when cooled to 4K and 10mK, port match and isolation remains the same.

Magnetic flux density generated by internal magnet

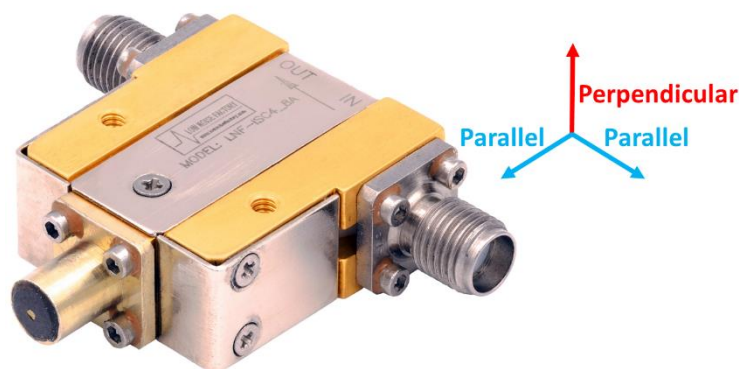
| Parameter | Condition | Value | Unit |
|--|-------------------|-------|-------|
| Magnetic flux density with standard shielding* | 6 mm from chassis | <4 | Gauss |
| Magnetic flux density with optional shielding | 6 mm from chassis | <0.1 | Gauss |

- This is the magnetic field generated by the internal magnet inside the isolator/circulator chassis, which potentially may influence nearby components.
- Two isolators/circulators can be placed 3.3 mm apart without interfering with each other.

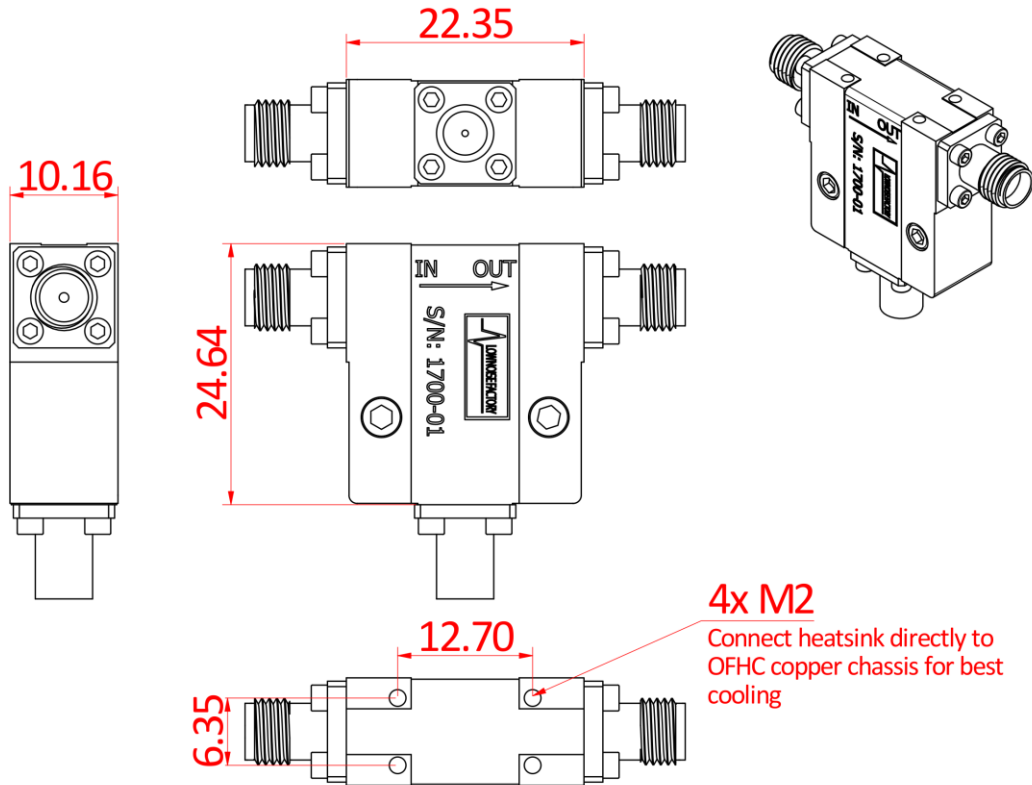
Maximum external magnetic field imposed on the isolator

| Parameter | Condition | Value | Unit |
|---|------------|-------|-------|
| Maximum perpendicular external magnetic field | At chassis | 650 | Gauss |
| Maximum parallel external magnetic field | At chassis | 1500 | Gauss |

- “Maximum field” means the field when the passband frequency edge has shifted 150 MHz, and insertion loss degradation becomes noticeable.
- The optional MuMetal shield improves the maximum external magnetic field very little. MuMetal alloys are good at shielding very low level “stray” magnetic fields, however the material saturates quickly and doesn’t shield well against high field external sources

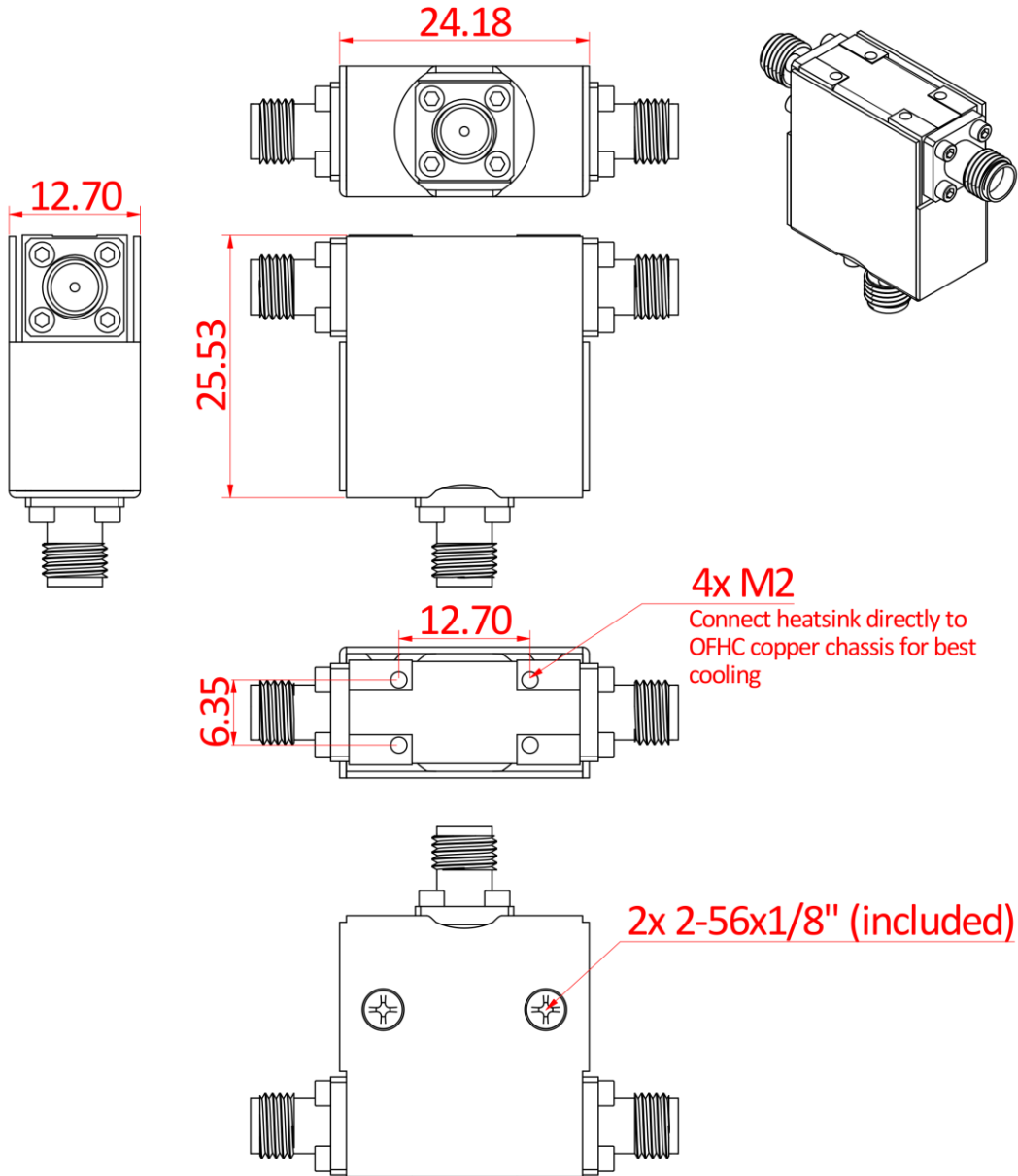


Drawing without additional shielding



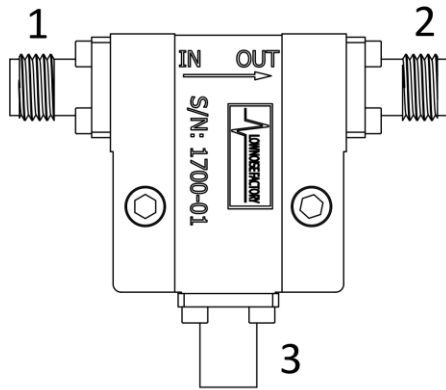
Dimensions are in millimeters

Drawing with additional shielding

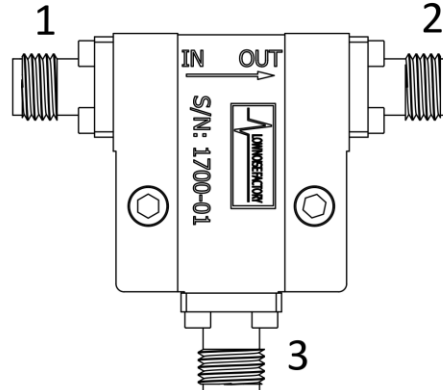


Dimensions are in millimeters

Model numbering



LNF-ISC4_12A
Single Junction Isolator
Port 1: Female SMA
Port 2: Female SMA
Port 3: Termination

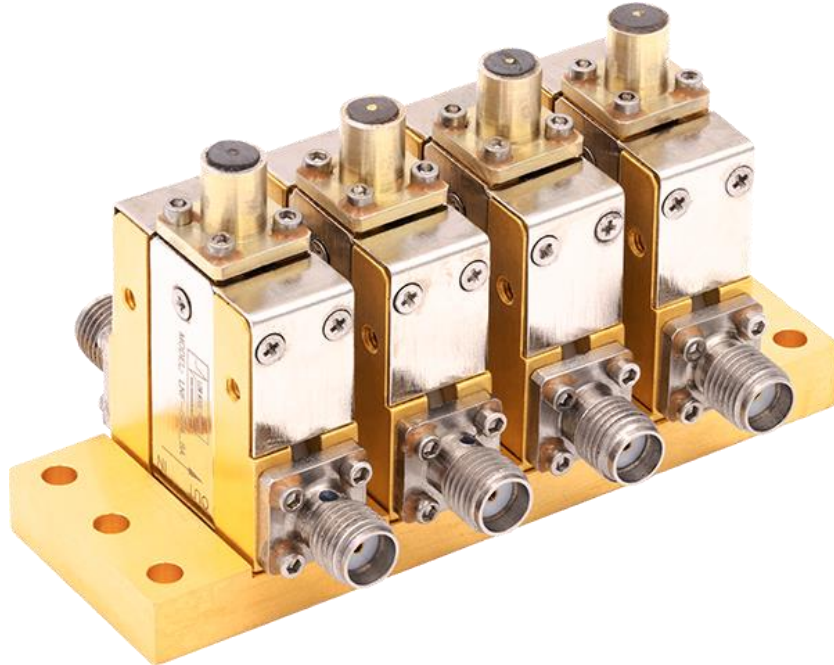


LNF-CIC4_12A
Single Junction Circulator
Port 1: Female SMA
Port 2: Female SMA
Port 3: Female SMA

| Version | Model number |
|--------------|-------------------|
| Isolator | LNF-ISC4_12A |
| Circulator | LNF-CIC4_12A |
| Extra shield | LNF-SHIELD4_8_SJ* |

* LNF-ISC4_8A and LNF-ISC4_12A share the same chassis dimensions and hence also the same extra shield.

Array



Please consult with factory for array options