

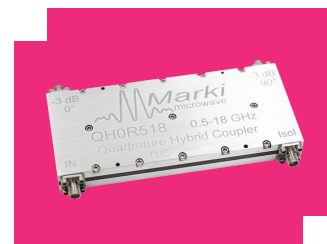
## QH-0R518

### 3 dB Quadrature Hybrid

## DEVICE OVERVIEW

### General Description

The QH-0R518 is a 0.5-18 GHz, multi-purpose broadband 3dB quadrature hybrid. The multisection tri-plate stripline design exhibits excellent amplitude balance with broadband quadrature phasing (90°) between the output ports. Applications include single sideband upconverters, image rejection downconverters, IQ modulators, balanced amplifiers, microwave correlators and microwave Butler matrices. Custom designs are also available; contact the factory for details.



[Download s-parameters here](#)

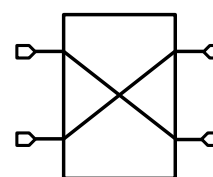
### Features

- Broadband performance
- Excellent amplitude and phase balance
- High isolation
- Low VSWR

### Applications

- Single Sideband Upconverters
- Image Rejection Downconverters
- IQ Modulators
- Balanced Amplifiers
- Microwave Correlators
- Microwave Butler Matrices

### Functional Block Diagram



### Part Ordering Options

| Part Number | Description            | Package | Packing Size | Green Status | Product Lifecycle | Export Classification |
|-------------|------------------------|---------|--------------|--------------|-------------------|-----------------------|
| QH-0R518    | 3 dB Quadrature Hybrid | -       | -            | Non-RoHS     | Released          | EAR99                 |

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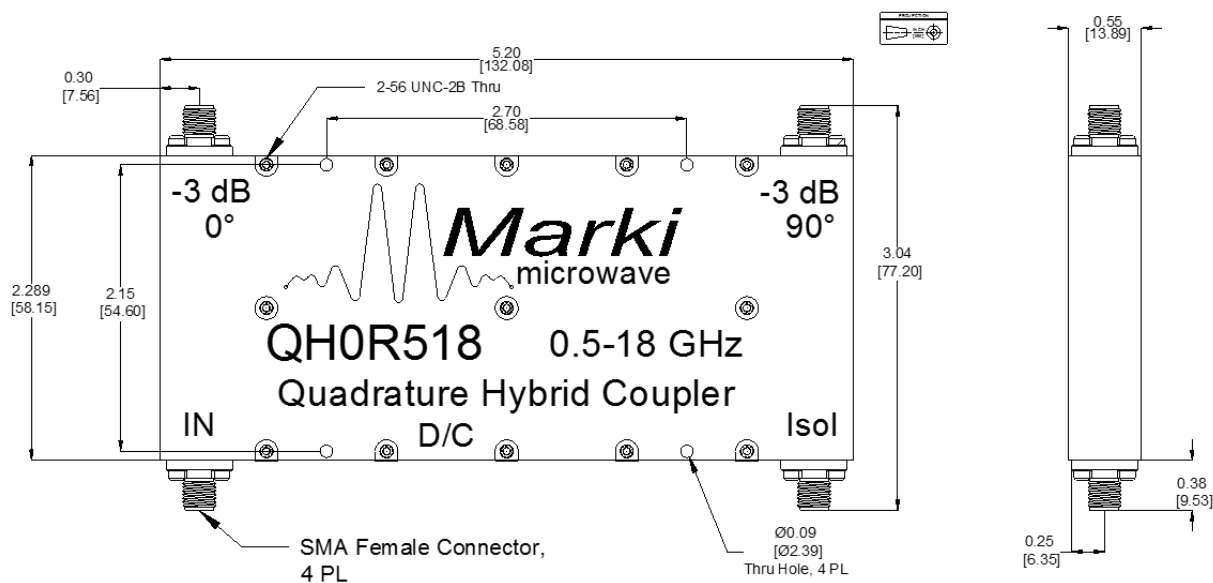
Outline Drawing

## Revision History

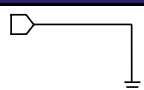
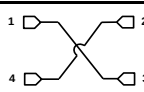
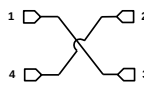
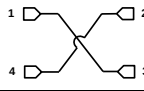
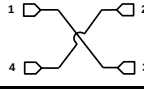
| Revision Code | Revision Date | Comment              |
|---------------|---------------|----------------------|
| -             | 2019-06-05    | Initial Date Release |

## Port Configuration and Functions

### Port Diagram



### Port Functions

| Port   | Function   | Description                                                             | Equivalent Circuit for Package                                                        |
|--------|------------|-------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| GND    | Ground     | Package ground provided through metal housing and outer coax conductor. |  |
| Port 1 | 0° Output  | Port 1 is DC short to port 3 and open to ground.                        |  |
| Port 2 | 90° Output | Port 2 is DC short to port 4 and open to ground.                        |  |
| Port 3 | Isolated   | Port 3 is DC short to port 1 and open to ground.                        |  |
| Port 4 | Input      | Port 4 is DC short to port 2 and open to ground.                        |  |

## Specifications

### Package Information

| Parameter  | Details | Rating            |
|------------|---------|-------------------|
| Weight     | -       | 225g              |
| Dimensions | -       | 132.08 x 58.15 mm |

### Electrical Specifications

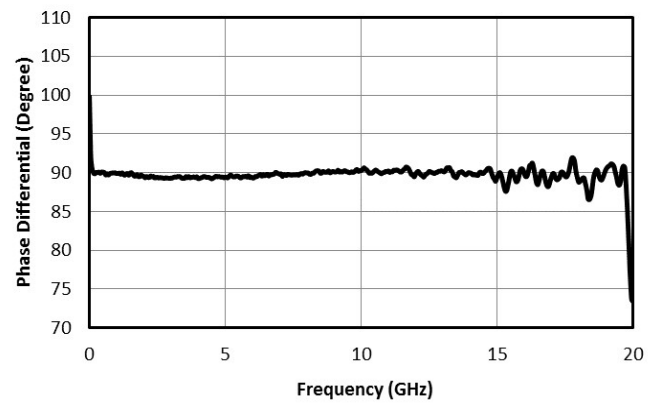
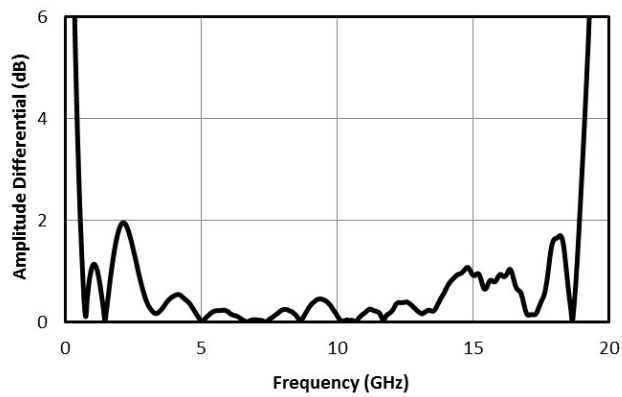
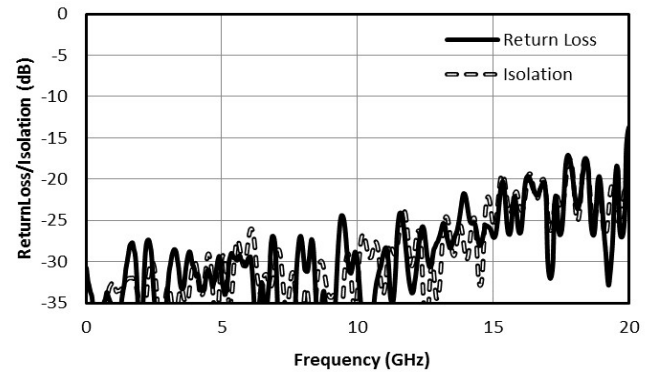
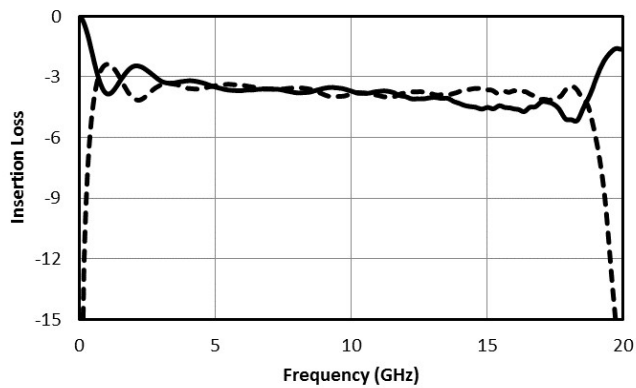
Specifications guaranteed when operated in a 50Ω system.

| Parameter                               | Test Conditions | Minimum Frequency (GHz) | Maximum Frequency (GHz) | Min | Typ | Max | Unit |
|-----------------------------------------|-----------------|-------------------------|-------------------------|-----|-----|-----|------|
| Phase Shift                             | -               | 0.5                     | 18                      | -   | 90  | -   | °    |
| Amplitude Balance <sup>1</sup>          | -               | 0.5                     | 18                      | -   | 0.5 | -   | dB   |
| Phase Balance                           | -               | 0.5                     | 18                      | -   | 3   | -   | °    |
| Isolation                               | -               | 0.5                     | 18                      | -   | 20  | -   | dB   |
| VSWR                                    | -               | 0.5                     | 18                      | -   | 1.5 | -   | -    |
| CW Power                                | -               | 0.5                     | 18                      | -   | -   | 20  | W    |
| Excess Insertion Loss (dB) <sup>2</sup> | -               | 0.5                     | 18                      | -   | 1.5 | -   | dB   |
| Mean Coupling                           | -               | 0.5                     | 18                      | -   | 3   | -   | dB   |

<sup>[1]</sup> Maximum amplitude differential is twice the magnitude of the amplitude balance (see Amplitude difference between the 0° and 90° output ports.)

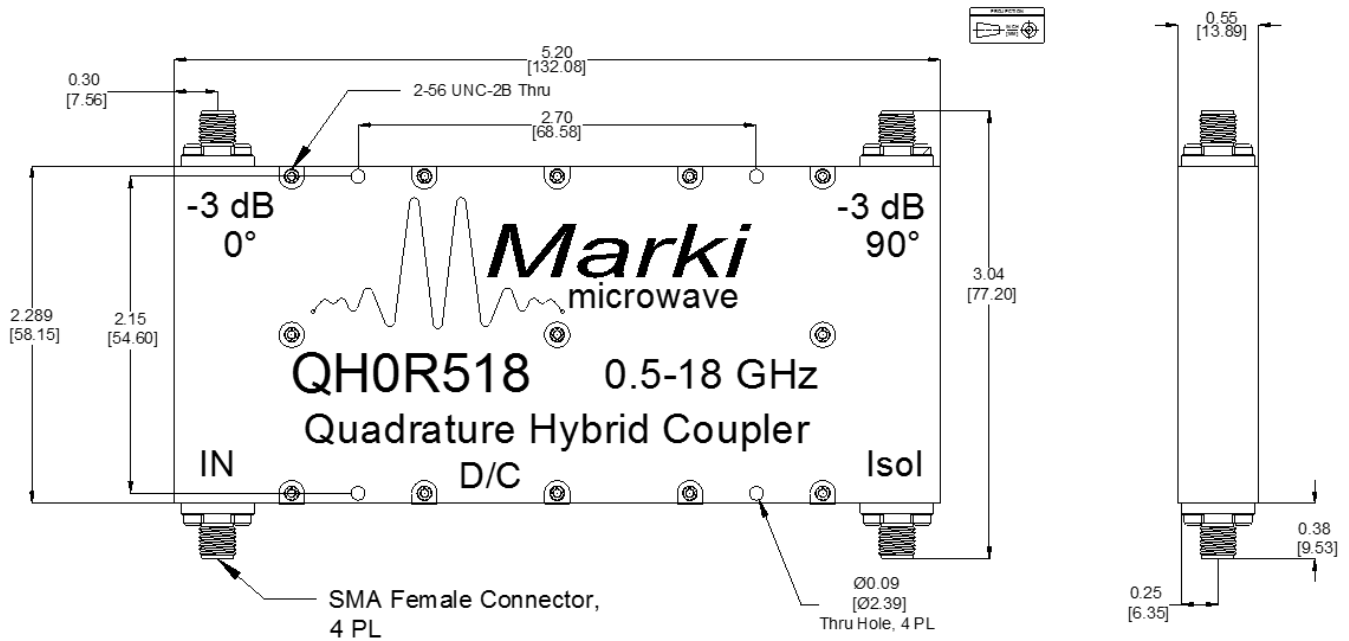
<sup>[2]</sup> Excess Insertion Loss = (Input Port to Output Port Insertion Loss) – 3 dB.

## Typical Performance Plots



**Mechanical Data**

**Outline Drawing**



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