

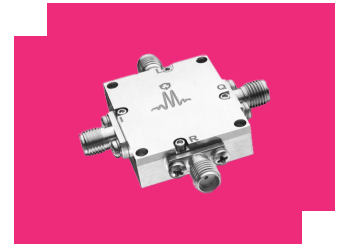
IQ-0618LXP

Quadrature-If Double-Balanced Mixers

DEVICE OVERVIEW

General Description

The IQ-0618 is a passive IQ mixer. This broadband mixer spans 6 to 18 GHz on the RF and LO ports with an IF from DC to 500 MHz. Up to 23 dB of image rejection is available due to the excellent phase and amplitude balance of its LO quadrature hybrid. IQ series mixers have generally been replaced with MMIQ mixers with superior performance, repeatability, and availability. IQ series mixers are still used in legacy systems and are suitable for laboratory use.



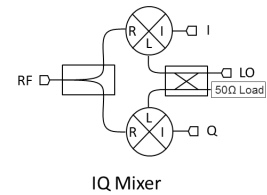
Features

- LO/RF 6.0 to 18.0 GHz
- IF DC to 500 MHz
- 7.5 dB Typical Conversion Loss
- 35 dB Typical LO to RF Isolation
- 3 Degree Typical Quadrature Phase Deviation
- .4 dB Typical Amplitude Deviation

Applications

N/A

Functional Block Diagram



Part Ordering Options

| Part Number | Description | Package | Connectors | Green Status | Product Lifecycle | Export Classification | Recommended Replacement |
|-------------------|--------------------------------------|---------|-----------------|--------------|--------------------------------|-----------------------|-------------------------|
| IQ-0618LXP | Quadrature-If Double-Balanced Mixers | XP | <u>Standard</u> | Non-RoHS | Not Recommended for New Design | EAR99 | - |
| <u>IQ-0618MXP</u> | Quadrature-If Double-Balanced Mixers | XP | <u>Standard</u> | Non-RoHS | Not Recommended for New Design | EAR99 | - |

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
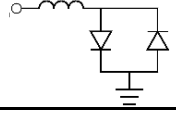
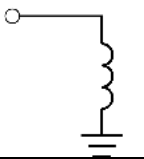
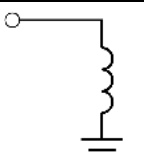
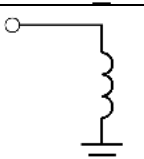
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Revision History

| Revision Code | Revision Date | Comment |
|---------------|---------------|---|
| A | 2024-03-06 | Revised max RF Conversion Loss spec, removed min image rejection specs. |

Port Configuration and Functions

Port Functions

| Port | Function | Connector Type | Description | Equivalent Circuit for Package |
|------|-------------------|----------------|--|--|
| GND | Ground | - | XP package ground taken through metal housing. | GND  |
| I | I Input / Output | SMAF | I port is diode coupled and AC matched to 50Ω over the specified I port frequency range. |  |
| LO | LO Input | SMAF | LO port is DC short and AC matched to 50Ω over the specified LO frequency range. |  |
| Q | Q Input / Output | SMAF | Q port is diode coupled and AC matched to 50Ω over the specified Q port frequency range. |  |
| RF | RF Input / Output | SMAF | RF port is DC short and AC matched to 50Ω over the specified RF frequency range. |  |

Specifications

Package Information

| Parameter | Details | Rating |
|------------|------------------|------------------|
| Weight | Package name: XP | 30g |
| Dimensions | - | 20.32 x 20.32 mm |

Recommended Operating Conditions

| Parameter | Min | Nominal | Max | Unit |
|----------------|-----|---------|-----|------|
| LO Input Power | 10 | - | 13 | - |

NOT RECOMMENDED FOR NEW DESIGN

Electrical Specifications

Specifications guaranteed from -55 to +100°C, measured in a 50-Ohm system.

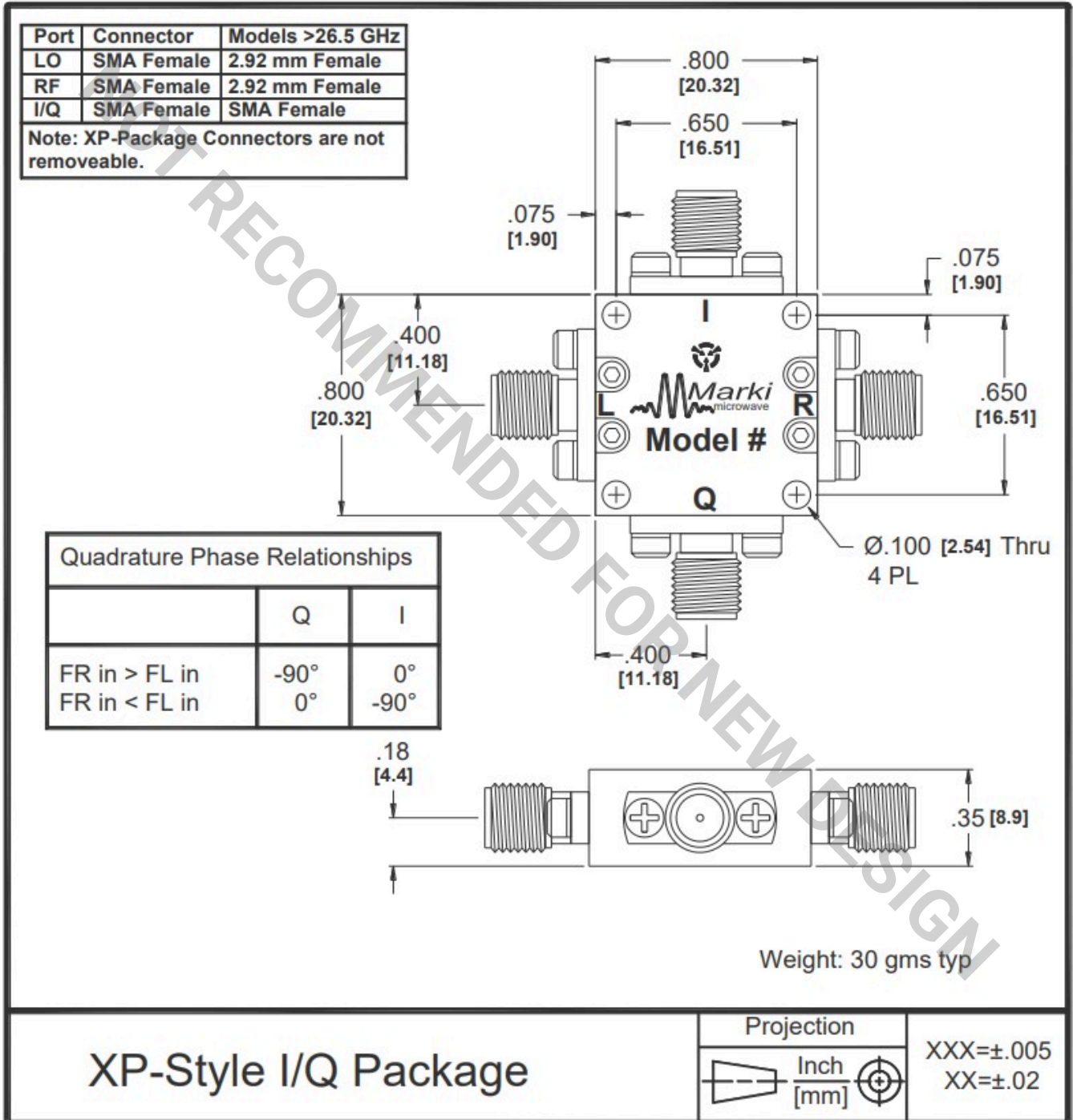
| Parameter | Test Conditions | Minimum Frequency (GHz) | Maximum Frequency (GHz) | Min | Typ | Max | Unit |
|--------------------------------|--|-------------------------|-------------------------|-----|-----|-----|------|
| Image Rejection | LO/RF=6-18 GHz IF=DC-.5 GHz | 6 | 18 | - | 23 | - | dB |
| Image Rejection | LO/RF=8-18 GHz IF=DC-.5 GHz | 8 | 18 | - | 23 | - | dB |
| Input 1 dB Compression | LO/RF=6-18 GHz LO drive level, L Diode Option=10-13 dBm | 6 | 18 | - | 4 | - | dBm |
| Input IP3 | LO/RF=6-18 GHz LO drive level, L Diode Option=10-13 dBm | 6 | 18 | - | 14 | - | dBm |
| I/Q Amplitude Deviation | LO/RF=6-18 GHz IF=DC-.5 GHz | 6 | 18 | - | 0.4 | - | dB |
| I/Q Quadrature Phase Deviation | LO/RF=6-18 GHz IF=DC-.5 GHz | 6 | 18 | - | 3 | - | ° |
| Isolation, LO to IF | LO/RF=6-18 GHz | 6 | 18 | - | 20 | - | dB |
| Isolation, LO to RF | LO/RF=6-18 GHz | 6 | 18 | 25 | 35 | - | dB |
| Isolation, RF to IF | LO/RF=6-18 GHz | 6 | 18 | - | 20 | - | dB |
| RF Conversion Loss | LO/RF=6-18 GHz IF=DC-.5 GHz | 6 | 18 | - | 7.5 | 12 | dB |
| IF Frequency Range | - | - | - | 0 | - | 0.5 | GHz |
| RF Frequency Range | - | - | - | 6 | - | 18 | GHz |

NOT RECOMMENDED FOR NEW DESIGN

Mechanical Data

Outline Drawing

Download : [Outline 2D Drawing](#)



Notes

1. Mixer Conversion Loss Plot IF frequency is 70 MHz.
2. Mixer Noise Figure typically measures within 0.5 dB of conversion loss for IF frequencies greater than 5 MHz.
3. Conversion Loss typically degrades less than 0.5 dB for LO drives 2 dB below the lowest and 3 dB above highest nominal LO drive levels.
4. Conversion Loss typically degrades less than 0.5 dB at +100°C and improves less than 0.5 dB at -55°C.
5. Maximum input power is +26 dBm at +25°C, derated linearly to +23 dBm at +100°C.
6. Specifications are subject to change without notice. Contact Marki Microwave for the most recent specifications and data sheets.
7. Catalog mixer circuits are continually improved. Configuration control requires custom mixer model numbers and specifications.

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