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M4-0140LK

Double-Balanced 1 - 40 GHz Mixers

DEVICE OVERVIEW

General Description

M4 diplexed IF mixers are hybrid assemblies that combine a low frequency IF (to DC) with a multi-decade bandwidth RF and LO. M4 mixers are commonly used for single tone analyzers (such as antenna test systems) with ultra-broad frequency ranges.

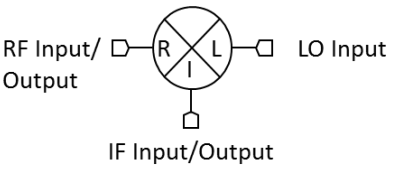
Features

- LO/RF 1.0 to 40.0 GHz
- IF DC to 500 MHz
- 9.5 dB Typical Conversion Loss
- 30 dB Typical LO to RF Isolation
- Super-Broadband RF and LO
- Available with 2.40 or 2.92 mm Connectors

Applications

N/A

Functional Block Diagram



Part Ordering Options

Part Number	Description	Package	Connectors	Green Status	Product Lifecycle	Export Classification
M4-0140HK	Double-Balanced 1 - 40 GHz Mixers	K	Standard	Consult Factory	End of Life	EAR99
M4-0140LKV	Double-Balanced 1 - 40 GHz Mixers	-	Standard	Consult Factory	Released	EAR99
M4-0140LK	Double-Balanced 1 - 40 GHz Mixers	K	Standard	Consult Factory	Released	EAR99

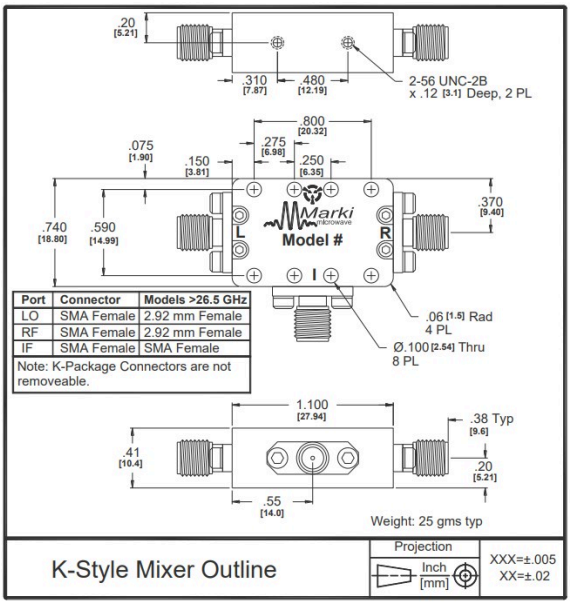
Table Of Contents

Revision History

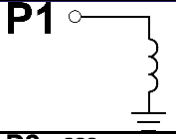
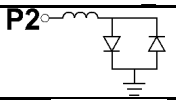
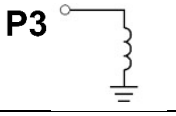
Revision Code	Revision Date	Comment
-	2023-09-01	Initial Release on New Format
A	2024-03-20	Updated Performance Plots due to Diode Change

Port Configuration and Functions

Port Diagram



Port Functions

Port	Function	Connector Type	Description	Equivalent Circuit for Package
Port 1	LO	SMAF	Port 1 is DC short for the K package.	
Port 2	IF	SMAF	Port 2 is diode connected for the K Package.	
Port 3	RF	SMAF	Port 3 is DC short for the K Package.	

Specifications

Package Information

Parameter	Details	Rating
Weight	Package name: K	25g
Dimensions	-	20.32 x 18.80 mm

Recommended Operating Conditions

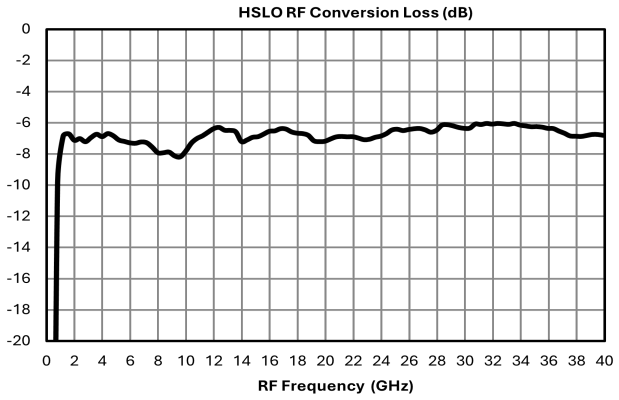
Parameter	Min	Nominal	Max	Unit
LO Input Power	10	-	13	-

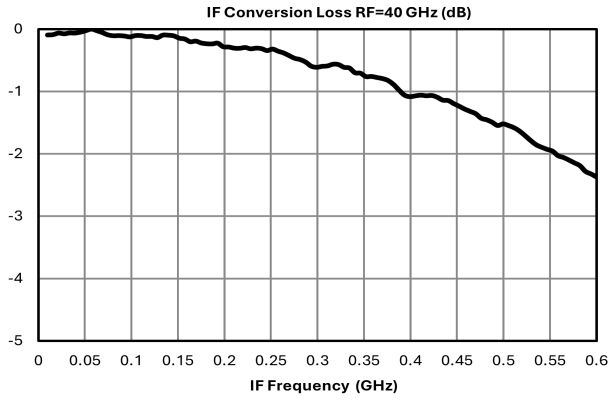
Electrical Specifications

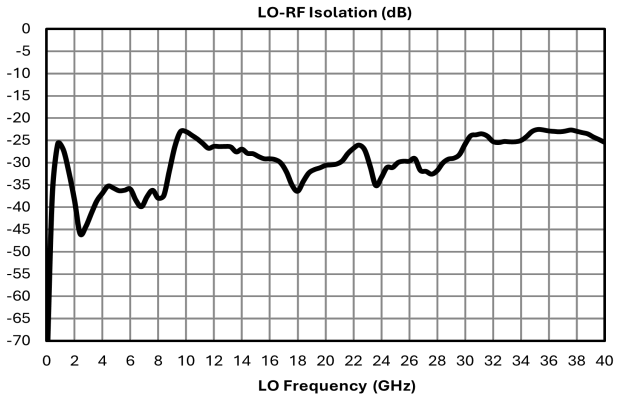
Specifications guaranteed from -55 to +100°C, measured in a 50-Ohm system.

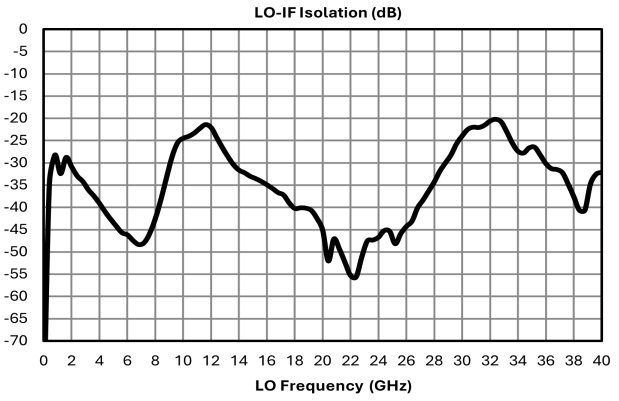
Parameter	Test Conditions	Min	Typ	Max	Unit
Conversion Loss	LO/RF=1-40 GHz IF=DC-0.5 GHz	-	9.5	12	dB
Input 1 dB Compression	LO/RF=1-40 GHz L diode level 10-13 dBm	-	3	-	dBm
Input IP3	LO/RF=1-40 GHz L diode level 10-13 dBm	-	13	-	dBm
Isolation, LO to IF	LO/RF=1-40 GHz	-	27	-	dB
Isolation, LO to RF	LO/RF=1-40 GHz	20	30	-	dB
Isolation, RF to IF	LO/RF=1-40 GHz	-	25	-	dB
IF Frequency Range	-	0	-	0.5	GHz
RF Frequency Range	-	1	-	40	GHz

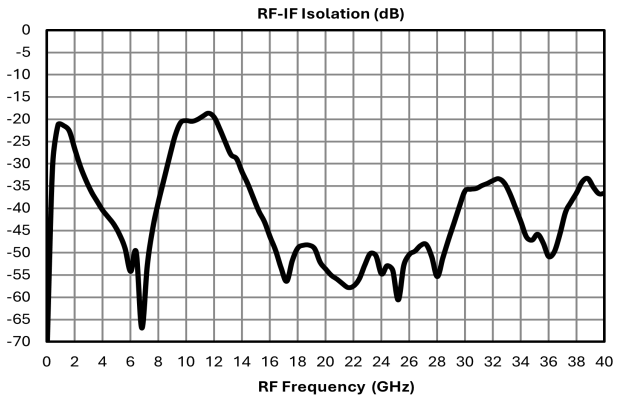
Typical Performance Plots

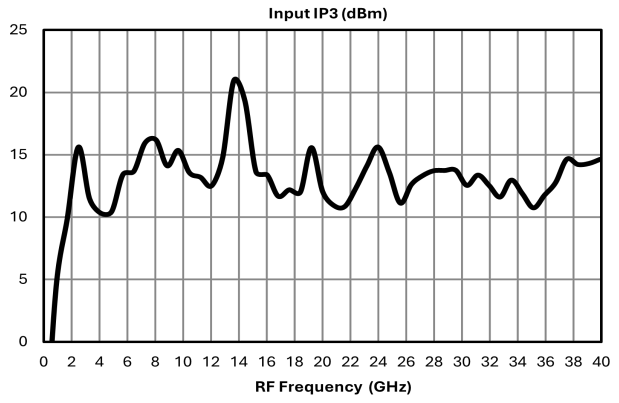








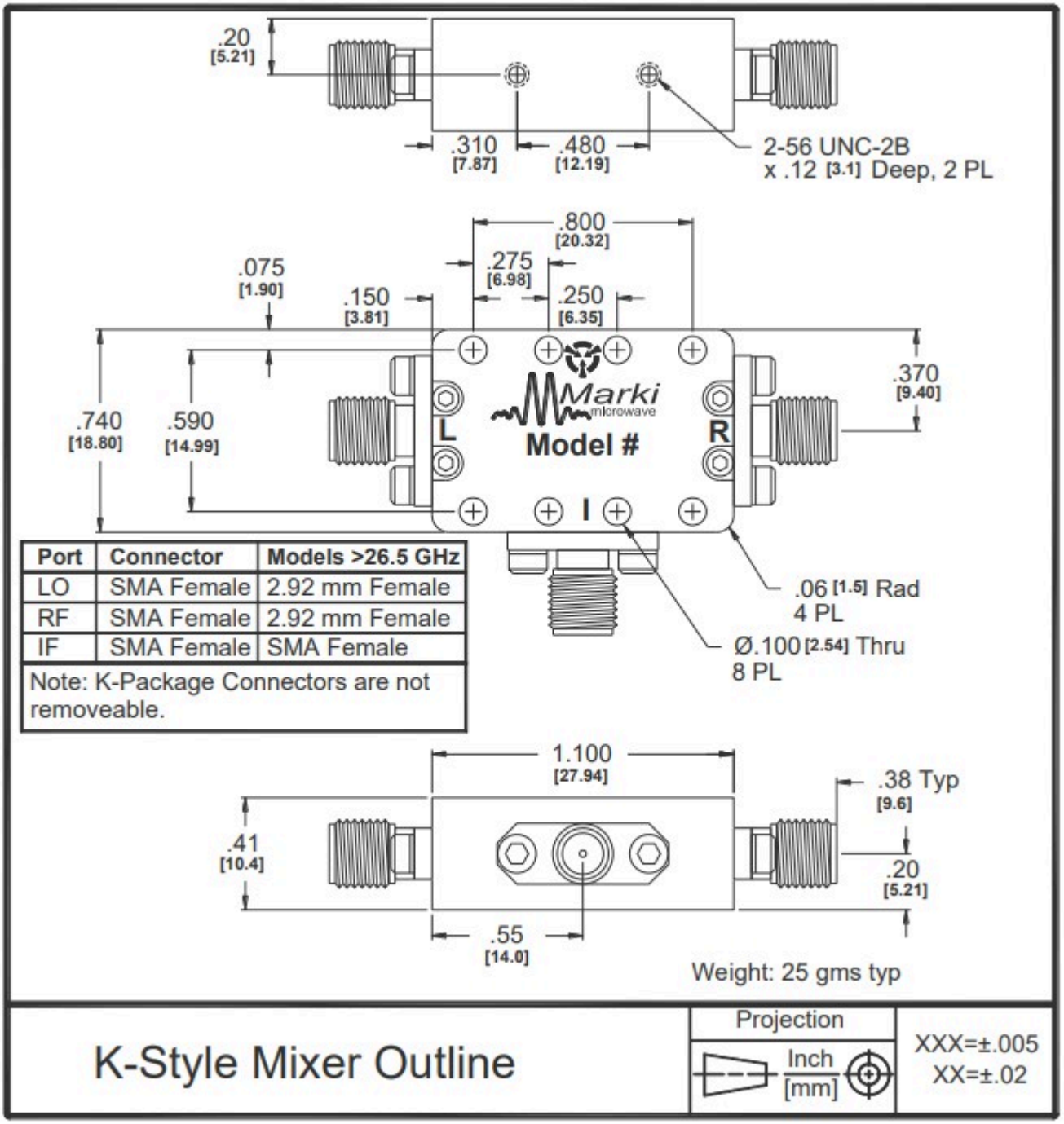




Mechanical Data

Outline Drawing

Download : Outline 3D Drawing | Outline 3D STP



Port	Connector	Models >26.5 GHz
LO	SMA Female	2.92 mm Female
RF	SMA Female	2.92 mm Female
IF	SMA Female	SMA Female

Note: K-Package Connectors are not removeable.

Notes

1. Mixer Conversion Loss Plot is done with an IF frequency of 100 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 +23 dBm at +25°C, derated linearly to +20 dBm at +100°C.
6. Specifications are subject to change without notice. Contact Marki Microwave for the most recent specifications and data sheets.
7. Standard configuration for A, B, and C outlines are with connectors and bottom spacer.
8. Catalog mixer circuits are continually improved. Configuration control requires custom mixer model numbers and specifications