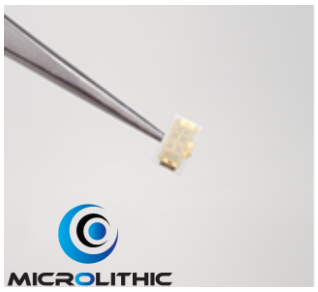
MICROLITHIC™ DOUBLER

MLD-0632



The MLD-0632 is a Microlithic™ doubler. As with all Microlithic™ devices (patent pending), it features excellent conversion loss and harmonic suppressions across a broad bandwidth and in a miniaturized form factor. Accurate, nonlinear software models are available for Microwave Office through the Marki Microwave PDK. The MLD-0632 is available as a wire bondable chip or in a connectorized package. The MLD-0632 is an excellent alternative to Marki Microwave doublers packaged in drop-in carriers such as the ES carrier.

Features

- Compact Chip Style Package (0.152" x 0.090" x 0.010")
- CAD Optimized for Superior Suppressions and Efficiency
- Excellent Unit-to-Unit Repeatability
- Fully nonlinear software models available with Marki PDK for Microwave Office
- RoHS Compliant

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

Parameter	Input (GHz)	Output (GHz)	Min	Typ	Max	Diode Option Input drive level (dBm)
2F (out) Conversion Loss (dB)	3.0-16.0	6.0-32.0		12	17	
Suppressions [1]						
1F (in) Fundamental				40		
3F (out) Third Harmonic				42		
4F (out) Fourth Harmonic				18		
Isolations [1]						
1F (in) Fundamental				52		
3F (out) Third Harmonic				54		
4F (out) Fourth Harmonic				30		
1F Input Level [2]			+9		+15	L-Version

[1] Suppression is relative to doubled output power. Isolation is defined as relative to the fundamental input power.
[2] For higher input power, alternative diode options may be available. Contact factory.

Part Number Options

Please specify diode level and package style by adding to model number.				
Package Styles		**Examples**		
Connectorized [1]	S	MLD-0632LCH, MLD-0632LS		
Chip [2, 3] (RoHS)	CH	MLD-0632 (Model)	L (Diode Option)	CH (Package)

[1] Connectorized package consists of chip package wire bonded to a substrate, equivalent to an evaluation board.
[2] Chip package connects to external circuit through wire bondable gold pads.
[3] Note: For port locations and I/O designations, refer to the drawing on page 3 of this document.

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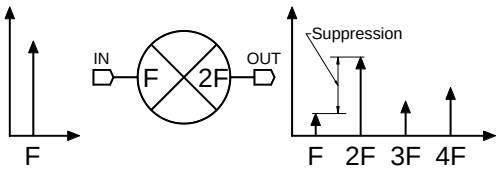
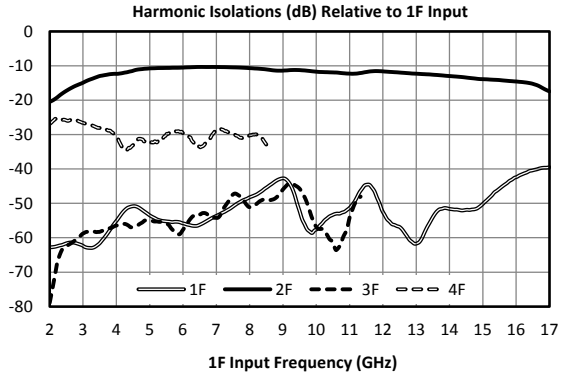
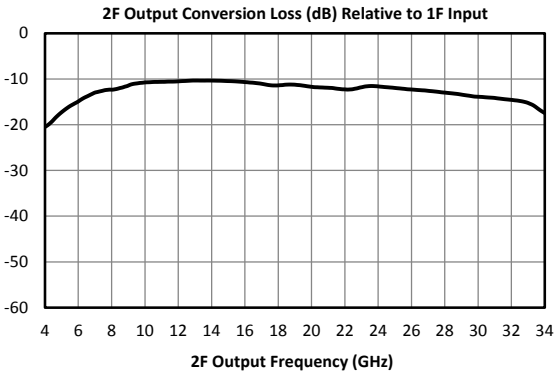
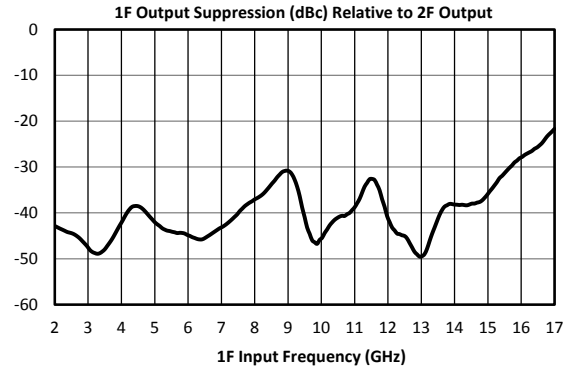
Input 3 to 16 GHz
Output 6 to 32 GHz

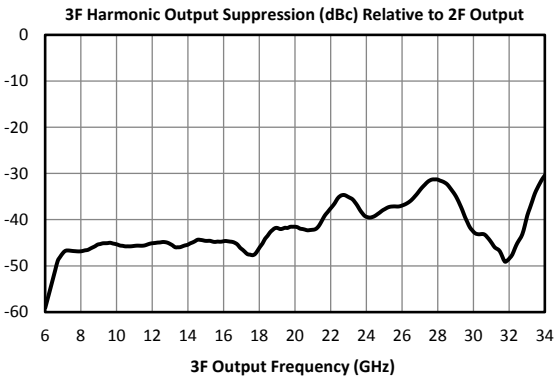
Typical Performance

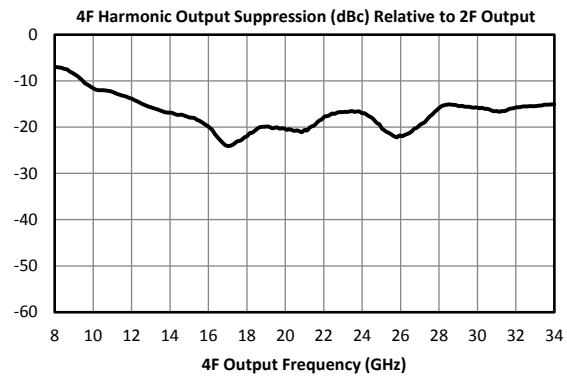


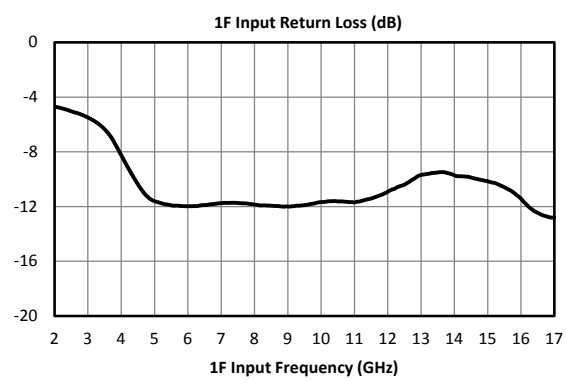


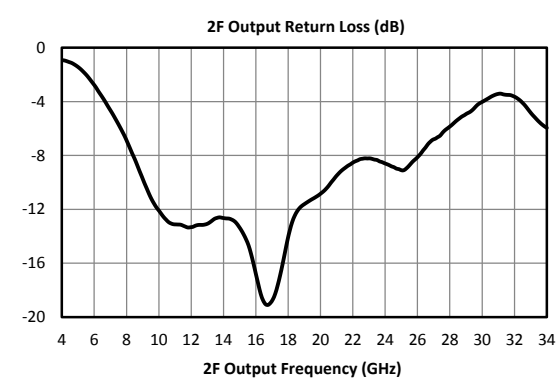












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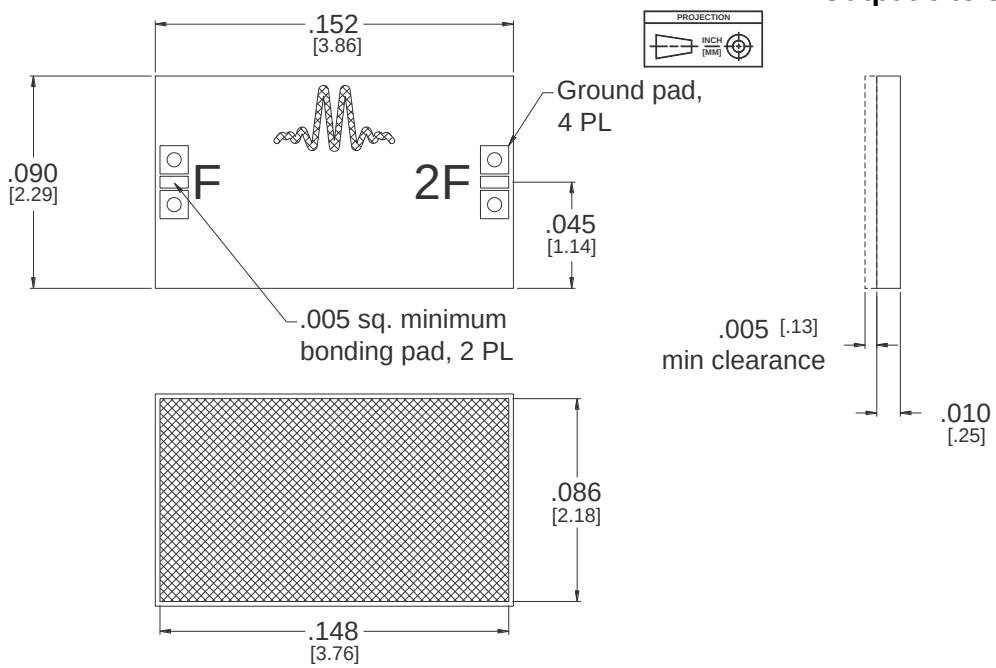
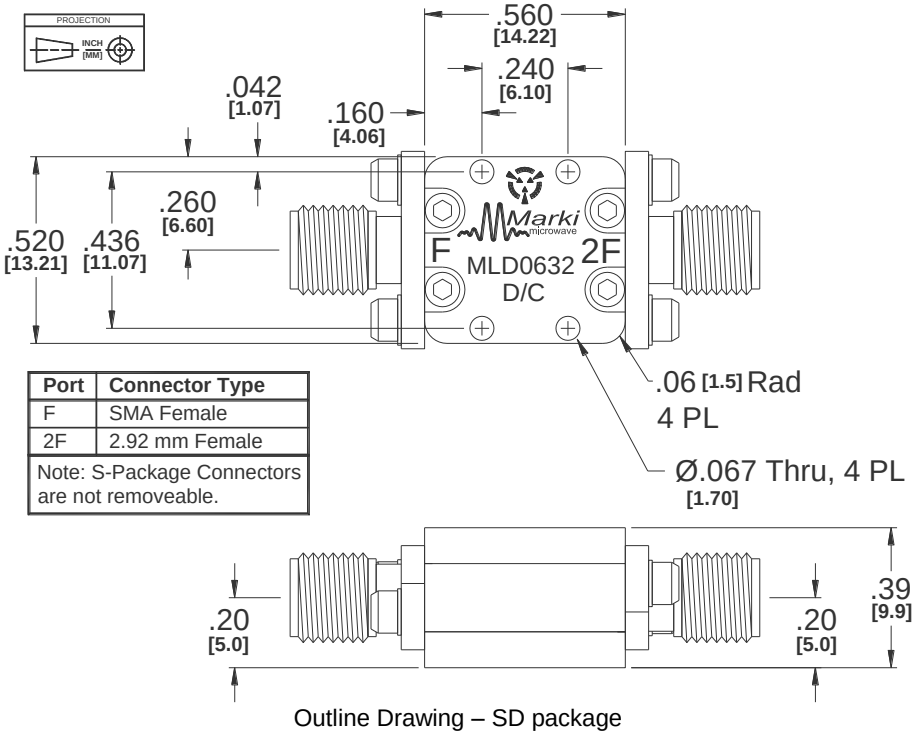
Input 3 to 16 GHz
Output 6 to 32 GHz



Outline Drawing – CH package

*CH Substrate material is .010 thick Ceramic.
I/O traces and ground plane finish is 2.5 microns Au over .05 microns WTi.
Wire Bonding - Ball or wedge bond with 0.025 mm (1 mil) diameter pure gold wire. Thermosonic wirebonding with a nominal stage temperature of 150 °C and a ball bonding force of 40 to 50 grams or wedge bonding force of 18 to 22 grams is recommended. Use the minimum level of ultrasonic energy to achieve reliable wirebonds. Wirebonds should be started on the chip and terminated on the package or substrate. All bonds should be as short as possible <0.31 mm (12 mils).



Port	Connector Type
F	SMA Female
2F	2.92 mm Female
Note: S-Package Connectors are not removeable.	

Outline Drawing – SD package

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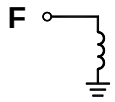
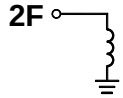
Input 3 to 16 GHz
Output 6 to 32 GHz

Port	Description	DC Interface Schematic
F Input	The input port is DC short to ground and AC matched to 50 Ohms from 3 to 16 GHz. Blocking capacitor is optional.	
2F Output	The output port is DC short to ground and AC matched to 50 Ohms from 6 to 32 GHz. Blocking capacitor is optional.	

Absolute Maximum Ratings	
Parameter	**Maximum Rating**
Input DC Current	1 Amp
Output DC Current	1 Amp
RF Power Handling	+25 dBm at +25°C, derated linearly to +20 dBm at +100°C
Operating Temperature	-55ºC to +100ºC
Storage Temperature	-65ºC to +125ºC

DATA SHEET NOTES:
1. Doubled Loss typically degrades less than 0.5 dB at +100°C and improves less than 0.5 dB at -55°C.
2. Unless otherwise specified, L-Diode data is taken with a +11 dBm input.
3. Specifications are subject to change without notice. Contact Marki Microwave for the most recent specifications and data sheets.
4. Catalog doubler circuits are continually improved. Configuration control requires custom model numbers and specifications.

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