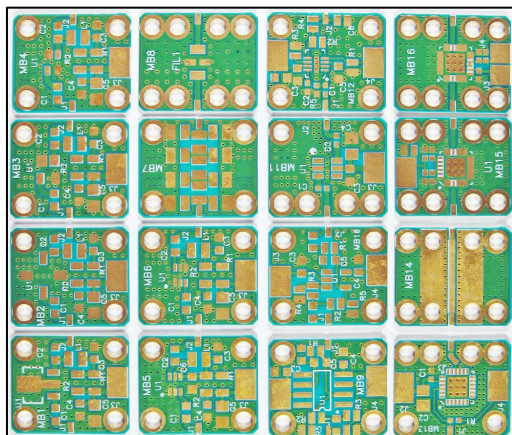




Key Features

- Fits MicroAmp MH-series housings
- Single board fits MH-1 housing
- Cascade two boards into MH-2 housing
- RF amplifier boards for most popular MMIC packages
- Boards for filters, VCOs, dividers, multipliers, opamps, log detectors
- RO-4350 board material
- ENIG plating finish

Description

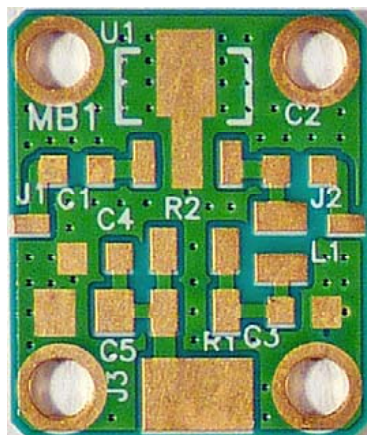
MicroAmp MB series circuit boards are designed for rapid prototyping of many different low and high-frequency circuit functions. Boards are available for many popular MMIC amplifiers, filters, frequency dividers, multipliers, VCOs, passive circuits, and opamps. These easy-to-assemble boards use standard surface-mount components and can be turned into functional circuits in a matter of minutes. All boards fit into the MicroAmp MH series of connectorized housings that allows them to be used as a single (MH-1) or dual-cascaded circuits (MH-2). All boards are fabricated from a high-performance 13 mil thick RO-4350 laminate with RoHS compatible ENIG plating (electroless nickel/immersion gold) on both the component side and the solid bottom ground plane. Superior grounding to the housings is provided by securing the boards with multiple screws.

The table below summarizes the board functions currently available in the MB series. Devices from other manufacturers will also be compatible with many of these boards. See the individual board data sheets for schematics and assembly guidelines.

Board	Function	Package	Manufacturers (1)	Comments
MB-1	Amplifier	SOT-89	Analog Devices, Avago, Hittite, MA/COM, Mini-Circuits, RFMD, Triquint	Popular package for
MB-2	Amplifier	SOT-86	Avago, Hittite, Mini-Circuits, RFMD, Triquint	Also fits many other 4-pin package styles
MB-3	Amplifier	SOT-143	Avago, Mini-Circuits	
MB-4	Amplifier	SOT-343	Avago	
MB-5	Amplifier	SOT-363	Avago, CEL, MA/COM, RFMD, Triquint	Dual-bias designs
MB-6	Amplifier	SOT-363	Avago, MA/COM, RFMD, Triquint	Single-bias designs
MB-7	Passive Circuit	SMD		Custom lumped element circuits
MB-8	Filter	FV1206	Mini-Circuits	Lowpass, highpass, bandpass LTCC filters
MB-9	Op Amp	SOIC-8	Analog Devices, National, TI, Linear Tech	Supports inverting and non-inverting designs
MB-10	Op Amp	SOT-23-5	Analog Devices, National, TI, Linear Tech	Supports inverting and non-inverting designs
MB-11	Freq Divider	SOT-23-6	Hittite	HMC-432/433/434 prescalers to 8 GHz
MB-12	Log Detector	LFCSP	Analog Devices	AD8317/8319 detectors to 10 GHz
MB-13	VCO	LP4/LP4E	Hittite	Various VCOs from 2-8 GHz
MB-14	Through Line			Can also customize for passive networks
MB-15	Freq Multiplier	LP4/LP4E	Hittite	X and Ku-band output frequencies
MB-16	Tunable Filter	LP4/LP4E	Hittite	Tunable filters from 7-21 GHz

(1) Manufacturers listed are trademarks of their respective companies

MicroAmp MB-1 Circuit Board For SOT-89 Amplifiers

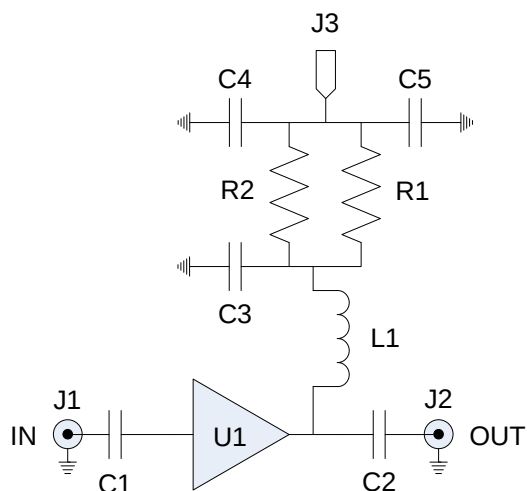


Key Features

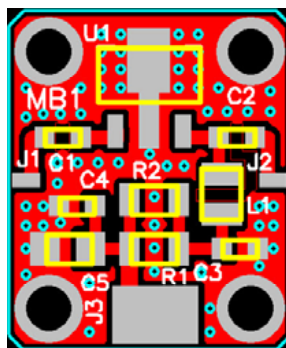
- Fits SOT-89 amplifier packages
- Input/Output blocking capacitors
- RF bypass and bias capacitors
- Dual bias resistors
- RF bias inductor
- RO-4350 board material
- Fits MicroAmp MH-series housings

Description

The MicroAmp MB-1 circuit board is designed for rapid prototyping of many different RF MMIC amplifiers in the SOT-89 package available from manufacturers such as Analog Devices, Avago, Hittite, Mini-Circuits, RFMD, Triquint, and others. This board will fit the MicroAmp MH series of connectorized housings that allow it to be used as a single amplifier stage or cascaded with other MicroAmp boards for added versatility. Boards are fabricated from a high-performance 13 mil thick RO-4350 laminate with RoHS compatible ENIG plating (electroless nickel/immersion gold) on both the component side and the solid bottom ground plane. The board measures 0.490" x 0.590" and mounts into the housing with four #1-72 screws. Amplifiers can be easily designed and assembled with standard surface-mount passive components. It includes provisions for input and output DC blocking capacitors (0603), RF and bias bypass capacitors (0603/0805), dual bias resistors for flexible thermal management (0805), and a RF bias inductor (0805 or 0603). Pads for the RF connectors allow the SMA center pins to be easily soldered to the board after it is installed into the housing, as well as a large pad to connect the completed board assembly to the bias feed-through.



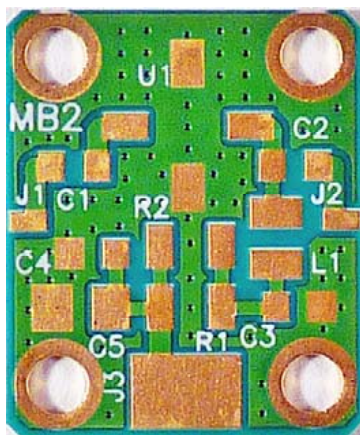
Amplifier Schematic



Assembly

Ref	Size	Function
C1	0603	DC block
C2	0603	DC block
C3	0603	Bypass
C4	0603	Bypass
C5	0805	Bypass
R1	0805	DC bias
R2	0805	DC bias
L1	0805/0603	RF bias
U1	SOT-89	Amplifier
J1		Input
J2		Output
J3		Bias

MicroAmp MB-2 Circuit Board For SOT-86 Amplifiers

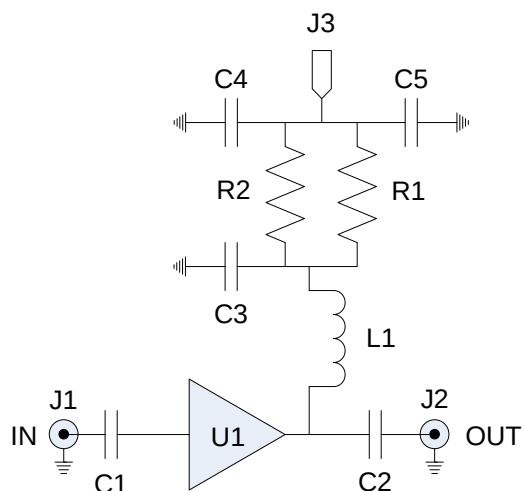


Key Features

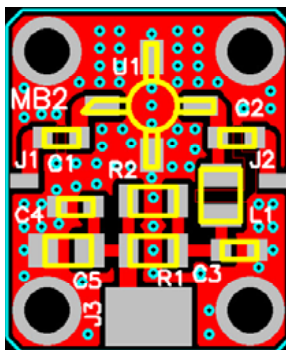
- Fits SOT-86 and similar 4-pin amplifier packages
- Input/Output blocking capacitors
- RF bypass and bias capacitors
- Dual bias resistors
- RF bias inductor
- RO-4350 board material
- Fits MicroAmp MH-series housings

Description

The MicroAmp MB-2 circuit board is designed for rapid prototyping of many different RF MMIC amplifiers in the SOT-86 and other similar 4-pin packages from Avago, Mini-Circuits, RFMD, Triquint, and others. This board will fit the MicroAmp MH series of connectorized housings that allow it to be used as a single amplifier stage or cascaded with other MicroAmp boards for added versatility. Boards are fabricated from a high-performance 13 mil thick RO-4350 laminate with RoHS compatible ENIG plating (electroless nickel/immersion gold) on both the component side and the solid bottom ground plane. The board measures 0.490" x 0.590" and mounts into the housing with four #1-72 screws. Amplifiers can be easily designed and assembled with standard surface-mount passive components. It includes provisions for input and output DC blocking capacitors (0603), RF and bias bypass capacitors (0603/0805), dual bias resistors for flexible thermal management (0805), and a RF bias inductor (0805 or 0603). Pads for the RF connectors allow the SMA center pins to be easily soldered to the board after it is installed into the housing, as well as a large pad to connect the completed board assembly to the bias feed-through.



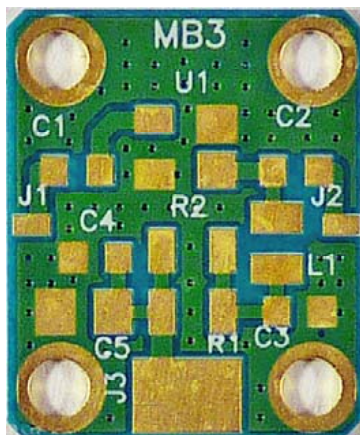
Amplifier Schematic



Assembly

Ref	Size	Function
C1	0603	DC block
C2	0603	DC block
C3	0603	Bypass
C4	0603	Bypass
C5	0805	Bypass
R1	0805	DC bias
R2	0805	DC bias
L1	0805/0603	RF bias
U1	SOT-86	Amplifier
J1		Input
J2		Output
J3		Bias

MicroAmp MB-3 Circuit Board For SOT-143 Amplifiers

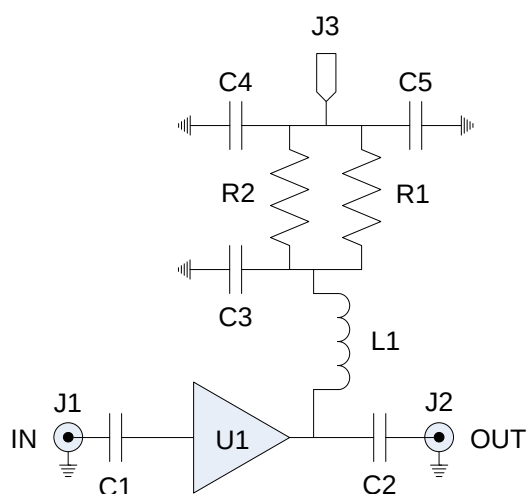


Key Features

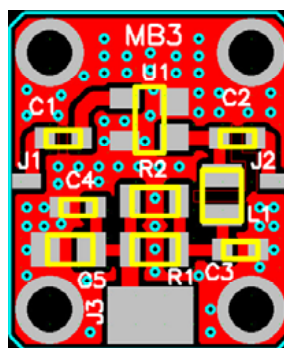
- Fits SOT-143 amplifier packages
- Input/Output blocking capacitors
- RF bypass and bias capacitors
- Dual bias resistors
- RF bias inductor
- RO-4350 board material
- Fits MicroAmp MH-series housings

Description

The MicroAmp MB-3 circuit board is designed for rapid prototyping of many different RF MMIC amplifiers in SOT-143 4-pin packages that use a common RF output and bias pin from manufacturers such as Avago (MSA), Mini-Circuits (VAM), and others. This board will fit the MicroAmp MH series of connectorized housings that allow it to be used as a single amplifier stage or cascaded with other MicroAmp boards for added versatility. Boards are fabricated from a high-performance 13 mil thick RO-4350 laminate with RoHS compatible ENIG plating (electroless nickel/immersion gold) on both the component side and the solid bottom ground plane. The board measures 0.490" x 0.590" and mounts into the housing with four #1-72 screws. Amplifiers can be easily designed and assembled with standard surface-mount passive components. It includes provisions for input and output DC blocking capacitors (0603), RF and bias bypass capacitors (0603/0805), dual bias resistors for flexible thermal management (0805), and a RF bias inductor (0805 or 0603). Pads for the RF connectors allow the SMA center pins to be easily soldered to the board after it is installed into the housing, as well as a large pad to connect the completed board assembly to the bias feed-through.



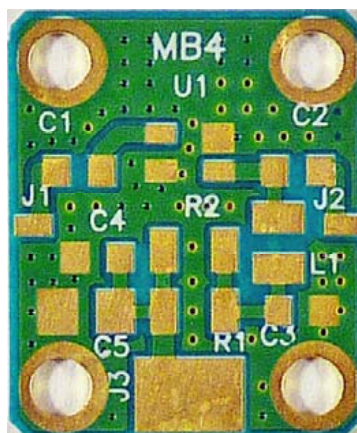
Amplifier Schematic



Assembly

Ref	Size	Function
C1	0603	DC block
C2	0603	DC block
C3	0603	Bypass
C4	0603	Bypass
C5	0805	Bypass
R1	0805	DC bias
R2	0805	DC bias
L1	0805/0603	RF bias
U1	SOT-143	Amplifier
J1		Input
J2		Output
J3		Bias

MicroAmp MB-4 Circuit Board For SOT-343 (SC-70) Amplifiers

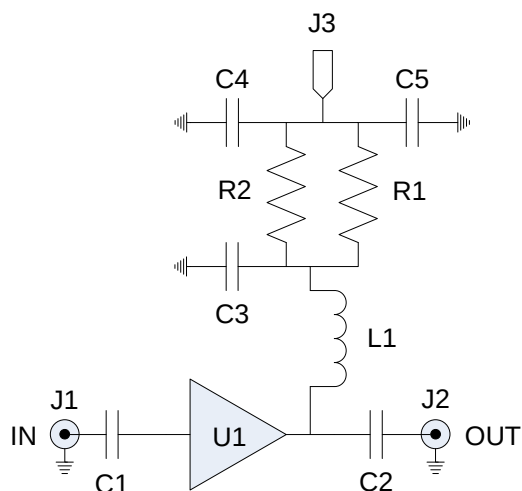


Key Features

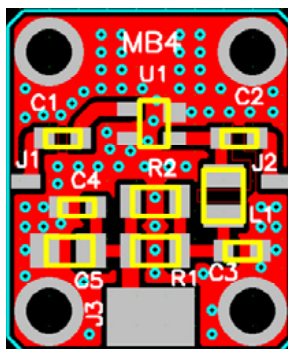
- Fits SOT-343 (SC-70) amplifier packages
- Input/Output blocking capacitors
- RF bypass and bias capacitors
- Dual bias resistors
- RF bias inductor
- RO-4350 board material
- Fits MicroAmp MH-series housings

Description

The MicroAmp MB-4 circuit board is designed for rapid prototyping of many different RF MMIC amplifiers in SOT-343 (SC-70) 4-pin packages that use a common RF output and bias pin from manufacturers such as Avago (ADA) and others. This board will fit the MicroAmp MH series of connectorized housings that allow it to be used as a single amplifier stage or cascaded with other MicroAmp boards for added versatility. Boards are fabricated from a high-performance 13 mil thick RO-4350 laminate with RoHS compatible ENIG plating (electroless nickel/immersion gold) on both the component side and the solid bottom ground plane. The board measures 0.490" x 0.590" and mounts into the housing with four #1-72 screws. Amplifiers can be easily designed and assembled with standard surface-mount passive components. It includes provisions for input and output DC blocking capacitors (0603), RF and bias bypass capacitors (0603/0805), dual bias resistors for flexible thermal management (0805), and a RF bias inductor (0805 or 0603). Pads for the RF connectors allow the SMA center pins to be easily soldered to the board after it is installed into the housing, as well as a large pad to connect the completed board assembly to the bias feed-through.



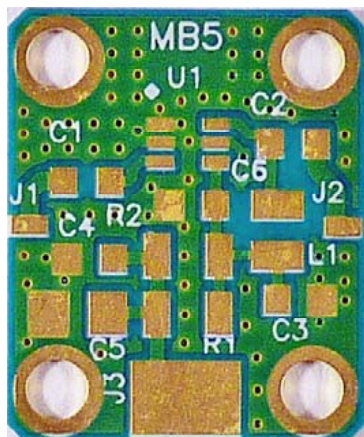
Amplifier Schematic



Assembly

Ref	Size	Function
C1	0603	DC block
C2	0603	DC block
C3	0603	Bypass
C4	0603	Bypass
C5	0805	Bypass
R1	0805	DC bias
R2	0805	DC bias
L1	0805/0603	RF bias
U1	SOT-343	Amplifier
J1		Input
J2		Output
J3		Bias

MicroAmp MB-5 Circuit Board For Dual-Bias SOT-363 Amplifiers

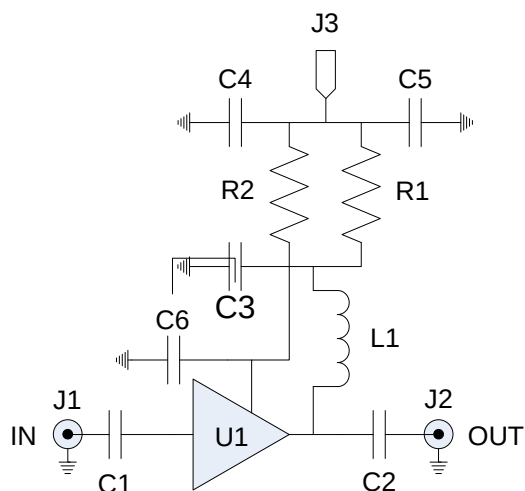


Key Features

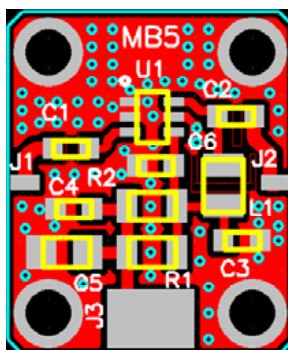
- Fits dual-bias SOT-363 amplifier packages
- Input/Output blocking capacitors
- RF bypass and bias capacitors
- Dual bias resistors
- RF bias inductor
- RO-4350 board material
- Fits MicroAmp MH-series housings

Description

The MicroAmp MB-5 circuit board is designed for rapid prototyping of many different RF MMIC amplifiers in SOT-363 6-pin packages that use separate RF output and bias pins from manufacturers such as Avago (ABA), CEL (UPC), and others. Check the specific part data sheet for device orientation since some manufacturers use different pin numbering. This board will fit the MicroAmp MH series of connectorized housings that allow it to be used as a single amplifier stage or cascaded with other MicroAmp boards for added versatility. Boards are fabricated from a high-performance 13 mil thick RO-4350 laminate with RoHS compatible ENIG plating (electroless nickel/immersion gold) on both the component side and the solid bottom ground plane. The board measures 0.490" x 0.590" and mounts into the housing with four #1-72 screws. Amplifiers can be easily designed and assembled with standard surface-mount passive components. It includes provisions for input and output DC blocking capacitors (0603), RF and bias bypass capacitors (0603/0805), dual bias resistors for flexible thermal management (0805), and a RF bias inductor (0805 or 0603). Pads for the RF connectors allow the SMA center pins to be easily soldered to the board after it is installed into the housing, as well as a large pad to connect the completed board assembly to the bias feed-through.



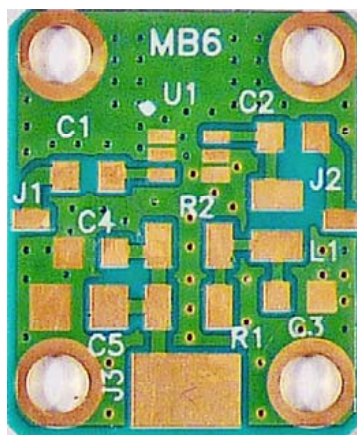
Amplifier Schematic



Assembly

Ref	Size	Function
C1	0603	DC block
C2	0603	DC block
C3	0603	Bypass
C4	0603	Bypass
C5	0805	Bypass
C6	0603	Bypass
R1	0805	DC bias
R2	0805	DC bias
L1	0805/0603	RF bias
U1	SOT-363	Amplifier
J1		Input
J2		Output
J3		Bias

MicroAmp MB-6 Circuit Board For Single-Bias SOT-363 Amplifiers

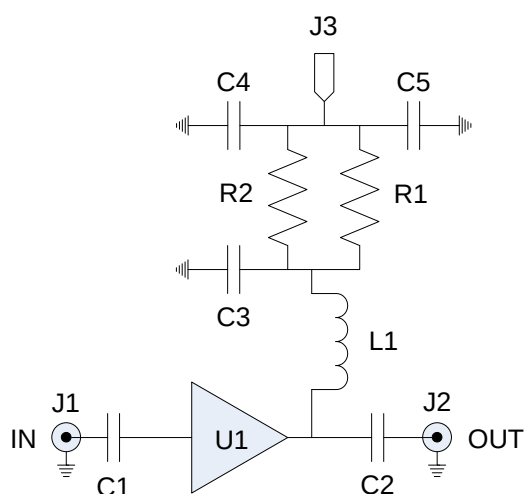


Key Features

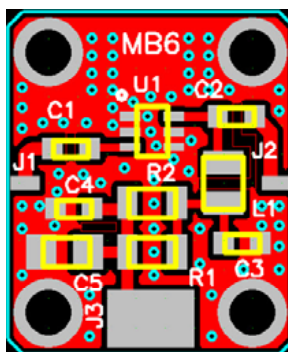
- Fits SOT-363 amplifier packages
- Input/Output blocking capacitors
- RF bypass and bias capacitors
- Dual bias resistors
- RF bias inductor
- RO-4350 board material
- Fits MicroAmp MH-series housings

Description

The MicroAmp MB-6 circuit board is designed for rapid prototyping of many different RF MMIC amplifiers in SOT-363 6-pin packages that use a common RF output and bias pin from manufacturers such as Avago (AVT, MGA), RFMD (SGA), Triquint (AG), and others. Check the specific part data sheet for device orientation since some manufacturers use different pin numbering. This board will fit the MicroAmp MH series of connectorized housings that allow it to be used as a single amplifier stage or cascaded with other MicroAmp boards for added versatility. Boards are fabricated from a high-performance 13 mil thick RO-4350 laminate with RoHS compatible ENIG plating (electroless nickel/immersion gold) on both the component side and the solid bottom ground plane. The board measures 0.490" x 0.590" and mounts into the housing with four #1-72 screws. Amplifiers can be easily designed and assembled with standard surface-mount passive components. It includes provisions for input and output DC blocking capacitors (0603), RF and bias bypass capacitors (0603/0805), dual bias resistors for flexible thermal management (0805), and a RF bias inductor (0805 or 0603). Pads for the RF connectors allow the SMA center pins to be easily soldered to the board after it is installed into the housing, as well as a large pad to connect the completed board assembly to the bias feed-through.



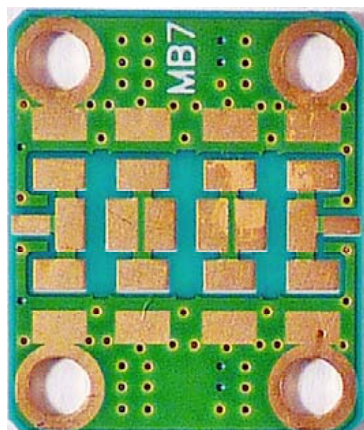
Amplifier Schematic



Assembly

Ref	Size	Function
C1	0603	DC block
C2	0603	DC block
C3	0603	Bypass
C4	0603	Bypass
C5	0805	Bypass
R1	0805	DC bias
R2	0805	DC bias
L1	0805/0603	RF bias
U1	SOT-363	Amplifier
J1		Input
J2		Output
J3		Bias

MicroAmp MB-7 Circuit Board For Passive Networks

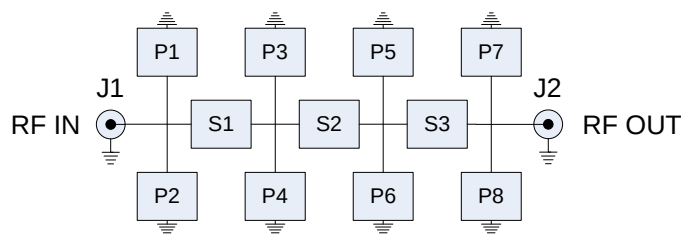


Key Features

- Generic layout for passive networks
- Easily create lumped element filters, equalizers, bias networks, attenuators, etc.
- Up to three series elements
- Up to eight parallel elements
- Accommodates 0603/0805 parts
- RO-4350 board material
- Fits MicroAmp MH-series housings

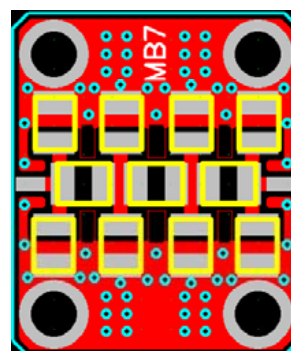
Description

The MicroAmp MB-7 circuit board is designed for rapid prototyping of passive networks such as filters, attenuators, equalizers, bias tees, etc. Passive elements such as resistors, capacitors, and inductors can be combined in a variety of series and shunt configurations. Networks can be easily designed and assembled with standard surface-mount passive components. It includes provisions for three series elements and up to eight shunt elements in either 0603 or 0805 packages. This board will fit the MicroAmp MH series of connectorized housings that allow it to be used as a single passive network or cascaded with other MicroAmp boards for added versatility. Boards are fabricated from a high-performance 13 mil thick RO-4350 laminate with RoHS compatible ENIG plating (electroless nickel/immersion gold) on both the component side and the solid bottom ground plane. The board measures 0.490" x 0.590" and mounts into the housing with four #1-72 screws. Pads for the RF connectors allow the SMA center pins to be easily soldered to the board after it is installed into the housing.



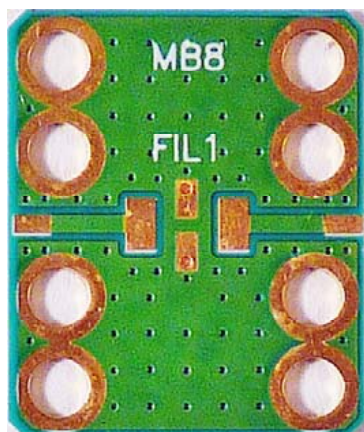
Network Schematic

Ref	Size	Function
S1-S3	0603/0805	Series element
P1-P8	0603/0805	Parallel element
J1		Input
J2		Output



Assembly

MicroAmp MB-8 Circuit Board For Mini-Circuits LTCC Filters

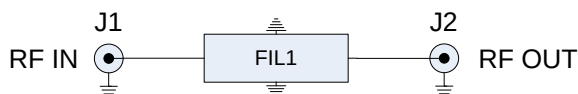


Key Features

- Fits Mini-Circuits LFCN, HFCN, and BFCN filters in FV1206 package
- Lowpass, highpass, bandpass filters
- Many filters to choose from
- RO-4350 board material
- Fits MicroAmp MH-series housings

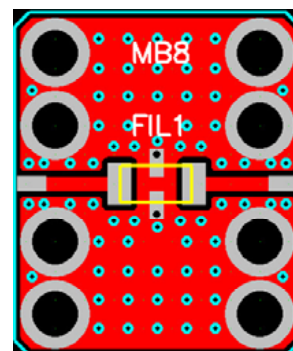
Description

The MicroAmp MB-8 circuit board is designed for rapid prototyping of microwave filters using the Mini-Circuits line of LFCN, HFCN, and BFCN components in the FV1206 package. Filters from under 100 MHz to over 6 GHz can be quickly fabricated in lowpass, highpass, or bandpass configurations. In addition, the MB-8 can be used to insert a series element with a standard 1206 surface mount package such as a DC blocking capacitor or series resistor. This board will fit the MicroAmp MH series of connectorized housings that allow it to be used as a single passive network or cascaded with other MicroAmp boards for added versatility. Boards are fabricated from a high-performance 13 mil thick RO-4350 laminate with RoHS compatible ENIG plating (electroless nickel/immersion gold) on both the component side and the solid bottom ground plane. The board measures 0.490" x 0.590" and mounts into the housing with four or eight #1-72 screws. Mounting screws closer to the traces allow for better grounding with higher frequency filters. Pads for the RF connectors allow the SMA center pins to be easily soldered to the board after it is installed into the housing.



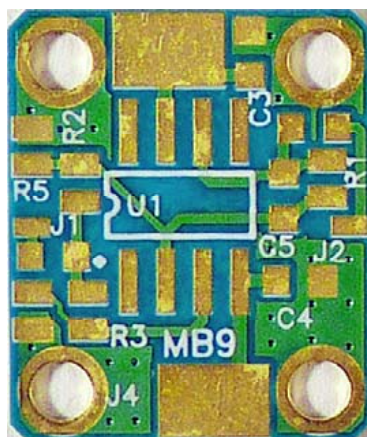
Filter Schematic

Ref	Size	Function
FIL1	FV1206/1206	Filter or passive
J1		Input
J2		Output



Assembly

MicroAmp MB-9 Circuit Board For SOIC-8 Operational Amplifiers

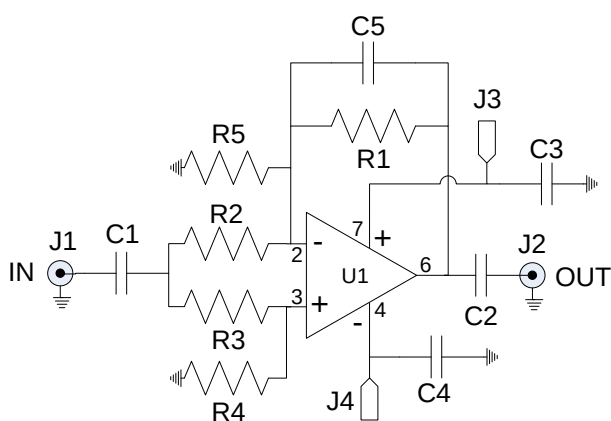


Key Features

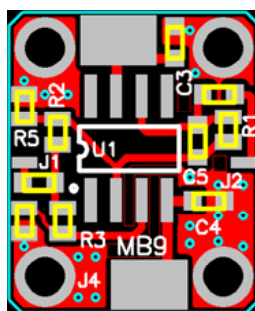
- Fits standard single SOIC-8 opamp packages
- Inverting or non-inverting configuration
- Optional DC blocks on input and output
- Uses standard 0603 passives
- RO-4350 board material
- Fits MicroAmp MH-series housings

Description

The MicroAmp MB-9 circuit board is designed for rapid prototyping of operational amplifier circuits using standard pinout SOIC-8 packages. It can be configured as an inverting or non-inverting topology with selectable input and feedback resistors and has a parallel feedback capacitor for filtering or compensation. This board will fit the MicroAmp MH series of connectorized housings that allow it to be used as a single amplifier stage or cascaded with other MicroAmp boards for added versatility. Boards are fabricated from a high-performance 13 mil thick RO-4350 laminate with RoHS compatible ENIG plating (electroless nickel/immersion gold) on both the component side and the solid bottom ground plane. The board measures 0.490" x 0.590" and mounts into the housing with four #1-72 screws. Amplifier circuits can be easily designed and assembled with standard 0603 surface-mount passive components. It includes provisions for input and output DC blocking capacitors, or these can be replaced with zero-ohm jumpers for DC operation. Pads for the input/output connectors allow the SMA center pins to be easily soldered to the board after it is installed into the housing, as well as large pads to connect the bias voltages to feed-throughs. Separate bias pads are provided for single and dual power supply configurations.



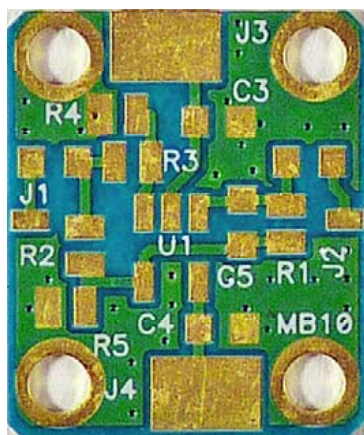
OpAmp Schematic



Assembly

Ref	Size	Function
C1	0603	Block or jumper (not labeled)
C2	0603	Block or jumper (not labeled)
C3	0603	Bias bypass
C4	0603	Bias bypass
C5	0603	Inverting feedback filter
R1	0603	Inverting feedback gain
R2	0603	Inverting input gain
R3	0603	Input divider
R4	0603	Input divider (not labeled)
R5	0603	Feedback gain
U1	SOIC-8	OpAmp
J1		Signal input
J2		Signal output (pin 6)
J3		Positive bias or gnd (pin 7)
J4		Negative bias or gnd (pin 4)

MicroAmp MB-10 Circuit Board For 5-pin SOT-23 Operational Amplifiers

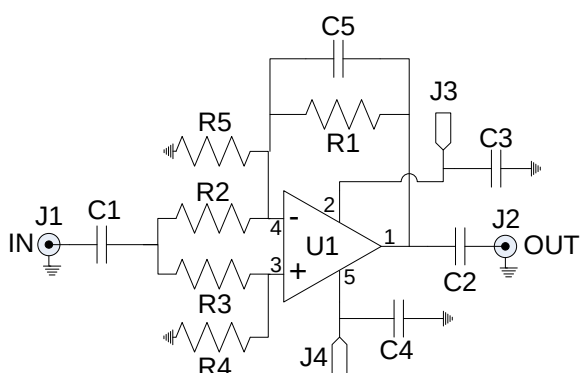


Key Features

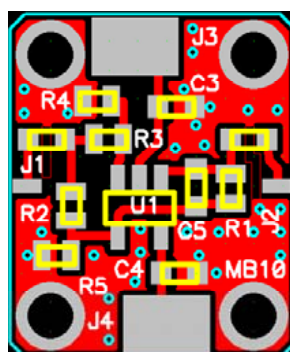
- Fits standard 5-pin SOT-23 opamp packages
- Inverting or non-inverting configuration
- Optional DC blocks on input and output
- Uses standard 0603 passives
- RO-4350 board material
- Fits MicroAmp MH-series housings

Description

The MicroAmp MB-10 circuit board is designed for rapid prototyping of operational amplifier circuits using popular 5-pin SOT-23 packages with the output on pin 1, non-inverting input on pin 3, and the inverting input on pin 4. It can be configured as an inverting or non-inverting topology with selectable input and feedback resistors and has a parallel feedback capacitor for filtering or compensation. This board will fit the MicroAmp MH series of connectorized housings that allow it to be used as a single amplifier stage or cascaded with other MicroAmp boards for added versatility. Boards are fabricated from a high-performance 13 mil thick RO-4350 laminate with RoHS compatible ENIG plating (electroless nickel/immersion gold) on both the component side and the solid bottom ground plane. The board measures 0.490" x 0.590" and mounts into the housing with four #1-72 screws. Amplifier circuits can be easily designed and assembled with standard 0603 surface-mount passive components. It includes provisions for input and output DC blocking capacitors, or these can be replaced with zero-ohm jumpers for DC operation. Pads for the input/output connectors allow the SMA center pins to be easily soldered to the board after it is installed into the housing, as well as large pads to connect the bias voltages to feed-throughs. Separate bias pads are provided for single and dual bias configurations. Use caution on the bias polarity depending upon the specific opamp being used.



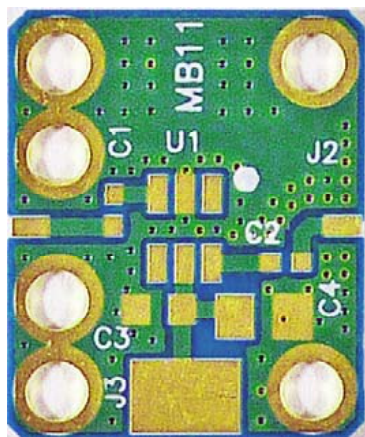
OpAmp Schematic



Assembly

Ref	Size	Function
C1	0606	Block or jumper (not labeled)
C2	0603	Block or jumper (not labeled)
C3	0603	Bias bypass
C4	0603	Bias bypass
C5	0603	Inverting feedback
R1	0603	Inverting feedback gain
R2	0603	Input gain
R3	0603	Input divider
R4	0603	Input divider
R5	0603	Feedback gain
U1	SOT-23	OpAmp
J1		Signal input
J2		Signal output (pin 1)
J3		Bias or ground (pin 2)
J4		Bias or ground (pin 5)

MicroAmp MB-11 Circuit Board For Hittite SOT-23 Prescalers

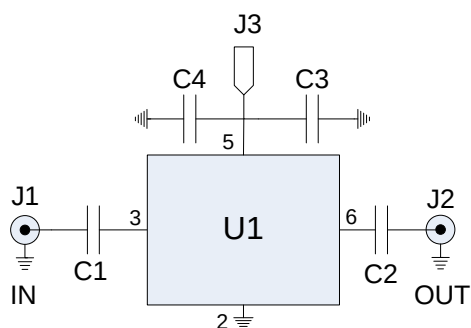


Key Features

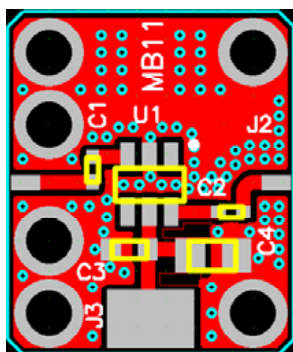
- Fits Hittite 6-pin SOT-23 prescaler packages
- Divide by 2/4/8 configurations
- Input frequencies up to 8 GHz
- DC blocks on input and output
- RO-4350 board material
- Fits MicroAmp MH-series housings

Description

The MicroAmp MB-11 circuit board is designed for rapid prototyping of Hittite Microwave 6-pin SOT-23 prescalers. HMC-43X prescalers are available in divide by 2/4/8 versions (HMC-432/433/434) which operate at input frequencies as high as 8 GHz. This board will fit the MicroAmp MH series of connectorized housings that allow it to be used as a single prescaler or cascaded with other MicroAmp boards for added versatility. Boards are fabricated from a high-performance 13 mil thick RO-4350 laminate with RoHS compatible ENIG plating (electroless nickel/immersion gold) on both the component side and the solid bottom ground plane. The board measures 0.490" x 0.590" and mounts into the housing with four or six #1-72 screws to insure optimal grounding for high frequency operation. Prescaler circuits can be easily assembled with standard surface-mount passive components. It includes provisions for input and output DC blocking capacitors and bias bypass capacitors. Pads for the RF input/output connectors allow the SMA center pins to be easily soldered to the board after it is installed into the housing, as well as a large pad to connect the bias voltage to the feed-through. These prescalers have a tendency to output broadband noise or oscillations when not driven with sufficient input power. Consult the Hittite data sheets for proper drive levels.



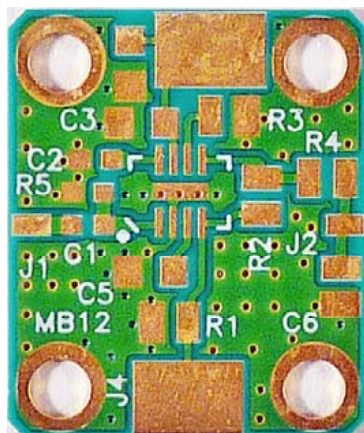
Prescaler Schematic



Assembly

Ref	Size	Function
C1	0402	DC block
C2	0402	DC block
C3	0603	Bypass
C4	0603/0805	Bypass
U1	SOT-23	Prescaler
J1		Signal input (pin 3)
J2		Signal output (pin 6)
J3		Bias (pin 5)

MicroAmp MB-12 Circuit Board For Analog Devices Log Detectors

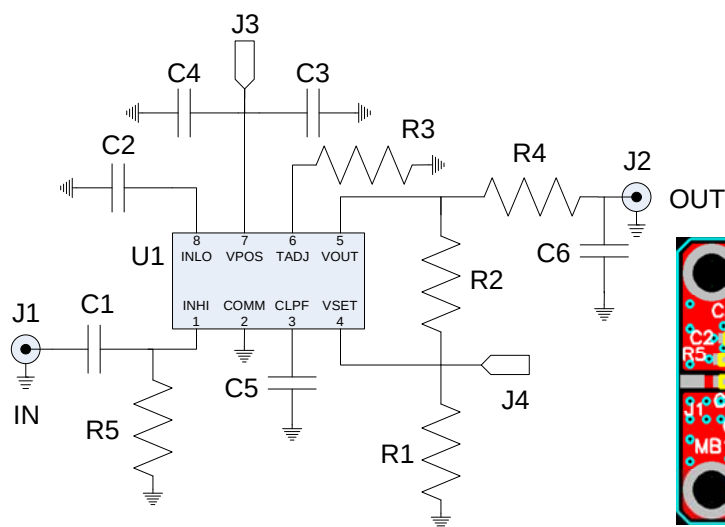


Key Features

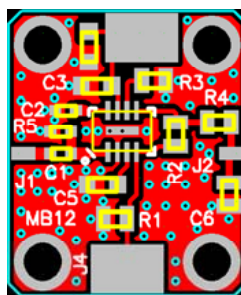
- Fits Analog Devices AD8317/8319 LFCSP packages
- 10 GHz frequency range
- Controller or Measurement mode
- Uses standard SMD passive parts
- RO-4350 board material
- Fits MicroAmp MH-series housings

Description

The MicroAmp MB-12 circuit board is designed for rapid prototyping of RF log detector circuits using Analog Devices AD8317/8319 devices in LFCSP packages. It can be configured in measurement or controller modes by selectively installing the appropriate resistors. Using these detectors, the MB-12 can provide a wide dynamic range log detection function at frequencies up to 10 GHz. This board will fit the MicroAmp MH series of connectorized housings that allow it to be used as a stand-alone detector or cascaded with other MicroAmp boards for added versatility. Boards are fabricated from a high-performance 13 mil thick RO-4350 laminate with RoHS compatible ENIG plating (electroless nickel/immersion gold) on both the component side and the solid bottom ground plane. The board measures 0.490" x 0.590" and mounts into the housing with four #1-72 screws. Detector circuits can be easily designed and assembled with standard surface-mount passive components. It includes provisions for input DC blocking, impedance matching, and other RC components for adjusting performance parameters of the log detector. Pads for the input/output connectors allow the SMA center pins to be easily soldered to the board after it is installed into the housing, as well as large pads to connect the bias voltage and controller mode input pins to feed-throughs.



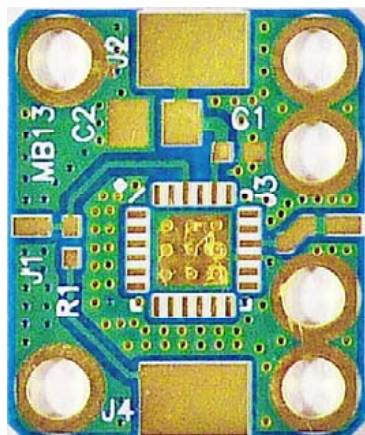
Log Detector Schematic



Assembly

Ref	Size	Function
C1	0402	DC block
C2	0402	DC block/bypass
C3	0603	Bypass
C4	0603	Bypass (not labeled)
C5	0603	Lowpass filter
C6	0603	Output lowpass filter
R1	0603	Meas mode divider
R2	0603	Meas mode divider
R3	0603	Temp comp
R4	0603	Output lowpass filter
R5	0603	Input match
U1	LFCSP	Log Detector IC
J1		RF input
J2		Log video output
J3		+ Bias (not labeled)
J4		Controller mode input

MicroAmp MB-13 Circuit Board For Hittite VCOs in LP4E Packages

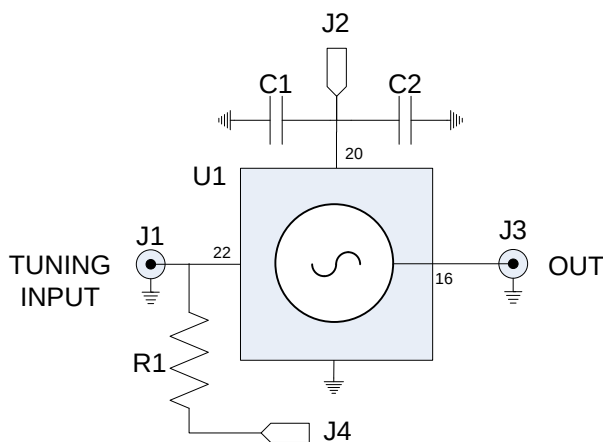


Key Features

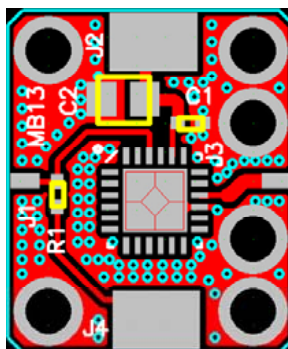
- Fits Hittite Microwave VCOs with LP4E packages
- Usable with HMC384-386, 388-391, 416, 429-431, 466, 505, 506, 532 VCOs
- VCOs frequencies from 2-8 GHz
- Uses standard SMD passive parts
- RO-4350 board material
- Fits MicroAmp MH-series housings

Description

The MicroAmp MB-13 circuit board is designed for rapid prototyping of microwave VCOs using Hittite Microwave devices in LP4E packages with RF outputs on pin 16, tuning controls on pin 22, and bias on pin 20. This board will fit the MicroAmp MH series of connectorized housings that allow it to be used as a stand-alone oscillator or cascaded with other MicroAmp boards for added versatility. Boards are fabricated from a high-performance 13 mil thick RO-4350 laminate with RoHS compatible ENIG plating (electroless nickel/immersion gold) on both the component side and the solid bottom ground plane. The board measures 0.490" x 0.590" and mounts into the housing with four or six #1-72 screws for optimal high frequency grounding. Oscillator circuits can be easily designed and assembled with standard surface-mount passive components. It includes provisions for DC bias bypassing and configuring the tuning pin to be connected to either an SMA input connector or feed-through in the housing. Pads for the input/output connectors allow the SMA center pins to be easily soldered to the board after it is installed into the housing, as well as large pads to connect the bias voltage and tuning input pins. The tuning pin has the option of connecting to the J1 SMA connector or to a feedthrough by preferential installation of R1.



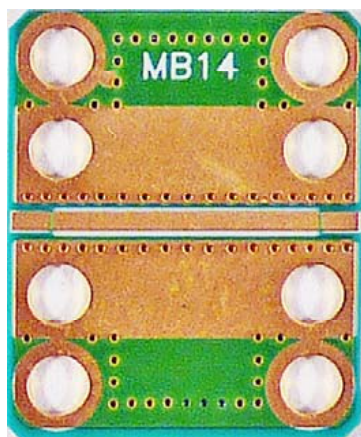
VCO Schematic



Assembly

Ref	Size	Function
C1	0402	Bias bypass
C2	0805	Bias bypass
R1	0402	Tuning pin connection
U1	LP4E	VCO
J1		Coax tuning input (pin 22)
J2		+ Bias (pin 20)
J3		RF output (pin 16)
J4		R1 tuning input (pin 22)

MicroAmp MB-14 Circuit Board Through Transmission Line



Key Features

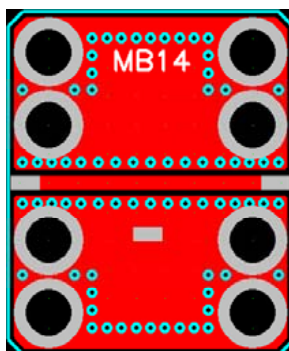
- Use for straight-through connections
- Can also be used for custom passive networks
- RO-4350 board material
- Fits MicroAmp MH-series housings

Description

The MicroAmp MB-14 circuit board is used for a straight-through connection with the MicroAmp MH series of connectorized housings. It can be used as an extension when designing multiple board circuits with the MH-2 housing, thereby allowing a single board to be tested before adding a second one in cascade. The MB-14 can also be used to create custom passive networks by cutting the center trace and soldering components in series or shunt. Boards are fabricated from a high-performance 13 mil thick RO-4350 laminate with RoHS compatible ENIG plating (electroless nickel/immersion gold) on both the component side and the solid bottom ground plane. The board measures 0.490" x 0.590" and mounts into the housing with four or eight #1-72 screws for optimal high frequency grounding. Pads for the input/output RF connectors allow the SMA center pins to be easily soldered to the board after it is installed into the housing.



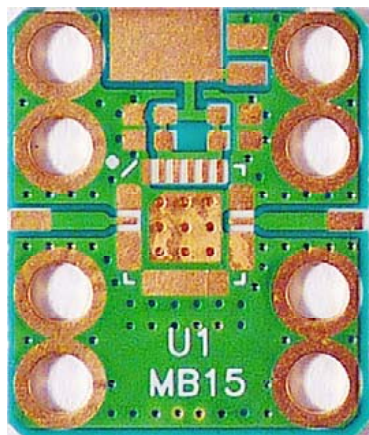
Through-Line Schematic



Assembly

<u>Ref</u>	<u>Size</u>	<u>Function</u>
J1	N/A	RF port
J2	N/A	RF port

MicroAmp MB-15 Circuit Board For Hittite Multipliers in LP4E Packages

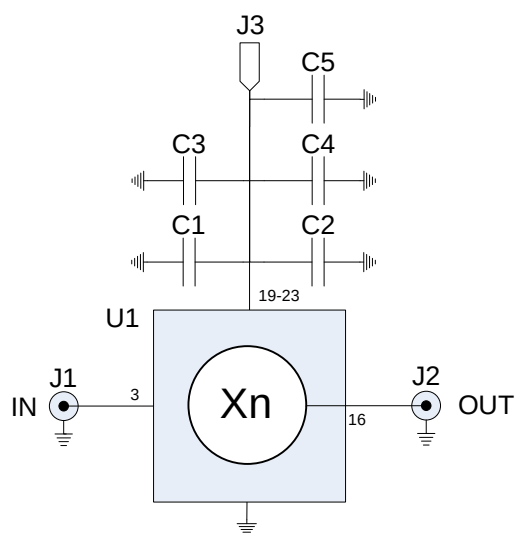


Key Features

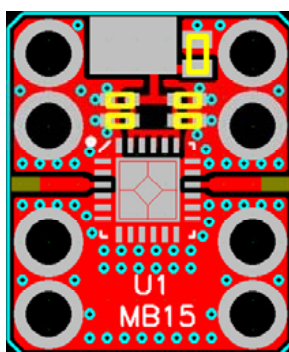
- Fits Hittite Microwave frequency multipliers with LP4E packages
- Usable with HMC368, 370, 443-445, 575, 695 multipliers
- Output frequencies in X and Ku band
- Uses standard SMD passive parts
- RO-4350 board material
- Fits MicroAmp MH-series housings

Description

The MicroAmp MB-15 circuit board is designed for rapid prototyping of active frequency multipliers using Hittite Microwave devices in LP4E packages with RF inputs on pin 3, RF outputs on pin 16, and bias connections on pins 19-23. Multiplier MMICs are available in various multiplication factors with output frequencies throughout the X and Ku-band range. This board will fit the MicroAmp MH series of connectorized housings that allow it to be used as a stand-alone multiplier or cascaded with other MicroAmp boards for added versatility. Boards are fabricated from a high-performance 13 mil thick RO-4350 laminate with RoHS compatible ENIG plating (electroless nickel/immersion gold) on both the component side and the solid bottom ground plane. The board measures 0.490" x 0.590" and mounts into the housing with four or eight #1-72 screws for optimal high frequency grounding. Multiplier circuits can be easily assembled with standard surface-mount passive components. The MB-15 includes provisions for DC bias bypassing. Pads for the input/output RF connectors allow the SMA center pins to be easily soldered to the board after it is installed into the housing, as well as a large pad to connect the bias voltage to a feed-through. Check the specific data sheet for the multiplier being used. Many of the pins are unused and need not be soldered to the ground plane.



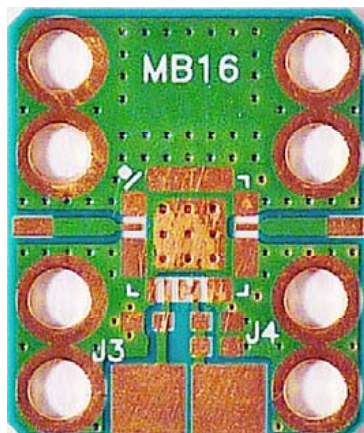
Multiplier Schematic



Assembly

Ref	Size	Function
C1	0402	Bias bypass (not labeled)
C2	0402	Bias bypass (not labeled)
C3	0402	Bias bypass (not labeled)
C4	0402	Bias bypass (not labeled)
C4	0603	Bias bypass (not labeled)
U1	LP4E	Multiplier
J1		RF input (pin 3)
J2		RF output (pin 16)
J3		+ Bias (pins 19-23)

MicroAmp MB-16 Circuit Board For Hittite Tunable Filters in LP4E Packages

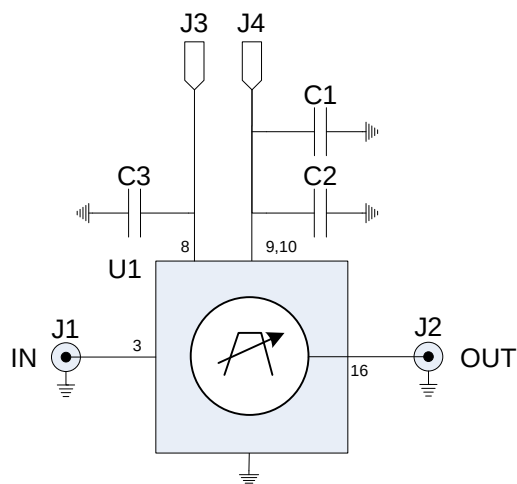


Key Features

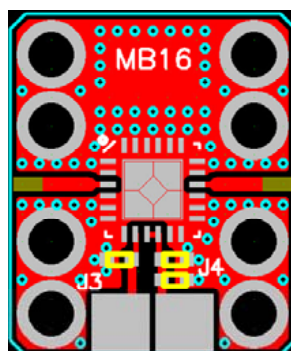
- Fits Hittite Microwave tunable filters with LP4E packages
- Usable with HMC895-898 tunable bandpass filters
- Uses standard SMD passive parts
- RO-4350 board material
- Fits MicroAmp MH-series housings

Description

The MicroAmp MB-16 circuit board is designed for rapid prototyping of tunable bandpass filters using Hittite Microwave devices in LP4E packages with RF inputs on pin 3, RF outputs on pin 16, and control connections on pins 8-10. Filter MMICs are available at various frequencies throughout the 6.8 to 21 GHz range. This board will fit the MicroAmp MH series of connectorized housings that allow it to be used as a stand-alone multiplier or cascaded with other MicroAmp boards for added versatility. Boards are fabricated from a high-performance 13 mil thick RO-4350 laminate with RoHS compatible ENIG plating (electroless nickel/immersion gold) on both the component side and the solid bottom ground plane. The board measures 0.490" x 0.590" and mounts into the housing with four or eight #1-72 screws for optimal high frequency grounding. Filter circuits can be easily assembled with standard surface-mount passive components. The MB-16 includes provisions for control bias bypassing. Pads for the input/output RF connectors allow the SMA center pins to be easily soldered to the board after it is installed into the housing, as well as large pads to connect the control voltages to feed-throughs. Check the specific data sheet for the filter being used. Many of the pins are unused and need not be soldered to the ground plane.



Tunable Filter Schematic



Assembly

Ref	Size	Function
C1	0402	Bias bypass (not labeled)
C2	0402	Bias bypass (not labeled)
C3	0402	Bias bypass (not labeled)
U1	LP4E	Tunable Filter
J1		RF input (pin 3)
J2		RF output (pin 16)
J3		Control bias (pin 8)
J4		Control bias (pins 9,10)