

Your Trusted Partner

DC to mmWave



The Industry's Widest Selection in Stock for Same-Day Shipping

- 27 Product Lines
- 10,000+ Active Models
- Designed, Built & Tested in House
- 20,000 Customers Worldwide
- 50+ Years Strong

Components for the Entire Signal Chain

Every Block Covered from DC to mmWave



DC TO 50 GHz LTCC Passives World-Leading Design

LTCC devices are fabricated with capacitors, inductors and distributed structures embedded in multi-layered ceramic substrate and sintered into a single monolithic component. Our design team has the most advanced knowledge of LTCC technology in the industry building on 20+ years of R&D and multiple active patents.

- World's broadest portfolio
- 750+ in-stock models
- Custom designs
- Packages as small as 0202

Product lines:

Couplers, filters, power splitters, thru-lines, transformers/baluns



DC TO 65 GHz MMICS Designed & Packaged in House

MMICs are integrated circuits fabricated from semiconductor substrates, sold in surface-mount packages or as bare die for chip-and-wire assembly. Mini-Circuits MMICs utilize pHEMT, HBT and IPD fabrication processes on gallium arsenide (GaAs), designed and packaged in our own facilities.

- 700+ models in stock and growing
- Industry-leading quality
 - All models available in SMT and bare die format

Product lines:

Amplifiers, attenuators, bias tees, couplers, equalizers, reflectionless filters, mixers, multipliers, power splitters, switches, transformers/baluns

DC TO 20 GHz Core & Wire 50+ Years of Quality

Core and wire designs consist of twisted, wirecoupled structures wound around toroidal ferrite cores utilizing inductive coupling between conductors to achieve a desired function. Mini-Circuits performs all wire twisting, winding and welding in house with tight process control to ensure the highest quality and repeatability.

- Thousands of models
- Outstanding repeatability
- Footprints as small as 0.15 x 0.15"
- TopHat[®] feature for more accurate pick-and-place

Product lines:

Couplers, filters, power splitters, transformers/baluns

MMIC Products

New and Coming Soon

	Part No.	Freq. Range (GHz)	Description	Package Style
	AVA-183MP+	0.05 to 18	High Dynamic Range P1dB +24 dBm, NF 1.8 dB, Gain 16 dB, OIP3 +31 dBm	4x4 mm 20-Lead QFN
	AVA-5R183+	0.5 to 18	High Dynamic Range P1dB +17 dBm, NF 3.4 dB, Gain 14 dB, OIP3 +28 dBm	4x4 mm 20-Lead QFN
Amplifiers	PMA3-15453+	15 to 45	NF 3.2 dB, P1dB +17 dBm, OIP3 +25 dBm, Gain 16 dB, Single +5V Supply	3x3 mm 12-Lead QFN
	AVA-2183+	2 to 20	P1dB +19 dBm, OIP3 +25 dBm, Flat Gain 16 ± 1 dB	4x4 mm 20-Lead QFN
	AVA-0233LN+	2 to 30	Gain Control 30 dB, NF 2.4 dB, Flat Gain 16 \pm 1 dB	5x5 mm 32-Lead QFN
	PMA3-24323LN+	24 to 32	NF 3.1 dB, P1dB +17 dBm, OIP3 +25 dBm, Gain 16 dB, Single +5V Supply	3x3 mm 12-Lead QFN
Balun	MTX2-133+	1.5 to 13	1:2 Balun, IL (above 3dB theoretical) 2.3 dB, Amplitude Unbal- ance 0.2 dB, Phase Unbalance 1 Degree	3x4 mm 12-Lead QFN
Balun	MTX2-183+	2 to 18	1:2 Balun, IL (above 3 dB theoretical) 2.3 dB , Amplitude Unbalance 0.2 dB, Phase Unbalance 2 Degrees	3x4 mm 12-Lead QFN
Coupler	EDC14-553-D+	22 to 55	Coupling 14 \pm 1 dB, Low IL 0.8 dB, DC Passing	Bare Die
Mixer	SMIQ-6243H+	6 to 24	IQ Mixer, Conversion Loss 9 dB, L to R isolation 42 dB, Image Rejection 30 dB	4x4 mm 24-Lead QFN
Multiplier	CY3-453+	20 to 45	X3, Conversion Loss 20 dB, Harmonic Rejection > 30 dBc	4x4 mm 24-Lead QFN
Variable Gain Amplifier	PVGA-123+	0.4 to 12	Adjustable Gain Range 16 dB, OIP3 +30 dBm, Single +6V Supply	3x3 mm 12-Lead QFN
Multiplier	CY3-723-D+	40 to 72	X3, Conversion Loss 19 dB, Harmonic Rejection > 30 dBc	Bare Die
Power Amplifier	PMA5-83-2W+	DC to 8	P _{SAT} +33 dBm, OIP3 +44 dBm, Gain 11.5 ± 1 dB	5x5 mm 32-Lead QFN

BROWSE OUR FULL SELECTION



PROPRIETARY TECHNOLOGIES

LTCC Filter Innovations

The Industry's Widest Selection



Ultra-High Rejection

- Rejection floor down to 100+ dB
- Excellent selectivity
- Built-in shielding
- 1812 package style
- Patent pending



mmWave Passbands

- Passbands to 50+ GHz
- The industry's widest selection of LTCC filters optimized for 5G FR2 bands
- Growing selection of models for

• Placeholders for LTCC filters anywhere on your board layout

• Variety of footprint sizes: 0603, 0805, 1206 & 1812

Low insertion loss & excellent return loss

- Ku- and Ka-band Satcom downlink
- 1812 & 1008 package styles



Dual / Differential Filters DC to 1900 MHz

- Two filters in a single, tiny LTCC monolith
- Ideal for saving space in balanced or differential circuits
- 0805 & 1206 package styles



Splitters 600 to 6500 MHz

- 2-, 3- and 4-way designs
- Power handling up to 20W
- Variety of package styles
- as small as 0805



Baluns 0.2 to 18 GHz

Thru-Lines

DC to 30 GHz

Power handling up to 30W

• Impedance ratio from 1 to 4 • Excellent power handling, up to 3W Variety of package styles as small as 0402



Couplers 360 to 7200 MHz

• Coupling from 6 to 30 dB • Directional and bi-directional models • Variety of package styles as small as 0603

Integrated Balun-Bandpass Filters

 Combine balun transformer and bandpass filter in a single device

Saves space and simplifies board

1210, 1008 & 0805 package styles

layouts in ADCs, DACs and other circuits

LEARN MORE



30+ years Supporting Your Hi-Rel & Launch Prep Requirements

Mil-Spec Qualification

- Qualification for the toughest operating environments
- Broad selection off-the-shelf + custom designs
- MMICs in ceramic, plastic and bare die formats

Standard Capabilities:

Burn-in, thermal shock, vibration, destructive physical analysis*, mechanical shock, hermeticity and HAST

In addition to our technology-specific, standard capabilities, Mini-Circuits' applications support team can develop custom solutions for nearly any project.

*While Mini-Circuits performs most of its testing and upscreening in-house, we use specialist partners for a limited selection of tests.

Space Upscreening

- Mil-Spec or equivalent qualifications
- 30+ years of space-level screening
- In-stock and custom components
- EEE-INST-002 compliant workflows

Standard Capabilities:

Burn-in, thermal shock, vibration*, radiographic inspection*, destructive physical analysis (DPA)*, mechanical shock, hermeticity, outgassing requirements, residual gas analysis, and hydrogen poisoning susceptibility with accompanying acceptance test procedure (ATP)

LEARN MORE

RF / Microwave Test Solutions & Components

Get More Out of Your Test Setup

- Improve test efficiency and throughput without breaking the bank
- Expand and reconfigure as your needs change
- Wide variety of components in stock from DC to 100+ GHz
- The industry's fastest turnaround times

Rack Mount Systems & Benchtop Modules



Test Systems

Attenuation & Switching

Mesh Network

Simultaneously Interconnect

3 to n Devices or Test Modules

Test Systems

Panel Mounted

Adapters, Attenuators,

Structures

Splitters & More

Modular



Mechanical Switch Systems



Blocking, Non-Blocking

NxM Switch

Matrices

& Full Fanout



Solid State Switch Systems

Fast Switching, High Isolation



High Power Test Systems



Programmable Attenuators

9 kHz to 67 GHz, up to 120 dB



Instrumentation Amplifiers

Precision Amplifier Systems

Custom Test Systems

Our wealth and variety of components in stock allows us to take a building-block approach to developing custom equipment for your unique needs with exceptionally fast turnaround.

LEARN MORE

Test Instrumentation





Vector Network Analyzer

1 MHz to 30 GHz,

A High-Quality, Affordable 2-Port 6 GHz VNA

-70 to +23 dBm

Interconnect and Calibration





Cables Test Leads and System Cables

Coax and Waveguide

Wrenches

Adapters

N, SMA, 1.85 mm, 2.4 mm, 2.92 mm, 3.5 mm

Lab Components



Limiters

0.2 to 8200 MHz

Switches

DC to 67 GHz



Amplifiers Attenuators DC to 95 GHz DC to 65 GHz

Impedance

Matching Pads

Power Splitter

& Combiners

DC to 67 GHz

DC to 3000 MHz

Bias Tees Couplers 0.1 MHz to 54 GHz 0.005 MHz to 65 GHz





1 to 200 MHz

Modulators & 0.0005 MHz to 65 GHz Demodulators



Terminations DC to 65 GHz

Mixers



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Signal Distribution **Systems**

Multiple Channel Test Configuration







Signal Generators

Power Sensors

CW, RMS, Peak & Average up to 40 GHz



Frequency Counter / Power Sensor

Synchronized Frequency & Power Measurement from a Single Device





Gauges

Ensure Connector Integrity



VNA **Callibration Kits**

N-type, SMA-type



DC Blocks 0.1 MHz to 65 GHz



Multipliers 0.05 MHz to 20 GHz



Equalizers DC to 40 GHz



Phase Detectors 1 to 100 MHz



Filters DC to 86 GHz



Hybrids, 90° & 180° 0.01 to 4200 MHz



Phase Shifters 250 to 430 MHz



Power Detectors 10 MHz to 43 5 GHz

DC TO 95 GHz **High-Frequency Products** For mmWave Test Applications

E-Band Amplifiers

ZVA-50953G+



E-Band Medium Power Amplifier

- 50 to 95 GHz
- +21 dBm P_{OUT} at Saturation
- 28 dB gain
- ±2.0 dB gain flatness
- Single supply voltage, +10 to +15V

ZVA-71863HP+



E-Band Medium Power Amplifier

- 71 to 86 GHz
- +24 dBm P_{OUT} at Saturation
- 38 dB gain
- ±1.5 dB gain flatness • Single supply voltage, +10 to +15V

K – V-Band Amplifiers

ZVA-35703+



Medium Power Amplifier

- 35 to 71 GHz
- +21 dBm P_{SAT}
- 17.5 dB gain
- ±1.5 dB gain flatness
- Single supply voltage, +10 to +15V



ZVA-543HP+

- 18 to 54 GHz

- +10 to +15V



ZVA-71863LNX+

E-Band Low Noise Amplifier

• +13.8 dBm P1dB, +18 dBm P_{CAT}

• 71 to 86 GHz

• 37 dB gain

• 4.5 dB noise figure

• Single-supply voltage,

ZVA-0.5W303G+

+10 to +15V

Medium Power Amplifier

- 10 MHz to 30 GHz
- 0.5W P_{OUT} at Saturation
- ±1.5 dB gain flatness
- 4.2 dB noise figure
- Single +12V bias voltage



DIGITAL STEP **ATTENUATORS**



POWER DETECTORS



I/O MIXERS



SWITCHES



LEARN MORE

MIXERS





& MORE



2.4 TO 2.5 GHz | 300W to 1kW ISM RF & MW **Energy Solutions**

Solid-State Power Amplifier & Signal Controller

User-Friendly Building Blocks

Mini-Circuits offers the flexibility to build the solution that fits your application requirements in the way that makes the most sense for you.

Signal Generator/Controller ISC-2425-25+



- Output power from -30 to +25 dBm in 0.1 dB steps
- Frequency selection with 1 kHz steps from 2400 to 2500 MHz
- Closed loop and feed forward RF power control modes
- Standalone or multi-channel operation (in either coherent or incoherent modes)
- User-friendly GUI and full API included

Example Configurations:



Fully Integrated 1kW Rack Mount Solution **Coming Soon!**

xΝ

MULTIPLIERS

Medium Power Amplifier

- +29 dBm P_{SAT}
- High gain, 31 dB
- ±2.0 dB gain flatness
- Single supply voltage,

LEARN MORE



300W SSPA ZHL-2425-250X+



- 300W saturated output power typ.
- Supports CW & pulsed signals
- 42 dB gain
- 60% efficiency
- Built-in monitoring and protection for temperature, current forward and reflected power
- User friendly I²C control interface

ISC Master	SSPA	250W	
ISC Slave 1	SSPA -	250W	
ISC Slave 2	SSPA -	250W	 2.4
ISC Slave 3	SSPA -	250W	

45 GHz, 4x250W



ISM RF & MW ENERGY

27 MHz SSPA

Driver & Amplifier Pair from 1.7 to 6 kW

1.7kW Power Amplifier RFE-24M30M1K7X+



- 1.7kW output power
- CW & pulsed signals
- 26 dB gain
- 80% efficiency
- Built-in temperature & current monitoring
- Built-in emergency switch off
- Water cooled

4-Channel Driver RFE-24M30M075X+



- One input, four 19W outputs
- CW & pulsed signals
- 16 dB gain at P3dB
- 55% efficiency
- Integrated harmonic suppression
- Built-in temperature & current monitoring
- Built-in emergency switch off

LEARN MORE



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