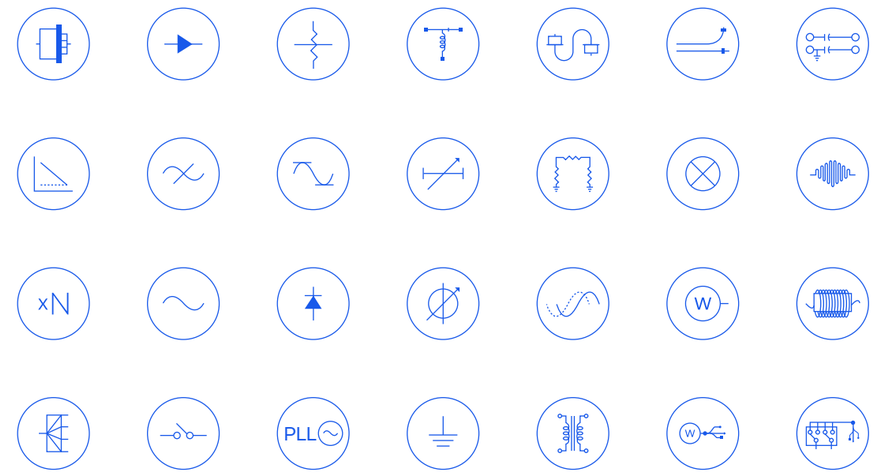
Q4 2020

New Product Update

Mini-Circuits



DC TO MMWAVE

Preferred by 20,000+ More than Just a Supplier

Selection and Solutions

- 27 product lines from one source
- 7500+ models in stock and growing
- Coverage from VHF to mmWave
- Custom components, integrated systems and test solutions with fast turnaround

Peace of Mind

- Award-winning quality excellence
- Easy trouble-shooting and RMA process
- Supply chain security through the life of your system—no EOL target

Service Beyond Normal

- Global presence, local service
- Accessible engineering and support
- Same-day shipping and on-time delivery
- Short lead times and low minimums

Constant Innovation

- Relentless investment in new products and design capabilities
- 300+ catalog introductions per year
- Patented technologies

Table of Contents

New and Improved Mini-Circuits Microwave Calculator App

The latest version of Mini-Circuits' Microwave Calculator app now includes 31 RF/microwave calculations commonly used by engineers in the lab and in the field. New functions include frequency to wavelength conversion, voltage divider circuit analysis, Ohm's Law circuit analysis and more! The app also features a fully redesigned user interface for improved navigability and user experience.

Mini-Circuits is pleased to offer Microwave Calculator app for FREE as part of our commitment to supporting customers and friends in the industry with the best available engineering tools and resources.

LEARN MORE

Adapters

What's New?

- New 2.92 mm, 2.4 mm and 1.85 mm models up to 50 GHz
- New right-angle adapters up to 40 GHz
- New panel mount adapters

50Ω DC TO 50000 MHZ

Coaxial 2.92 mm, 2.4 mm & 1.85 mm Adapters

Key Features:

- Low insertion loss
- Excellent VSWR
- Flat response
- Broad selection of connector types and gender combination

Model Number	Conn. 1	Conn. 2	Frequency Range (MHz)	VSWR
New SMPM-24M+	SMP-M	2.4 mm-M	DC-40000	1.1
185M-24M+	1.85 mm-M	2.4 mm-M	DC-50000	1.04
185M-24F+	1.85 mm-M	2.4 mm-F	DC-50000	1.06
185F-24M+	1.85 mm-F	2.4 mm-M	DC-50000	1.08
185F-24F+	1.85 mm-F	2.4 mm-F	DC-50000	1.08
24M-24M+	2.4 mm-M	2.4 mm-M	DC-50000	1.04
24F-24M+	2.4 mm-F	2.4 mm-M	DC-50000	1.06
24F-24F+	2.4 mm-F	2.4 mm-F	DC-50000	1.03
KMNMD-24MNMD+	2.92 mm NMD-M	2.4 mm NMD-M	DC-40000	1.06
KM-KM50+	2.92 mm-M	2.92 mm-M	DC-40000	1.02
KM-24MNMD+	2.92 mm-M	2.4 mm NMD-M	DC-40000	1.04
KM-24M+	2.92 mm-M	2.4 mm-M	DC-40000	1.1

Model Number	Conn. 1	Conn. 2	Frequency Range (MHz)	VSWR
KM-24F+	2.92 mm-M	2.4 mm-F	DC-40000	1.1
KFPM-KF50+	2.92 mm-F	2.92 mm-F	DC-40000	1.08
KFNMD-KMNMD+	2.92 mm NMD-F	2.92 mm-M	DC-40000	1.05
KFNMD-KM+	2.92 mm NMD-F	2.92 mm-M	DC-40000	1.06
KFNMD-24MNMD+	2.92 mm NMD-F	2.4 mm NMD-M	DC-40000	1.08
KFFL-KF50+	2.92 mm-F	2.92 mm-F	DC-40000	1.05
KF-KM50+	2.92 mm-F	2.92 mm-M	DC-40000	1.04
KF-KF50+	2.92 mm-F	2.92 mm-F	DC-40000	1.03
KF-24MNMD+	2.92 mm-F	2.4 mm NMD-M	DC-40000	1.06
KF-24M+	2.92 mm-F	2.4 mm-M	DC-40000	1.1
KF-24F+	2.92 mm-F	2.4 mm-F	DC-40000	1.1
185M-KM+	1.85 mm-M	2.92 mm-M	DC-40000	1.03
185M-KF+	1.85 mm-M	2.92 mm-F	DC-40000	1.04
185F-KM+	1.85 mm-F	2.92 mm-M	DC-40000	1.04
185F-KF+	1.85 mm-F	2.92 mm-F	DC-40000	1.05

50Ω DC TO 50000 MHZ

Panel Mount Adapters

Key Features:

- Ideal for connections directly through equipment panels
- Avoids extra brackets or adapters, improving reliability and reducing component count

Model Number	Conn. 1	Conn. 2	Frequency Range (MHz)	VSWR
New 24FPM-24F+	2.4 mm-F	2.4 mm-F	DC-50000	1.04
New 4B-KB+	2.92 mm-F	2.92 mm-F	DC-40000	1.05
New KB-KB50+	2.92 mm-F	2.92 mm-F	DC-40000	1.03
New NFFL-NF50+	N-F	N-F	DC-9000	1.07

50Ω DC TO 40000 MHZ

Right-Angle Adapters

Key Features:

- Ideal for making connections between components with perpendicular ports
- Avoids sharp cable bends, improving system performance and preventing strain at cable-connector interface

Model Number	Conn. 1	Conn. 2	Frequency Range (MHz)	VSWR
New KFR-KM50+	2.92 mm-F	2.92 mm-M Right-Angle	DC-40000	1.07
New KMR-KM50+	2.92 mm-M	2.92 mm-M Right-Angle	DC-40000	1.06
KMR-24F+	2.4 mm-F	2.92 mm-M Right-Angle	DC-40000	1.09
SMPMR-SM50+	SMP-M	SMA-M Right-Angle	DC-26500	1.1
SFR-SM50+	SMA-F	SMA-M Right-Angle	DC-18000	1.09
SFR-KF50+	SMA-F	2.92 mm-F Right-Angle	DC-18000	1.11
NF-NMR50-18+	N-F	N-M Right-Angle	DC-18000	1.06

Expanding Amplifier Design Capabilities

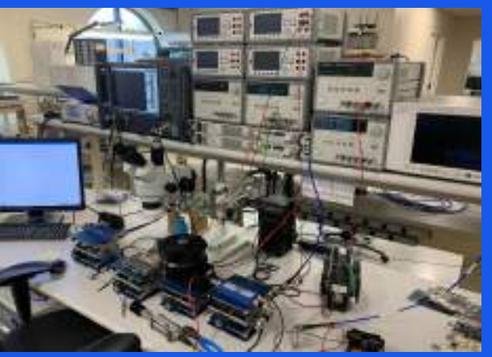
High-Power

Mini-Circuits' new facility in Lincoln, R.I. is home to our dedicated design team for solid-state power amplifiers. The team is focused on expanding Mini-Circuits power amplifier product line up to 1 kW and beyond for test and measurement up to 8 GHz and industrial RF energy applications in the ISM bands.

High Frequency

We've expanded our facility in Deer Park, Long Island with a state-of-the-art design and manufacturing operation that will be the center of growth of our connectorized amplifier product line into the mmWave bands to 100 GHz and beyond.

LINCOLN, RI

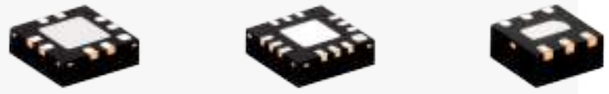


DEER PARK, NY

Amplifiers

What's New?

- Low noise MMIC transistors covering wide bandwidths from 10 MHz to 10 GHz
- New MMIC LNA with positive gain slope from 6 to 18 GHz
- MMIC transistors with noise figure as low as 0.5 dB
- SMA and 2.92mm connectorized wideband gain blocks up to 40 GHz



50Ω 50 TO 18000 MHZ

Low Noise MMIC Amplifiers

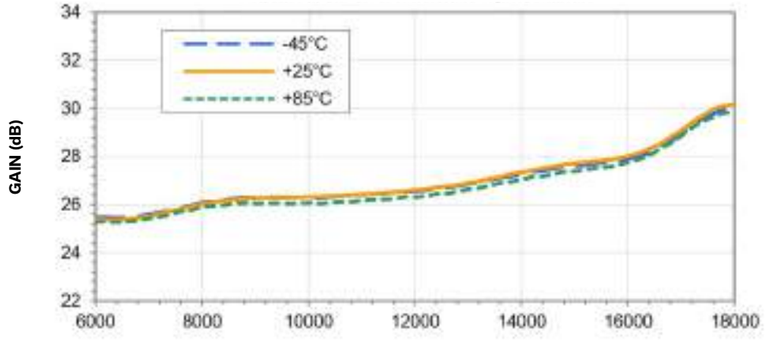
Key Features:

- Noise figure as low as 0.38
- Flat gain over wide bandwidths
- Good linearity, IP3 up to 40 dBm
- New wideband design PMA-183PLN+ with positive gain slope

Model Number	Frequency Range (MHz)	Gain (dB) Typ.	NF (dB) Typ.	Power Out (dBm) @ 1dB Comp. Typ.	Out. IP3 (dBm) Typ.	Input VSWR (:1) Typ.	Output VSWR (:1) Typ.	Voltage (V)	DC Current (mA)
New PMA-183PLN+	6000-18000	27.3	1.1	9.1	21.7	1.5	1.5	2.6	53

PMA-183PLN+

GAIN vs. FREQUENCY & TEMPERATURE
INPUT POWER = -25.00dBm, Vd = 2.6V



Model Number	Frequency Range (MHz)	Gain (dB) Typ.	NF (dB) Typ.	Power Out (dBm) @ 1dB Comp. Typ.	Out. IP3 (dBm) Typ.	Input VSWR (:1) Typ.	Output VSWR (:1) Typ.	Voltage (V)	DC Current (mA)
PMA2-183LN+	4000-18000	10.4	2.5	14.2	25.6	1.79	1.43	5	48.2
PMA2-153LN+	500-15000	16.8	2.6	14.8	26.8	1.97	1.15	2.6	50/66
PMA2-133LN+	10000-13000	15.3	1.3	13.5	28.6	1.24	1.08	3.0/5.0	13/29
PMA2-123LN+	500-12000	16.8	2.6	14.9	27	1.96	1.17	5.0/6.0	51/68
PMA2-123LN5+	500-12000	15.1	1.2	12.2	23.4	1.9	1.3	5	30
PMA3-83LN+	500-8000	22.1	1.3	20.7	35.2	1.38	1.58	5.0/6.0	60/77
PMA3-83LNW+	400-8000	22.6	1.2	21.7	37.0	1.32	1.5	5.0/6.0	58/75
PMA-545+	50-6000	14.2	0.8	20.3	36.4	2.3	1.3	3	80
PMA-5451+	50-6000	13.7	0.8	16.8	30.8	2.6	1.3	3	30
PMA-5452+	50-6000	14	0.7	18.3	34.1	2.6	1.3	3	40
PMA-5453+	50-6000	14.3	0.7	19.64	36.8	2.6	1.3	3	60
PMA-5454+	50-6000	13.5	0.9	14.6	28.1	2.9	1.3	5	20
PMA-5455+	50-6000	14	0.8	19.1	32.7	2.6	1.3	5	40
PMA-5456+	50-6000	14.4	0.8	21.5	36	2.6	1.3	5	60
PMA3-63GLN+	1800-6000	27.9	0.7	14.1	26.6	1.78	1.92	5.0	69
PMA2-43LN+	1100-4000	19.9	0.46	19.9	32.9	1.35	1.64	5	51
PMA3-352GLN+	2500-3500	28.5	0.7	14.8	27.8	1.78	1.92	5.0	69
PMA2-33LN+	400-3000	19.1	0.38	17.2	34.5	1.9	1.2	3	56
PMA4-33GLN+	700-3000	38.9	0.47	22.6	40.4	1.6	1.9	5	152
PMA2-252LN+	1500-2500	17.6	0.8	17.8	30	1.3	1.3	4	57
PMA-545G1+	400-2200	31.3	1	22.2	33.6	1.6	1.4	5	158
PMA-545G2+	1100-1600	30.4	1	22	33.6	1.6	1.4	5	158
PMA2-162LN+	700-1600	22.7	0.5	20	30	1.3	1.3	4	55
PMA-545G3+	700-1000	31.3	0.9	21.9	33.4	1.6	1.4	5	158

50Ω 10 TO 10000 MHZ

Low Noise MMIC Transistors

Key Features:

- Noise figure as low as 0.5 dB
- Wide bandwidths
- Good linearity, IP3 up to 42.9 dBm
- Package options for a variety of footprint requirements

Model Number	Frequency Range (MHz)	Gain (dB)	NF (dB)	P1dB (dBm)	Out.IP3 (dBm)	Voltage (V)	DC Current (mA)
TAV2-14LN+	50-10000	16.4	0.7	18.8	30.9	2/4	2/4
SAV-541+	45-6000	23.2	0.5	19.2	33.1	3	60
SAV-551+	45-6000	20.9	0.5	17.5	24.3	3	15
SAV-581+	45-6000	22.3	0.5	19	30.6	3	30
TAV-541+	45-6000	23.8	0.5	19.1	33.6	3	60
TAV-551+	45-6000	21.3	0.5	17.5	23.5	3	15
TAV-581+	45-6000	22.9	0.5	18.3	30.3	3	30
TAV1-541+	45-6000	23.2	0.5	19.2	33.1	3	60
SAV-331+	10-4000	24.1	0.5	19.6	32.3	4	60
TAV1-331+	10-4000	24.1	0.6	20.1	31.8	4	60
New TAV2-501+	400-3900	15.1	1.3	27.7	42.9	4.5	280

50Ω 700 TO 40000 MHZ

Connectorized Wideband Gain Blocks

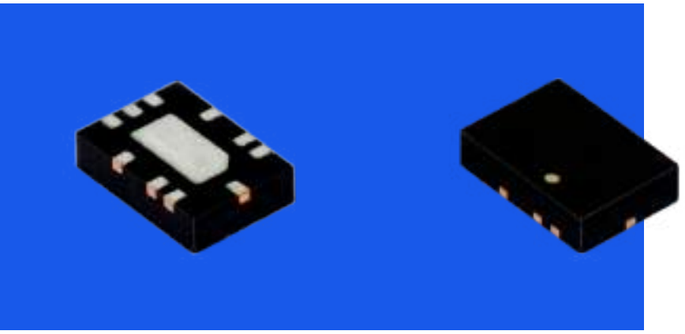
Key Features:

- Multi-octave bandwidths
- Flat gain
- POUT up to 6W
- High dynamic range, IP3 up to 44 dBm

Model Number	Frequency Range (MHz)	Gain (dB)	NF (dB)	P1dB (dBm)	Out.IP3 (dBm)	Input VSWR (:1)	Output VSWR (:1)	Voltage (V)	DC Current (mA)	Connector Type
ZVE-403-K+	26000-40000	22	9	19	21	2	2	12	300	2.92mm
ZVE-323LN-K+	18000-32000	20	3	10	23	1.9	1.8	12	50	2.92mm
ZVE-323LN-K+	18000-32000	20	3	10	23	1.9	1.8	12	50	2.92mm
ZVE-3W-183+	5900-18000	35	5.5	34	44	1.5	1.2	15	2200	SMA
New ZVE-143-S+	8000-14000	19	4.5	28	35	1.5	1.5	12	450	SMA
New ZVE-143X-S+	8000-14000	19	4.5	28	35	1.5	1.5	12	450	SMA
ZVE-3W-83+	2000-8000	35	5.8	33	42	1.5	1.4	15	1500	SMA
ZVE-3W-83X+	2000-8000	35	5.8	33	42	1.5	1.4	15	1500	SMA
New ZVE-6W-83+	2000-8000	33	10	37	40	1.9	1.4	15	5000	SMA
New ZVE-6W-83X+	2000-8000	33	10	37	40	1.9	1.4	15	5000	SMA
ZVE-8G+	2000-8000	30	4	30	40	2	2	12	1200	SMA
ZVE-8GX+	2000-8000	30	4	30	40	2	2	12	1200	SMA
ZVE-2W-272+	700-2700	33	9.5	32	39.5	1.9	1.5	15	800	SMA
ZVE-2W-272X+	700-2700	33	9.5	32	39.5	1.9	1.5	15	800	SMA

Pushing the Envelope in MMIC Packaging

Affordable surface-mount packaging techniques for mmWave applications continue to be a technical barrier for designers buildinghigh-frequency systems. Mini-Circuits has developed innovative design and manufacturing techniques to extend the performance of industry-standard QFN packaging up to 50 GHz.



Attenuators

What's New?

- New ultra-wideband MMIC fixed attenuators covering DC to 50 GHz in surface mount package
- New connectorized, high-power precision fixed attenuators up to 100W

50Ω DC TO 4000 MHZ

High-Power Connectorized Precision Fixed Attenuators

Key Features:

- Wideband
- Excellent attenuation flatness vs. frequency
- Excellent VSWR

Model Number	Frequency Range (MHz)	Attenuation (dB)	Flatness (dB)	VSWR (:1)	Input Power (W), Max	Connector Type
BW-N40W50+	DC-18000	40	-	1.4	50	N
BW-N30W50+	DC-18000	30	-	1.4	50	N
BW-N20W50+	DC-18000	20	-	1.4	50	N
BW-N10W50+	DC-18000	10	-	1.4	50	N
BW-40N100W+	DC-4000	40	1.4	1.4	100	N
BW-30N100W+	DC-6000	30	1.5	1.45	100	N
BW-20N100W+	DC-6000	20	1.5	1.45	100	N
New BW-40TMNF100W+	DC-4000	40	-	1.3	100	TNC/N

50Ω DC TO 50000 MHZ

50 GHz MMIC Fixed Attenuators

Key Features:

- Precise performance up to 50 GHz in cost-effective QFN package
- Good power handling from 0.8W to 2W
- Small size, 2 x 2 mm

Model Number	Frequency Range (MHz)	Attenuation (dB)	VSWR (:1)	Input Power (W), Max
New QAT-0+	DC-50000	0	1.30	2
New QAT-1+	DC-50000	1	1.16	2
New QAT-2+	DC-50000	2	1.17	2
New QAT-3+	DC-50000	3	1.21	2
New QAT-4+	DC-50000	4	1.16	1.7
New QAT-5+	DC-50000	5	1.13	1.4
New QAT-6+	DC-50000	6	1.14	1.6
New QAT-7+	DC-50000	7	1.15	1.3
New QAT-8+	DC-50000	8	1.16	1.2
New QAT-9+	DC-50000	9	1.19	1.1
New QAT-10+	DC-50000	10	1.20	1.7
New QAT-12+	DC-50000	12	1.19	1.1
New QAT-15+	DC-50000	15	1.20	1.4
New QAT-20+	DC-50000	20	1.16	0.8
New QAT-30+	DC-50000	30	1.21	1

MMIC Fixed Attenuator Designer's Kit

New K1-QAT+

Key Features:

- 15 models, 5 of each, 75 pieces total
- Attenuation values from 0 to 30 dB
- $524.95 ea.

Bias Tees

What's New?

- Wideband MMIC bias tee covers 1.5 to 28 GHz with excellent DC current and RF power handling

0Ω 1500 TO 28000 MHZ

Wideband MMIC Bias Tee

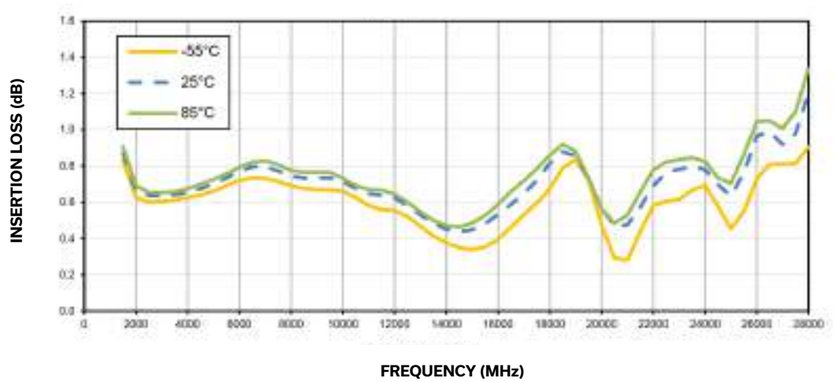
Key Features:

- Ultra-wideband
- 500 mA DC current handling
- +30 dBm RF power handling

Model Number	Frequency Range (MHz)	Insertion Loss (dB)	Input Current (mA) Max	DC Port Isolation (dB)	VSWR (:1)
New MBT-283+	1.5-28000	0.7	500	47	1.22

MBT-283+

INSERTION LOSS (RF - RF&DC)



50Ω 0.1 TO 12000 MHZ

More Surface Mount Bias Tees

Key Features:

- Wideband
- High DC current and RF power handling
- Low insertion loss
- Good isolation
- Footprint as small as 0.15" x 0.15"

Model Number	Frequency Range (MHz)	Insertion Loss (dB)	Input Current (mA) Max	DC Port Isolation (dB)	VSWR (:1)
TCBT-123+	10-12000	0.3	200	33	1.2
TCBT-14+	10-10000	0.35	200	33	1.2
TCBT-14R+	10-10000	0.6	200	33	1.2
TCBT-6G+	50-6000	0.7	200	28	1.1
JEBT-4R2G+	0.1-4200	0.6	500	40	1.1
JEBT-4R2GW	0.1-4200	0.6	500	40	1.1
JEBT-4R2GW+	0.1-4200	0.6	500	40	1.1
TCBT-2R5G+	20-2500	0.35	200	44	1.05
RCBT-63+	1.0-500	1	500	20	1.25

50Ω 0.1 TO 12000 MHZ

Coaxial Bias Tees

Key Features:

- High DC current and RF power handling
- Wide frequency ranges
- Low insertion loss

Model Number	Frequency Range (MHz)	Input Current (mA) Max	Insertion Loss (dB)	DC Port Isolation (dB)	VSWR (:1)
ZX85-12G-S+	0.2-12000	400	0.6	-	1.2
ZFBT-6G+	10-6000	500	0.6	40	1.13
ZFBT-6G-FT+	10-6000	500	0.6	-	1.13
ZFBT-6GW+	0.1-6000	500	0.6	40	1.13
ZFBT-6GW-FT+	0.1-6000	500	0.6	-	1.13
ZNBT-60-1W+	2.5-6000	500	0.6	45	1.1
ZX85-40W-63-S+	1000-6000	1000	0.5	-	1.4
ZFBT-4R2G+	10-4200	500	0.6	40	1.13
ZFBT-4R2G-FT+	10-4200	500	0.6	-	1.13
ZFBT-4R2GW+	0.1-4200	500	0.6	40	1.13
ZFBT-4R2GW-FT+	0.1-4200	500	0.6	-	1.13
ZFBT-352-FT+	300-3500	4000	0.5	23	1.1
ZFBT-33-75-FT+	10-3000	200	0.15	-	1.13
ZFBT-33W-75-FT+	1-3000	200	0.5	-	1.18
ZFBT-282-1.5A+	10-2800	1500	0.6	45	1.1
Z3BT-2R15G+	10-2150	2000	1.4	47	1.6
ZABT-80W-13-S+	20-1000	5000	0.6	50	1.2

50Ω 0.1 TO 12000 MHZ

Mux Tees

(Bias Tee + Diplexers)

Key Features:

- Combination bias tees + diplexers for L-Band communications
- Filtered 10 MHz port allows easy coupling of 10 MHz reference injection
- Allows DC pass through / DC feed, eliminating additional cable runs
- Bi-directional operation

Model Number	Common Port (MHz)	Output Port Freq. (MHz)	IL/ISO (dB) COM-LP	IL/ISO (dB) COM-HP	IL/ISO (dB) LO-HP	VSWR (:1) COM	VSWR (:1) LP	VSWR (:1) HP	DC Current (mA)
Z4BT-2R15G+	10, 950-2150	10	0.5	65	50	-	1.4	-	2000
		950-2150	90	0.4	50	-	-	1.2	2000
ZABT-2R15G+	10, 950-2150	10	0.5	65	40	-	1.4	-	3000
		950-2150	90	0.4	50	-	-	1.2	3000

Mouser Distribution Expands to 206 Countries

Mini-Circuits has announced an expansion of its distribution partnership with Mouser Electronics, Inc., making Mouser an authorized distributor of Mini-Circuits' product line in 206 countries. The two companies first announced their partnership in March with initial distribution in the U.S. and India. The expanded agreement will give more international customers the option to order Mini-Circuits components through Mouser or directly through Mini-Circuits. Mouser currently stocks over 1,300+ Mini-Circuits part numbers with more models planned for release.

LEARN MORE

Cables

What's New?

- Flexible interconnect cables to 50 GHz with wide selection of connector configurations
- Designer's kits for HandFlex® hand-formable interconnect cables
- Economy precision test cables up to 67 GHz

50Ω DC TO 50000 MHZ

Flexible Interconnect Cables

Key Features:

- 0.047" and 0.086" center diameters
- Tight bend radius
- Excellent return loss and insertion loss
- Broad selection of connector types

Model Number	Conn. 1	Conn. 2	Length (FT)	Diameter (In.)	Frequency Range (MHz)	Insertion Loss
New FL47-12VM+	2.4mm-Male	2.4mm-Male	1	0.047	DC-50000	3.2
New FL86-12VM+	2.4mm-Male	2.4mm-Male	1	0.086	DC-50000	1.96
New FL47-12KM+	2.92mm-Male	2.92mm-Male	1	0.047	DC-40000	2.7
New FL47-12KMVM+	2.92mm-Male	2.4mm-Male	1	0.047	DC-40000	2.8
New FL47-12SSMP+	SMPM-Female	SMPM-Female	1	0.047	DC-40000	2.7
New FL47-12SSMPKM+	SMPM-Female	2.92mm-Male	1	0.047	DC-40000	2.7
New FL47-12SSMPVM+	SMPM-Female	2.4mm-Male	1	0.047	DC-40000	2.8
New FL86-12KMVM+	2.92mm-Male	2.4mm-Male	1	0.086	DC-40000	1.6
New FL86-12SSMP+	SMPM-Female	SMPM-Female	1	0.086	DC-40000	1.86
New FL86-12SSMPKM+	SMPM-Female	2.92mm-Male	1	0.086	DC-40000	1.79
New FL86-12SSMPVM+	SMPM-Female	2.4mm-Male	1	0.086	DC-40000	1.81
New FL86-12SMPKM+	SMP-Female	2.92mm-Male	1	0.086	DC-33000	1.46
New FL86-12SMPVM+	SMP-Female	2.4mm-Male	1	0.086	DC-33000	1.45
New FL86-12SSMPSMP+	SMPM-Female	SMP-Female	1	0.086	DC-33000	1.45
New FL86-12SMP+	SMP-Female	SMP-Female	1	0.086	DC-26500	1.45

50Ω DC TO 67000 MHZ

Economy Precision Test Cables

Key Features:

- New 1.85mm models up to 67 GHz
- Affordable without compromising on performance
- Low insertion loss
- Good phase stability versus flexure

Model Number	Conn. 1	Conn. 2	Length (FT)	Frequency Range (MHz)	Insertion Loss
New E67-1M-EMEM+	1.85 mm-Male/Straight	1.85 mm-Male/Straight	3.28	67.0	5.5
New E67-2FT-EMEM+	1.85 mm-Male/Straight	1.85 mm-Male/Straight	2.0	67.0	2.7
New E67-3FT-EMEM+	1.85 mm-Male/Straight	1.85 mm-Male/Straight	3.0	67.0	4.2

50Ω DC TO 18000 MHZ

HandFlex® Cable Designer's Kits

Key Features:

- Handy combinations of cable lengths and connector configurations
- 0.047", 0.086" and 0.141" center diameter options
- Hand-formable construction
- Excellent return loss and insertion loss

New Kit # KHFC1-047+:

- 5 models | 5 of each model | 20 pieces total
- 0.047" center diameter | 0.5 FT length | SMP connectors with various orientation
- $495 ea.

Model Number	Conn. 1	Conn. 2	Length (FT)	Frequency Range (MHz)	Insertion Loss
047-6SMP+	SMP-Female/Straight	SMP-Female/Straight	0.5	DC-18000	0.72
047-6SMPR+	SMP-Female/Right Angle 0°	SMP-Female/Right Angle 0° Clocked	0.5	DC-18000	0.75
047-6SMPRC+	SMP-Female/Right Angle 180°	SMP-Female/Right Angle 0° Clocked	0.5	DC-18000	0.78
047-6SMPSM+	SMA-Male/Straight	SMP-Female/Straight	0.5	DC-18000	0.75

New Kit # KHFC2-086+:

- 10 models | 5 of each model | 50 pieces total
- 0.086" center diameter | models with various lengths | SMA-M straight connectors
- $495 ea.

Model Number	Conn. 1	Conn. 2	Length (FT)	Frequency Range (MHz)	Insertion Loss
086-10SM+	SMA-Male/Straight	SMA-Male/Straight	0.83	DC-18000	0.85
086-12SM+	SMA-Male/Straight	SMA-Male/Straight	1.0	DC-18000	1.01
086-2SM+	SMA-Male/Straight	SMA-Male/Straight	0.17	DC-18000	0.33
086-3SM+	SMA-Male/Straight	SMA-Male/Straight	0.25	DC-18000	0.31
086-4SM+	SMA-Male/Straight	SMA-Male/Straight	0.33	DC-18000	0.34
086-5SM+	SMA-Male/Straight	SMA-Male/Straight	0.42	DC-18000	0.41
086-6SM+	SMA-Male/Straight	SMA-Male/Straight	0.5	DC-18000	0.52
086-7SM+	SMA-Male/Straight	SMA-Male/Straight	0.58	DC-18000	0.6
086-8SM+	SMA-Male/Straight	SMA-Male/Straight	0.67	DC-18000	0.69
086-9SM+	SMA-Male/Straight	SMA-Male/Straight	0.75	DC-18000	0.79

New Kit # KHFC3-086+:

- 5 models | 5 of each model | 25 pieces total
- 0.086" center diameter | models with various lengths | SMA-M straight connectors
- $295 ea.

Model Number	Conn. 1	Conn. 2	Length (FT)	Frequency Range (MHz)	Insertion Loss
086-12SM+	SMA-Male/Straight	SMA-Male/Straight	1.0	DC-18000	1.01
086-18SM+	SMA-Male/Straight	SMA-Male/Straight	1.5	DC-18000	1.41
086-24SM+	SMA-Male/Straight	SMA-Male/Straight	2.0	DC-18000	2.02
086-3SM+	SMA-Male/Straight	SMA-Male/Straight	0.25	DC-18000	0.31
086-6SM+	SMA-Male/Straight	SMA-Male/Straight	0.5	DC-18000	0.52

HandFlex® Cable Designer Kits Continued

New Kit # KHFC4-086+:

- 5 models | 3 of each model | 15 pieces total
- 0.086" center diameter | 0.5 FT length | SMA connectors with various orientation
- $195 for 1 kit

Model Number	Conn. 1	Conn. 2	Length (FT)	Frequency Range (MHz)	Insertion Loss
086-6SB+	SMA-Female/bulkhead	SMA-Female/bulkhead	0.5	DC-18000	0.44
086-6SBSM+	SMA-Male/Straight	SMA-Female/Straight	0.5	DC-18000	0.47
086-6SM+	SMA-Male/Straight	SMA-Male/Straight	0.5	DC-18000	0.52
086-6SMR+	SMA-Male/Right Angle 0°	SMA-Male/Right Angle 0° Clocked	0.5	DC-18000	0.76
086-6SMRSM+	SMA-Male/Straight	SMA-Male/Right Angle 0° Clocked	0.5	DC-18000	0.57

New Kit # KHFC3-141+:

- 5 models | 5 of each model | 25 pieces total
- 0.141" center diameter | models with various lengths | SMA-M straight connectors
- $295 for 1 kit

Model Number	Conn. 1	Conn. 2	Length (FT)	Frequency Range (MHz)	Insertion Loss
141-12SM+	SMA-Male/Straight	SMA-Male/Straight	1.0	DC-18000	0.66
141-18SM+	SMA-Male/Straight	SMA-Male/Straight	1.5	DC-18000	0.89
141-24SM+	SMA-Male/Straight	SMA-Male/Straight	2.0	DC-18000	1.12
141-3SM+	SMA-Male/Straight	SMA-Male/Straight	0.25	DC-18000	0.21
141-6SM+	SMA-Male/Straight	SMA-Male/Straight	0.5	DC-18000	0.39

Couplers

What's New?

- Wideband connectorized directional couplers up to 65 GHz
- High-power directional couplers up to 250W

50Ω 1000 TO 65000 MHZ

Coaxial Wideband Directional Couplers

Key Features:

- Multi-octave bandwidths
- Flat coupling
- Power handling up to 20W
- Low mainline loss

Model Number	Frequency Range (MHz)	Coupling (dB)	Mainline Loss (dB)	Directivity (dB)	VSWR (:1)	Power Input Max. (W)
New ZCDC10-E2653+	2000-65000	10	1.45	22	1.11	11
New ZCDC10-E6653+	6000-65000	10	1.2	22	1.12	11
New ZCDC13-E1653+	1000-65000	13	1.55	21.5	1.12	11
New ZCDC20-E18653+	18000-65000	20	0.9	20	1.15	12

50Ω 130 TO 18000 MHZ

Coaxial High-Power Directional Couplers

Key Features:

- High power handling, up to 250W
- Wide bandwidths
- Low mainline loss

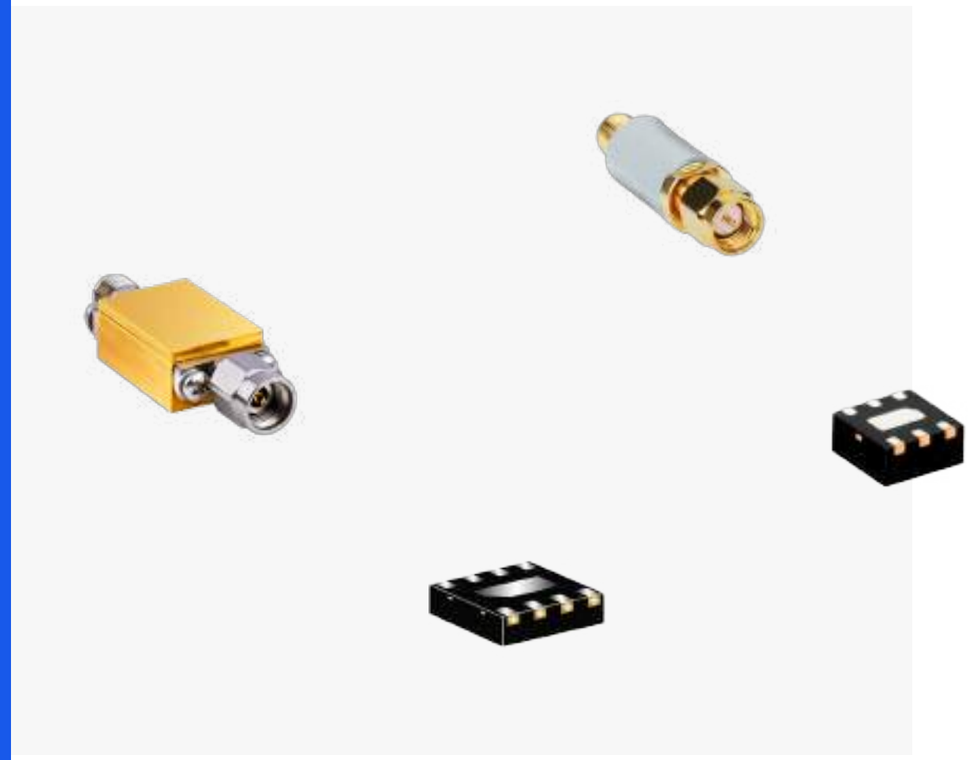
Model Number	Frequency Range (MHz)	Coupling (dB)	Mainline Loss (dB)	Directivity (dB)	VSWR (:1)	Power Input Max. (W)
ZUDC10-183+	500-18000	10	1.4	17	1.3	50
New ZUDC10-06183-S+	6000-18000	10	0.77	21	1.14	50
ZUDC20-183+	500-18000	20	0.9	17	1.3	50
New ZUDC20-06183-S+	6000-18000	20	0.37	21	1.11	50
ZUDC30-183+	500-18000	30	0.9	16	1.3	50
ZGDC35-93HP+	900-9000	35	0.1	19	1.25	250
ZGDC6-372HP+	380-3700	6	0.2	23	1.09	250
ZGDC10-372HP+	380-3700	10	0.17	23	1.09	250
ZGDC20-372HP+	300-3700	20	0.15	25	1.06	250
ZGDC30-372HP+	380-3700	30	0.16	17	1.07	250
New ZGDC6-521-N+	130-520	6	0.2	26	1.08	60

New Warehouse and Shipping Hub in Penang

Mini-Circuits is pleased to announce the opening of a new warehouse and shipping hub at its facility in Penang, Malaysia. This expansion will allow the company to offer many customers shorter lead times and lower freight costs by shipping orders directly from Penang.It will also add another layer of security to Mini-Circuits' global logistics network by sharing the commitment to prompt, reliable fulfillment with existing corporate shipping locations in the aaround the world.

LEARN MORE

Equalizers



What's New?

- Ultra-wideband fixed slope equalizers now available in 2.92mm connectorized, QFN surface mount and bare die formats
- Designer's kits offer economical small-quantity variety packs for evaluation, prototyping and lab use

50Ω DC TO 20000 MHZ

2.92 mm Connectorized Fixed Slope Equalizers

Key Features:

- Slope values from 1 to 10 dB
- Minimal slope deviation of ±0.4 dB
- Power handling, 2W
- Small form factor, 0.80" x 0.56"

Model Number	Frequency Range (MHz)	Slope (dB)	Insertion Loss @ Freq. High (dB)	VSWR (:1)	Max Input Power (dBm)
New ZEQ-1-24K+	DC-20000	1.4	1.9	1.3	30
New ZEQ-2-24K+	DC-20000	2.4	1.6	1.2	33
New ZEQ-4-24K+	DC-20000	4.2	1.7	1.3	33
New ZEQ-5-24K+	DC-20000	5.3	1.65	1.3	30
New ZEQ-7-24K+	DC-20000	7.4	1.75	1.4	33
New ZEQ-9-24K+	DC-20000	9.2	2.1	1.3	33
New ZEQ-11-24K+	DC-20000	10.8	2.6	1.4	30

50Ω DC TO 45000 MHZ

MMIC Equalizer Designer's Kits

Key Features:

- Coaxial, surface mount and bare die formats
- 6, 20 and 45 GHz models
- Slope values ranging from 1 to 11 dB
- Economical small quantity variety packs for evaluation, prototyping and lab use

New Kit # K1-EQY-24-DG+:

- 7 models | 5 of each model | 35 pieces total
- Bare die | slope values from 2 to 12 dB
- $815.95 ea.

Model Number	Frequency Range (MHz)	Slope (dB)	Insertion Loss @ Freq. High (dB)	VSWR (:1)	Max Input Power (dBm)
EQY-2-24-D+	DC-20000	2.1	0.9	1.26	31
EQY-3-24-D+	DC-20000	3	0.8	1.24	34
EQY-5-24-D+	DC-20000	4.9	0.8	1.34	34
EQY-6-24-D+	DC-20000	6.1	0.7	1.3	31
EQY-8-24-D+	DC-20000	8	1.1	1.31	34
EQY-10-24-D+	DC-20000	10	1.1	1.28	33
EQY-12-24-D+	DC-20000	11.9	1.5	1.17	30

MMIC Equalizer Designer's Kits Continued

New Kit # K1-EQY453+:

- 8 models | 5 of each model | 40 pieces total
- Surface mount | slope values from 3 to 10 dB
- $699.95 ea.

Model Number	Frequency Range (MHz)	Slope (dB)	Insertion Loss @ Freq. High (dB)	VSWR (:1)	Max Input Power (dBm)
EQY-3-453+	DC-45000	3.5	0.9	1.24	30
EQY-4-453+	DC-45000	4.1	1.1	1.24	29
EQY-5-453+	DC-45000	5.1	1.1	1.29	28
EQY-6-453+	DC-45000	6.1	1.1	1.29	28
EQY-7-453+	DC-45000	7	1.3	1.23	27
EQY-8-453+	DC-45000	7.9	1.2	1.17	27
EQY-9-453+	DC-45000	8.6	1.5	1.22	28
EQY-10-453+	DC-45000	9.6	1.8	1.27	28

New Kit # K1-EQY-63-DG+:

- 8 models | 5 of each model | 40 pieces total
- Bare die | slope values from 1 to 10 dB
- $415.95 ea.

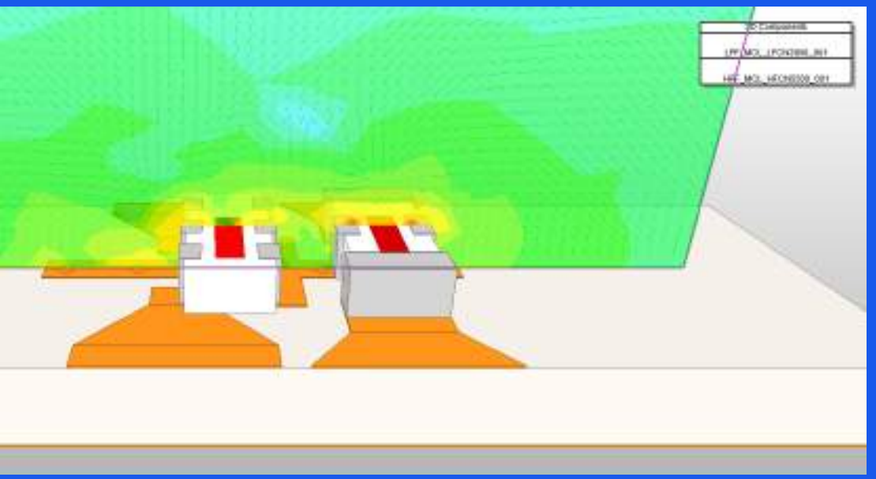
Model Number	Frequency Range (MHz)	Slope (dB)	Insertion Loss @ Freq. High (dB)	VSWR (:1)	Max Input Power (dBm)
EQY-1-63-D+	DC-6000	1.2	0.4	1.24	31
EQY-2-63-D+	DC-6000	2.1	0.4	1.29	31
EQY-3-63-D+	DC-6000	3.2	0.6	1.29	31
EQY-4-63-D+	DC-6000	4.2	0.6	1.25	31
EQY-5-63-D+	DC-6000	5	1	1.24	31
EQY-6-63-D+	DC-6000	6.5	0.5	1.2	32
EQY-8-63-D+	DC-6000	8.2	0.5	1.21	31
EQY-10-63-D+	DC-6000	10.2	1	1.12	31

New Kit # K1-ZEQ24+:

- 7 models | 1 of each model | 7 pieces total
- 2.92 mm connectorized | slope values from 1 to 11 dB
- $1400 ea.

Model Number	Frequency Range (MHz)	Slope (dB)	Insertion Loss @ Freq. High (dB)	VSWR (:1)	Max Input Power (dBm)
ZEQ-1-24K+	DC-20000	1.4	1.9	1.3	30
ZEQ-2-24K+	DC-20000	2.4	1.6	1.2	33
ZEQ-4-24K+	DC-20000	4.2	1.7	1.3	33
ZEQ-5-24K+	DC-20000	5.3	1.65	1.3	30
ZEQ-7-24K+	DC-20000	7.4	1.75	1.4	33
ZEQ-9-24K+	DC-20000	9.2	2.1	1.3	33
ZEQ-11-24K+	DC-20000	10.8	2.6	1.4	30

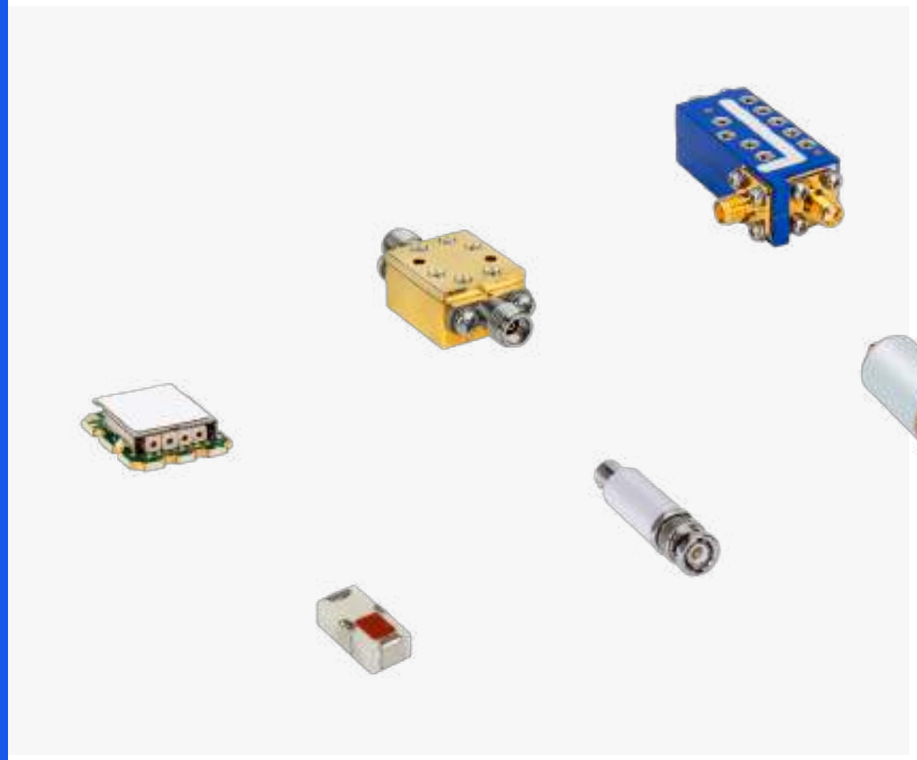
Free Full 3D Models for HFSS



Mini-Circuits has partnered with modelling and simulation leader, Modelithics to offer full 3D models for Ansys HFSS for over 40 of Mini-Circuits' most popular LTCC filters. The models are now available for free download from the Modelithics website as a resource to customers in the simulation stage for new system designs.

LEARN MORE

Filters & Diplexers



What's New?

- LTCC low pass filters with superior performance in 0805, 0603 and 0402 packages
- Expanded selection of coaxial lumped L-C low pass and high pass filters
- New suspended substrate high pass filters and diplexers with passbands up to 40 GHz
- New ceramic resonator band pass filters
- Reflectionless low pass and high pass filters up to 30 GHz in SMA and 2.92mm connectorized housings

50Ω DC TO 14000 MHZ

LTCC Low Pass Filters

Key Features:

- Superior performance in smaller packages
- New 0805 and 0603 models
- Low cost and outstanding repeatability for volume production

Model Number	Case Style	Passband (MHz)	fco (MHz)	Stopband F3 (MHz)	Rejection @ F3 (dB)	Stopband F4 (MHz)	54Rejection @ F4 (dB)
New LFCW-143+	0603	DC-14000	16000	19250-25000	31	25000-26500	30
New LFCW-103+	0603	DC-10000	11400	13700-18000	38	23000-26500	15
New LFCG-3400+	0805	DC-3400	3800	5000-8500	40	8500-15000	25
New LFCG-2000+	0805	DC-2000	2350	3300-7500	52	7500-13500	28
New LFCG-1525+	0805	DC-1525	1800	2125-7000	40	7000-12000	30
New LFCG-1325+	0805	DC-1325	1550	1900-2150	45	6500-11600	35
LFCW-123+	0603	DC-12000	15000	16300-22000	35	22000-26500	20
LFCW-133+	0603	DC-13250	13650	14910-15410	20	-	-
LFCW-1142+	0603	DC-11400	11700	12860-13860	20	-	-
LFCW-1062+	0603	DC-10600	10800	12160-12860	20	-	-
LFCW-8400+	0603	DC-8400	9800	12200-16000	45	16000-26500	15
LFCG-612+	0805	4900-6100	7500	8200	20	9800-12200	30
LFCW-6000+	0603	DC-6000	6800	8200-14000	42	14000-26500	15

Model Number	Case Style	Passband (MHz)	fco (MHz)	Stopband F3 (MHz)	Rejection @ F3 (dB)	Stopband F4 (MHz)	54Rejection @ F4 (dB)
LPGE-592R+	0805	DC-4900	5900	9800-11800	42	14700-17700	54
LFCW-5000+	0603	DC-5000	5750	7200-11000	40	11000-26500	15
LFCG-3800+	0805	DC-3900	5000	5800-8400	40	8400-18000	20
LFCG-3500+	0805	DC-3500	3970	4800-5000	35	8500-15000	25
LFCG-3000+	0805	DC-3000	3460	4550-7000	50	11000-15000	25
LFCG-2850+	0805	DC-2850	3250	3800-4400	20	4400-12000	30
LFCW-272+	0603	DC-2690	3200	4400	20	4800-5400	30
LFCG-2750+	0805	DC-2750	3150	4000-7200	50	7200-16000	25
LFCG-2600+	0805	DC-2600	3000	3850-7000	50	7000-15000	25
LFCG-2500+	0805	DC-2500	2870	3500-4000	33	7000-10000	30
LFCG-2250+	0805	DC-2250	2500	2800-3600	20	3600-8000	30
LPGE-252R+	0805	DC-2400	2500	4800-5000	40	7200-7500	37
LPNK-252R+	0402	DC-2400	2500	4800-5000	42	7200-7500	40
LFCG-1800+	0805	DC-1800	2030	2450-7000	40	7000-10000	35
LFCG-1700+	0805	DC-1700	2025	2400-2800	20	2800-8000	30
LFCG-1575+	0805	DC-1575	1850	2175-2400	20	2400-7000	40
LFCG-1400+	0805	DC-1400	1650	2015-6600	50	6600-10000	35
LFCG-1200+	0805	DC-1200	1470	1865-3700	50	3700-10000	30
LFCG-92+	0805	DC-990	1400	1700	20	1800-2700	30
LFCG-1000+	0805	DC-1000	1370	1550-1900	20	1900-6000	30
LFCG-900+	0805	DC-850	1000	1300-1600	48	4500-11000	20
LFCG-630+	0805	DC-630	780	1050-1500	48	1500-8500	15
LFCG-575+	0805	DC-575	725	1020-2500	30	2500-4400	25
LFCG-530+	0805	DC-530	670	980-2600	30	2600-4000	25
LFCG-490+	0805	DC-490	590	800-1500	48	1500-8500	15
LFCG-400+	0805	DC-400	520	800-2500	30	2500-4500	20
LFCG-42+	0805	DC-435	475	625	20	650-2700	30
LFCG-320+	0805	DC-320	440	660-2000	33	2000-6000	20

50Ω 9.5 TO 242 MHZ

Coaxial Lumped L-C Band Pass Filters

Key Features:

- High rejection
- Excellent selectivity
- Good passband VSWR
- More connector options available at Minicircuits.com

Model Number	Case Style	Passband (MHz)	Stopband F3 (MHz)	Rejection @ F3 (dB)	Stopband F4 (MHz)	Rejection @ F4 (dB)
New BBP-240+	Tubular BNC	238-242	DC-220	32	260-2000	30
New SBP-240+	Tubular SMA	238-242	DC-220	32	260-2000	30
New BBP-150+	Tubular BNC	140-160	DC-120	29	190-2000	30
New SBP-150+	Tubular SMA	140-160	DC-120	27	190-2000	32
New BBP-27R5+	Tubular BNC	24-31	DC-19	30	39-900	30
New SBP-27R5+	Tubular SMA	24-31	DC-19	30	39-900	30
BBP-140+	Tubular BNC	130-150	DC-110	30	185-2000	30
SBP-140+	Tubular SMA	130-150	DC-110	30	185-2000	30
BBP-100+	Tubular BNC	87-117	DC-66	29	143-1500	28
SBP-100+	Tubular SMA	87-117	DC-66	29	143-1500	28
BBP-101+	Tubular BNC	94-108	DC-80	29	130-2000	28
SBP-101+	Tubular SMA	94-108	DC-80	29	130-3300	28
BBP-70+	Tubular BNC	63-77	51	20	94	20
SBP-70+	Tubular SMA	63-77	51	20	94	20
BBP-60+	Tubular BNC	55-67	44	20	79	20
SBP-60+	Tubular SMA	55-67	44	20	79	20
BBP-35B+	Tubular BNC	24-46	DC-16	29	73-1000	27
SBP-35B+	Tubular SMA	24-46	DC-16	29	73-1000	27
BBP-35A+	Tubular BNC	30-40	DC-19	30	65-1350	30
SBP-35A+	Tubular SMA	30-40	DC-21	27	60-1350	30
BBP-29+	Tubular BNC	24-35	DC-18	27	46-1600	27
SBP-29+	Tubular SMA	24-35	DC-18	27	46-1600	27
BBP-30+	Tubular BNC	27-33	22	20	40	20
SBP-30+	Tubular SMA	27-33	22	20	40	20
BBP-21.4+	Tubular BNC	19.2-23.6	15.5	20	29	20
SBP-21.4+	Tubular SMA	19.2-23.6	15.5	20	29	20
BBP-20R5+	Tubular BNC	20-21	DC-15.8	40	40-380	40
SBP-20R5+	Tubular SMA	20-21	DC-17	30	27-380	25
BBP-10.7+	Tubular BNC	9.5-11.5	7.5	20	15	20
SBP-10.7+	Tubular SMA	9.5-11.5	7.5	20	15	20

50Ω 20 TO 2250 MHZ

Surface Mount Lumped L-C Band Pass Filters

Key Features:

- High rejection
- Excellent selectivity
- Good passband VSWR
- Small footprint, 0.74" x 0.44"

Model Number	Passband (MHz)	Stopband F3 (MHz)	Rejection @ F3 (dB)	Stopband F4 (MHz)	Rejection @ F4 (dB)
New SXBP-300+	290-310	DC-200	69	2000-3300	39
SXBP-2150+	2050-2250	DC-950	20	2675-5000	20
SXBP-1940+	1710-2170	DC-145	20	2900-4700	20
SXBP-1430+	950-2150	575	20	2850	20
SXBP-1430-75+	950-2150	540	20	2950	20
SXBP-1200+	800-1800	535	20	2220	20
SXBP-1500+	1350-1650	DC-75	20	2160-3700	20
SXBP-1100+	1000-1200	DC-20	20	1500-2200	20
SXBP-820+	769-872	550	20	920	20
SXBP-707+	650-770	450	20	830	20
SXBP-640+	600-680	500	20	750	20
SXBP-615+	565-670	380	20	720	20
SXBP-507+	460-560	300	20	615	20
SXBP-425+	410-440	385	20	470	20
SXBP-404+	398-410	DC-370	20	445-4500	20
SXBP-350+	330-375	280	20	435	20
SXBP-310+	300-320	DC-280	20	342-2250	20
SXBP-240+	238-242	220	20	260	20
SXBP-202+	198-206	250	20	2700	20
SXBP-178+	170-186	150	20	210	20
SXBP-176+	175-177	DC-155	20	199-1000	20
SXBP-161R5+	148-175	DC-130	20	200-2300	20
SXBP-169+	164-174	137	20	205	20
SXBP-162+	155-169	138	20	200	20
SXBP-157+	150-164	131	20	187	20
SXBP-150+	140-160	120	20	190	20
SXBP-140+	130-150	110	20	185	20
SXBP-100+	87-117	66	20	143	20
SXBP-101+	94-108	DC-80	20	130-3900	20
SXBP-70W+	50-90	DC-2	20	137-1500	20
SXBP-45-75+	5-85	DC-1	20	116-3000	20
SXBP-70+	63-77	50	20	95	20
SXBP-69+	61.9-76.5	DC-55	20	87-3200	20
SXBP-72+	68-76	DC-60	20	87-4000	20
SXBP-35W+	24-46	16	20	73	20
SXBP-35N+	30-40	21	20	60	20
SXBP-29+	24-35	DC-17	20	48-1600	20
SXBP-27R5+	24-31	DC-19	20	39-900	20
SXBP-20R5+	20-21	DC-17	20	27-400	20

50Ω DC TO 44 MHZ

Lumped L-C Low Pass Filters

Key Features:

- High rejection
- Excellent selectivity
- Good passband VSWR
- More connector options available at Minicircuits.com

Model Number	Case Style	Passband (MHz)	fco (MHz)	Stopband F3 (MHz)	Rejection @ F3 (dB)	Stopband F4 (MHz)	Rejection @ F4 (dB)
New SLP-44+	Tubular SMA	DC-44	48.5	59-65.5	30	65.5-600	46
New BLP-36+	Tubular BNC	DC-36	40	50-57	30	57-560	46
New SLP-36+	Tubular SMA	DC-DC-36	40	50-57	30	57-560	46
New BLP-27+	Tubular BNC	DC-27	30	36-41	26	41-810	43
New SLP-27+	Tubular SMA	DC-27	30	36-41	26	41-810	43
New BLP-25+	Tubular BNC	DC-25	28	36-47	25	47-1000	45
New SLP-25+	Tubular SMA	DC-DC-25	28	36-47	25	47-1000	45
New BLP-23+	Tubular BNC	DC-23	25	31-34	30	34-500	48
New SLP-23+	Tubular SMA	DC-23	25	31-34	30	34-500	48
SLP-2950+	Tubular SMA	DC-2700	2950	3700-4500	20	4500-6000	40
SLP-2400+	Tubular SMA	DC-2200	2400	3150-4000	20	4000-6000	40
SLP-1650+	Tubular SMA	DC-1400	1650	2300-2900	20	2900-6000	40
SLP-1200+	Tubular SMA	DC-1000	1200	1620-2100	20	2100-2500	40
BLP-1200+	Tubular BNC	DC-1000	1200	1620-2100	20	2100-2500	40
SLP-1000+	Tubular SMA	DC-900	990	1340-1750	20	1750-2000	40
BLP-1000+	Tubular BNC	DC-900	990	1340-1750	20	1750-2000	40
SLP-850+	Tubular SMA	DC-780	850	1100-1400	20	1400-2000	40
BLP-850+	Tubular BNC	DC-780	850	1100-1400	20	1400-2000	40
SLP-800+	Tubular SMA	DC-720	800	1080-1400	20	1400-2000	40
BLP-800+	Tubular BNC	DC-720	800	1080-1400	20	1400-2000	40
SLP-750+	Tubular SMA	DC-700	770	1000-1300	20	1300-2000	40
BLP-750+	Tubular BNC	DC-700	770	1000-1300	20	1300-2000	40
SLP-600+	Tubular SMA	DC-580	640	840-120	20	1120-2000	40
BLP-600+	Tubular BNC	DC-580	640	840-1120	20	1120-2000	40
SLP-550+	Tubular SMA	DC-520	570	750-920	20	920-2000	40
BLP-550+	Tubular BNC	DC-520	570	750-920	20	920-2000	40
SLP-450+	Tubular SMA	DC-400	440	580-750	20	750-1800	40
BLP-450+	Tubular BNC	DC-400	440	580-750	20	750-1800	40
SLP-300+	Tubular SMA	DC-270	297	410-550	20	550-1200	40
BLP-300+	Tubular BNC	DC-270	297	410-550	20	550-1200	40
SLP-250+	Tubular SMA	DC-225	250	320-400	20	400-1200	40
BLP-250+	Tubular BNC	DC-225	250	320-400	20	400-1200	40
SLP-200+	Tubular SMA	DC-190	210	290-390	20	390-800	40
BLP-200+	Tubular BNC	DC-190	210	290-390	20	390-800	40
SLP-150+	Tubular SMA	DC-140	155	210-300	20	300-600	40
BLP-150+	Tubular BNC	DC-140	155	210-300	20	300-600	40
SLP-100+	Tubular SMA	DC-98	108	146-189	20	189-400	40
BLP-100+	Tubular BNC	DC-98	108	146-189	20	189-400	40
SLP-90+	Tubular SMA	DC-81	90	121-157	20	157-400	40
BLP-90+	Tubular BNC	DC-81	90	121-157	20	157-400	40
SLP-70+	Tubular SMA	DC-60	67	90-117	20	117-300	40
BLP-70+	Tubular BNC	DC-60	67	90-117	20	117-300	40

Model Number	Case Style	Passband (MHz)	fco (MHz)	Stopband F3 (MHz)	Rejection @ F3 (dB)	Stopband F4 (MHz)	Rejection @ F4 (dB)
SLP-70+	Tubular SMA	DC-60	67	90-117	20	117-300	40
BLP-50+	Tubular BNC	DC-48	55	70-90	20	90-200	40
SLP-50+	Tubular SMA	DC-48	55	70-90	20	90-200	40
BLP-44+	Tubular BNC	DC-44	48.5	59-65.5	30	65.5-600	46
BLP-30+	Tubular BNC	DC-32	35	47-61	20	61-200	40
SLP-30+	Tubular SMA	DC-32	35	47-61	20	61-200	40
BLP-21.4+	Tubular BNC	DC-22	24.5	32-41	20	41-200	40
SLP-21.4+	Tubular SMA	DC-22	24.5	32-41	20	41-200	40
BLP-15+	Tubular BNC	DC-15	17	23-32	20	32-200	40
SLP-15+	Tubular SMA	DC-15	17	23-32	20	32-200	40
BLP-10.7+	Tubular BNC	DC-11	14	19-24	20	24-200	40
SLP-10.7+	Tubular SMA	DC-11	14	19-24	20	24-200	40
BLP-5+	Tubular BNC	DC-5	6	8-10	20	10-200	40
SLP-5+	Tubular SMA	DC-5	6	8-10	20	10-200	40
BLP-2.5+	Tubular BNC	DC-2.5	2.75	3.8-5.0	20	5.0-200	40
SLP-2.5+	Tubular SMA	DC-2.5	2.75	3.8-5.0	20	5.0-200	40
BLP-1.9+	Tubular BNC	DC-1.9	2.5	3.4-4.7	20	4.7-200	40
SLP-1.9+	Tubular SMA	DC-1.9	2.5	3.4-4.7	20	4.7-200	40

50Ω 2000 TO 40000 MHZ

Suspended Substrate High Pass Filters

Key Features:

- High Q
- Wide passbands up to 40 GHz
- Very high rejection

Model Number	Passband (MHz)	Stopband F3 (MHz)	Rejection @ F3 (dB)	Stopband F4 (MHz)	Rejection @ F4 (dB)
New ZHSS-K24G+	24000-40000	DC-15000	80	15000-18500	40
ZHSS-K18G+	18000-40000	DC-11700	80	11700-13600	40
ZHSS-K11G+	11000-40000	DC-6500	80	6500-8500	40
ZHSS-11G-S+	11000-24000	DC-6000	80	6000-9000	30
ZHSS-8G-S+	8000-24000	5300-5800	20	DC-5300	40
ZHSS-2G-S+	2000-14000	DC-500	80	500-1150	30

50Ω DC TO 20000 MHZ

Suspended Substrate Diplexers

Key Features:

- High Q
- Wide passbands, high pass up to 20 GHz
- Very high rejection

Model Number	Passband (MHz)	Passband IL (dB)	Rejection (dB)	Return Loss (dB)
New ZDSS-7G10G-S+	DC-7500	0.8	90 @ 13000-20000	12
	10500-20000	1.2	90 @ DC-7500	12
ZDSS-2R5G5G-S+	DC-2500	0.5	50 @ 5100-7500	20
	5100-7500	0.8	65 @ DC-2500	17
ZDSS-3G4G-S+	DC-3000	1.5	30 @ 4000-20000	10
	4000-20000	1.5	15 @ DC-3000	10
ZDSS-5G6G-S+	DC-5000	1.5	80 @ 7200-20000	10
	6000-20000	2.5	50 @ DC-4000	8

50Ω 645 TO 5825 MHZ

Ceramic Resonator Band Pass Filters

Key Features:

- Low insertion loss and excellent power handling
- Fractional bandwidth from 3 to 25% up to 6 GHz
- Excellent selectivity
- Rugged construction for tough environments
- 60+ models in stock (new releases shown here)

Model Number	Passband (MHz)	Stopband F3 (MHz)	Rejection @ F3 (dB)	Stopband F4 (MHz)	Rejection @ F4 (dB)
New CBP-1400BD+	1320-1480	DC-1224	27	1700-2300	55
New CBP-1476BD+	1427-1525	DC-1340	26	1590-2500	26
New CBP-1905AN+	1785-2025	DC-1525	27	2365-3200	26

50Ω DC TO 20000 MHZ

Coaxial Reflectionless Low Pass Filters

Key Features:

- Patented topology absorbs and terminates signal internally
- Ideal for pairing with amplifiers, mixers, multipliers and other sensitive non-linear devices
- Eliminates in-band spurs
- SMA and 2.92mm connectorized housings for coaxial systems and lab use

Model Number	Connector Type	Passband (MHz)	fco (MHz)	Stopband F3 (MHz)	Rejection @ F3 (dB)	Stopband F4 (MHz)	Rejection @ F4 (dB)
New ZXLF-K173+	2.92mm	DC-17000	18000	25000-35000	25	35000-40000	22
New ZXLF-K133+	2.92mm	DC-13000	15000	20000-30000	23	30000-35000	20
New ZXLF-K123+	2.92mm	DC-12000	14200	18100-19000	20	19000-29000	24
New ZXLF-K982+	2.92mm	DC-9800	12800	19000-22000	15	22000-32500	22
New ZXLF-K14+	2.92mm	DC-10000	12500	-	-	16500-24200	22
New ZXLF-K962+	2.92mm	DC-9600	12000	14800-16000	20	16000-25200	23
VXLF-172H+	SMA	DC-2000	2350	3600-3800	28	3800-11000	47
VXLF-192+	SMA	DC-1900	-	3480-11200	15	-	-

50Ω 4800 TO 30000 MHZ

Coaxial Reflectionless High Pass Filters

Key Features:

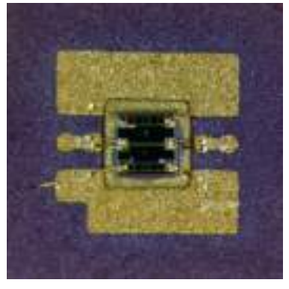
- Patented topology absorbs and terminates signal internally
- Ideal for pairing with amplifiers, mixers, multipliers and other sensitive non-linear devices
- Eliminates in-band spurs
- SMA and 2.92mm connectorized housings for coaxial systems and lab use

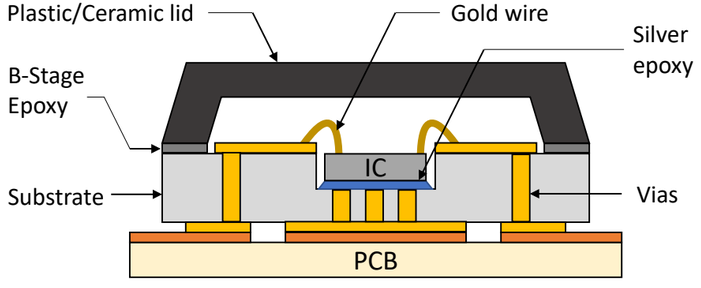
Model Number	Connector Type	Passband (MHz)	Stopband F3 (MHz)	Rejection @ F3 (dB)	Stopband F4 (MHz)	Rejection @ F4 (dB)
New ZXHF-K1832+	2.92mm	18300-30000	DC-9000	6.7	9000-14600	14
New ZXHF-K153+	2.92mm	15300-30000	DC-2400	6.8	2400-12000	13.7
New ZXHF-K1352+	2.92mm	13500-30000	DC-3000	6.9	3000-10500	13.8
New ZXHF-K482M+	2.92mm	4800-19000	2400-3500	30	DC-2400	35
New ZXHF-K73M+	2.92mm	7000-16000	4000-5200	25	DC-4000	35
New ZXHF-K652M+	2.92mm	6600-16000	4000-5000	30	DC-4000	34
ZXHF-K1162+	2.92mm	11600-30000	DC-2500	6.9	2500-8700	13.6
ZXHF-K912+	2.92mm	9100-30000	DC-1400	6.9	1400-7100	14.3
VXHF-392+	SMA	3940-11500	DC-2450	12.5	-	-
VXHF-23+	SMA	2010-10100	DC-1210	14	-	-
VXHF-482M+	SMA	4800-9000	DC-2400	37	2400-3600	36
VXHF-292M+	SMA	2900-8700	DC-1950	36	-	-

New Patent Award:

Cost-Effective, Custom SMT Packaging for mmWave Applications

Mini-Circuits' patented approach to mmWave surface-mount packaging combines industry-standard processes and tunable design features into a customizable package template allowing cost-effective packaging solutions with outstanding electrical performance up to 60 GHz, wide application flexibility, and fast development time.





Mixers & Multipliers

What's New?

- Wideband 2.92mm connectorized frequency doublers with integrated reflectionless filters at input and output
- Ultra-wideband Level 15 Mixers with RF bandwidth from 10 to 40 GHz

50Ω 9000 TO 20000 MHZ

Frequency Doublers with Integrated Reflectionless Filters

Key Features:

- Ultra-wideband output
- Wide input power range
- Low conversion loss
- Good fundamental and harmonic suppression
- Patented reflrectionless filters on input and output absorb and terminate out-of-band signals internally
- Minimizes need for external attenuator pads

Model Number	Input Freq. Range (MHz)	Output Freq. Range (MHz)	RF Input Power Range (dBm)	Conversion Loss (dB)	F1 Suppression Below F[X] (dBc)	F[X-1] Suppression Below F[X] (dBc)	F[X+1] Suppression Below F[X] (dBc)
New ZXF90-2-24-K+	6000-10000	12000-20000	16-22	17	35	38	20
New ZXF90-2-183-K+	6000-9000	12000-18000	14-20	17	35	43	20
New ZXF90-2-153-K+	4500-7500	9000-15000	16-22	15	48	42	23

50Ω 10000 TO 40000 MHZ

Ultra-Wideband Double-Balanced Mixers

Key Features:

- Wide RF bandwidth
- Low conversion loss
- High L-R isolation
- 2.92mm connectorized, QFN and bare die formats

Model Number	Interface	LO/RF Freq. Range (MHz)	IF Freq. Range (MHz)	LO Level (dBm)	Conversion Loss (dB)	L-R Isola-tion (dB)	L-I Isolation (dB)	Input IP3 (dBm)	Input P1dB (dBm)
New ZMDB-44H-K+	Connector	10000-40000	DC-15000	15	8.8	35	30	20	10
MDB-44H+	SMT	10000-40000	DC-15000	15	8.4	37	37	20	10
MDB-44H-D+	Die	10000-40000	DC-15000	15	8.4	37	37	20	10

IN-HOUSE SPACE UPSCREENING

Launch Prep

Mil-Spec or Equivalent Qualifications

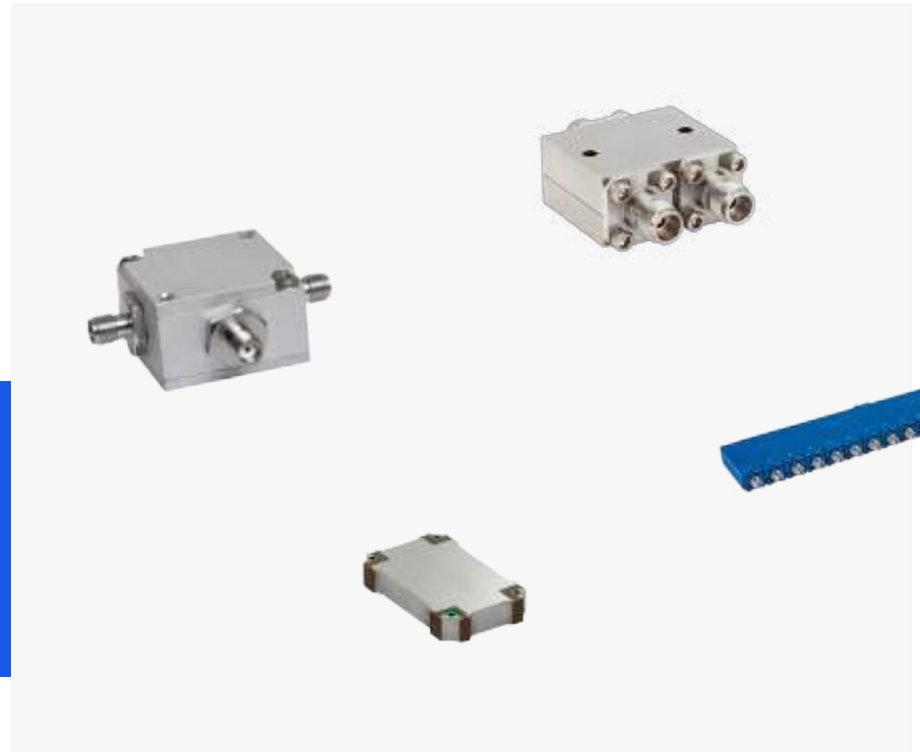
- 30+ years of space-level screening and testing
- 7500+ components and custom capabilities
- EEE-INST-002 compliant workflows

Standard Capabilities

Burn-in, thermal cycling and shock, vibration*, radiographic inspection*, destructive physical analysis (DPA)*, mechanical shock, hermeticity with accompanying acceptance test procedure (ATP).

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

Splitters & Hybrids



What's New?

- New 2-way coaxial splitters up to 44 GHz
- New 16-way coaxial splitter up to 18 GHz
- Stripline-based 90° hybrids provide up to 250W power handling in a miniature surface mount package

50Ω 1 TO 44000 MHZ

2-Way Coaxial Power Splitters

Key Features:

- Wide frequency range
- High isolation
- Low insertion loss
- Rugged construction

Model Number	Frequency Range (MHz)	Isolation (dB)	Insertion Loss (dB)	Phase Unbalance (deg)	Amplitude Unbalance (dB)	Power Input (W), Max.
New ZC2PD-V18443+	18000-44000	29	0.7	0.9	0.04	20
New ZFSC-2-1WDC-S+	1-750	28	0.4	4	0.15	1

50Ω 2 TO 40000 MHZ

Coaxial 16-Way Power Splitters

Key Features:

- Wideband
- Low insertion loss
- High isolation
- Power handing up to 20W

Model Number	Frequency Range (MHz)	Isolation (dB)	Insertion Loss (dB)	Phase Unbalance (deg)	Amplitude Unbalance (dB)	Power Input (W), Max.
New ZC16PD-02183-S+	2000-18000	30	2.2	3.1	0.13	20
ZC16PD-K1844+	18000-40000	22	3.1	5.9	0.2	20
ZC16PD-K0644+	6000-40000	26	2.2	6	0.28	20
ZC16PD-18263-S+	18000-26500	23	3.1	3.8	0.24	20
ZC16PD-06263-S+	6000-26500	24	2.2	3.3	0.2	20

50Ω 9000 TO 20000 MHZ

Stripline-Based High-Power Surface Mount 90° Hybrids

Key Features:

- High power handling in small format
- Wide bandwidth
- Low insertion loss
- Low phase unbalance (relative to 90°) and amplitude unbalance

Model Number	Frequency Range (MHz)	Isolation (dB)	Insertion Loss (dB) above 3 dB	Phase Unbalance (deg)	Amplitude Unbalance (dB)	Input Power, Max.
QCH-123+	8000-12000	23	0.25	-	1	50
QCH-83	4000-8000	23	0.15	-	1.3	75
QCH-652+	1000-6500	19	0.6	-	1.8	60
New QCH-63+	2000-6000	26	0.2	5	1.4	200
QCH-63B+	800-6000	20	0.5	-	2.6	70
QCH-392+	600-3900	14	0.8	12	2.8	90
QCH-382+	800-3800	28	0.25	7.5	1.3	150
QCH-272+	700-2700	22	0.3	5	1	200
QCH-451	225-450	27	0.2	5	0.5	250

Test Solutions

What's New?

- USB/Ethernet electromechanical switch modules with new models up to 50 GHz
- Programmable attenuators with up to 8 independently controlled channels

50Ω 1 TO 44000 MHZ

USB & Ethernet Electromechanical Switch Modules

Key Features:

- Wide frequency range
- High isolation
- Low insertion loss
- Rugged construction

Model Number	Switch Type	Number of Switches	Frequency Range (MHz)	Insertion Loss (dB)	Isolation (dB)	VSWR (:1)	RF Power (W), Max.
New RC-1SP4T-50	Z	1	DC-50000	0.25	80	1.2	20
New RC-1SP6T-50	SP6T	1	DC-50000	0.3	80	1.3	20
RC-1SP4T-40	SP4T	1	DC-40000	0.2	80	1.35	20
RC-1SP6T-40	SP6T	1	DC-40000	0.4	75	1.3	20
New RC-2MTS-40	Transfer Switch	2	DC-40000	0.2	90	1.2	20
RC-2SP4T-40	SP4T	2	DC-40000	0.25	90	1.35	20
RC-2SP6T-40	SP6T	2	DC-40000	0.4	80	1.7	20
RC-1SP4T-26	SP4T	1	DC-26500	0.4	75	1.4	20
RC-1SP6T-26	SP6T	1	DC-26500	0.25	80	1.2	20
New RC-1SPDT-A26	SPDT	1	DC-26500	0.6	65	1.25	20
New RC-2MTS-26	Transfer Switch	2	DC-26500	0.2	86	1.15	10

Model Number	Switch Type	Number of Switches	Frequency Range (MHz)	Insertion Loss (dB)	Isolation (dB)	VSWR (:1)	RF Power (W), Max.
RC-2SP4T-26	SP4T	2	DC-26500	0.3	75	1.3	20
RC-2SP6T-26	SP6T	2	DC-26500	0.4	70	1.3	20
RC-2SPDT-A26	SPDT	2	DC-26500	0.25	80	1.2	20
RC-4SPDT-A26	SPDT	4	DC-26500	0.3	80	1.3	20
RC-1SP4T-A18	SP4T	1	DC-18000	0.2	80	1.35	20
RC-1SPDT-A18	SPDT	1	DC-18000	0.2	90	1.2	20
RC-2MTS-18	Transfer Switch	2	DC-18000	0.25	90	1.35	20
RC-2SP4T-A18	SP4T	2	DC-18000	0.4	80	1.7	20
New RC-2SP6T-A18	SP6T	2	DC-18000	0.4	100	1.43	20
RC-2SPDT-A18	SPDT	2	DC-18000	0.25	80	1.2	20
RC-3MTS-18	Transfer Switch	3	DC-18000	0.6	65	1.25	20
RC-4SPDT-A18	SPDT	4	DC-18000	0.2	86	1.15	10
RC-8SPDT-A18	SPDT	8	DC-18000	0.25	80	1.2	20
RC-1SP6T-A12	SP6T	1	DC-12000	0.54	65	1.25	20
RC-2SP6T-A12	SP6T	2	DC-12000	0.25	80	1.2	20

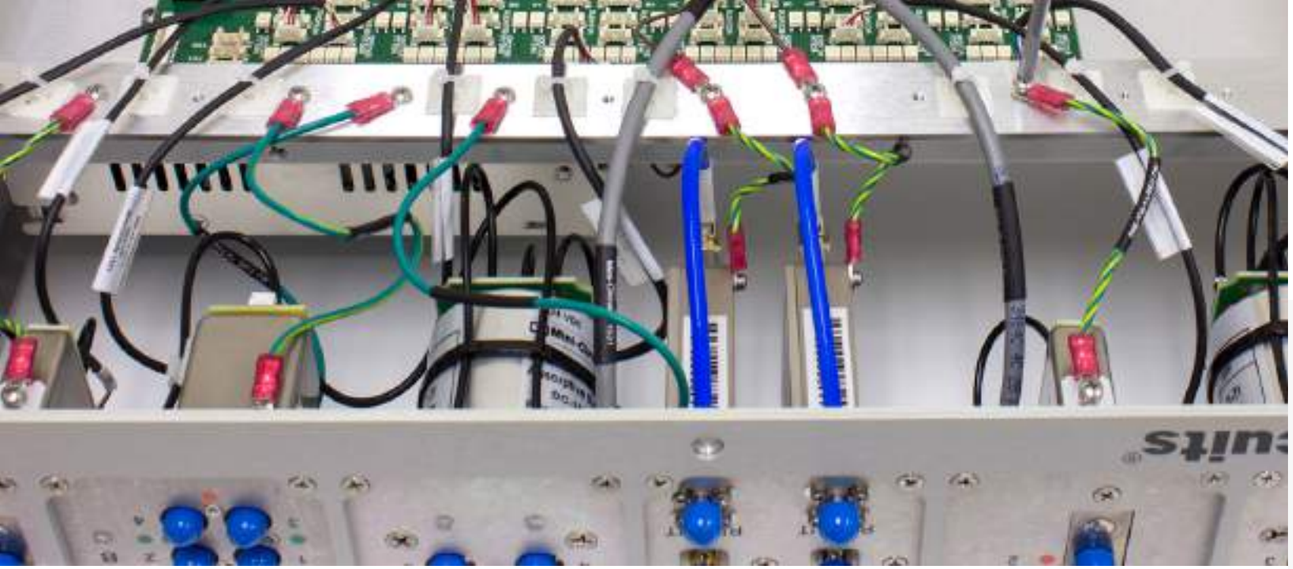
50Ω DC TO 40000 MHZ

USB & Ethernet Programmable Attenuators

Key Features:

- Attenuation ranges from 0 to 120 dB in 0.25 dB steps
- Up to eight independently controlled channels
- Ideal for cellular handover testing, fading simulation and more
- Mini-Circuits' user-friendly GUI and full API with programming instructions included

Model Number	Number of Channels	Frequency Range (MHz)	Attenuation Range (dB)	Attenuation Step (dB)	Insertion Loss (0 dB Setting) (dB), Max	Attenuation Accuracy (dB)	Max Input Power (dBm)	IP3 (dB)
RCDAT-40G-30	1	100-40000	30	0.5	16	± 1.0	24	38
RCDAT-30G-30	1	100-30000	30	0.5	16	± 0.8	24	38
New RC8DAT-8G-95	8	1-8000	95	0.25	12	± 1.8	28	51
RC4DAT-8G-95	4	1-8000	95	0.25	12	± 0.8	28	51
RCDAT-8000-30	1	1-8000	30	0.25	6	± 0.4	28	52
RCDAT-8000-60	1	1-8000	60	0.25	10	± 0.75	28	51
RCDAT-8000-90	1	1-8000	90	0.25	10	± 0.8	28	51
RC4DAT-6G-60	4	1-6000	63	0.25	7.5	± 0.6	23	53
RC4DAT-6G-95	4	1-6000	95	0.25	10	± 0.4	20	54
RC4DAT-6G-30	4	1-6000	30	0.25	5	± 0.35	23	53
RCDAT-6000-30	1	1-6000	30	0.25	5	± 0.4	20	56
RCDAT-6000-60	1	1-6000	60	0.25	7.5	± 0.3	20	55
RCDAT-6000-90	1	1-6000	90	0.25	10	± 0.4	20	54
RCDAT-6000-110	1	1-6000	110	0.25	11.5	± 0.45	20	53
RCDAT-4000-120	1	1-4000	120	0.25	10.5	± 0.5	20	53
RCDAT-3000-63W2	1	50-3000	63	1	7.5	± 0.4	33	54



DC TO 50 GHZ

Test Solutions

Components, Systems and Accessories

User-Assembled

Leverage our wide selection of in stock components for total flexibility to build your own system. We'll help you choose the right hardware. You take it from there.

Pre-Built Modular

Configure our flexible, pre-built modular chassis structures with your choice of routing and attenuation hardware for delivery as fast as two weeks. Plug and play GUI and API included.

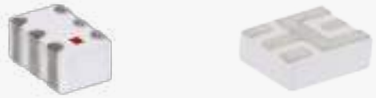
Custom Systems

Put our full design and manufacturing capability to work for you to build complex custom systems with bespoke control software tailored to your unique test setup—scalable from design to production.

Transformers

What's New?

- Tiny LTCC baluns up to 18 GHz in 0603 packages
- Expanded selection of core-and-wire surface mount transformers



50Ω 700 TO 18000 MHZ

LTCC Balun Transformers

Key Features:

- Tiny size, as small as 0603
- Excellent power handling
- Low insertion loss
- Low unbalance
- Low cost and excellent repeatability for volume production

Model Number	Single-Ended to Single-Ended	Single-Ended to Balanced	Balanced to Balanced	Center Tap	DC Isolation	Frequency Range (MHz)	Impedance Ratio (Sec/Pri)
NCR2-183+	N	Y	N	N	Y	12000-18000	2
New NCR2-123+	N	Y	N	N	Y	4700-12000	2
NCR2-113+	N	Y	N	N	Y	3500-11000	2
New TCW1-6000+	N	Y	N	N	Y	3200-6000	1
New TCW2-6000+	N	Y	N	N	Y	3100-6000	2
TCW2-63+	N	Y	N	N	Y	4900-5875	2
TCW1-392+	N	Y	N	N	Y	3300-3900	1
TCW1-3901+	N	Y	Y	N	N	3300-3900	1
TCW2-392+	N	Y	N	N	Y	3300-3900	2
TCW1-33+	N	Y	N	N	Y	2300-3000	1
New TCW2-282+	N	Y	N	N	Y	700-2800	2
TCW1-272+	N	Y	Y	N	N	1700-2700	1
New TCW1-2700+	N	Y	N	N	Y	700-2700	1
TCW2-272+	N	Y	N	N	Y	2100-2700	2

50 & 75Ω 700 TO 18000 MHZ

Core & Wire Transformers

Key Features:

- Wide bandwidths
- Low insertion loss
- Small size
- 75Ω models support DOCSIS 4.0 bandwidth requirements

Model Number	Single-Ended to Single-Ended	Single-Ended to Balanced	Balanced to Balanced	Center Tap	DC Isolation	Frequency Range (MHz)	Impedance (Ω)	Impedance Ratio
New TTC2-63W+	N	Y	N	N	N	100-6000	50	2
New TRS1-182-75+	N	Y	Y	N	N	10-1800	75	1
New TRS1.5-182+	N	Y	Y	N	N	10-1800	50	1.5
New TRS2-1T-75+	N	Y	N	N	N	1-1200	75	2
TTC1-33W+	N	Y	N	N	N	4.5-3000	50	1
TTC1-33W-75+	N	Y	N	N	N	30-3000	75	1
TRS2-252+	Y	N	N	N	N	4-2500	50	2
TRS1-23-75+	N	Y	Y	N	N	10-2200	75	1
TRS1.33-132-75+	N	Y	N	N	N	25-1300	75	1.33
TRS1.33-1T-75+	N	Y	Y	Y	Y	1-400	75	1.33

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