

SATCOM PRODUCT GUIDE



Connecting  Mini-Circuits & Israel

Local Technical Support:

admin1@mcdi-ltd.com

077-5406075

www.mcdi-ltd.com





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CUSTOMIZED SMA WRENCHES

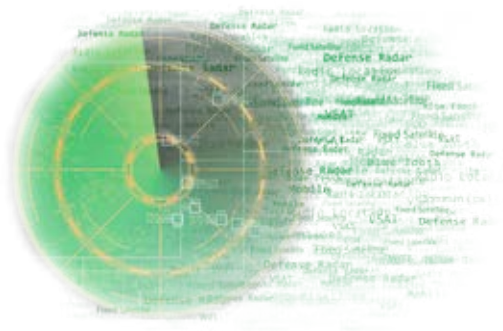
Easily removes cable connections from tight spots.

From \$24.95 ea.

Patent Pending

Custom Modules Upon Request

*Mini-Circuits engineers will design and build
to meet any of your custom requirements.*

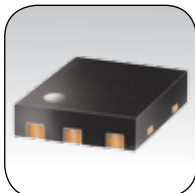


Attenuators

DC to 26 GHz



Surface Mount Fixed Models

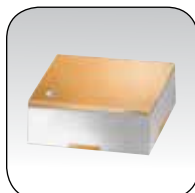


YAT Series

Precision

DC – 18 GHz, 50Ω
Models from 0 - 30
Flatness <±1 dB
P_{MAX}, 2W

.079 x .079 x .039"



RCAT Series

Fixed Hermetic LTCC

DC – 20 GHz, 50Ω
Models from 0 to 30 dB
Flatness <±1 dB
P_{MAX}, 2W

2.25 x 2.25 x 1.1 mm

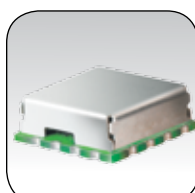


HAT Series

Precision, BNC Connector

DC – 2000 MHz, 50Ω & 75Ω
Models from 1 to 30 dB
Flatness, ±1 dB
P_{MAX}, up to 1W

1.94 x 0.62" diameter



RVA-2500+

Surface Mount Voltage Variable

DC – 2500 MHz, 50Ω & 75Ω
Attenuation range, 5 – 40 dB
Power supply, 3 – 5V, 5mA
Control voltage, 0 – 17V

0.5 x 0.5 x 0.2"

Coaxial Fixed Models, 50Ω & 75Ω



VAT Series

Wideband

DC – 6 GHz, 50Ω
Models from 1 - 30 dB
Flatness, ±1 dB
P_{MAX}, up to 2W

1.43 x 0.41" diameter



UNAT Series

Wideband, N-type Connector

DC – 6 GHz, 50Ω
Models from 1 – 30 dB
Flatness, ±2 dB
P_{MAX}, up to 1W

2.11 x .68" diameter



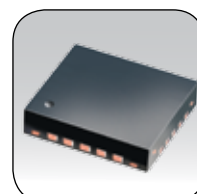
BW Series

Very Wideband, Precision

DC – 26 GHz, 50Ω
Models from 0 to 40 dB
Flatness, ±0.5 dB
P_{MAX}, up to 100W

Dimensions Vary

Variable Models



DAT Series

Surface Mount Digital Step

DC – 4 GHz, 50Ω & 75Ω
Attenuation range, 15.5 - 31.5 dB
Step size, 0.5 dB
Accuracy, 0.1 dB

0.16 x 0.16 x 0.04"



ZX76-Series

Coaxial Digital Step

DC – 4 GHz, 50Ω
Attenuation range, up to 31.5 dB
Step size, 0.5 dB
Accuracy, 0.1 dB typ.

1.2 x 1.18 x 0.46"



ZX73-2500+

Coaxial Voltage Variable

10 – 2500 MHz, 50Ω
Attenuation range, 5 – 40 dB
Power supply, 3 – 5V, 5mA
Control voltage, 0 – 17V

1.2 x 0.75 x 0.46"



Amplifiers

DC to 20 GHz

Monolithic Models – GVA Series, InGaP HBT Technology, Unconditionally Stable



0.18 x 0.17 x 0.06"

GVA-60+

Flat Gain, High IP3

0.01 – 5 GHz, 50Ω
Gain, 18.5 dB
P1dB, 20 dBm
IP3, 40 dBm

GVA-62+

Flat Gain, High IP3

0.01 – 6 GHz, 50Ω
Gain, 15.5
P1dB, 19 dBm
IP3, 33.5 dBm

GVA-63+

Flat Gain, High IP3

0.1 – 6 GHz, 50Ω
Gain, 20.4 dB
P1dB, 19 dBm
IP3, 35 dBm

GVA-81+

Flat Gain, High IP3

DC – 6 GHz, 50Ω
Gain, 10 dB
P1dB, 18 dBm
IP3, 41 dBm

GVA-82+

Flat Gain, High IP3

DC – 7 GHz, 50Ω
Gain, 10 dB
P1dB, 20 dBm
IP3, 41 dBm

GVA-83+

Flat Gain, High IP3

DC – 7 GHz, 50Ω
Gain, 20 dB
P1dB, 18 dBm
IP3, 33 dBm

GVA-84+

Flat Gain, High IP3

DC – 7 GHz, 50Ω
Gain, 24 dB
P1dB, 20.5 dBm
IP3, 37 dBm

Monolithic Models – PHEMT Technology, 50Ω & 75Ω

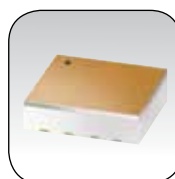


0.236 x 0.192 x 0.35"

YSF-2151+

Ultra Flat Gain

0.9 – 2.5 GHz, 50Ω
Gain, 20 dB
P1dB, 20 dBm
IP3, 35 dBm

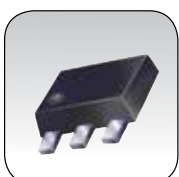


0.118 x 0.118 x 0.045"

CMA Series

Ceramic, Hi-Rel

0.01 – 6 GHz, 50Ω
Gain up to 31.5 dB
P1dB up to 23.7 dBm
IP3 up to 39 dBm



0.18 x 0.17 x 0.06"

PGA-105+

Flat Gain, Low Noise

0.04 – 2.6 GHz, 50Ω
Gain, 15.2 dB
P1dB, 20.5 dBm
IP3, 39.3 dBm

PGA-106W-75+

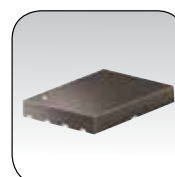
Flat Gain, High Dynamic Range

0.95 – 2.15 GHz, 75Ω
Gain, 16.9 dB
P1dB, 19.5 dBm
IP3, 35.6 dBm

PHA-1+

Ultra High Dynamic Range

0.05 – 6 GHz, 50Ω
Gain, 13.5 dB
P1dB, 22.4 dBm
IP3, 42 dBm



0.24 x 0.19 x 0.04"

PHA-11+

Dual Matched for Push-Pull Configuration

0.05 – 3 GHz, 50Ω & 75Ω
Gain, 16 dB
P1dB, 22 dBm
IP3, 41 dBm



0.12 x 0.12 x 0.04"

PMA-545G1+

Ultra Low Noise, 1.0 dB

0.4 – 2.2 GHz, 50Ω
Gain, 31.3 dB
P1dB, 22 dBm
IP3, 33.6 dBm

PMA-5452+

Low Noise, High IP3

0.5 – 6 GHz, 50Ω
Gain, 19 dB
P1dB, 18.3 dBm
IP3, 32 dBm



0.12 x 0.12 x 0.04"

AVA-24+

Wideband, Integrated Matching

5 – 20 GHz, 50Ω
Gain, 12.6 dB
P1dB, 18 dBm
IP3, 25.4 dBm

AVA-183A+

Wideband, Integrated Matching

5 – 18 GHz, 50Ω
Gain, 13.7 dB
P1dB, 19 dBm
IP3, 29 dBm



Amplifiers – Rugged Coaxial Connectorized Models



ZX60-24+
*Wideband,
Unconditionally Stable*
5 – 20 GHz, 50Ω
Gain, 24 dB
P1dB, 18.0 dBm
IP3, 26.4 dBm

0.75 x 0.74 x 0.46"

ZX60-H242+
Ultra High IP3
700 – 2400 MHz, 50Ω
Gain, 14.5 dB
P1dB, 23 dBm
IP3, 46 dBm

ZX60-V62+
Ultra Flat Gain
0.05 – 6 GHz, 50Ω
Gain, 15.4 dB
P1dB, 19 dBm
IP3, 33.4 dBm

ZX60-V63+
High Gain, High IP3
0.05 – 6 GHz, 50Ω
Gain, 20 dB
P1dB, 17.8 dBm
IP3, 31.2 dBm



ZX60-2411BM+
High Linearity
800 – 2400 MHz, 50Ω
Gain, 12 dB
P1dB, 23 dBm
IP3, 49 dBm

1.20 x 0.75 x 0.46"



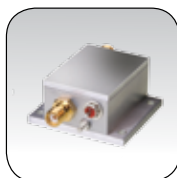
ZRL-2150+
High IP3, Low Noise
950 – 2150 MHz, 50Ω
Gain, 25 dB
P1dB, 22 dBm
IP3, 33 dBm

3.75 x 2.00 x 0.80"



ZHL-2150-X
L Band, Flat Gain
950 – 2150 MHz, 50Ω
Gain, 29 dB
P1dB, 10.44 dBm
IP3, 24.29 dBm

3.75 x 2.00 x 0.86"



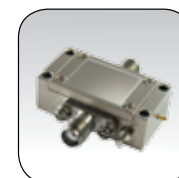
ZKL-2R5+
*Wideband,
Medium Power*
10 – 2500 MHz, 50Ω
Gain, 30 dB
P1dB, 13 dBm
IP3, 31 dBm

1.38 x 1.50 x 0.75"



ZVA-183W+
Super Ultra Wideband
0.1 – 18 GHz, 50Ω
Gain, 27 dB
P1dB, 27 dBm
IP3, 36 dBm

4.18 x 3.36 x 3.57"



ZVA-213+
Super Ultra Wideband
0.8 to 21 GHz
Gain, 26 dB
P1dB, 24 dBm
IP3, 33 dBm

4.18 x 3.36 x 3.57"



Bias-Tees Satellite MuxTee & Bias-Tee/Diplexers

100 kHz to 10 GHz

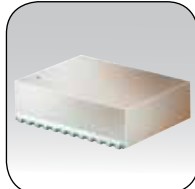


Surface Mount Models



0.15 x 0.15 x 0.14"

TCBT Series
*Extremely Wideband
Bias Tee*
RF / RF + DC / DC
10 MHz – 10 GHz, 50Ω
Insertion loss, <1 dB
Current, up to 200 mA



1.26 x 0.94 x 0.39"

JEFT Series
*Extremely Wideband
Bias Tee*
RF / RF + DC / DC
10 – 4200 MHz, 50Ω
Insertion loss, 0.6 dB
Current, 500 mA

Coaxial Models



2.19 x 1.25 x 0.94"

ZFBT-282-1.5A+
*Extremely Wideband
Bias Tee*
RF / RF + DC / DC
10 MHz – 2.8 GHz, 50Ω
Insertion loss, 0.6 dB
Current, 1.5A



1.25 x 1.25 x 0.75"

ZFBT-4R2GW+
Wideband Bias Tee
RF / RF + DC / DC
0.1 – 4200 MHz, 50Ω
Insertion loss, 0.6 dB
Current, 500 mA



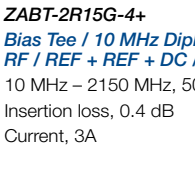
1.25 x 1.25 x 0.75"

ZFBT-6GW+
Wideband Bias Tee
RF / RF + DC / DC
0.1 – 6000 MHz, 50Ω
Insertion loss, 0.6 dB
Current, 500 mA

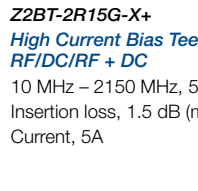


2.00 x 2.00 x 0.75"

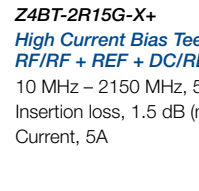
ZABT-2R15G+
*Satellite MuxTee
Bias Tee / 10 MHz Diplexer*
RF / RF + REF + DC /
REF / DC
10 MHz – 2150 MHz, 50Ω
Insertion loss, 0.4 dB
Current, 3A



ZABT-2R15G-4+
Bias Tee / 10 MHz Diplexer
RF / REF + REF + DC / REF
10 MHz – 2150 MHz, 50Ω
Insertion loss, 0.4 dB
Current, 3A



Z2BT-2R15G-X+
High Current Bias Tee
RF/DC/RF + DC
10 MHz – 2150 MHz, 50Ω
Insertion loss, 1.5 dB (max.)
Current, 5A



Z4BT-2R15G-X+
High Current Bias Tee
RF/RF + REF + DC/REF/DC
10 MHz – 2150 MHz, 50Ω
Insertion loss, 1.5 dB (max.)
Current, 5A



System Interconnect & Test Cables

DC to 40 GHz

Test Cables, Performance Qualified to 20,000 Flexures, 50 Ω & 75 Ω



CBL Precision
L, C & Ku Band
DC – 18 GHz, 50 Ω
SMA (M/F), N-Type (M)
Return Loss, 27 dB

Various Lengths



APC Armored
L, C & Ku Band
DC – 18 GHz, 50 Ω
N-Type (M) Connectors
Return Loss, 27 dB

Various Lengths



FLC Super Flexible
L, C, Ku & K Band
DC – 26 GHz
SMA (M) connectors
Return Loss, 28.5 dB

Various Lengths



CBL 75 Ω
L Band
DC – 3000 MHz, 75 Ω
F-Type (M)
Return loss, 26 dB

Various Lengths



CBL 75 Ω
L Band
DC – 3000 MHz, 75 Ω
N-type (M)
Return loss, 26 dB

Various Lengths



KBL 40 GHz
Phase Stable
L, C, Ku, K & Ka Band
DC – 40 GHz, 50 Ω
2.92mm (M) connectors
Return Loss, 17 dB
@ 40 GHz
Phase 3° typ. @ 40 GHz

Various Lengths



KBL 40 GHz
Low Loss
L, C, Ku, K & Ka Band
DC – 40 GHz, 50 Ω
2.92mm (M) connectors
Return Loss, 17 dB
@ 40GHz
Insertion Loss, 3.1 dB
@ 40 GHz / 1M

Various Lengths



QBL E-Z Lock
L, C & Ku Band
DC – 18 GHz, 50 Ω
SMA (M) or N-Type (M)
Return Loss, 27 dB

Various Lengths

System Interconnect Cables

HAND FLEX™



Various Lengths

086 Series
0.086" diameter
141 Series
0.141" diameter
L, C & Ku Band
DC – 18 GHz, 50 Ω
SMA (M) or N-Type (M)
Straight or right-angle



Directional Couplers

0.1 to 9700 MHz



Coaxial Models



1.25 x 1.25 x 0.75"

ZFDC-10-5-S+ **10 MHz Pass**

1 – 2000 MHz, 50Ω
10 dB coupling
Directivity, 30 dB
P_{MAX}, 0.5W

ZFDC-20-3-S+ **10 MHz Pass**

0.2 – 250 MHz, 50Ω
20 dB coupling
Directivity, 33 dB
P_{MAX}, 4.0W

ZFDC-20-4L **10 MHz Pass**

10 – 1000 MHz, 50Ω
20 dB coupling
Directivity, 30 dB
P_{MAX}, 1.0W

ZFDC-20-50-S+ **10 MHz Pass**

20 – 2000 MHz, 50Ω
20 dB coupling
Directivity, 25 dB
P_{MAX}, 1.0W

ZFDC-20-5-S+ **10 MHz Pass**

0.1 – 2000 MHz, 50Ω
20 dB coupling
Directivity, 27 dB
P_{MAX}, 1.0W



0.74 x 0.90 x 0.54"

ZX30-17-5-S+ **10 MHz Pass, All Welded**

5 – 2000 MHz, 50Ω
17 dB coupling
Directivity, 18 dB
P_{MAX}, 1.0W

ZX30-20-4-S+ **10 MHz Pass, All Welded**

5 – 1000 MHz, 50Ω
20 dB coupling
Directivity, 20 dB
P_{MAX}, 1.0W



1.04 x 0.60 x 0.75"

ZX30-14-972HP+ **High Power, DC Pass**

8300 – 9700 MHz, 50Ω
14 dB coupling
Directivity, 7 dB
P_{MAX}, 20W



2.00 x 2.00 x 0.54"

ZADC-6-2G-5W+ **10 MHz / DC Pass**

800 – 2000 MHz, 50Ω
6 dB coupling
Directivity, 22 dB
P_{MAX}, 5.0W



5.93 x 2.24 x 1.00"

ZGDC6-362HP+ **High Power, DC Pass**

380 – 3600 MHz, 50Ω
6 dB coupling
Directivity, 28 dB
P_{MAX}, 250W

ZGDC10-362HP+ **High Power, DC Pass**

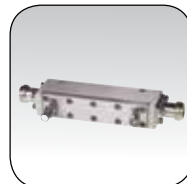
380 – 3600 MHz, 50Ω
10 dB coupling
Directivity, 27 dB
P_{MAX}, 250W



5.58 x 2.50 x 1.00"

ZGDC20-33HP+ **High Power, DC Pass**

300 – 3000 MHz, 50Ω
20 dB coupling
Directivity, 26 dB
P_{MAX}, 250W



3.85 x 1.10 x .80"

ZGDC35-93HP+ **High Power, DC Pass**

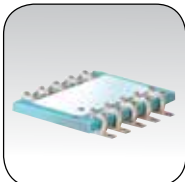
900 – 9000 MHz, 50Ω
35 dB coupling
Directivity, 25 dB
P_{MAX}, 20W

Bi-Directional Couplers

400 to 2525 MHz



Surface Mount Models, 50Ω & 75Ω



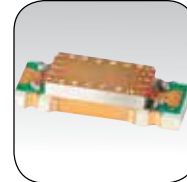
0.30 x 0.30 x 0.07"

BDCA-10-25+
L Band 10 MHz / DC Pass
800 – 2500 MHz, 50Ω
10 dB coupling
Directivity, 22 dB
P_{MAX}, 50W



0.13 x 0.06 x 0.04"

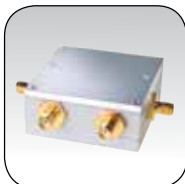
BDCN-17-25+
Four Port, LTCC,
0.126 x 0.063" DC Pass
824 – 2525 MHz, 50Ω
17 dB coupling
Directivity, 22 dB
P_{MAX}, 7W



0.70 x 0.32 x 0.13"

SYBD Series
High Power, DC Pass
400 – 6000 MHz, 50Ω
8 to 30 dB coupling
Directivity up to 35 dB
P_{MAX}, 100W

Coaxial Models



2.00 x 2.00 x 0.75"

ZABDC20-2400+
DC Pass, SMA Connector
1500 – 2400 MHz, 50Ω
20 dB coupling
Directivity, 25 dB
P_{MAX}, 10W



2.00 x 2.00 x 0.88"

ZABDC20-25H75+
DC Pass, N-Type Connector
700 – 2500 MHz, 75Ω
20 dB coupling
Directivity, 25 dB
P_{MAX}, 100W



Equalizers 950 to 2150 MHz



Surface Mount Voltage Variable Equalizer



0.39 x 0.39 x 0.15"

VAEQ-2150+

L Band, Adjustable Attenuation Slope

950 – 2150 MHz, 50Ω

VSWR, 1.37

±0.05 dB deviation from linear loss

Coaxial Slope Equalizers, SMA



1.25 x 1.25 x 0.75"

ZEQ-3-222S+

L Band, Attenuation Slope: 3

950 – 2150 MHz, 50Ω

VSWR, 1.1

±0.4 dB deviation in
attenuation slope



1.25 x 1.25 x 0.75"

ZEQ-8-222S+

L Band, Attenuation Slope: 8

950 – 2150 MHz, 50Ω

VSWR, 1.1

±0.4 dB deviation in
attenuation slope

Coaxial Slope Equalizers, N-Type



1.25 x 1.25 x 0.94"

ZEQ-3-222N+

L Band, Attenuation Slope: 3

950 – 2150 MHz, 50Ω

VSWR, 1.1

±0.4 dB deviation in
attenuation slope



1.25 x 1.25 x 0.94"

ZEQ-8-222N+

L Band, Attenuation Slope: 8

950 – 2150 MHz, 50Ω

VSWR, 1.1

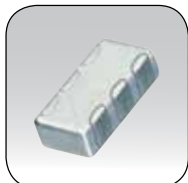
±0.4 dB deviation in
attenuation slope

High Pass Filters

54 to 5000 MHz

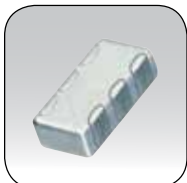


Surface Mount Models



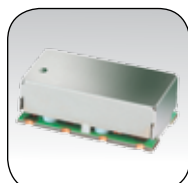
0.13 x 0.06 x 0.04"

HFCN-1320+
LTCC, 1206 Package
1400 – 5000 MHz, 50Ω
Pass band IL, 1 dB
Stop band rejection:
27 dB @ 1060 MHz



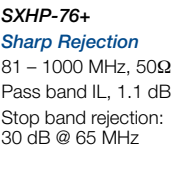
0.13 x 0.06 x 0.04"

HFCN-740+
LTCC, 1206 Package
780 – 2800 MHz, 50Ω
Pass band IL, 1.1 dB
Stop band rejection:
23 dB @ 550 MHz



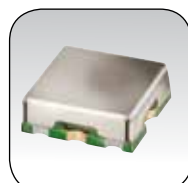
0.74 x 0.44 x 0.27"

SXHP-48+
Sharp Rejection
54 – 1000 MHz, 50Ω
Pass band IL, 0.6 dB
Stop band rejection:
30 dB @ 42 MHz



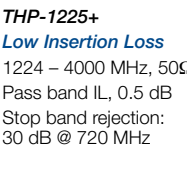
SXHP-76+
Sharp Rejection
81 – 1000 MHz, 50Ω
Pass band IL, 1.1 dB
Stop band rejection:
30 dB @ 65 MHz

SXHP-108+
Sharp Rejection
108 – 1000 MHz, 50Ω
Pass band IL, 1.0 dB
Stop band rejection:
30 dB @ 85 MHz



0.25 x 0.25 x 0.10"

THP-1050+
Low Insertion Loss
1050 – 4000 MHz, 50Ω
Pass band IL, 0.6 dB
Stop band rejection:
30 dB @ 620 MHz



THP-1225+
Low Insertion Loss
1224 – 4000 MHz, 50Ω
Pass band IL, 0.5 dB
Stop band rejection:
30 dB @ 720 MHz

THP-1500+
Low Insertion Loss
1500 – 4000 MHz, 50Ω
Pass band IL, 0.7 dB
Stop band rejection:
30 dB @ 1030 MHz

Coaxial Models



1.98 x 0.67" diameter

SHP-900+
Low Insertion Loss
910 – 3000 MHz, 50Ω
Pass band IL, 0.7 dB
Stop band rejection:
25 dB @ 660 MHz



1.43 x 0.41" diameter

VHF-1300+
Sharp Rejection
1400 – 5000 MHz, 50Ω
Pass band IL, 2 dB
Stop band rejection:
27 dB @ 930 MHz

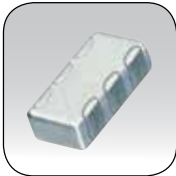


Low Pass Filters & Diplexers

DC to 4400 MHz



Surface Mount Low Pass Filters



0.13 x 0.06 x 0.04"

LFCN-400+
LTCC, 1206 Package
DC – 400 MHz, 50Ω
Pass band IL, 1.0 dB
Stop band rejection:
40 dB @ 680 MHz

LFCN-1400+
LTCC, 1206 Package
DC – 1400 MHz, 50Ω
Pass band IL, 1.0 dB
Stop band rejection:
30 dB @ 2100 MHz

LFCN-1525+
LTCC, 1206 Package
DC – 1525 MHz, 50Ω
Pass band IL, 1.2 dB
Stop band rejection:
30 dB @ 2120 MHz

LFCN-2250+
LTCC, 1206 Package
DC – 2200 MHz, 50Ω
Pass band IL, 1.2 dB
Stop band rejection:
30 dB @ 3000 MHz

LFCN-3800+
LTCC, 1206 Package
DC – 3900 MHz, 50Ω
Pass band IL, 1.5 dB
Stop band rejection:
30 dB @ 5700 MHz

LFCN-4400+
LTCC, 1206 Package
DC – 4400 MHz, 50Ω
Pass band IL, 1.0 dB
Stop band rejection:
30 dB @ 6280 MHz

Coaxial Low Pass Filters



1.98 x 0.67" diameter

SLP-2400+
Sharp Roll-Off
DC – 2200 MHz, 50Ω
Pass band IL, 0.2 dB
Stop band rejection:
30 dB @ 3200 MHz

Surface Mount Diplexers



0.50 x 0.50 x 0.18"

RDP-2R15+
DC – 20 MHz and
950 – 2150 MHz, 50Ω
Low pass IL, 0.5 dB
High pass IL, 0.6 dB
Stop band isolation:
Low pass, 30 dB @ 70 MHz
High pass, 32 dB @ 250 MHz



0.87 x 0.80 x 0.25"

SDP-2R15+
DC – 800 MHz and
1500 – 2150 MHz, 50Ω
Low pass IL, 0.4
High pass IL, 0.5
Stop band isolation:
Low pass, 30 dB @ 1300 MHz
High pass, 29 dB @ 930 MHz

Coaxial Diplexers



0.74 x 0.90 x 0.54"

ZX75-2R15+
DC – 20 MHz and
950 – 2150 MHz, 50Ω
Low pass IL, 0.4 dB
High pass IL, 0.5 dB
Stop band isolation:
Low pass, 30 dB @ 70 MHz
High pass, 30 dB @ 320 MHz



0.74 x 0.90 x 0.54"

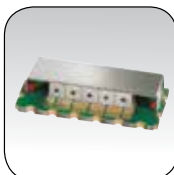
ZDPLX-2150+
DC – 10 MHz and
50 – 2150 MHz, 50Ω
Low pass IL, 0.5 dB
High pass IL, 0.9 dB
Stop band isolation:
Low pass, 31 dB @ 40 MHz
High pass, 33 dB @ 18 MHz



Band Pass Filters

175 to 2600 MHz

Surface Mount Models 50Ω & 75Ω



0.55 x 1.04 x 0.18"

CBP-2400A+

Ceramic Resonator

2200 – 2600 MHz, 50Ω
Pass band IL, 1.1 dB
Stop band rejection:
Lower, 31 dB @ 1780 MHz
Upper, 31 dB @ 3480 MHz

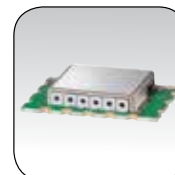


0.75 x 0.75 x 0.21"

CBP-B1230C+

Ceramic Resonator

1120 – 1340 MHz, 50Ω
Pass band IL, 0.6 dB
Stop band rejection:
Lower, 30 dB @ 910 MHz
Upper, 30 dB @ 1750 MHz



0.434 x 0.638 x 0.105"

CBP-1400E+

Ceramic Resonator

1320 – 1480 MHz, 50Ω
Pass band IL, 1.7 dB
Stop band rejection:
Lower, 42 dB @ 1150 MHz
Upper, 31 dB @ 1600 MHz



0.74 x 0.44 x 0.27"

SXBP-176+

Narrow Band

175 – 177 MHz, 50Ω
Pass band IL, 3.3 dB
Stop band rejection:
Lower, 30 dB @ 155 MHz
Upper, 31 dB @ 199 MHz

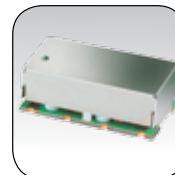


0.74 x 0.44 x 0.27"

SXBP-1500+

Fast Roll-Off on Upper Band Edge

1350 – 1650 MHz, 50Ω
Pass band IL, 0.6 dB
Stop band rejection:
Lower, 30 dB @ 75 MHz
Upper, 29 dB @ 2160 MHz

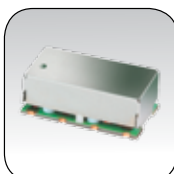


0.74 x 0.44 x 0.27"

SXBP-1940+

Fast Roll-Off on Upper Band Edge

1710 – 2170 MHz, 50Ω
Pass band IL, 2.0 dB
Stop band rejection:
Lower, 30 dB @ 145 MHz
Upper, 28 dB @ 2900 MHz

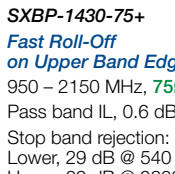


0.74 x 0.44 x 0.19"

SXBP-1430+

Fast Roll-Off on Upper Band Edge

950 – 2150 MHz, 50Ω
Pass band IL, 0.6 dB
Stop band rejection:
Lower, 28 dB @ 575 MHz
Upper, 29 dB @ 2800 MHz



0.74 x 0.44 x 0.19"

SXBP-1430-75+

Fast Roll-Off on Upper Band Edge

950 – 2150 MHz, 75Ω
Pass band IL, 0.6 dB
Stop band rejection:
Lower, 29 dB @ 540 MHz
Upper, 29 dB @ 2800 MHz

Coaxial Models



0.74 x 0.75 x 0.46"

ZX75BP-1500+

Sharp Roll-Off on Upper Band Edge

1350 – 1650 MHz, 50Ω
Pass band IL, 0.7 dB
Stop band rejection:
Lower, 30 dB @ 85 MHz
Upper, 29 dB @ 2030 MHz

ZX75BP-1940+

Sharp Roll-Off on Upper Band Edge

1710 – 2170 MHz, 50Ω
Pass band IL, 0.7 dB
Stop band rejection:
Lower, 30 dB @ 150 MHz
Upper, 31 dB @ 2800 MHz

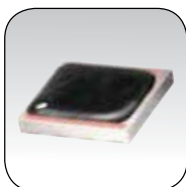


Frequency Mixers

5 MHz to 20 GHz



Surface Mount Models



0.20 x 0.18 x 0.09"

SIM-153+

Level 7, Ceramic

3.4 – 15 GHz, 50Ω
50mW RF power
Conversion loss, 6.8 dB
L-R isolation, 36 dB

SIM-153LH+

Level 10, Ceramic

3.2 – 15 GHz, 50Ω
50mW RF power
Conversion loss, 6.1 dB
L-R isolation, 36 dB

SIM-24MH+

Level 13, Ceramic

7.3 – 20 GHz, 50Ω
250mW RF power
Conversion loss, 5.7 dB
L-R isolation, 36 dB

SIM-153MH+

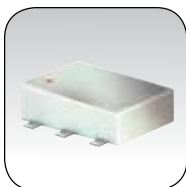
Level 13, Ceramic

3.2 – 15 GHz, 50Ω
50mW RF power
Conversion loss, 6.5 dB
L-R isolation, 36 dB

SIM-193H+

Level 17, Ceramic

7.3 – 19 GHz, 50Ω
120mW RF power
Conversion loss, 6.2 dB
L-R isolation, 33 dB



0.31 x 0.27 x 0.11"

ADE-30W

Level 7

300 MHz – 4 GHz, 50Ω
50mW RF power
Conversion loss, 6.8 dB
L-R isolation, 35 dB



0.50 x 0.50 x 0.16"

LAVI-17VH+

Level 21

470 – 1730 MHz, 50Ω
125 mW RF power
Conversion loss, 6.8 dB
L-R isolation, 52 dB



0.30 x 0.25 x 0.06"

MAC series

Levels 4 – 17

Ultra-Rel Hermetic LTCC
300 MHz – 12 GHz, 50Ω
50 – 100mW RF Power
Conversion loss from 5.8 dB
L-R isolation as high as 40 dB

Rugged Coaxial Models, ZX05 Series



0.74 x 0.90 x 0.54"

ZX05-30W-S+

Level 7

300 – 4000 MHz, 50Ω
50mW RF power
Conversion loss, 6.8 dB
L-R isolation, 35 dB

ZX05-5-S+

Level 7

5 – 1500 MHz, 50Ω
50mW RF power
Conversion loss, 6.6 dB
L-R isolation, 40 dB

ZX05-83-S+

Level 7

2300 – 8000 MHz, 50Ω
50mW RF power
Conversion loss, 6.0 dB
L-R isolation, 29 dB

ZX05-42MH-S+

Level 13

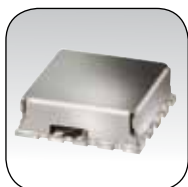
5 MHz – 4.2 GHz, 50Ω
200mW RF power
Conversion loss, 7.5 dB
L-R isolation, 26 dB



Limiters

0.2 to 8200 MHz

Surface Mount Models



0.50 x 0.50 x 0.18"

RLM-23+

Low Output Power

950 – 2050 MHz, 50Ω
+5 to +30 dBm
Recovery time, 8 nsec.
Max P_{in} , 1.5W
Output power, 0 dBm
@ 30 dBm input



0.50 x 0.50 x 0.18"

RLM-23-1WL+

Low Output Power

100 – 2500 MHz, 50Ω
+5 to +30 dBm
Recovery time, 8 nsec.
Max P_{in} , 1.5W
Output power, 0 dBm
@ 30 dBm input



0.25 x 0.31 x 0.16"

RLM-63-2W+

Low Output Power

30 – 6000 MHz, 50Ω
+12 to +33 dBm
Recovery time, 10 nsec.
Max P_{in} , 2W
Output power, 11.5 dBm



0.25 x 0.31 x 0.16"

RLM-33-2W+

Low Output Power

0.2 – 3000 MHz, 50Ω
+12 to +33 dBm
Recovery time, 22.5 nsec.
Max P_{in} , 2.5W
Output power, 13 dBm



0.25 x 0.31 x 0.16"

RLM-33+

Low Output Power

30 – 3000 MHz, 50Ω
+12 to +30 dBm
Recovery time, 10 nSec
Max P_{in} , 2W
Output power, 11.5 dBm



0.118 x 0.118 x 0.045"

CLM-83-2W+

Ceramic, Hermetic, Nitrogen-Filled, Hi-Rel

30 – 8200 MHz, 50Ω
+12 to +32 dBm
Recovery time, 10 nsec.
Max P_{in} , 2W
Output power, 11.5 dBm

Coaxial Models



1.43 x 0.41" diameter

VLM-73-1W+

Hi-Rel

30 – 7000 MHz, 50Ω
+12 to +30 dBm
Recovery time, 5 nsec.
Max. P_{in} , 1.5W CW
Leakage power, 11.5 dBm

VLM-33+

Hi-Rel

30 – 3000 MHz, 50Ω
+12 to +30 dBm
Recovery time, 5 nsec.
Max. P_{in} , 2W
Leakage power, 11.5 dBm

VLM-63-2W+

Hi-Rel

30 – 6000 MHz, 50Ω
+12 to +33 dBm
Recovery time, 5 nsec.
Max. P_{in} , 2.5W
Leakage power, 11.5 dBm



1.25 x 1.25 x 0.75"

ZFLM-252-1WL+

Low Output Power

100 – 2500 MHz, 50Ω
+5 to +30 dBm
Recovery time, 8 nsec.
Max P_{in} , 1.5W
Leakage power, 6 dBm

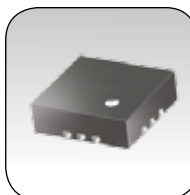


2 Way, 0° and 180° Power Splitters/Combiners

DC to 18 GHz



Surface Mount 2 Way 0° Models

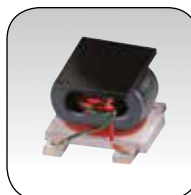


0.118 x 0.118 x 0.035"

GP2S1+

0°, L Band

500 – 2500 MHz, 50Ω
Insertion loss, 0.9 dB
Amp. unb., 0.02 dB
Phase unb., 0.9°
Isolation, 20 dB



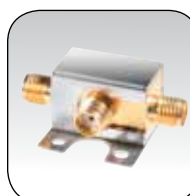
0.16 x 0.15 x 0.16"

TCP-2-25+

0°, L Band

200 – 2500 MHz, 50Ω
Insertion loss, 0.8 dB
Amp. unb., 0.2 dB
Phase unb., 1°
Isolation, 25 dB

Coaxial 2 Way 0° Models

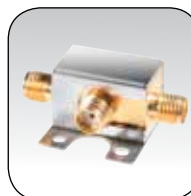


0.74 x 0.90 x 0.54"

ZX10-2-222+

0°, L Band

800 – 2200 MHz, 50Ω
Insertion loss, 0.8 dB
Amp. unb., 0.01 dB
Phase unb., 1°
Isolation, 24 dB



0.74 x 0.90 x 0.54"

ZX10-2-42+

0°, S Band

1900 – 4200 MHz, 50Ω
Insertion loss, 0.2 dB
Amp. unb., 0.03 dB
Phase unb., 1°
Isolation, 23 dB

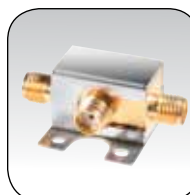


0.74 x 0.90 x 0.54"

ZX10-2-71+

0°, C Band

2950 – 7100 MHz, 50Ω
Insertion loss, 0.25 dB
Amp. unb., 0.06 dB
Phase unb., 0.5°
Isolation, 23 dB



0.74 x 0.90 x 0.54"

ZX10-2-98-S+

0°, C Band

4750 – 9800 MHz, 50Ω
Insertion loss, 0.3 dB
Amp. unb., 0.1 dB
Phase unb., 1°
Isolation, 23 dB

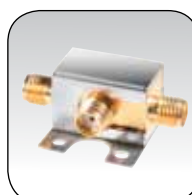


0.74 x 0.90 x 0.54"

ZX10R-14-S+

0° Resistive,
L Band, C Band

DC – 10 GHz, 50Ω
Insertion loss, 0.7 dB
Amp. unb., 0.02 dB
Phase unb., 1°
Isolation, 6 dB



0.74 x 0.90 x 0.54"

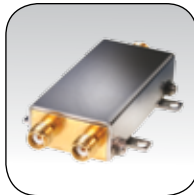
ZX10-2-12+

0°, VHF/UHF

2 – 1200 MHz, 50Ω
Insertion loss, 0.35 dB
Amp. unb., 0.05 dB
Phase unb., 1°
Isolation, 21 dB



Coaxial 2 Way 0° Models



1.90 x 0.96 x 0.46"

ZX10-2-183+
0°, L, C & Ku Band
1.5 – 18 GHz, 50Ω
Insertion loss, 0.8 dB
Amp. unb., 0.1 dB
Phase unb., 4°
Isolation, 22 dB



1.25 x 1.25 x 0.75"

ZFSC-2-1+
0°, VHF
5 – 500 MHz, 50Ω
Insertion loss, 0.3 dB
Amp. unb., 0.1 dB
Phase unb., 1°
Isolation, 28 dB



1.25 x 1.25 x 0.75"

ZFSC-2-2500+
0°, L Band
10 – 2500 MHz, 50Ω
Insertion loss, 0.4 dB
Amp. unb., 0.1 dB
Phase unb., 1°
Isolation, 17 dB



2.0 x 2.0 x 0.75"

ZAPD-2-272+
0°, L Band
800 – 2700 MHz, 50Ω
Insertion loss, 0.3 dB
Amp. unb., 0.05 dB
Phase unb., 0.7°
Isolation, 25 dB



2.0 x 2.0 x 0.75"

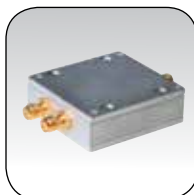
ZAPD-4+
0°, C Band
2000 – 4200 MHz, 50Ω
Insertion loss, 0.4 dB
Amp. unb., 0.1 dB
Phase unb., 0.5°
Isolation, 25 dB



1.00 x 0.75 x 0.58"

ZFRSC-183+
0° Resistive, L, C & Ku Band
DC – 18 GHz, 50Ω
Insertion loss, 0.7 dB
Amp. unb., 0.1 dB
Phase unb., 1°
Isolation, 6.5 dB

Coaxial 2 Way 180° Model



4.50 x 2.50 x 0.67"

ZN2PD2-50+
0°, L & C Band
500 – 5000 MHz, 50Ω
Insertion loss, 0.8 dB
Amp. unb., 0.05 dB
Phase unb., 0.5°
Isolation, 25 dB



1.25 x 1.25 x 0.75"

ZY2PDJ-33-1+
180°, L Band
50 – 3000 MHz, 50Ω
Insertion loss, 2.4 dB
Amp. unb., 0.3 dB
Phase unb., 180° ± 4°
Isolation, 4.23 dB



3, 4, 8, 12, 16, and 24 Way, 0° Power Splitters/Combiners

0.25 to 3600 MHz



Coaxial Models



1.50 x 1.00 x 0.38"

ZCSC-3-R3+
3 Way, 0°
2 – 300 MHz, 50Ω
Insertion loss, 0.4 dB
Amp. unb., 0.1 dB
Phase unb., 1°
Isolation, 31 dB



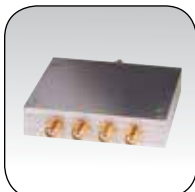
3.50 x 2.13 x 0.88"

ZB3PD1-222+
3 Way, 0°, L Band
500 – 2200 MHz, 50Ω
Insertion loss, 0.3 dB
Amp. unb., 0.2 dB
Phase unb., 111°
Isolation, 25 dB



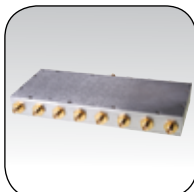
3.50 x 2.13 x 0.88"

ZB4PD1-2000+
4 Way, 0°, L Band
800 – 2000 MHz, 50Ω
Insertion loss, 0.6 dB
Amp. unb., 0.1 dB
Phase unb., 1°
Isolation, 25 dB



2.75 x 2.80 x 0.63"

ZN4PD-272+
4 Way, 0°, L Band
500 – 2700 MHz, 50Ω
Insertion loss, 0.9 dB
Amp. unb., 0.2 dB
Phase unb., 1.7°
Isolation, 25 dB



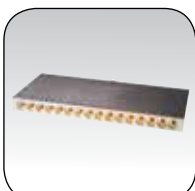
7.06 x 3.13 x 0.88"

ZB8PD-362+
8 Way, 0°, L Band
600 – 3600 MHz, 50Ω
Insertion loss, 1 dB
Amp. unb., 0.2 dB
Phase unb., 4°
Isolation, 20 dB



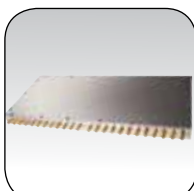
6.69 x 1.60 x 1.50"

ZFSC-12-1+
12 Way, 0°
1 – 200 MHz, 50Ω
Insertion loss, 1.1 dB
Amp. unb., 0.2 dB
Phase unb., 1°
Isolation, 35 dB



8.50 x 3.95 x 0.75"

ZC16PD-2185
16 Way, 0°
1800 – 2600 MHz, 50Ω
Insertion loss, 0.5 dB
Amp. unb., 0.2 dB
Phase unb., 4°
Isolation, 30 dB



12.75 x 5.50 x 0.88"

ZC24PD-222+
24 Way, 0°, L Band
650 – 2200 MHz, 50Ω
Insertion loss, 1.8 dB
Amp. unb., 0.5 dB
Phase unb., 10°
Isolation, 25 dB

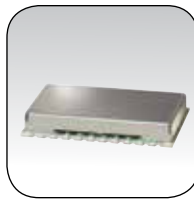


Surface Mount Models, 50Ω & 75Ω



0.15 x 0.15 x 0.15"

SBTC-2-10-75X+
2 Way, 0°
 10 – 1000 MHz, **75Ω**
 Insertion loss, 0.8 dB
 Amp. unb., 0.15 dB
 Phase unb., 1°
 Isolation, 25 dB



1.25 x 1.00 x 0.20"

SEPS-4-272+
4 Way, 0°, L-Band
 690 – 2700 MHz, 50Ω
 Insertion loss, 1.0 dB
 Amp. unb., 0.4 dB
 Phase unb., 4°
 Isolation, 20 dB



0.50 x 0.38 x 0.25"

SYPS-2-282-75+
8 Way, 0°, L Band
 5 – 2750 MHz, **75Ω**
 Insertion loss, 0.8 dB
 Amp. unb., 0.1 dB
 Phase unb., 0.5°
 Isolation, 25 dB

Coaxial Models, 75Ω



1.25 x 1.25 x 0.75"

ZFSC-2-1-75+
2 Way, 0°
 0.25 – 300 MHz, **75Ω**
 Insertion loss, 0.4 dB
 Amp. unb., 0.1 dB
 Phase unb., 0.2°
 Isolation, 30 dB



2.00 x 2.00 x 0.75"

ZAPD-2-22-75+
2 Way, 0°, L Band
 910 – 2150 MHz, **75Ω**
 Insertion loss, 0.2 dB
 Amp. unb., 0.1 dB
 Phase unb., 0.5°
 Isolation, 30 dB



3.50 x 2.13 x 0.88"

ZB4PD-222-75+
4 Way, 0°, L Band
 950 – 2200 MHz, **75Ω**
 Insertion loss, 0.9 dB
 Amp. unb., 0.3 dB
 Phase unb., 2.7°
 Isolation, 23 dB



7.06 x 3.13 x 0.88"

ZB8PD-22-75+
8 Way, 0°, L Band
 950 – 2200 MHz, **75Ω**
 Insertion loss, 0.5 dB
 Amp. unb., 0.1 dB
 Phase unb., 5°
 Isolation, 24 dB

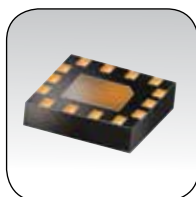


Switches

DC to 18 GHz

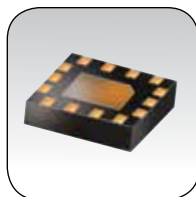


Surface Mount Models, 50Ω & 75Ω



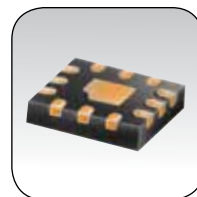
JSW2-33DR-75+
*SPDT, Reflective
Internal Driver*
10 – 3000 MHz, 75Ω
Insertion loss, 0.46 dB
Isolation, 40 dB
Rise/fall time, 0.75 μsec

2 x 2 x 0.55 mm



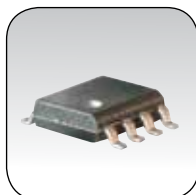
JSW2-63DR+
*SPDT, Reflective
Internal Driver*
10 – 6000 MHz, 50Ω
Insertion loss, 0.33 dB
Isolation, 40 dB
Rise/fall time, 0.75 μsec

2 x 2 x 0.55 mm



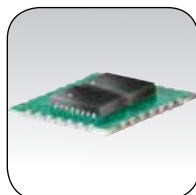
JSW6-23DR-75+
*SP6T, Reflective
Internal Driver*
10 – 2000 MHz, 75Ω
Insertion loss, 0.8 dB
Isolation, 29 dB
Rise/fall time, 1 μsec

2 x 2 x 0.55 mm



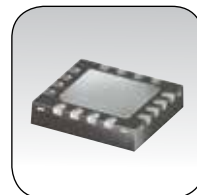
MSWT-4-20+
50W Transfer
DC – 2 GHz, 50Ω
Insertion loss, 1.25 dB
Isolation, 26 dB
Rise/fall time, 2 nsec

0.25 x 0.21 x 0.08"



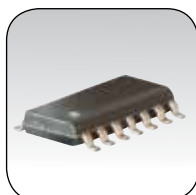
GSAWA-4-30DR+
SP4T, Absorptive
DC – 3 GHz, 50Ω
Insertion loss, 2 dB
Isolation, 37 dB
Rise/fall time, 25 nsec

0.49 x 0.49 x 0.06"



HSAWA2-30DR+
*SPDT, Absorptive
Immune to Latchup*
DC – 3 GHz, 50Ω
Insertion loss, 0.95 dB
Isolation, 50 dB
Rise/fall time, 2 msec

0.16 x 0.16 x 0.04"



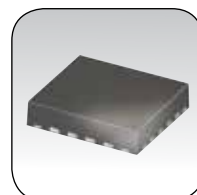
RSW-2-25P+
SPDT, Reflective
DC – 2500 MHz, 50Ω
Insertion loss, 1.1 dB
Isolation, 50 dB
Rise/fall time, 10 nsec

0.34 x 0.24 x 0.07"



VSW2-33-10W+
SPDT, Reflective
50 – 3000 MHz, 50Ω
Insertion loss, 0.5 dB
Isolation, 26 dB
Rise/fall time, 150 nsec

0.118 x 0.079 x 0.035"



VSWA2-63DR+
*SPDT, Absorptive
With Internal Driver*
500 – 6000 MHz, 50Ω
Insertion loss, 1.0 dB
Isolation, 65 dB
Rise/fall time, 23 nsec

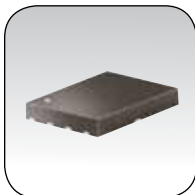
0.157 x 0.157 x 0.35"



Synthesizers

700 to 3500 MHz

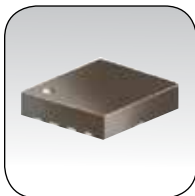
Surface Mount Models, Robust Design and Construction



M3SW-2-50DR+
*SPDT, Reflective
Integral TTL Driver*

M3SWA-2-50DR+
*SPDT, Absorptive
Integral TTL Driver*
DC – 4500 MHz, 50Ω
Insertion loss, 0.7 dB
Isolation, 60 dB
Rise/fall time, 5 nsec

0.13 x 0.13 x 0.04"



SWM-2-50DR+
*SPDT, Reflective
Integral TTL Driver*

SWMA-2-50DR+
*SPDT, Absorptive
Integral TTL Driver*
DC – 4500 MHz, 50Ω
Insertion loss, 0.7 dB
Isolation, 55 dB
Rise/fall time, 5 nsec

0.24 x 0.19 x 0.04"

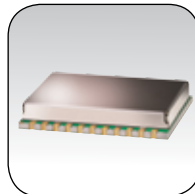
Coaxial, Hi-Rel Mechanical Switches



MSP Series
*SPDT, SP4T & Transfer
100 Million Cycles
Guaranteed!*

DC – 18 GHz, 50Ω
Insertion loss, 0.25 dB
Isolation, 80 dB
Switching time, 20 msec

Dimensions Vary



DSN-3019A-119+
Integrated VCO+ PLL
1788 – 3019 MHz, 50Ω
Step size, 100 kHz
Phase Noise: -83 dBc/Hz
@ 10 kHz offset

1.00 x 1.25 x 0.20"



KSN-700A-3C19+
*Integrated Microcontroller
Fixed Frequency*
700 MHz, 50Ω
Comparison freq., 5 MHz
Phase noise: -110 dBc/Hz
@ 10 kHz offset

0.80 x 0.58 x 0.15"

KSN-1900A-119+
Integrated VCO+ PLL
1830 – 1900 MHz, 50Ω
Step size, 1000 kHz
Phase noise: -101 dBc/Hz
@ 10 kHz offset

KSN-3500A-119+
Fractional N Synthesizer
3000 – 3450 MHz, 50Ω
Step size, 1000 kHz
Phase noise: -95 dBc/Hz
@ 10 kHz offset

KSN-3310A-119+
Fractional N Synthesizer
3210 – 3310 MHz, 50Ω
Step size, 2500 kHz
Phase noise: -93 dBc/Hz
@ 10 kHz offset

KSN-1470A-1+
Integrated VCO+ PLL
930 – 1470 MHz, 50Ω
Step size, 0.3 Hz
Phase noise: -83 dBc/Hz
@ 10 kHz offset

DSN-3500A-119+
Integrated VCO+ PLL
2700 – 3500, MHz 50Ω
Step size, 1000 kHz
Phase noise: -83 dBc/Hz
@ 10 kHz offset

KSN-860A-119+
Integrated VCO+ PLL
856.6 – 858.6 MHz, 50Ω
Step size, 5 kHz
Phase noise: -101 dBc/Hz
@ 10 kHz offset

KSN-2825A-219+
Fractional N Synthesizer
2435 – 2825 MHz, 50Ω
Step size, 2500 kHz
Phase noise: -94 dBc/Hz
@ 10 kHz offset

KSN-3263A-1
Integrated VCO+ PLL
3210 – 3310 MHz, 50Ω
Step size, 1 MHz
Phase noise: -95 dBc/Hz
@ 10 kHz offset

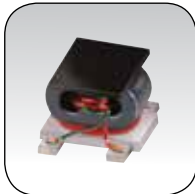


Transformers

DC to 3000 MHz

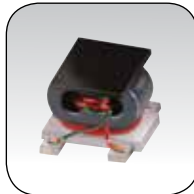


Surface Mount Models, 50Ω & 75Ω



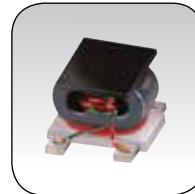
0.15 x 0.15 x 0.16"

TC1-1-13MX+
Top Hat Feature
4.5 – 3000 MHz, 50Ω
Ω secondary/primary, 1
Phase unb., 2°
Insertion loss, 0.9 dB
Max. input power, 0.25W



0.15 x 0.15 x 0.16"

TC1.5-1X+
Top Hat Feature
0.5 – 2200 MHz, 50Ω
Ω secondary/primary, 1.5
Phase unb., 3°
Insertion loss, 0.6 dB
Max. input power, 0.25W



0.15 x 0.15 x 0.16"

TC1.33-282X+
Top Hat Feature
5 – 2800 MHz, 50Ω to 75Ω
Ω secondary/primary, 1.33
Phase unb., 6°
Insertion loss, 1.4 dB
Max. input power, 0.25W



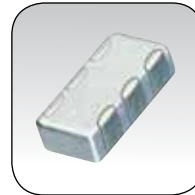
0.15 x 0.15 x 0.15"

TC1-33-75G2+
Top Hat Feature
5 – 3000 MHz, 75Ω
Ω secondary/primary, 1
Phase unb., 3°
Insertion loss, 1.4 dB
Max. input power, 0.25W



0.20 x 0.20 x 0.20"

TRS2-252+
Ceramic
4 – 2500 MHz, 100Ω to 50Ω
Ω secondary/primary, 2
Phase unb., N/A
Insertion loss, 1.2 dB
Max. input power, 0.35W



0.08 x 0.05 x 0.03"

NCS1-222-75+
LTCC Balun
950 – 2200 MHz, 75Ω
Ω secondary/primary, 1
Phase unb., 5°
(rel. to 180°)
Insertion loss, 1.0 dB
Max. input power, 3W



0.13 x 0.06 x 0.04"

TCN4-22+
LTCC Balun
1200 – 2200 MHz, 50Ω
Ω secondary/primary, 4
Phase unb., 10°
(rel. to 180°)
Insertion loss, 1 dB
Max. input power, 5W



1.25 x 1.25 x 0.75"

SEMP-5075-1+
L Band Matching Pad
950 – 2150 MHz
50Ω to 75Ω
Phase unb., N/A
Insertion loss, 0.2 dB
Max. input power, 0.25W



1.25 x 1.25 x 0.94"

Z7550-FMSF+
DC Passing
DC – 2300 MHz
50Ω to 75Ω
Phase unb., N/A
Insertion loss, 0.5 dB
Max. input power, 2W

Coaxial Models



Voltage Controlled Oscillators

950 to 4360 MHz

Surface Mount Models



0.5 x 0.5 x 0.18"

ROS-2150VW+ **L Band**

970 – 2150 MHz, 50Ω
Phase noise: -96 dBc/Hz
@ 10 kHz offset
Linear tuning, 30 – 70 MHz
Power output, +4 dBm



0.5 x 0.5 x 0.18"

ROS-1700-919+ **L Band**

950 – 1620 MHz, 50Ω
Phase noise: -100 dBc/Hz
@ 10 kHz offset
Linear tuning, 10 – 110 MHz
Power output, +6 dBm



0.5 x 0.5 x 0.18"

ROS-2500W-319+ **L Band**

1000 – 2400 MHz, 50Ω
Phase noise: -93 dBc/Hz
@ 10 kHz offset
Linear tuning, 80 – 95 MHz
Power output, +3.5 dBm



0.5 x 0.5 x 0.18"

ROS-4403-119+ **C Band**

4260 – 4360 MHz, 50Ω
Phase noise: -97 dBc/Hz
@ 10 kHz offset
Linear tuning, 60 – 80 MHz
Power output, +4 dBm



0.5 x 0.5 x 0.22"

ROS-3730C+ **L Band**

3575 – 3730 MHz, 50Ω
Phase noise: -103 dBc/Hz
@ 10 kHz offset
Linear tuning, 55 – 70 MHz
Power output, +2.5 dBm



0.5 x 0.5 x 0.22"

ROS-3044+

5V Tuning for PLL ICs
2885 – 3044 MHz, 50Ω
Phase noise: -104 dBc/Hz
@ 10 kHz offset
Linear tuning, 64 – 72 MHz
Power output, +8 dBm

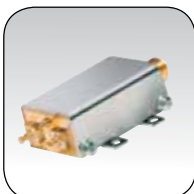


0.5 x 0.5 x 0.10"

ROS-2050-719+ **L Band**

1020 – 1980 MHz, 50Ω
Phase noise: -99 dBc/Hz
@ 10 kHz offset
Linear tuning, 57 – 105 MHz
Power output, +4 dBm

Coaxial, Patented Unibody Construction



1.20 x 1.18 x 0.46"

ZX95-3360-S+ **Low Pushing, Low Pulling**

2120 – 3360 MHz, 50Ω
Phase noise: -95 dBc/Hz
@ 10 kHz offset
Linear tuning, 65 – 113 MHz
Power output, +8.5 dBm



Rack Mount Integrated Assemblies

DC to 18 GHz

Much more than catalog products

Mini-Circuits has a well-established history of supporting customers with custom integration to achieve highly functional systems and sub-systems. Leveraging our wealth of standard components, our application and systems engineers work directly with customers at the engineering level following our proven framework to accurately define your design requirements up front, ensuring a successful development effort.

The following examples illustrate just some of the capabilities we offer that may be implemented or adapted for use in satcom systems and subsystems.



13 x 19 x 7"

ZT-100

2 x 10 Switch Matrix

DC to 8.5 GHz, 50Ω

With cross bar configuration, this switch matrix can connect the 2 input ports to any 2 of the 10 output ports with the push of a button using the Mini-Circuits GUI (included). This versatile module offers an efficient solution for L, S, and C band signal routing.



10 x 19 x 10.5"

ZT-101

Amplifier with Dual Switched Outputs

0.7 to 18 GHz, 50Ω

Housed in a space-efficient 1U height rack, this module integrates a super ultra wideband, unconditionally stable amplifier with a high isolation absorptive electro-mechanical SPDT switch. The ZT-101 offers the convenience of dual switched outputs for line amplification over L, S, C, X, and Ku bands.



16 x 19 x 3.5"

ZT-103

12 x 3 Switch Matrix

DC to 18 GHz, 50Ω

With 3 high-isolation SP4T electro-mechanical switches independently controlled via Mini-Circuits user-friendly GUI (included), the ZT-103 greatly enhances efficiency where multiple TX and RX signals need to be processed. This unit offers outstanding capability for switching needs in earth station subsystems.



13 x 19 x 7"

ZT-116

Antennae Distribution Matrix with Push Button Control

600 to 3000 MHz, 50Ω

Push button control allows users to switch in signal from various antennae to receivers via multiple output channels on the front panel. Additional frequency ranges are available upon request as well as remote control via USB/Ethernet.



10 x 19 x 10.5"

ZT-117

Multiple Signal Distribution Box

800 to 2000 MHz

Where multiple splitters or combiners are required to distribute signals, optimizing your system layout is often a challenge for complex configurations. The ZT-117 is designed with 9 six-way splitter/combiners to provide 54 RF channels in neat arrangement allowing easy portability and repeatable configuration. Different splitters and combiners can be used to extend to the frequency range of your choice.



16 x 19 x 3.5"

ZT-122

6 Channel RF Signal Distribution Matrix with Push Button Control

2 to 18 GHz

Where a tone needs to be directed to 1 or more outputs simultaneously, the ZT-122 provides an array of 6 momentary push buttons on the front panel for change-on-the-fly situations. Output connector types can be chosen from TNC, SMA and N Type. USB/Ethernet control for remote operation is also available.





Satellite Antenna H Switch Control Module

**19" Rack Mount Assembly for
Band Satellite Antenna Rx
and Tx Path Control**

10 to 4200 MHz

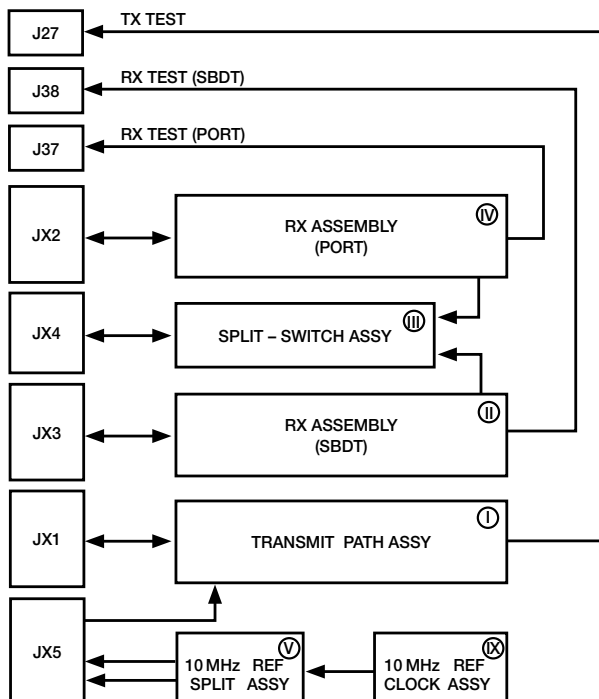


Fig.1: Overall Schematic

Designed specifically to control satellite transmit and receive antennas, the Mini-Circuits H Switch control module is configured with two receive modules and one transmit module. It can also easily be configured for other antenna options. It has a self-contained 10 MHz Rubidium clock with lock detect, operates on 24VDC supply, and comes contained in a 3.5 x 19 x 20" rack mountable case. All RF connections are PDK style multi-connector, and all control lines are D Sub connectors. BNC front panel test ports are available for transmit and receive paths.

4 Channel Remote Radio Head (RRH) Tester

19" Rack Mount Assembly with 40W Tx Power Handling

2000 to 3800 MHz



THE ZT-110 high performance switch matrix is designed to handle 40W of transmit (Tx) power from an RRH and simultaneously work with the receive (Rx) path of another channel. This configuration eliminates the need to turn off the high output power in the Tx path during channel swapping. A built-in isolator provides additional signal isolation between the Tx and Rx paths. Current configuration operates over 2000 – 3800 MHz. Other frequency bands are also available upon request.

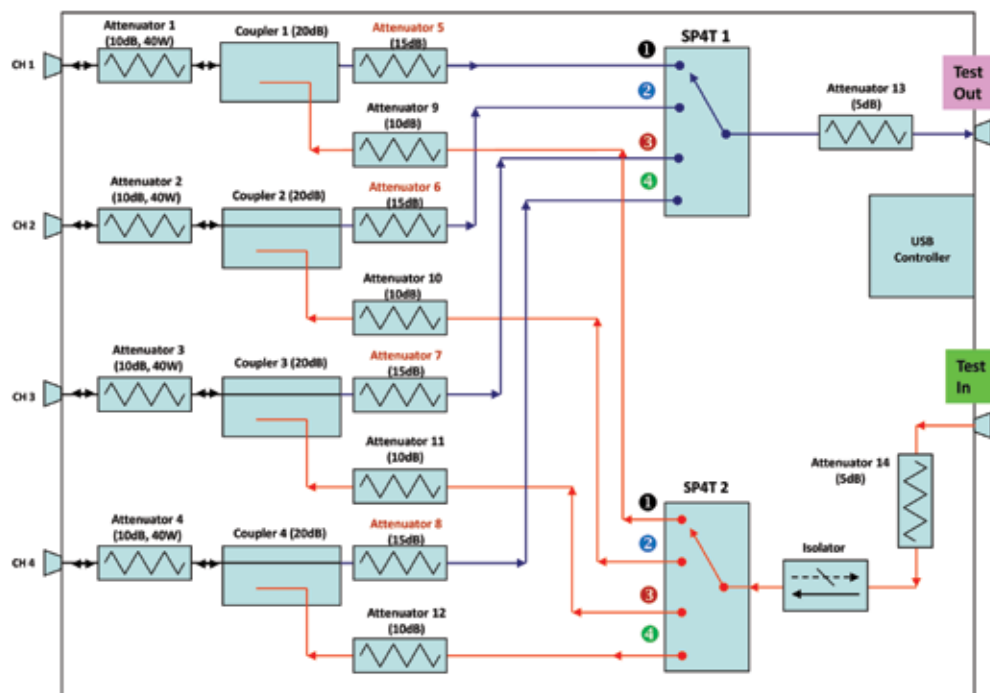


Figure1: ZT-110 Functional Schematic



J Box L Band Diplexer

**Integrated Assembly with
2 Rx Paths and 2 Tx Paths**



The Mini-Circuits J Box is an L band diplexer featuring two receive paths and two transmit paths. The receive paths have approximately 30 dB of forward gain, and both are designed with a 2 way power splitter on their inputs to drive multiple modems.

Each of the receive and transmit paths contains a 10 MHz diplexer, which feeds the 10 MHz reference back to the receive and transmit antennas via their respective coaxial cables. The 10 MHz path features an active buffer stage to increase isolation between the receive and transmit paths.

The unit also features a separate 10 MHz monitor port, a compact 6" x 4" x 0.5" case with SMA connectors, and operates from a 24 VDC supply.

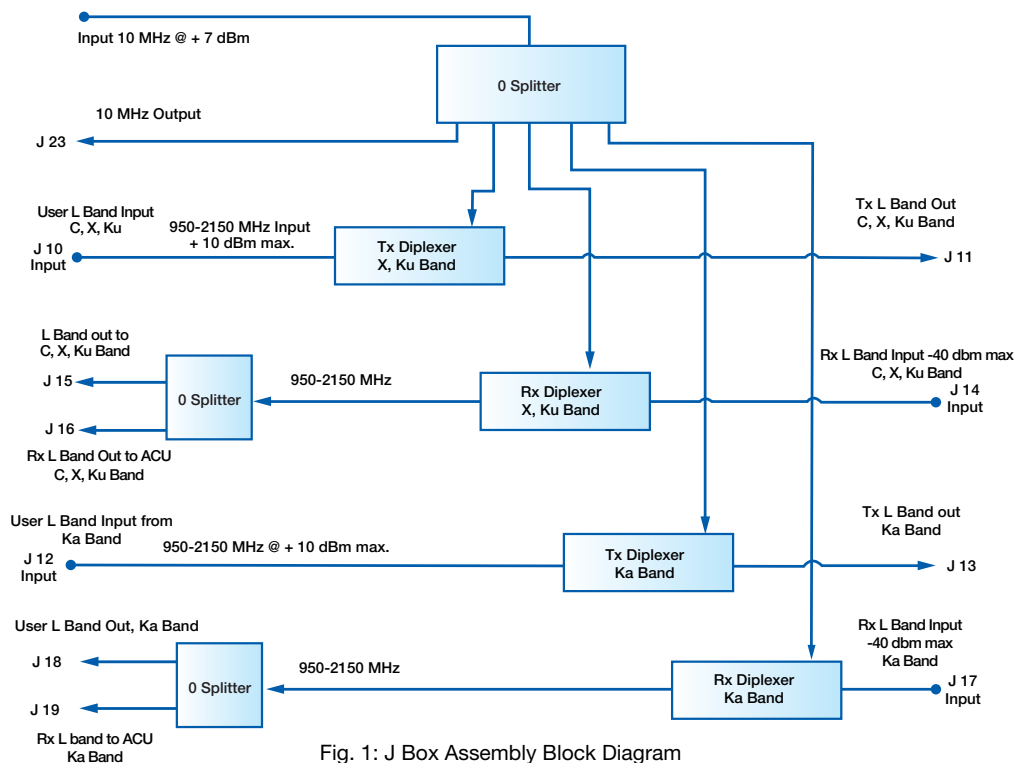


Fig. 1: J Box Assembly Block Diagram

Active L Band 8 Way Power Splitter

19" Rack Mount Assembly



The Mini-Circuits RZ8PD-222DC-X+ is an active L Band 8 way power splitter housed in a 1U high rack mounted assembly. It contains an 8 way splitter, an amplifier, and an internal AC-DC power supply.

This design provides 0 dB insertion loss (± 0.5 dB) while still maintaining excellent port-to-port amplitude and phase matching (see figure below). All RF input and output connections are SMA and accessible from the front panel.

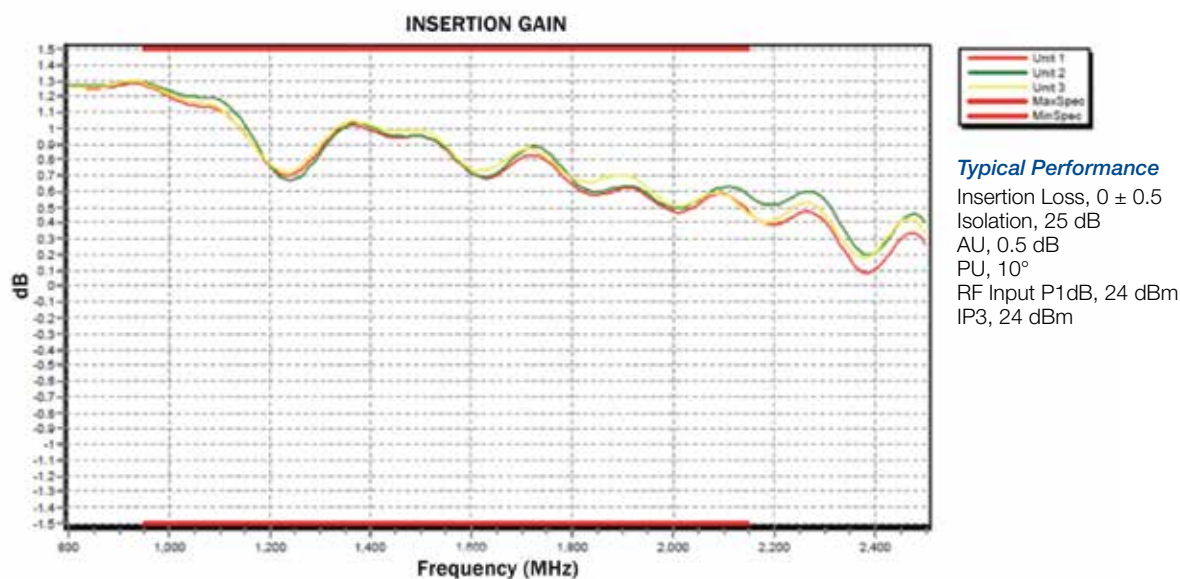


Figure 1: RZ8PD-222DC-X+ Insertion Gain (dB) vs. Frequency (MHz)



Portable Test Equipment

DC to 18 GHz

**Signal Generators,
Switch Matrices, Power Sensors,
and Programmable Attenuators**



Mini-Circuits offers a unique line of easy-to-configure test equipment providing convenient, cost-effective measurement capability. These units are small and light enough to carry in your laptop case and come standard with our user-friendly GUI control software, all available from stock at prices to fit your budget.

Synthesized Signal Generators

5 models with a practical range of capabilities to meet your needs.

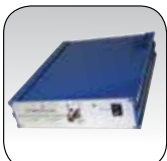


8.37 x 8.50 x 2.15"

SSG-4000HP

High Output Power

250 – 4000 MHz, 50Ω
P_{out}, -50 to +20 dBm
Frequency resolution, 5 kHz
Power resolution, 0.25 dB
Internal pulse modulation, triggered or continuous
Frequency/power sweeping (up, down, bi-directional)
USB control



11.00 x 8.50 x 2.15"

SSG-4000LH

Low Harmonics

250 – 4000 MHz, 50Ω
P_{out}, -60 to +10 dBm
Frequency resolution, 5 kHz
Power resolution, 0.25 dB
Internal pulse modulation, triggered or continuous
Frequency/power sweeping (up, down, bi-directional)
Harmonics, -66 dBc
USB control



8.37 x 8.50 x 2.15"

SSG-6000

Expanded Frequency Range

25 – 6000 MHz, 50Ω
P_{out}, -60 to +10 dBm
Frequency resolution, 3 Hz
Power resolution, 0.25 dB
Internal pulse modulation, triggered or continuous
Frequency/power sweeping (up, down, bi-directional)
Frequency/power hopping
USB control

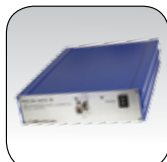


8.37 x 8.50 x 2.15"

SSG-6000RC

Expanded Frequency, USB/Ethernet

250 – 6000 MHz, 50Ω
P_{out}, -60 to +10 dBm
Frequency resolution, 3 Hz
Power resolution, 0.25 dB
Internal pulse modulation, triggered or continuous
Frequency/power sweeping (up, down, bi-directional)
Frequency/power hopping
USB and Ethernet control



11.00 x 8.50 x 2.15"

SSG-6400HS

High Speed, High Capability

0.25 – 6400 MHz, 50Ω
P_{out}, -75 to +10 dBm
Frequency resolution, 0.01 Hz
Power resolution, <0.01 dB
Internal AM, PM, FM, and pulse modulation, triggered or continuous
Tuning speed, <300μs
Frequency/power sweeping (up, down, bi-directional)
Frequency/power hopping
USB and Ethernet control

RACK MOUNT OPTION AVAILABLE



Switch Matrices

Mini-Circuits switch matrices incorporate our patented mechanical switches with ultra-high reliability and extra-long life of 10 years/100 million switch cycles of guaranteed performance.* This robustness makes them suitable for signal routing and redundancy switching relays in earth station systems where reliability is critical. USB and Ethernet control options are available on all models, and our intuitive GUI control screen allows you to set many different switch configurations for step-by-step control or full automation. Operating voltage may also be modified to fit your application requirements upon request.



Dimension Vary

USB Control Switch Matrices

Model	# Switches (SPDT)	IL (dB)	VSWR (:1)	Isolation (dB)	RF P _{MAX} (W)
USB-1SP4T-A18	1 (SP4T)	0.25	1.2	85	2
USB-1SPDT-A18	1	0.25	1.2	85	10
USB-2SPDT-A18	2	0.25	1.2	85	10
USB-3SPDT-A18	3	0.25	1.2	85	10
USB-4SPDT-A18	4	0.25	1.2	85	10
USB-8SPDT-A18	8	0.25	1.2	85	10

USB and Ethernet Control Switch Matrices

Model	# Switches (SPDT)	IL (dB)	VSWR (:1)	Isolation (dB)	RF P _{MAX} (W)
RC-1SP4T-A18	1 (SP4T)	0.25	1.2	85	2
RC-1SPDT-A18	1	0.25	1.2	85	10
RC-2SPDT-A18	2	0.25	1.2	85	10
RC-3SPDT-A18	3	0.25	1.2	85	10
RC-4SPDT-A18	4	0.25	1.2	85	10
RC-8SPDT-A18	8	0.25	1.2	85	10

*The mechanical switches within each model are offered with an optional 10 year extended warrantee. Agreement required. See data sheets on our website for terms and conditions.

Smart Power Sensors, 50Ω & 75Ω

Mini-Circuits smart power sensors are pocket-sized, precision USB HID devices that provide highly accurate measurements of continuous wave (CW) as well as modulated and multi-tone signals. Built-in GUI measurement software enables the user to perform measurements on RF components such as couplers, filters, amplifiers, and more, and displays numerical data and graphs for a full range of data analysis options.



4.89 x 1.74 x 0.95"

Model	Frequency (MHz) and Impedance	Type	Dynamic Range (dBm)	Measurement Speed (ms)
PWR-2.5GHS-75	0.1 – 2500, 75Ω	CW only	-30 to +20	30
PWR-4GHS	0.009 – 4000, 50Ω	CW only	-30 to +20	30
PWR-4RMS	50 – 4000, 50Ω	True RMS	-35 to +20	30
PWR-6GHS	1 – 6000, 50Ω	CW only	-30 to +20	30
PWR-8GHS	1 – 8000, 50Ω	CW only	-30 to +20	30
PWR-8FS	2 – 8000, 50Ω	CW only	-30 to +20	10

Programmable Attenuators

Mini-Circuits' USB and Ethernet controlled programmable attenuators provide precise level control for a wide range of field, test, and integration applications. They come housed in a pocket-sized, shielded metal case. Our unique design maintains linear attenuation change per dB over the entire range of attenuation settings.



2.0 x 3.0 x 0.6"

RUDAT-6000 Series

Programmable, USB Controlled

1 MHz to 6 GHz, 50Ω
Max. attenuation, 30, 60, or 90 dB
Step size, 0.25 dB
Accuracy:
±0.3 dB @ 10 dB attenuation
±1.7 dB @ 90 dB attenuation



2.5 x 3.0 x 0.85"

RCDAT-6000 Series

Programmable USB & Ethernet Controlled

1 MHz to 6 GHz, 50Ω
Max. Attenuation, 30, 60, or 90 dB
Step size, 0.25 dB
Accuracy:
±0.3 dB @ 10 dB attenuation
±1.7 dB @ 90 dB attenuation



SATCOM PRODUCT GUIDE

TECHNICAL SUPPORT

NORTH AMERICA

apps@minicircuits.com
1 718-934-4500

EUROPE

apps@uk.minicircuits.com
44 1252 832600

SINGAPORE, INDONESIA MALAYSIA, THAILAND

sales@minicircuits.com.my
604 646 2828

INDIA

apps@minicircuits.com
91 44 2 2622575

ISRAEL

app@ravon.co.il
972 4 8749100

CHINA

sales@mitron.cn
0591-8787 0001

or

yuanzhong@minicircuits.com
20-8734 0992

TAIWAN, PHILIPPINES

robert@min-kai.com.tw
886 3 318 4450

*For a complete listing of our global
sales network, please visit
www.minicircuits.com*

