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Mini-Circuits Worldwide Support

IF/RF & MICROWAVE PRODUCTS

For detailed performance specs & shopping see minicircuits.com

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For detailed performance specs & data, go to minicircuits.com
**Mini-Circuits product lines...**

**FEATURED PRODUCT LINES**

<table>
<thead>
<tr>
<th>Category</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMPLIFIERS</td>
<td>8-9</td>
</tr>
<tr>
<td>ATTENUATORS</td>
<td>18</td>
</tr>
<tr>
<td>CABLES</td>
<td>17</td>
</tr>
<tr>
<td>COUPLERS</td>
<td>10</td>
</tr>
<tr>
<td>CUSTOM PRODUCTS</td>
<td>6-7</td>
</tr>
<tr>
<td>FILTERS</td>
<td>11</td>
</tr>
<tr>
<td>FREQUENCY MIXERS</td>
<td>24</td>
</tr>
<tr>
<td>FREQUENCY MULTIPLIERS</td>
<td>22</td>
</tr>
<tr>
<td>LIMITERS</td>
<td>22</td>
</tr>
<tr>
<td>PORTABLE TEST EQUIPMENT</td>
<td>14-16</td>
</tr>
<tr>
<td>POWER SPLITTERS/COMBINERS</td>
<td>12-13</td>
</tr>
<tr>
<td>SWITCHES</td>
<td>19</td>
</tr>
<tr>
<td>SYNTHESIZERS</td>
<td>21</td>
</tr>
<tr>
<td>TRANSFORMERS</td>
<td>23</td>
</tr>
<tr>
<td>VOLTAGE CONTROLLED</td>
<td>20</td>
</tr>
<tr>
<td>OSCILLATORS</td>
<td></td>
</tr>
<tr>
<td>ADAPTERS</td>
<td></td>
</tr>
<tr>
<td>BIAS TEES</td>
<td></td>
</tr>
<tr>
<td>DC BLOCKS</td>
<td></td>
</tr>
<tr>
<td>DESIGNER KITS</td>
<td></td>
</tr>
<tr>
<td>ELECTRONIC LINE STRETCHERS</td>
<td></td>
</tr>
<tr>
<td>IMPEDANCE MATCHING PADS</td>
<td></td>
</tr>
<tr>
<td>MODULATORS/DEMODULATORS</td>
<td></td>
</tr>
<tr>
<td>PHASE DETECTORS</td>
<td></td>
</tr>
<tr>
<td>PHASE SHIFTERS</td>
<td></td>
</tr>
<tr>
<td>POWER DETECTORS</td>
<td></td>
</tr>
<tr>
<td>RF CHOKES</td>
<td></td>
</tr>
<tr>
<td>TERMINATIONS</td>
<td></td>
</tr>
<tr>
<td>VOLTAGE VARIABLE EQUALIZERS</td>
<td></td>
</tr>
</tbody>
</table>

Choose from thousands of signal processing components—data sheets, performance curves, material declarations, environmental specifications, pricing, and stock availability for all of our models are easy to find at minicircuits.com

See website for additional product lines:

- ADAPTERS
- BIAS TEES
- DC BLOCKS
- DESIGNER KITS
- ELECTRONIC LINE STRETCHERS
- IMPEDANCE MATCHING PADS
- MODULATORS/DEMODULATORS
- PHASE DETECTORS
- PHASE SHIFTERS
- POWER DETECTORS
- RF CHOKES
- TERMINATIONS
- VOLTAGE VARIABLE EQUALIZERS
from DC up to 40GHz
300 Watt Rack Mounted Base Station Combiners

Ultra-Reliable Switching & Distribution Module

BTS-DAS Quad Simulcast Module

Multi-Function Base Station Module
designed & manufactured to meet customer requirements
MMIC Amplifiers

DC to 20 GHz

- **PGA family**
  - High Linearity
  - 50 MHz to 6 GHz
  - IP3 up to +45 dBm
  - NF from 0.5 dB
  - DC from 3V/60 mA

- **SAV-541+**
  - Ultra Low Noise
  - 450 MHz to 6 GHz
  - NF 0.5 dB
  - IP3 +33 dBm

- **CMA family**
  - Low Profile High IP3
  - 10 MHz to 6 GHz
  - IP3 up to +38 dBm
  - Ceramic Hermetic Case

- **AVA family**
  - Ultra Wideband
  - 5 to 20 GHz
  - Flatness from ±0.8 dB
  - Isolation up to 38 dB

- **PSA family**
  - High Linearity LNA
  - 50 MHz to 4 GHz
  - NF from 0.75 dB
  - IP3 up to +37 dBm

- **GVA family**
  - Flat Gain Wideband
  - 10 MHz to 6 GHz
  - Flatness from ±0.8 dB
  - IP3 up to +38 dBm

- **TAMP family**
  - Low Noise
  - 400 MHz to 3.6 GHz
  - Gain up to 35 dB
  - NF from 0.55 dB

- **GALI family**
  - Wideband
  - DC to 8 GHz
  - Gain 12 to 22 dB
  - IP3 up to +38 dBm

- **ERA family**
  - Wideband
  - DC to 8 GHz
  - Gain 8 to 19 dB
  - IP3 up to +36 dBm

Over 150 MMIC models ALWAYS IN STOCK! For more information, just go to minicircuits.com
Coaxial Amplifiers
2.5 kHz to 21 GHz

ZHL family
High Power GaN & GaAs
5 MHz to 4 GHz
P_{out} up to 100 W
IP3 up to +60 dBm

ZVE family
Medium Power
2 to 18 GHz
P_{out} up to 3W
IP3 up to +44 dBm
Low Cost

LZY family
High Power
100 kHz to 1.0 GHz
P_{out} up to 50 W
Up to 70 dB blanking

ZVA family
Super Ultra Wideband
100 MHz to 21 GHz
Flat gain, from ±1 dB
P_{out} up to +27 dBm

ZFL family
Wideband
50 kHz to 2.5 GHz
P_{out} up to +25 dBm
IP3 up to +38 dBm
Low cost

ZKL family
Wideband
10 MHz to 2.7 GHz
Gain up to 40 dB
DC 12V/120 mA typ
Low cost

ZX60 family
Low Noise/Wideband
300 kHz to 20 GHz
NF from 0.4 dB
IP3 up to +46 dBm

ZRL family
High Dynamic Range
150 MHz to 3.5 GHz
NF from 1.0 dB
IP3 up to +46 dBm

TVA family
Instrument amplifiers
500 kHz to 21 GHz
Gain 25 to 41 dB
P_{out} up to +35 dBm
IP3 up to +44dBm

Over 100 coaxial models, WITH or WITHOUT HEAT SINK, ALWAYS IN STOCK at minicircuits.com
Couplers
5 kHz to 12 GHz

**SYBD family**
- Bidirectional, to 100 W
- 400 MHz to 6 GHz
- Coupling 8 to 33 dB
- Directivity up to 35 dB
- DC Pass up to 2A

**DBTC family**
- Directional, to 2 W
- 5 MHz to 2 GHz
- Coupling 7 to 21 dB
- Directivity up to 32 dB
- Tiny, from 3.8 x 3.8 mm

**BDC and MBD families**
- Bidirectional, to 65 W
- 360 MHz to 6 GHz
- Coupling 6 to 21 dB
- Directivity up to 27 dB
- Tiny LTCC, from 3.2 x 1.6 mm

**TCD family**
- Directional, to 2 W
- 5 MHz to 2 GHz
- Coupling 7 to 21 dB
- Directivity up to 32 dB
- Tiny, from 3.8 x 3.8 mm

**ZGDC/ZGBDC family**
- Directional Bidirectional, to 250 W
- 300 MHz to 12 GHz
- Coupling 6 to 35 dB
- Directivity up to 26 dB
- DC Pass up to 3A

**ZABDC family**
- Bidirectional, to 50 W
- 700 MHz to 3.2 GHz
- Coupling 10 to 22 dB
- Directivity up to 28 dB
- DC Pass up to 2A

**ZX30 series**
- Directional, to 1 W
- 5 MHz to 2 GHz
- Coupling 9 to 21 dB
- Directivity up to 25 dB
- Small size, low cost

**ADC family**
- Directional, to 5 W
- 5 MHz to 1.3 GHz
- Coupling 6 to 26 dB
- Directivity up to 40 dB
- 50 and 75 Ω models

**D1 and D2 families**
- Directional, to 1 W
- 810 MHz to 2.6 GHz
- Coupling 18 to 19 dB
- Tiny case, 3 x 3 mm
- From 99¢ ea (Qty. 20)

Hundreds of coupler models ALWAYS IN STOCK! Just go to minicircuits.com
**Filters**

*DC to 15 GHz*

**Low Pass, High Pass, Band Pass**

**Band Stop, Diplexers**

---

**LFCN family**
Low Pass LTCC  
DC up to 12 GHz  
Passband IL 1.2 dB typ  
Rejection 30 dB typ  
Tiny, 3.2 x 1.6 x 0.9 mm

**HFCN family**
High Pass LTCC  
500 MHz up to 15 GHz  
Passband IL 1.5 dB typ  
Rejection 30-50 dB  
Tiny, 3.2 x 1.6 x 0.9 mm

**VLF family**
Low Pass, Unibody  
DC to 7.2 GHz  
Passband IL <1 dB  
Rejection 30 dB typ  
Low Price

**LPF family**
Low Pass  
DC up to 500 MHz  
High rejection 40 dB  
Fast roll-off  
Passband IL <1 dB typ

**BFCN family**
Band Pass LTCC  
1.42 to 8.75 GHz  
2% to 29% passband  
Passband IL <3 dB typ  
Rejection 20-30 dB typ  
Tiny, 3.2 x 1.6 x 0.9 mm

**CBP/CSBP family**
Ceramic resonator  
880 MHz to 1.9 GHz  
High rejection 30 dB  
Low IL, from 0.7 dB  
$P_{\text{MAX}}$ to 28 W  
50 & 75 Ω

**Diplexers**
DC up to 2.7 GHz  
Passband IL <1 dB typ  
High rejection, >30 dB

**BLP, NLP, & SLP family**
Low Pass, Shielded  
DC up to 2.7 GHz  
Passband IL <1 dB  
Rejection 40 dB typ  
Low Price

**ZX75BS family**
Band Stop  
Stop bands from 47 0 up to 170 MHz  
Passband IL <1 dB  
High rejection, 45 dB

---

**HUNDREDS of filter models ALWAYS IN STOCK at minicircuits.com**

**IF/RF & MICROWAVE PRODUCTS** For detailed performance specs & shopping see minicircuits.com
Surface-Mount Power Splitters/Combiners

100 kHz to 8 GHz

QC family
2 Way-90° LTCC
90 MHz to 8 GHz
High P_{max} 10 to 15 W
Tiny case, 0805 to 1210
High bandwidth/size
Low price

JEPS family
16 Way-0°
5 MHz to 1 GHz
Good VSWR, 1.2 typ
Good ISO, 23 dB typ

TCP family
2 Way-0°
5 MHz to 3 GHz
High ISO, up to 29 dB
Low IL, from 0.3 dB
Small size, 0.16 x 0.15”
Very low cost

GP family
2 Way-0°
500 MHz to 7.2 GHz
Very wide bandwidths
Good ISO, 20+ dB typ
Low IL, 0.4 dB typ
Tiny 3x3 mm cases

SCN family
2 and 3 Way-0° LTCC
750 MHz to 6.5 GHz
Low IL, 0.6 dB typ
Good ISO, 20+ dB typ
Tiny 1206 case

SP family
2 Way-0°
640 MHz to 4.2 GHz
High ISO, up to 30 dB
Low IL, 0.5 dB typ
from 96¢ ea (qty 20)

SBTC family
2 Way-0° or 180°
50/75Ω matching
5 MHz to 2.5 GHz
Low IL, from 0.3 dB typ
ISO as high as 28 dB

WP4 family
4 Way-0°
720 MHz to 6.5 GHz
High ISO, up to 30 dB
Low IL, from 0.4 dB
Tiny 3x3 mm cases

HUNDREDS of surface-mount splitter/combiner models ALWAYS IN STOCK—just go to minicircuits.com
Coaxial Power Splitters/Combiners

DC to 18 GHz

HUNDREDS of coaxial splitter/combiner models ALWAYS IN STOCK—just go to minicircuits.com
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Our user-friendly GUI gets you up and running in minutes:
- Using almost any 32/64-bit Windows® computer*
- Command-line support for 32/64-bit Linux® systems*
- Full compatibility with most test software (see data sheets)

Smart Synthesized Signal Generators
250 kHz to 6.4 GHz

SSG-4000HP
- High P_OUT -50 to +20 dBm
- 250 MHz to 4 GHz
- Low Harmonics -40 dBc typ
- Power level adjust 0.25 dB
- Frequency step size 5 kHz
- 213 x 216 x 55 mm
- Only $1995

SSG-4000LH
- Low Harmonics -66 dBc typ
- 250 MHz to 4 GHz
- P_OUT -60 to +10 dBm
- Power level adjust 0.25 dB
- Frequency step size 5 kHz
- 279 x 216 x 55 mm
- Only $2395

SSG-6000
- Wideband CW and Pulse
- 25 MHz to 6 GHz
- Pulse as short as 1µS
- Low Harmonics -40 dBc typ
- P_OUT -60 to +10 dBm
- Power level adjust 0.25 dB
- Frequency step size 6 Hz
- 213 x 216 x 55 mm
- Only $2495

SSG-6400HS
- High Speed CW and Pulse
- 250 kHz to 6.4 GHz
- Full range sweep in 100 µs
- Pulse as short as 100 nS
- Phase control 360°
- AM/FM/PM Modulation
- P_OUT -70 to +10 dBm
- Power level adjust 0.01 dB
- Frequency step size 0.01 Hz
- 279 x 216 x 55 mm
- Available Q2 2013

HPG-13
- High Power SSG
- 800 MHz to 1 GHz
- P_OUT up to 100 W
- Frequency step size 5 kHz
- Sampled output -33 dBc
- Trigger & Reference In/Out
- Available Q2 2013

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- Command-line support for 32/64-bit Linux® systems*
- Full compatibility with most test software (see data sheets)

**Smart Power Meters**

**Frequency Counters**

**I/O Boxes**

**RS232 to SPI Converters**

**9 kHz to 8 GHz**

- **PWR-4GHS**
  - Ultra Wide Band VLF
  - 9 kHz to 4 GHz
  - RF Input -30 to +20 dBm
  - Measurements in 30 mS
  - User-friendly GUI
  - Only $795

- **PWR-5GHS**
  - Wide Band
  - 1 MHz to 5 GHz
  - RF Input -30 to +20 dBm
  - Measurements in 30 mS
  - User-friendly GUI
  - Inexpensive Price! $695

- **PWR-8FS**
  - High Speed
  - 1 MHz to 8 GHz
  - Measurements in 10 mS
  - RF Input -30 to +20 dBm
  - User-friendly GUI
  - Only $969

- **PWR-8GHS**
  - Ultra Wide Band SHF
  - 1 MHz to 8 GHz
  - RF Input -30 to +20 dBm
  - Measurements in 30 mS
  - User-friendly GUI
  - Only $869

- **PWR-4GHS**
  - Ultra Wide Band VLF
  - 9 kHz to 4 GHz
  - RF Input -30 to +20 dBm
  - Measurements in 30 mS
  - User-friendly GUI
  - Only $795

- **PWR-6GHS**
  - Wide Band
  - 1 MHz to 6 GHz
  - RF Input -30 to +20 dBm
  - Measurements in 30 mS
  - User-friendly GUI
  - Inexpensive Price! $695

- **PWR-8GHS**
  - Ultra Wide Band SHF
  - 1 MHz to 8 GHz
  - RF Input -30 to +20 dBm
  - Measurements in 30 mS
  - User-friendly GUI
  - Only $869

- **PWR-4GHS**
  - True RMS Power Meter
  - 50 MHz to 4 GHz
  - RF Input -35 to +20 dBm
  - Measurements in 30 mS
  - User-friendly GUI
  - Only $1769

- **PWR-2.5GHS-75**
  - 75 Ω Extra Wide Band
  - 100 kHz to 2.5 GHz
  - RF Input -30 to +20 dBm
  - Measurements in 30 mS
  - User-friendly GUI
  - Only $795

- **UFC-6000**
  - Frequency Counter
  - 1 MHz to 6 GHz
  - Accuracy to 0.13 ppm
  - RF Power -28 to +13 dBm
  - User-friendly GUI
  - Only $495

- **USB-I/O family**
  - Input/Output Boxes
  - Up to 16 TTL/LVTTL ports
  - Up to 8 form C dry relays
  - Up to 2 analog outputs
  - User-friendly GUI
  - From just $119.95

- **RS232/USB-SPI family**
  - Control SPI peripherals from USB or RS232-equipped computers
  - User-friendly GUI
  - All-inclusive, only $244.95

- **RUDAT Series**
  - 1 MHz to 6 GHz
  - 30, 60 & 90 dB models
  - 0.25 dB steps
  - Controlled by USB/RS232
  - From $395.00

---

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Portable Test Equipment

Our user-friendly GUI gets you up and running in minutes:
• Using almost any 32/64-bit Windows® computer
• Command-line support for 32/64-bit Linux® systems
• Full compatibility with most test software (see data sheets)

Smart RF Switch Matrix
DC to 18 GHz

USB-2SPDT-A18
2 SPDT Switch Matrix Ultra Reliable
DC to 18 GHz
152 x 114 x 57 mm
Only $885 ea. (Qty 1-9)

USB-3SPDT-A18
3 SPDT Switch Matrix Ultra Reliable
DC to 18 GHz
152 x 114 x 57 mm
Only $980 ea. (Qty 1-9)

USB-4SPDT-A18
4 SPDT Switch Matrix Ultra Reliable
DC to 18 GHz
152 x 114 x 57 mm
Only $1180 ea. (Qty 1-9)

USB-8SPDT-A18
8 SPDT Switch Matrix Ultra Reliable
DC to 18 GHz
305 x 114 x 57 mm
Only $2495 ea. (Qty 1-9)

ZT-100
Network Analyzer Extender Ultra Reliable
DC to 8.5 GHz
2 x 10 port switch matrix
High Isolation, 90 dB typ
Excellent VSWR, 1.2:1 typ

ZT-103
3 x 12 Switch Matrix Ultra Reliable
DC to 18 GHz
Low Isl, 0.2 dB typ
High Isolation, 80 dB typ

USB-1SP4T-A18
1 SP4T Switch Matrix Ultra Reliable
DC to 18 GHz
152 x 114 x 57 mm
Only $795 ea. (Qty 1-9)

ZT-101
Switched signal leveler Ultra Reliable
1 to 15 GHz
1 x 2 matrix
Gain 26+-1 dB
P<sub>out</sub> to 18 dBm

60-Port Rx/Tx Tester Ultra Reliable
DC to 18 GHz
Modular 4U design
Configured to customer req's

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All Smart Switch Matrix models ALWAYS IN STOCK at minicircuits.com
Cables
DC to 40 GHz

- **CBL Precision Test**
  - DC to 18 GHz
  - SMA (M or F), N-Type (M)
  - Length 0.5 to 7.6 M
  - Return Loss 27 dB typ
  - Proven 20k flex cycles
  - 6-month guarantee

- **KBL 40 GHz Low Loss**
  - DC to 40 GHz
  - 2.92 mm (M) connectors
  - Length 0.5 to 2 M
  - IL 3.1 dB @ 40 GHz/1 M
  - Proven 20k flex cycles
  - 6-month guarantee

- **KBL 40 GHz Phase Stable**
  - DC to 40 GHz
  - 2.92 mm (M) connectors
  - Length 0.5 to 2 M
  - Phase 3° typ @ 40 GHz
  - & 1 full turn 3” diameter
  - Proven 20k flex cycles
  - 6-month guarantee

- **QBL Quick Connect**
  - DC to 18 GHz
  - SMA (M) or N-Type (M)
  - Length 1.5 to 10 feet
  - Return Loss 27 dB typ
  - Proven 20k flex cycles
  - 6-month guarantee

- **Hand Flex™ Interconnects**
  - DC to 18 GHz
  - SMA (M) or N-Type (M)
  - Straight or right-angle
  - Length 7.6 to 127 cm
  - .086 or .141” diameter

- **APC Armored**
  - DC to 18 GHz
  - N-Type (M) connectors
  - Length 6 to 15 feet
  - Proven 20k flex cycles
  - 6-month guarantee

- **FLC Super Flexible**
  - DC to 26 GHz
  - SMA (M)
  - Lengths from 1 ft to 6.5 ft
  - IL: 1.4 dB at 10 GHz/3.3 ft
  - Proven 20k flex cycles
  - 6 month guarantee

All Test Cable and Interconnect models ALWAYS IN STOCK at minicircuits.com

IF/RF & MICROWAVE PRODUCTS For detailed performance specs & shopping see minicircuits.com
Attenuators

DC to 26 GHz

**HOT NEW PRODUCT**

**VAT family — Fixed**
DC to 18 GHz
0-10, 12, 15, 20, 30 dB
$P_{\text{MAX}}$ 2 W
Flatness $\pm 1$ dB typ
Tiny, 2 x 2 mm

**RCAT family**
Fixed Hermetic LTCC
DC to 18 GHz
0-10, 12, 15, 20, 30 dB
$P_{\text{MAX}}$ 2 W
Flatness $\pm 1$ dB typ
Tiny, 2.2 x 2.2 mm

**ZX76 family**
Digital Step
DC to 4 GHz
Attenuation to 31.5 dB
Step 0.5 to 1.0 dB
Rugged unibody case

**HVA, MVA, RVA, VACC**
Voltage Variable
10 MHz to 7 GHz
Attenuation to 47 dB
$V_{\text{CONTROL}}$ up to 17 V
Tiny, from 3.8 x 3.8 mm
50 & 75 $\Omega$

**BW family**
Fixed Precision
DC to 26 GHz
0-10, and up to 40 dB
Flatness $\pm 0.5$ dB typ
$P_{\text{MAX}}$ up to 100 W

**DAT family**
Digital Step
DC to 4 GHz
Attenuation to 31.5 dB
Step 0.5 to 1.0 dB
Tiny, 4 x 4 mm

**BW-40N100W+**
High Power Fixed
DC to 4 GHz
$P_{\text{MAX}}$ 100 W
Attenuation 40 dB
Flatness $\pm 1.4$ dB

**VAT family**
Fixed
DC to 6 GHz
1-10, and up to 30 dB
$P_{\text{MAX}}$ up to 2 W

**TERM-500W-14N+**
High Power Termination
700 MHz to 10 GHz
$P_{\text{MAX}}$ 500 W @ 1.0 GHz
Return loss 17 to 25 dB

All attenuator and termination models ALWAYS IN STOCK—just go to minicircuits.com
Switches

DC to 18 GHz

Semiconductor switches  DC to 6 GHz

**HSWA2-30DR+**
Absorptive SPDT
DC to 3 GHz
High ISO 54 dB typ
High IP3 +65 dBm typ
Single DC supply 3V
Immune to latchup

**MSW family**
SPDT or Transfer
DC to 2 GHz
Low video leakage
Excellent VSWR 1.2:1 typ
Fast switch from 5 ns typ

**ZX80-DR230+**
DC to 3 GHz
High ISO 54 dB typ
High IP3 +65 dBm typ
Single DC supply 3-5V
Rugged unibody case

**M3SW family**
TTL controlled SPDT
DC to 4.5 GHz
High in-out ISO 54 dB typ
Low IL 0.7 dB typ
Tiny, 3.25 x 3.25 mm

**VSW family**
Ultra Wide Band SPDT
50 MHz to 6 GHz
Low IL, from 0.5 dB typ
DC supply 3 to 5V
Tiny, from 2 x 3 mm

**ZASW family**
TTL controlled SPDT
DC to 5 GHz
Super High ISO 82 dB typ
Absorptive or reflective
Rugged construction

All switch models ALWAYS IN STOCK at minicircuits.com
Voltage Controlled Oscillators
3 MHz to 7 GHz

Surface-Mount or Coaxial
Low Phase Noise CROs
Fixed Freq / Ultra Low Noise
Dual Frequency
Wideband Linear Tuning
Modulation Ports
Custom Models Available

ROS family
Passive or Ceramic
43 MHz to 6.8 GHz
\( P_{\text{out}} \) -6.5 to +13 dBm
\( V_{\text{tune}} \) up to 28 V
Sensitivity 1-150 MHz/V
\( V_{\text{cc}} \) 3-15 V
0.5 x 0.5"

JTOS family
24 MHz to 3 GHz
\( P_{\text{out}} \) +7 to +12 dBm
\( V_{\text{tune}} \) up to 22 V
Sensitivity 1-160 MHz/V
\( V_{\text{cc}} \) 5-12 V
0.8 x 0.5"

ZX95 family
43 MHz to 6.8 GHz
\( P_{\text{out}} \) -2.6 to +10 dBm
\( V_{\text{tune}} \) up to 28 V
Sensitivity 1-150 MHz/V
\( V_{\text{cc}} \) 3-15 V
Rugged unibody case

MOS family
57 MHz to 2.8 GHz
\( P_{\text{out}} \) -8.5 to +7 dBm
\( V_{\text{tune}} \) up to 20 V
Sensitivity 4.5-73 MHz/V
\( V_{\text{cc}} \) 3-15 V
Very small, 0.4 x 0.4"

JCOS family
125 MHz to 1.1 GHz
\( P_{\text{out}} \) +3.7 to +9 dBm
\( V_{\text{tune}} \) up to 20 V
Sensitivity 3.8 MHz/V
\( V_{\text{cc}} \) 8-12 V
0.9 x 0.8"

Custom Models
3 MHz to 7 GHz
1 MHz to Octave Bandwidths
Noise -135 dBc/Hz @10 kHz
\( V_{\text{tune}} \) up to 28V
\( P_{\text{out}} \) up to +15 dBm
As small as 0.2 x 0.2 x 0.1"

SOS family
600 MHz to 4.3 GHz
\( P_{\text{out}} \) -6.5 to +6 dBm
\( V_{\text{tune}} \) up to 5 V
Sensitivity 7-180 MHz/V
\( V_{\text{cc}} \) 2.75-8 V
Tiny, 0.3 x 0.3"

ZOS family
25 MHz to 1.02 GHz
\( P_{\text{out}} \) +8 to +10 dBm
Aux out -12 dBc typ
\( V_{\text{tune}} \) 1-16 V
Sensitivity 2.5-30 MHz/V
\( V_{\text{cc}} \) 12 V

DOS and WOS families
100 MHz to 1.22 GHz
Very Tiny, from 0.2 x 0.2"
\( P_{\text{out}} \) +0.5 to +9 dBm
\( V_{\text{tune}} \) 0.3 to 4.7 V
Sensitivity 45 MHz/V max

Hundreds of VCO models ALWAYS IN STOCK! For more information, just go to minicircuits.com
Synthesizers

56 MHz to 7.8 GHz

Integer and Fractional N
Narrow Band / Low Phase Noise
Fixed Freq / Ultra Low Noise
Dual Frequency
Fast Settling Time
Ultra Wideband
Custom Models Available

SSND Dual Fixed family
600 MHz to 1.44 GHz
RF P_{OUT} +3 dBm typ
IF P_{OUT} -10 dBm typ
Φ Noise-90 dBc/Hz @10 kHz
Settling time 0.4 mS typ
Small size, 0.6 x 0.6"

KSN Narrow Band family
430 MHz to 4.26 GHz
P_{OUT} +0.5 to +4.6 dBm
Step size 5 kHz to 10 MHz
Φ Noise-95 dBc/Hz @10 kHz
Small size, 0.8 x 0.6"

SSN Narrow Band family
1.4 to 6 GHz
P_{OUT} +0.5 to +4.6 dBm
Step size 125-250 kHz
Φ Noise-95 dBc/Hz @10 kHz
Small size, 0.6 x 0.6"

WSN Very Wide Band/
Fast Settling Time family
700 MHz to 4 GHz
Settling time 15 µS
Step size 10 MHz
Φ Noise-97 dBc/Hz @10 kHz
1.75 x 1.25"

DSN Wide Band family
924 MHz to 3.5 GHz
P_{OUT} -0.5 to +9 dBm
Step size 12.5-10000 kHz
Φ Noise-95 dBc/Hz @10 kHz
Small size, 1.25 x 1.0"

ZSN family
3.7 to 7.8 GHz
P_{OUT} -3.5 to +10 dBm
Step size 1 to 10 MHz
Φ Noise-87 dBc/Hz @10 kHz
Small size, 2.75 x 2"

Custom Models
56 MHz to 7.8 GHz
Up to 2-Octave Bandwidths
Φ Noise-122 dBc/Hz @10 kHz
Settling time from 15 µS
P_{OUT} up to +13 dBm
Cases from 0.6 x 0.6"

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IF/RF & MICROWAVE PRODUCTS For detailed performance specs & shopping see minicircuits.com
**Frequency Multipliers**
output 100 kHz to 20 GHz

**Limiters**
200 kHz to 8.2 GHz

X2 Multipliers
Output 20-20000 MHz
RF Input up to 17 dBm
Low CL 12 dB typ
F1/F3 reject, to -45 dBc
Tiny, from 0.2 x 0.18”

X3 Multipliers
Output 300-15000 MHz
RF Input up to 17 dBm
Low CL 15 dB typ
F2/F4 reject, to -67 dBc
Tiny, from 0.25 x 0.31”

X2 Multipliers
Output 0.1-20000 MHz
RF Input up to 20 dBm
Low CL 12 dB typ
F1/F3 reject, to -45 dB
Small, from 0.74 x 0.9”

CLM family
Ultra Wideband Limiter
30 MHz to 8.2 GHz
Max PIN +32 dBm
PoUT +11.5 dBm
LTCC Hermetic Package
Tiny, 3 x 3 x 1.14 mm

X5 Multipliers
Output 37.5-2750 MHz
RF Input up to 17 dBm
Low CL 22 dB typ
F4/F6 reject, to -67 dBc
Tiny, from 0.25 x 0.31”

X12 Multiplier
Output 4.5-6 GHz
RF Input up to 0 dBm
Low CL 6.5 dB typ
F11/F13 reject, -26 dBc
Rugged case, 2 x 2”

RLM family
Wideband Limiters
200 kHz to 6 GHz
Max PIN up to +33 dBm
Low PoUT from 0 dBm

Custom models
Multipliers & Limiters
Rapid response
Fast turnaround

Give us a call!

VLM & ZFLM family
Wideband Limiters
10 MHz to 7 GHz
Max PIN up to +33 dBm
PoUT from 0 dBm

Limiter and multiplier models ALWAYS IN STOCK and ready to ship at minicircuits.com
Transformers

4 kHz to 8 GHz

TC family
3 MHz to 6 GHz
Ω ratios from 1 to 16
Ceramic base
Small as 0.15 x 0.15"

TT family
4 kHz to 500 MHz
Center-tap prim. & sec.
Ω ratios from 1 to 25
Small as 0.15 x 0.16"

NCS family
600 MHz to 8 GHz
Rugged LTCC case
Ω ratios from 1 to 4
Good Φ & amplitude
Tiny 0.08 x 0.08"

TCN family
600 MHz to 4.5 GHz
Rugged LTCC case
Ω ratios from 1 to 4
Good Φ & amplitude
Tiny 0.13 x 0.08"

TCM family
1.5 MHz to 4 GHz
Ω ratios from 1 to 9
Plastic base, low cost
Small as 0.15 x 0.15"

FT family
10 kHz to 500 MHz
Rugged aluminum case
Good return loss
DC isolated connectors available
Small 1.25 x 1.25"

ADT family
15 kHz to 1.8 GHz
Ω ratios from 1 to 16
Excellent Φ & amplitude
Small as 0.31 x 0.27"

SYTX family
30 MHz to 1 GHz
High RF power, 10W
DC pass 30 mA
High thermal conduct.
Small 0.43 x 0.69"

Z7550 Series
75 to 50 Ω
10-2300 MHz
Low Loss Less than 0.5dB typ.
Rugged Aluminum Case
Small 1.25”x1.25”

Hundreds of transformer models ALWAYS IN STOCK at minicircuits.com
Frequency Mixers

More mixer models, that meet more needs, than all other mixer manufacturers combined!

500 Hz to 20 GHz

ADE family
- 50 kHz to 4.2 GHz
- $P_{LO} +3$ to $+20$ dBm
- Low CL, from 4.6 dB typ
- Tiny, from 8 x 7 x 2 mm
- Low price

MAC family
- Ultra-Rel Hemistic LTCC
- 300 MHz to 12 GHz
- $P_{LO} +4$ to $+17$ dBm
- Low CL, from 5.8 dB
- Tiny, 7.6 x 6.4 x 1.5 mm

SIM family
- Rugged LTCC cases
- 100 kHz to 20 GHz
- $P_{LO} +4$ to $+17$ dBm
- Low CL, from 5.8 dB
- Tiny, 5 x 4.6 x 2.2 mm

LAVI family
- Very low distortion
- 2 MHz to 3.65 GHz
- $P_{LO} +17$ to $+23$ dBm
- High IP3 to $+36$ dBm
- Super high ISO to 58 dB

HJK family
- Low distortion
- 130 MHz to 5.4 GHz
- $P_{LO} +7$ to $+17$ dBm
- High IP3 to $+34$ dBm
- High ISO to 55 dB

MCA family
- High dynamic range
- 500 MHz to 5 GHz
- $P_{LO} +10$ to $+20$ dBm
- Low CL, from 5.9 dB
- High IP3 to $+35$ dBm
- High ISO to 44 dB

ZX05 family
- 100 kHz to 20 GHz
- $P_{LO} +3$ to $+17$ dBm
- Low CL, from 5.2 dB
- High ISO to 60 dB
- Rugged unibody

MRA family
- Ultra-Rel High Gain
- 1.0 to 4.2 GHz
- $P_{LO} +7$ to $+13$
- Conv. Gain 12 dB
- Tiny, 7.6 x 6.4 x 1.5 mm

SYM family
- 1 MHz to 6 GHz
- $P_{LO} +7$ to $+20$ dBm
- Low CL, from 6.3 dB
- High IP3 to 32 dBm
- High ISO to 50 dB
- Low cost

Over 500 mixer models in stock and ready to ship today! Just go to minicircuits.com

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