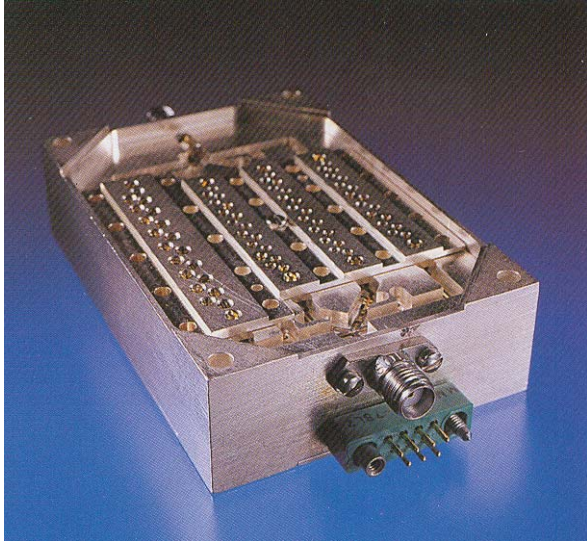


# Switch Filter Assembly

## R7084



**DESCRIPTION** Switch Filter Assembly used to provide 60 dB harmonic rejection for input signals in the 2 to 18 GHz frequency range. Multi Octave preselectors may be supplied from 0.1 GHz to 18.0 GHz.

**ADVANTAGES** The advantages of the Microphase designed and engineered R7084 Switch Filter Assembly provides high selectivity and extended stop bands, as well as low insertion loss and VSWR. The Microphase R7084 Switch Filter Assembly achieves excellent electrical performance, mechanical reliability and environmental stability. Compact and very rugged, all of our products are 100% tested. This component can be designed to your specifications.

### SPECIFICATIONS

Frequency Range	2.0 to 18.0 GHz
Insertion Loss	6.0 dB max.
VSWR (in/out)	2:1 max.
Harmonic Rejection	60 dB min.
Max. RF Power	250 mW CW
Switching Speeds	200 nsec. 50% TTL to 10/90% RF
Control	4 Line TTL
Power Supply	+ 5V @ 150 mA - 15V @ 50 mA
Size (excluding connectors)	3.00" X 2.00 x 0.75"
Connectors	SMA female (Removable)
Operating Temperature	-40 ° C to +95 ° C

### FILTER CHARACTERISTICS

Channel	Pass Bands (GHz)	Reject Bands (GHz) 60 dB min.
#1	2.0 – 3.5	4.0 – 18.0
#2	3.5 – 6.0	7.0 – 18.0
#3	6.0 – 10.4	12.0 – 18.0
#4	10.4 – 18.0	(Optional)



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# Filter Limiter Detector

## R6168

### Superior Electrical Performance

### Small Size

### High Input Power

**DESCRIPTION** The Microphase R6168 Filter Limiter Detector detects and limits RF energy levels into sensitive systems while filtering RF signals to specified levels. The Filter Limiter Detector has uses in many types of military applications including RF receivers and ECM systems.

**ADVANTAGES** The main advantage of the Microphase designed and engineered R6168 Filter Limiter Detector is its small size and superior electrical performance over a broad frequency range. Other important advantages are excellent amplitude flatness, high tangential sensitivity along with high voltage output and input power. You get excellent electrical performance, mechanical reliability and environmental stability. This high power handling unit can be custom specified with passband frequencies up to 18 GHz to meet specific customer configurations. Compact and very rugged, all products are 100% tested and readily available.



#### SPECIFICATIONS

Passband Frequency	900-1600 MHz
Passband Flatness	±1 dB
Passband Voltage Output (at -20 dBm)	15 mV min.
Load Impedance	2.2 K Ohms
Bias	-150 $\mu$ amps.
Tangential Sensitivity	-45 dB min.
Rejection DC to 0.650 and 1.91 to 18.0 GHz	50 dB min.
Input Power Handling	2 Watts CW
Size (excluding connectors)	2.7" L x 0.40" Dia.
Connectors	SMA female



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# Up and Down Converter

## R7212 Down Converter

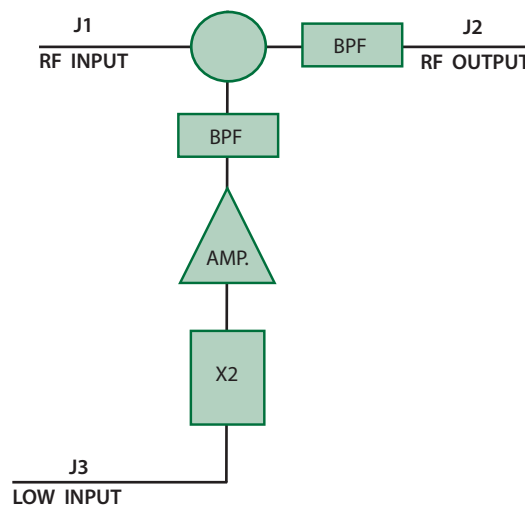
## R7213 Up Converter



**DESCRIPTION** The Microphase R7212 Down-Converter is used with the companion R7213 Up-Converter in a radar simulator to provide a Doppler frequency shift for a simulated Ku band radar return. An internal frequency doubler is used for the LO to allow a VHF synthesizer to generate the required  $1635 + \Delta$  MHz LO frequency. Both the doubled LO and RF signals are selectively filtered to provide a wide dynamic range spurious free conversion with low intermodulation distortion.

**ADVANTAGES** The Microphase designed and engineered Up and Down converters provide a low loss, low VSWR, high dynamic range conversion from RF to IF frequencies. They feature excellent electrical performance, environmental stability and high reliability. When used together, they provide a wide dynamic range spurious free Doppler frequency shift over a 1 GHz input band. They are fully productized in sealed housings, 100% tested. This component can be designed to your specifications.

**Superior Electrical Performance**  
**Wide Dynamic Range**  
**Low Loss and Low VSWR**



### SPECIFICATIONS

	R7212 Down Converter	R7213 Up Converter
RF Input	13.4 to 14.4 GHz	11.765 to 12.765 GHz
LO Frequency	817.5 MHz, +10 dBm	817.5 MHz, +10 dBm
RF Output	11.765 to 12.765 GHz	13.4 to 14.4 GHz
Flatness	$\pm 0.75$ dB	$\pm 0.75$ dB
Conversion Loss	8 dB max.	8 dB max.
Noise Figure	8 dB max.	8 dB max.
Input 1 dB Gain Compression	+1 dBm min.	+1 dBm min.
VSWR	2.0:1 max.	2.0:1 max.



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# SG 1000 Converter



**DESCRIPTION** The Microphase SG 1000 Converter is used in an S band Doppler weather radar to provide a very high dynamic range linear phase conversion from the RF operating frequency of 2.7 to 3.0 GHz to the 60 MHz IF frequency. Sample ports are provided on the RF, LO and IF signal lines. Isolators are included to maintain low VSWR. Internal voltage regulation is used for stability and external noise immunity.

**ADVANTAGES** The advantages of the Microphase designed and engineered SG1000 Converter provides a low noise, low VSWR, high dynamic range linear phase conversion from RF to IF frequencies. It features excellent electrical performance, environmental stability and high reliability. It is fully productized in a sealed housing, 100% tested and readily available. This component can be designed to your specifications.

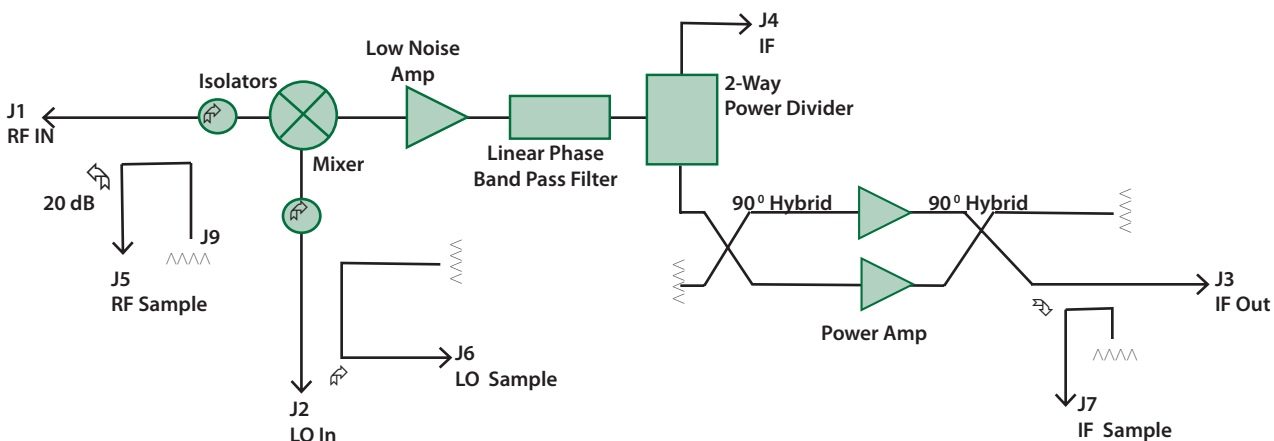
**Excellent Electrical Performance**

**High Dynamic Range**

**Low Noise and Low VSWR**

## SPECIFICATIONS

RF Input	2.7 to 3.0 GHz
LO Frequency	2.64 to 2.94 GHz
IF	60 ±10 MHz
Gain	20 dB ± 0.5 dB
Noise Figure	10 dB max.
VSWR	1.3:1 max.
Output 1 dB GCP	+20 dBm min.
Phase Linearity	±3° max.
Size	10.56" x 3.13" x 1.28"
(excluding connectors)	
Connectors	SMA female
DC Power	+18 volts 65 mA -18 volts 200 mA



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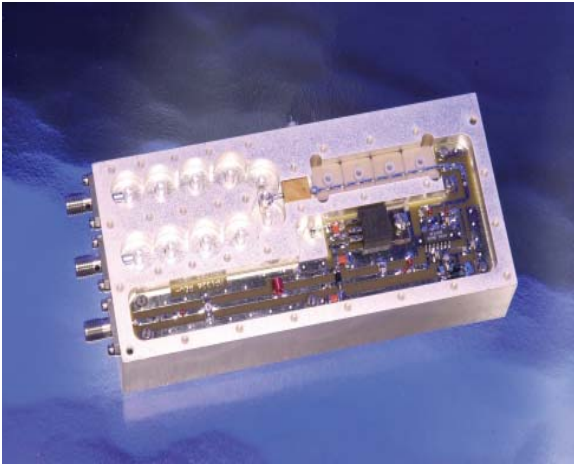
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# SRD Multiplier

## Step Recovery Diode (SRD) Design

**Spectrally Pure Low Phase Noise Output Signals.**

**Inexpensive, Compact and Efficient Design**



**DESCRIPTION:** Microphase's multiplier units rely on the impulse generating characteristics of step recovery diodes to produce a comb spectrum at multiples of the input frequency. The desired harmonics are filtered to produce spectrally pure low phase noise output signals that are integer multiples of the input frequency.

Typically an input amplifier is used to provide the correct operating level for the step recovery diode and optionally an output amplifier may be added to increase the output power for high order multiplications. The result is a compact, inexpensive, narrowband, spectrally pure signal generator based on a low input frequency. Multiple frequencies, switch selectable, single output port or multiple output ports are available as required.

### SPECIFICATIONS

Input Frequencies Range (5%)	250 MHz to 2000 MHz
Input Power Levels	
Passive (no amplifier)	+22 to +27 dBm
Active (with Amplifier)	Customer specified
Input VSWR	1.5:1 to 2.0:1 typ.
Multiplication Ratio (N)	x3 to x25
Output Frequency Range	1 GHz to 20 GHz
Output Power Level	0 to 15 dBm typ.
Output Power Variation	±1.5 dB max.
Undesired Harmonic Suppression	70 dB min.
Non Harmonic Spurious	-70 dBc min.
Output Additive Phase Noise	20 Log N typ.
DC Power (Amplified Units)	+5 to 15 VDC @ 100 to 300 mA typ.



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# Detector Coupler

## R7819

Excellent Electrical Performance

Small Size

Low VSWR

Excellent Flatness and Voltage Output



**DESCRIPTION** The Microphase Detector Coupler integrates a detector and coupler into one low-cost unit. The Detector Coupler provides product samples of RF energy by detecting a predetermined amount of RF energy. It can be used in all military applications, including satellite systems.

**ADVANTAGES** The Detector Coupler offers a high sensitivity level and wide dynamic range in a compact design. This Detector Coupler is Microphase-engineered for low VSWR, excellent frequency flatness and voltage output. You get excellent electrical performance, mechanical reliability and environmental stability. This sealed unit can also be adapted for custom configurations. Compact and very rugged, all of our products are 100% tested, and readily available. This component can be designed to your specifications.

### SPECIFICATIONS

Frequency Range	9.4-11.6 GHz*
Insertion Loss	0.9 dB
VSWR	1.3 max.
Voltage Output	1.1 volts at +22 dBm
Detector Flatness	±0.2 dB
Input Power	+18-23 dBm
Size (excluding connectors)	1.63" L x 1.2" W x 0.44" H
Connectors	SMA female

\* Other Detector Couplers are available from 0.5-18 GHz  
Coupling 10-20 dB, narrow and multi-octave designs.



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# Miniature Directional RF Coupler

Small Package Size

Precise Monitoring of RF Energy



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## SPECIFICATIONS

Frequency Range	10 MHz to 3000 MHz
Coupling	14.2 dB $\pm$ 0.75 dB
Insertion Loss	1.0 dB max. from 10 MHz to 1000 MHz 1.5 dB max. from 1000 to 2000 MHz 2.0 dB max. from 2000 to 3000 MHz
Return Loss	18.0 dB min. from 10 to 1000 MHz 15.0 dB min. from 1000 to 2000 MHz 14.0 dB min. from 2000 to 3000 MHz
Directivity	14.0 dB min. from 10 to 1000MHz 11.0 dB min. from 1000 to 3000 MHz
Input Power	3.0 watts max.
Mounting Holes	Three 3/32" Thru Holes
Size (excluding connectors)	0.65" L x 0.5" W x 0.38" H
Connectors	SMA female
Weight	0.10 oz.

**DESCRIPTION** The Miniature Directional RF Coupler, allows Precise Monitoring of RF Energy. The Miniature 3 Port Directional RF Coupler pictured, is specifically designed to monitor incident or reflected power within a small package design.

**ADVANTAGES** The Directional RF Coupler offers superior performance over a frequency range of 10 MHz to 3 GHz with a coupling value of 14.2  $\pm$  0.75 dB. The Microphase Coupler are offered in a lightweight aluminum package and can be manufactured in a variety of configurations. Shown is the 50 Ohm unit with SMA female connectors.



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# Frequency Channelizers

**Microphase Channelizers are Available with Detectors or Detector/Video Amplifiers, As Integrated Assemblies. Various Connector Types Available.**

**Superior Electrical Performance**

**Excellent Frequency Flatness**

**Low Insertion Loss and VSWR**

**Sharp Selectivity**

**DESCRIPTION** The Microphase Frequency Channelizers with narrow; contiguous frequency windows utilize isolated power division to feed multiplexing manifolds, interlacing odd and even-channel filter clusters. This allows flexibility in the choice of design functions - i.e. number of channels and bandwidth, selectivity, interchannel isolation and crossover characteristics. For example, adjacent channels may be designed to cross over at any relative amplitude, including overlap. Channel-insertion losses are internally equalized to offset cumulative manifold losses.



**ADVANTAGES** The main advantage of the Microphase designed and engineered Frequency Channelizers is their superior electrical performance. The low profile channelizer employs stripline power divider and drop-in circulators to feed four combine filter quadruplexers. Other important advantages are its sharp selectivity, excellent frequency flatness, with the capability of contiguous or non-contiguous crossover. You get excellent electrical performance, mechanical reliability and environmental stability. These units can be adapted for custom configurations. Lightweight, compact and very rugged, all of our products are 100% tested and readily available. This component can be designed to your specifications.

## TYPICAL SPECIFICATIONS

Passband Frequency Range	1 to 26 GHz
Number of Channels	6 to 24
Bandwidth	Up to 1.5 Octaves

## SPECIFICATIONS

Number of Channels	16
Insertion Loss	9.0 dB max.
Relative Flatness	$\pm 0.75$ dB max.
Crossover Loss	2.5 dB max.
Input VSWR	2.0:1 max.
Rejection	55 dB min. @ $f_0$ of adjacent channels

Miniature, high density package with four, multiplexed quadruplexers. Features replaceable SMA connectors. Operates over  $-54^{\circ}\text{C}$  to  $+95^{\circ}\text{C}$ .

## SPECIFICATIONS

Input Frequencies	4.0 to 8.0 GHz
Number of Channels	16
Channel Bandwidth	125 MHz, each Channel
Insertion Loss	7.0 dB max.
Relative Flatness	$\pm 1.0$ dB max.
Crossover Loss	2.0 dB max.
Input VSWR	1.9:1 max.
Rejection	30 dB min. @ $f_0$ of adjacent channels

Low profile channelizer employs stripline power divider and drop-in circulators to feed four combine-filter quadruplexers.



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