

Product Testing For High Reliability

Ultra-Rel[®]

Mini-Circuit's mixers, phase detectors, frequency doublers and limiters are "Ultra-Rel[®]". They carry a five-year guarantee, a reliability breakthrough attributed mainly to unique Ultra-Rel[®] diodes that easily meet and exceed MIL-STD-883 tests. Each type of diode must pass the following grueling tests:

LIFE	1000 hrs. TA + 125°C, 50 mA ac
THERMAL SHOCK	-65° to +125°C, 200 cycles, 5 min. dwell
MECHANICAL SHOCK	1.5k G's, 0.5 msec pulse
VIBRATION	variable frequency 20 to 2,000 Hz.
TEMPERATURE CYCLE	-65°C to +125°C, 200 cycles, 10 min. dwell
MOISTURE RESISTANCE	85°C/@85%humidity 1000 hrs., no bias
HI-TEMPERATURE STORAGE	125°C, 160 hrs.

/MIL and Hi-Rel Products

All hermetically sealed MCL models can be subjected to screening and to environmental testing. These tests are designed to eliminate early failures and to ensure performance in hostile environments. Many models having such testing performed are available from stock parts, designated by a /MIL, or Hi-Rel suffix to the model number. For your convenience, the table below summarizes availability and applicable MIL Spec by product line. A brief description of the test procedures follows the table.

Of course, if you have a specific screening requirement for any model, which is not available from a stock item, or for a non-hermetic model, contact our Applications Engineering staff and they will suggest the most cost-effective means of satisfying your reliability needs.

/MIL Models

Mixers, Frequency Doublers and Phase Detectors are tested in accordance with MIL-M-28837. Pre-conditioning, Group A (screened) and Group B are performed on each inspection lot.

Power Splitters are tested in accordance with MIL-P-23971. Group A and Group B are performed on each inspection lot.

These models may be ordered by adding the suffix /MIL to the model number.

Product Line	Applicable Suffix		Applicable Std. or Specification for reference
	*Hi-Rel	*/MIL	
Amplifiers	No	No	MIL-STD-883
Digital Step Attenuators	No	No	MIL-STD-883
Directional Couplers	Yes	No	MIL-C-15370
Electronic Attenuators/			
Switches	Yes	Yes	MIL-M-28837
Filters	Yes	No	MIL-F-18327
Fixed Attenuators	Yes	No	MIL-A-3933
Frequency Doublers	Yes	Yes	MIL-M-28837
I & Q Modulators and Demodulators	No	No	MIL-M-28837
Limiters	No	No	MIL-M-28837
Mixers	Yes	Yes	MIL-M-28837
Phase Detectors	Yes	Yes	MIL-M-28837
Phase Modulators	No	No	MIL-M-28837
Power Splitter/ Combiners	Yes	Yes	MIL-P-23971
Switches	Yes	No	MIL-STD-883
Terminations	No	No	MIL-D-39030
Transformers	Yes	No	MIL-T-55631

*Check with our Sales Department for specific models available as Hi-Rel. or MIL.

