APPLICATION NOTE

REPLACEMENT PART REFERENCE GUIDE, ZVVA-3000 AN-73-001

Original Part: ZVVA-3000
Suggested Alternate Part: RUDAT-6000-30

1. Summary of ZVVA-3000 (Now Obsolete)

ZVVA-3000 is a pin-diode based voltage-variable attenuator with USB & RS232 control interfaces, operating from 20-3000 MHz. The control interface allows a 0.1 dB nominal step size / resolution and the pin-diode characteristic means the max attenuation achievable varies with frequency, from 40 dB typ @ 20-500 MHz, to 24 dB typ @ 1500-3000 MHz.

2. Suggested Alternative (RUDAT-6000-30)

Mini-Circuits does not have a direct form, fit & function compatible replacement available so you are recommended to contact testsolutions@minicircuits.com to discuss your specific application requirements.

The closest performance match in most cases will be RUDAT-6000-30, a programmable (digital step) attenuator with USB & RS232 control interfaces, operating from 1-6000 MHz, with 0.25 dB steps size and 0-30 dB attenuation range.

2.1. Software Compatibility (ZVVA-3000 vs RUDAT-6000-30)

Both models use Mini-Circuits' common programmable attenuator software package, available for download from https://www.minicircuits.com/softwaredownload/patt.html.

Any software written for ZVVA-3000 is also capable of controlling RUDAT-6000-30.

2.2. Comparison of Key RF Performance Indicators (ZVVA-3000 vs RUDAT-6000-30)

	ZVVA-3000 (Obsolete) Performance	RUDAT-6000-30 Performance
Frequency	20-3000 MHz	1-6000 MHz
Input Power	+23 dBm max	+20 dBm max (>10 MHz)
Step Size	0.1 dB typ	0.25 dB typ
Attenuation Range	0-25 dB guaranteed 0-40 dB nominal (frequency dependent)	0-30 dB
Attenuation Transitions	Smooth / Analog transition from one state to the next	Undefined state during attenuation transition (potential for momentary drop

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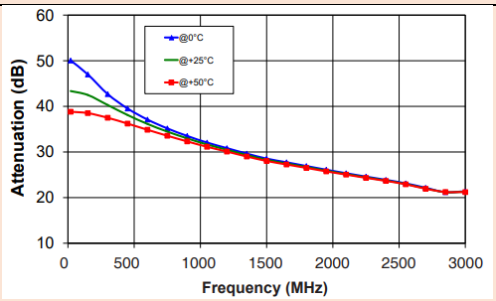
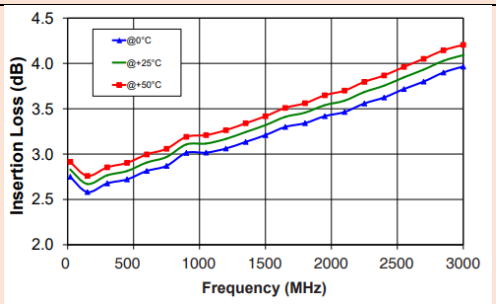
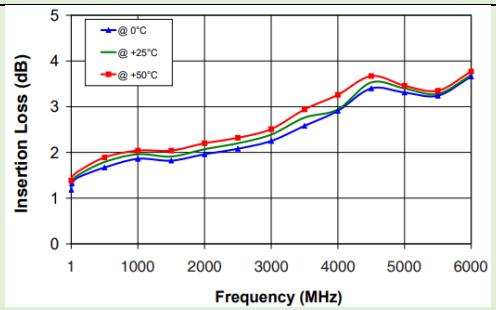
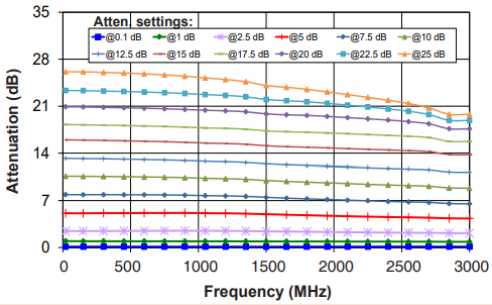
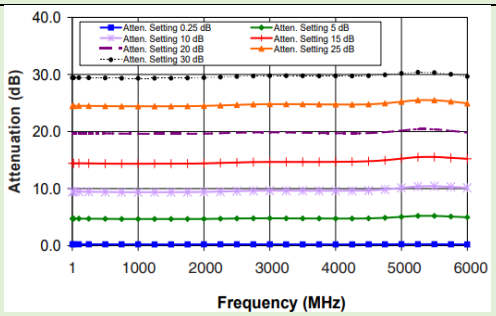
		or increase in attenuation before settling on final state)
Max Attenuation		30 dB (consistent across the frequency range 1-6000 MHz)
Insertion Loss		
Attenuation Relative to Insertion Loss		
Input IP3	+52 dBm typ	+50 dBm typ

3. Conclusion

RUDAT-6000-30 is software compatible with ZVVA-3000 and has broadly comparable RF performance characteristics. The most significant performance deviations are the attenuation characteristic at max attenuation and the nominal step size (0.25 dB, compared to 0.1 dB). RUDAT-6000-30 has the advantage of wider frequency range and more consistent attenuation characteristic with frequency. RCDAT-6000-30 is also available for applications where Ethernet control would be advantageous.

Since it is not an exact replacement, the datasheet must be examined carefully to ensure it fits the requirements of a given application. Please reach out to testsolutions@minicircuits.com for support.

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