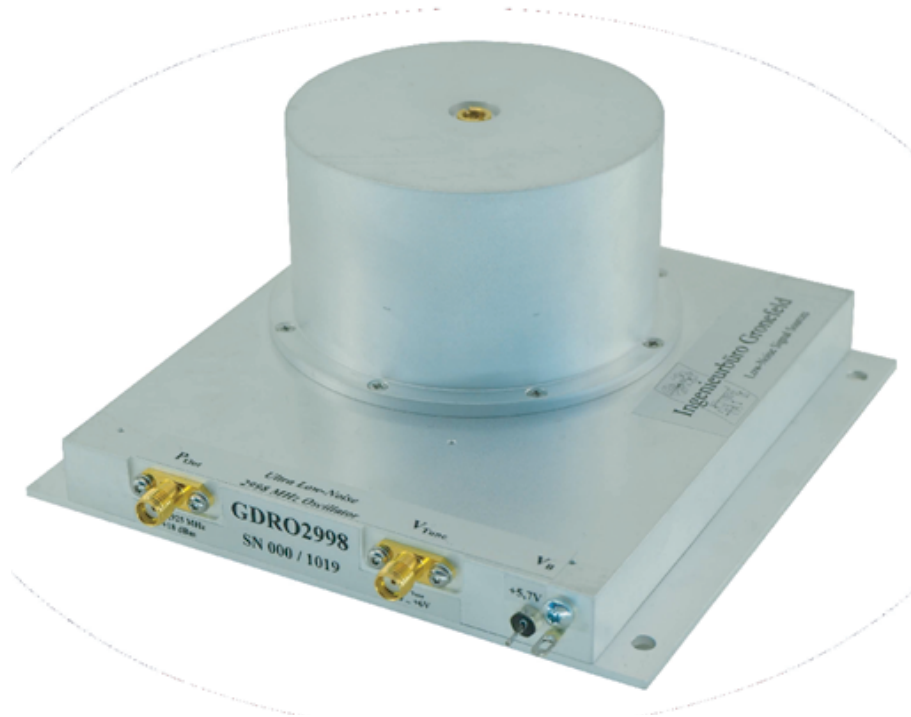


DATA SHEET

Ultra Low Noise 2.998GHz S-Band DRO



Oven-Stabilized Ultra Low Noise

S-Band DRO for 2.998GHz

Developed for extremely jitter sensitive applications like electron beam accelerators, this voltage-controlled Dielectric-Resonator Oscillator delivers ultimate phase noise performance at 2.998GHz, comparable to quartz crystal oscillators.

With a high performance dielectric resonator at its heart, phase noise typically reaches -130dBc/Hz at 1kHz, -160dBc/Hz at 10kHz offset and -180dBc/Hz in the noise floor, yielding attosecond jitter performance when integrated from 1kHz to 30MHz.

Double buffering on the output keeps pulling below 1ppm (typically) and a two tier voltage stabilization scheme virtually eliminates pushing.

The tuning port accepts 0..6V for a $\pm 45\text{kHz}$ tuning range and easy integration into phase-locked loops.

The DRO runs off a single +5.7V supply voltage. In addition a +15V supply, drawing a maximum current of 1100mA, is required to keep the unit at a stable temperature of $+35^{\circ}\text{C}$, ensuring frequency accuracy.

DATA SHEET

Ultra Low Noise 2.998GHz S-Band DRO

Available option

ALC: Amplitude stabilization to ± 0.1 dB.

Technical Data

Operating Frequency:	2.998GHz (3MHz mechanical tuning)
Output Power:	+18 dBm
Output Power Variation:	< ± 1.5 dB (typ. < ± 0.75 dB)
Return Loss:	> 20 dB, VSWR < 1.22 (typ. < 25 dB, VSWR < 1.12)
Harmonic Distortion:	< -40 dBc (typ. < -50 dBc)
Discrete Spurious Tones:	< -20 dBc - $20\log(fm)$ dBc for Offsets < 100kHz < -120 dBc for Offsets > 100kHz

		Guaranteed	Typical
Phase Noise:	@ 100Hz:	< -95 dBc/Hz	-100 dBc/Hz
	@ 1kHz:	< -125 dBc/Hz	-130 dBc/Hz
	@ 10kHz:	< -155 dBc/Hz	-160 dBc/Hz
	@ 100kHz:	< -170 dBc/Hz	-175 dBc/Hz
	@ 1MHz:	< -175 dBc/Hz	-180 dBc/Hz
	@ 10MHz:	< -175 dBc/Hz	-180 dBc/Hz
AM Noise:	@ 100Hz:	< -140 dBc/Hz	-145 dBc/Hz
	@ 1kHz:	< -160 dBc/Hz	-165 dBc/Hz
	@ 10kHz:	< -170 dBc/Hz	-173 dBc/Hz

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Ultra Low Noise 2.998GHz S-Band DRO

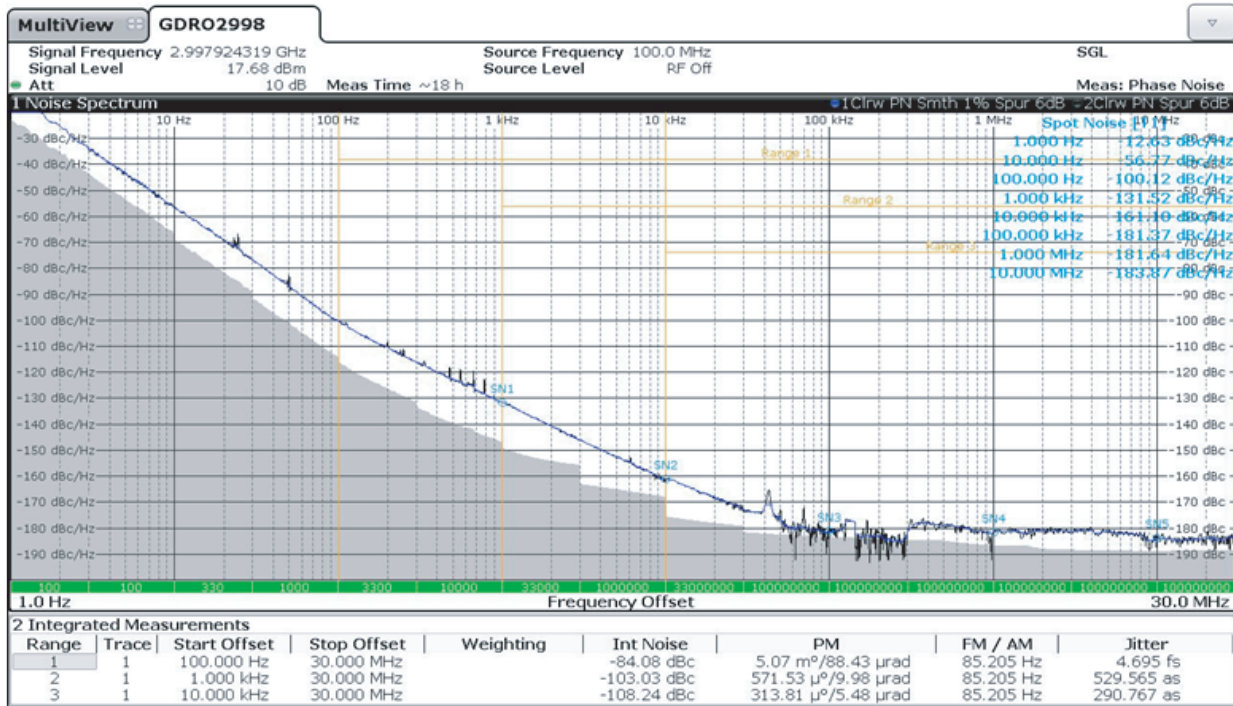
Technical Data

Electronic Tuning:	0 .. +6V (-45kHz .. +45kHz)
Tuning Slope:	15 kHz/V
Power Supply:	+5.7 V/450 mA +15 V/1100 mA max. (Heater)
Dimensions:	Milled Aluminum Case 125mm x 130mm x 61mm
Connectors:	2 x SMA (RF-Output, VCO-Tuning Port), Feed-Through for +5.7 V and +15 V, 2 x Ground Solder Pins
Temperature Range:	23°C ±8°C operating (-40°C .. +71°C storage), non
Oven warm-up Time:	Condensing) < 5 min for <30 kHz frequency error
Option ALC:	Output Power: +18 dBm Output Power Variation: < ±0.1 dB

DATA SHEET

Ultra Low Noise 2.998GHz S-Band DRO

Typical Phase Noise Plot



Typical AM Noise Plot



DATA SHEET

Ultra Low Noise 2.998GHz S-Band DRO

Mechanical Drawing

