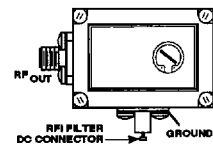


## FEATURES

- Customer Specified Fixed Frequencies from 3 to 12 GHz
- Tuning Range  $\pm 6$  to  $\pm 25$  MHz
- Thin-Film Construction
- 100 mW Power Output

- Mechanically Tuned Local Oscillators
  - Built-in Test Equipment (BITE)
  - IFM Front Ends
  - Missile Transponders
  - Radars
  - ECM Receivers
  - Altimeters
- Communication Systems



OD-62, OD-72,  
OD-82, p. 16-32

## APPLICATIONS

## DESCRIPTION

The DSO-2000-13 Series dielectrically-stabilized oscillators are derivatives of the DSO-1000 series of DSOs. These oscillators incorporate a mechanical tuning adjustment allowing up to  $\pm 25$  MHz of tuning range. The design of the mechanical tuner allows frequency adjustments with better than 1 MHz resolution and virtually no backlash. Frequency stability and susceptibility to shock and vibration are not compromised by this unique, rugged design. Mechanical tuning stops are provided to ensure against tuner damage and loss of package hermeticity. Expected tuner life exceeds 250 cycles.

These DSOs use high-Q dielectric resonators and silicon bipolar resistors which operate over wide temperature ranges

and in severe environmental conditions. They use much less power and have far fewer components than crystal oscillators; their high Q provides good noise performance; and, since the dielectric resonator is a solid structure (thin-film hybrid construction is used throughout), they are far less susceptible to vibration than cavity stabilized VCOs. Oscillator-to-load coupling is minimized by an internal buffer amplifier resulting in higher Q and minimum frequency pulling due to load variations. Please see page 11-2 for a descriptive explanation of mechanical tuning.

All Avantek DSOs are housed in hermetically sealed packages with field replaceable SMA connectors.

## ELECTRICAL AND PERFORMANCE SPECIFICATIONS

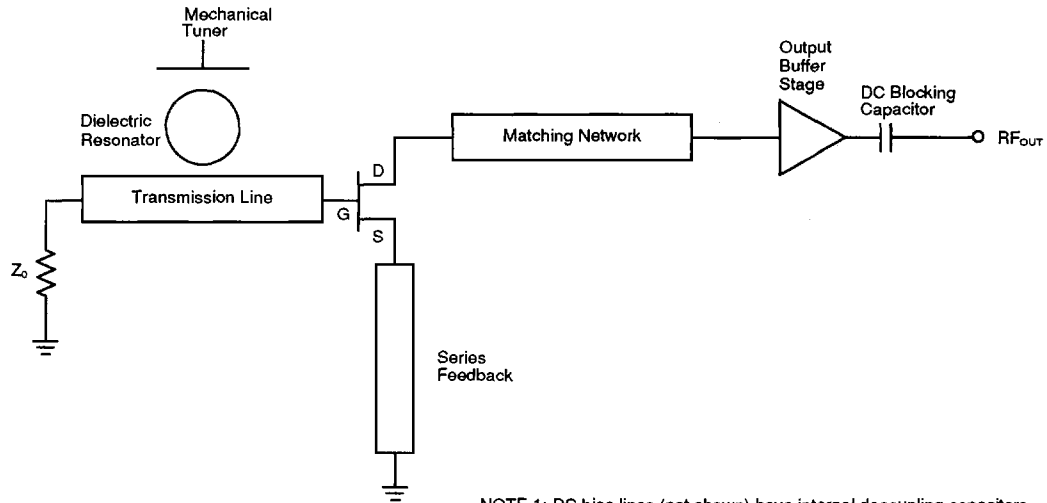
Guaranteed Specifications at  $-54$  to  $+85^{\circ}\text{C}$  Case Temperature

Model No. See Page 11-3 For Model Number Selection

	3000-4499 MHz	4500-7999 MHz	8000-11999 MHz
Frequency Range <sup>1</sup>	3000-4499 MHz	4500-7999 MHz	8000-11999 MHz
Mechanical Tuning Range, Min.	$\pm 6$ MHz	$\pm 10$ MHz	$\pm 25$ MHz
Power Output into 50-ohm Load, Min.	20 mW/ $+13$ dBm	20 mW/ $+13$ dBm	20 mW/ $+13$ dBm
Power Output Variation Over Temperature, Max.	3 dB	3 dB	3 dB
Frequency Accuracy (Under All Conditions) Max. <sup>2</sup>	0.1%	0.1%	0.1%
Temperature Stability, Max.	$\pm 0.05\%$	$\pm 0.05\%$	$\pm 0.05\%$
Pulling Figure (12 dB Return Loss), Max.	$\pm 0.02\%$	$\pm 0.02\%$	$\pm 0.02\%$
Pushing Figure, $+15$ VDC Supply, Max.	$\pm 0.001\%$	$\pm 0.001\%$	$\pm 0.001\%$
Harmonics, Below Carrier, Max.	$-20$ dBc	$-20$ dBc	$-20$ dBc
Spurious Output Below Carrier, Max.	$-60$ dBc	$-60$ dBc	$-60$ dBc
Phase Noise, Single Sideband			
1 Hz Bandwidth, Typical			
10 kHz From Carrier	$-100$ dBc	$-100$ dBc	$-90$ dBc
100 kHz From Carrier	$-125$ dBc	$-125$ dBc	$-115$ dBc
Input Power			
Voltage	$\pm 15 \pm 5$ VDC	$\pm 15 \pm 5$ VDC	$\pm 15 \pm 5$ VDC
Current, Max.	100 mA	75 mA	150 mA
Case Style	OD-62	OD-72	OD-82
Weight, Max.	7.5 oz.	5.5 oz.	3.5 oz.

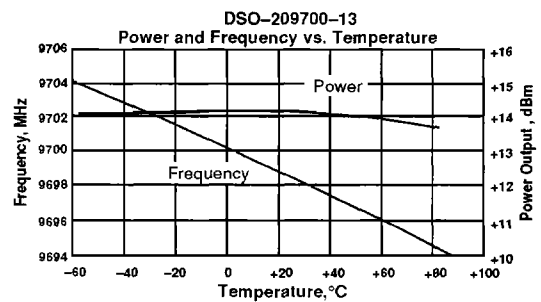
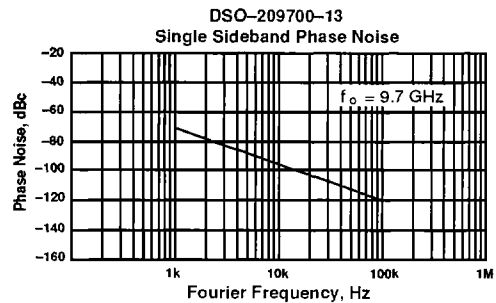
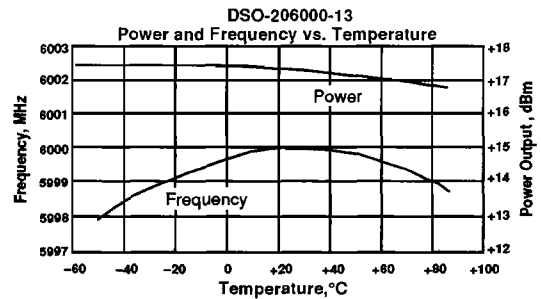
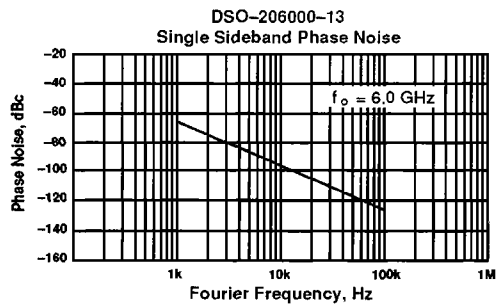
- NOTES: 1. Center frequencies are customer selectable and may be specified to the MHz. Center frequencies are set at  $+25^{\circ}\text{C}$ . See page 11-3 for part number selection.
2. The oscillator will stay within the frequency accuracy of the customer specified frequency under all conditions including the full temperature range, load pulling, frequency pushing, and aging.

## SCHEMATIC



NOTE 1: DC bias lines (not shown) have internal decoupling capacitors.

## TYPICAL PERFORMANCE @ 25°C Case Temperature



## TYPICAL PERFORMANCE (continued)

