

Dielectric Resonator Oscillator, 9.0 GHz

TDRO-900A Data Sheet



TDRO-900A—Shown in bench configuration, with Optional Base and SMA Connector

General Description

The TDRO-900A is an instrument grade, 9.0 GHz oscillator that uses the high-Q property of a dielectric resonator to tightly control the frequency of oscillation. Fine-tuning and electrical adjustment of ± 2.5 MHz around 9 GHz is available for phase-locked-loop applications that require higher precision. The phase noise performance of -114 dBc/Hz is ideal for systems that necessitate excellent dynamic range.

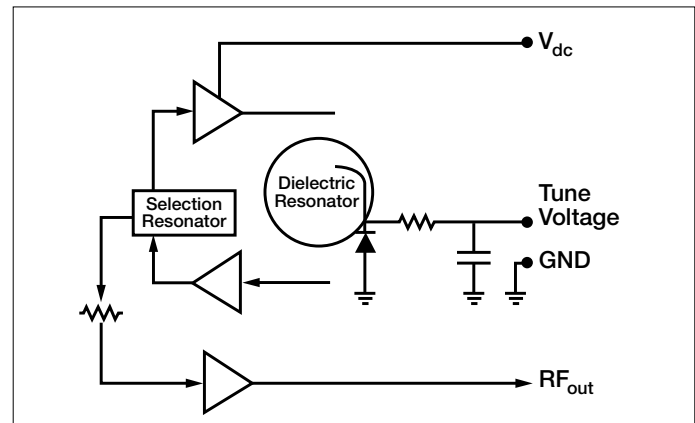
Tektronix Component Solutions can customize this module, or develop other integrated microwave assemblies, to meet your specific requirements.

Features & Benefits

- ± 2.5 MHz of Electrical Tuning Range around 9 GHz Center Frequency
 - Enables phase-locking of DRO
- Low SSB Phase Noise: -114 dBc/Hz @ 10 kHz Offset
 - Improved system dynamic range
- High Output Power: $+10$ dBm
 - Eliminates need for additional amplification

Applications

- High Performance Transmitter/Receiver Systems
- Synthesizer Systems
- General Purpose Lab Equipment



Functional Diagram

Electrical Characteristics ($T_A = +25^\circ\text{C}$, $V_{dc} = 8\text{ V}$, $V_{TUNE} = 7\text{ V}$)

Typical Performance

Parameter	Min	Typical	Max	Units
Frequency		9		GHz
Power Output	7	10		dBm
SSB Phase Noise @ 10 kHz		-114	-108	dBc/Hz
SSB Phase Noise @ 100 kHz		-136		dBc/Hz
SSB Phase Noise @ 1 MHz		-155		dBc/Hz
SSB Phase Noise @ 10 MHz		-161		dBc/Hz
Tune Voltage	1		20	V
Tuning Range $V_{TUNE} = 1\text{ V}$ $V_{TUNE} = 20\text{ V}$	9.0025		8.9975	GHz GHz
2 nd Harmonic		-29	-20	dBc
Supply Current		110		mA

Absolute Maximum Ratings

Parameter	Min	Max	Units
Voltage Supply (V_{dc})		11	V
Tune Voltage	-1	28	V
Storage Temperature	-20	80	$^\circ\text{C}$

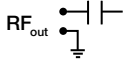
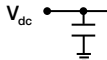
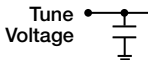

Mechanicals

Parameter	Typical	Units
Size	3.5 x 2.69 x 1.14	in ³
Weight	0.65	lbs
RF Connector Configuration	Female SMA	

Environmental

Parameter	Method
Humidity	Per MIL-STD-883, Method 1004
Altitude	Per MIL-STD-883, Method 1001, Cond. C
Vibration	Per MIL-STD-883, Method 2026, Cond. A
Mechanical Shock	MIL-STD-883, Method 2002, 60 g's/11 mS

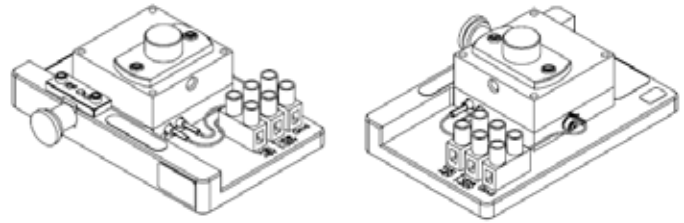
DRO Connector & Control Descriptions

Connector/Control	Description	Schematic Representation
RF _{out}	Female SMA	
V_{dc}	Terminal Block, Euro-style, 22 – 16 AWG	
Tune Voltage	Terminal Block, Euro-style, 22 – 16 AWG	
GND	Terminal Block, Euro-style, 22 – 16 AWG	

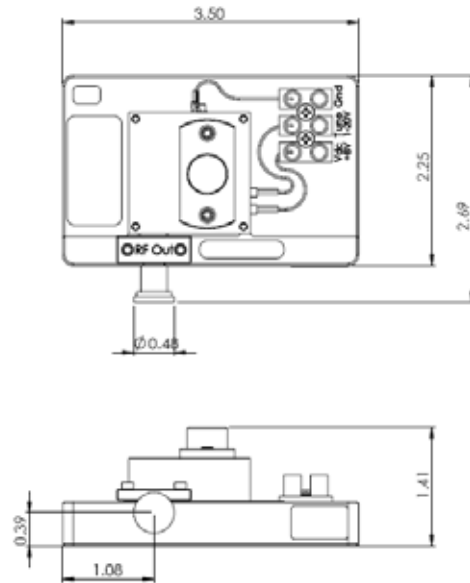
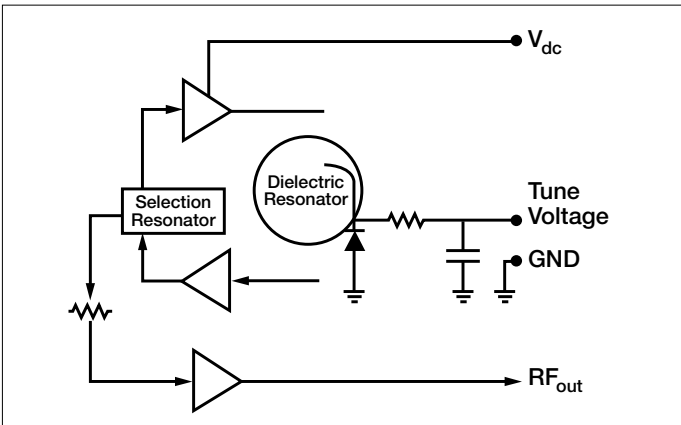
Application Notes

The TDRO-900A is tuned in the factory and delivered with the center frequency set to 9 GHz. With the V_{dc} set to 8 volts, the output frequency may be adjusted down by 2.5 MHz with a tune voltage of 1 volt and up by 2.5 MHz with the tune voltage set to 20 volts. The output power is greater than 7 dBm across this range. The tune voltage should never exceed 20 volts due to risk of damage to the tune circuitry. Also, if the tune voltage goes lower than 1 volt the DRO will stop oscillating.

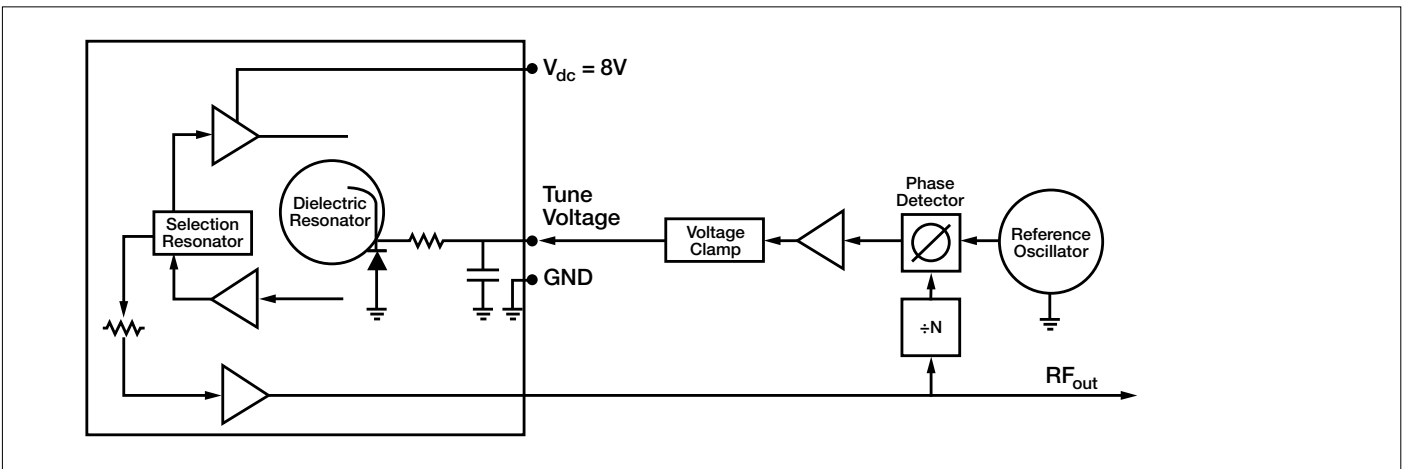
Outline Drawing



Open Loop Configuration ($V_{dc} = 7\text{ V}$ and Tune Voltage is varied from 1 to 20 V)



Phase Locked Loop Configuration



About Tektronix Component Solutions

With four decades of expertise, a talented in-house engineering team, a lean US-based manufacturing facility, advanced test capabilities and DSCC-suitable labs, Tektronix Component Solutions brings performance, reliability and quality to component design, assembly and test.

Originally created in 1970 as the Hybrid Components Organization within Tektronix, the group was formed to supply high-performance components for Tektronix high-speed measurement equipment, a charter we continue to fulfill today.

In 1994, our organization was spun out as a joint venture between Maxim and Tektronix. As Maxtek, we began to apply our expertise in the design, assembly and test of demanding microelectronics for customers in a variety of industries.

Reacquired by Tektronix in 2000 and renamed Tektronix Component Solutions in 2010, our organization continues to provide a full range of design, assembly and test services to those requiring components for demanding applications.

We are headquartered in Beaverton, Oregon, with additional sites in Orlando, Florida and Phoenix, Arizona.

For price, delivery and ordering information contact Tektronix Component Solutions directly at 1 (800)-462-9835 or email us at components@tektronix.com. For more information visit us at component-solutions.tektronix.com.



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