CFPT9300

The CFPT9300 series consists of surface-mountable 5.0 x 3.2 mm Temperature Compensated Voltage Controlled Crystal Oscillators (TCVCXOs), designed for medium to high-volume applications where compact size and high performance are essential. It features Rakon's proprietary ASIC, Pluto® a single-chip oscillator with an analogue compensation circuit, capable of delivering sub ±0.2 ppm performance over an extended temperature range. Its ability to operate at supply voltages as low as 2.4 V, combined with low power consumption, makes it particularly suitable for mobile applications.

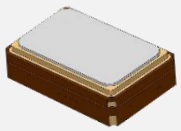
Features

- Frequency stability (FvT): ±0.2 to 1.5 ppm
- Wide frequency range
- Voltage control, T-sense, clipped sinewave, sinewave, CMOS, ACMOS and HCMOS options

Applications

- Time and frequency reference
  - Positioning
  - Test and Measurement
  - Telecommunications

5.0 x 3.2 x 1.3 mm



Pb FREE

RoHS COMPLIANT

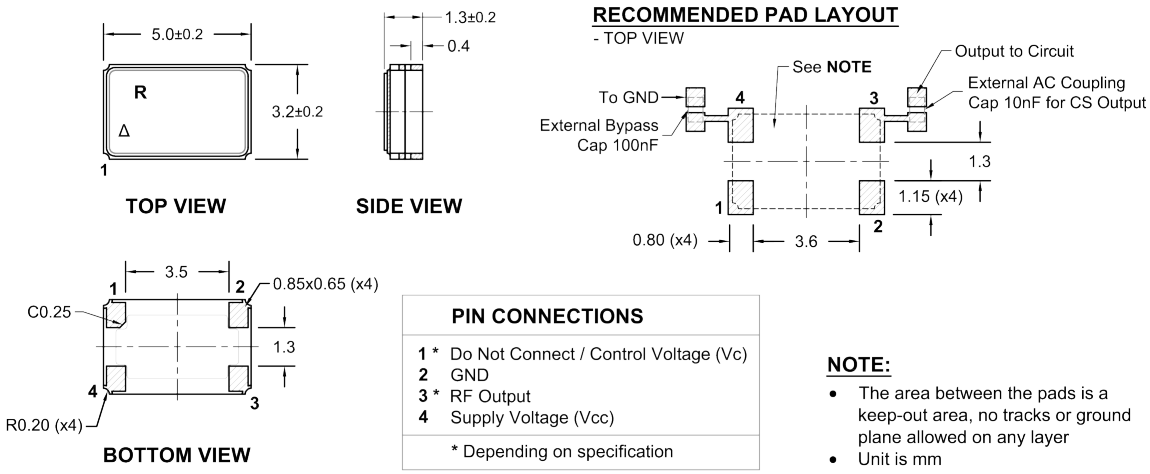
Standard Specifications

Parameter	Min.	Typ.	Max.	Unit	Test Condition / Description
Nominal frequency		1.25 – 52		MHz	
Frequency calibration			±1	ppm	Initial accuracy at 25 ± 1°C
Reflow shift			±0.5	ppm	Pre to post reflow ΔF (measured ≥ 60 minutes after reflow)
Operating temperature range	-40		105	°C	
Frequency stability over temperature			±0.5 – ±1.5	ppm	Reference to (Fmax + Fmin)/2. The best available stability depends on the nominal frequency and selected operating temperature range
Supply voltage stability		±0.2		ppm	±5% variation Reference to frequency at nominal V_{CC}
Load sensitivity		±0.2		ppm	• HCMOS, ACMOS: ±5pF variation, Clipped sine wave / Sine wave: ±10% variation reference to frequency at nominal load
Long term stability (aging) ≤26MHz >26MHz			 ±1 – 2 ±3 – 5	 ppm	 1 year 10 years
Acceleration stability		<2		ppb/*g*	Gamma vector, 3 axes, 30 – 1500Hz
Start-up time			5 – 15	ms	90% amplitude
Supply voltage, V_{CC} Current (C/Sine) Current (Sine) Current (HCMOS) Current (ACMOS)	2.4	 2 8 4 8	6	V mA mA mA mA	±5%, standard values are 3.0, 3.3 and 5.0V
Control voltage, Vc	0.5		2.5	V	
Frequency tuning ≤26MHz >26MHz	 ±5 ±7			 ppm ppm	
Root Allan Variance (20MHz)		5		10^{-11}	tau = 1.0s
Oscillator output options					Clipped sine wave, sine wave, HCMOS (LVCMOS & LVTTL compatible as per JESD8C) and ACMOS
Tri-state control Input level low (pin 6) Input level high (pin 6)	 $0.6V_{CC}$		 $0.2V_{CC}$	 V V	 Device disabled, output in high impedance state Device enabled and operating

Model Outline, 3D Model and Recommended Pad Layout

Parameter	Test Condition / Description
a. Package size	5.0 x 3.2 x 1.85 mm
b. STEP file	CFPT9300 4-pad 3D model *To open or view the STP file, you will need to import it into one of the following software programs: Autodesk Fusion 360, CATIA, SolidWorks, Solid Edge, TurboCAD, Kubotek KeyCreator, FreeCAD, ABViewer, ShareCAD, or eMachineShop.*

c. Model outline and recommended pad layout

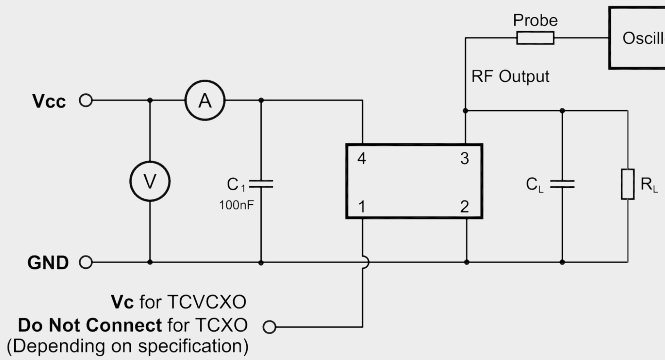
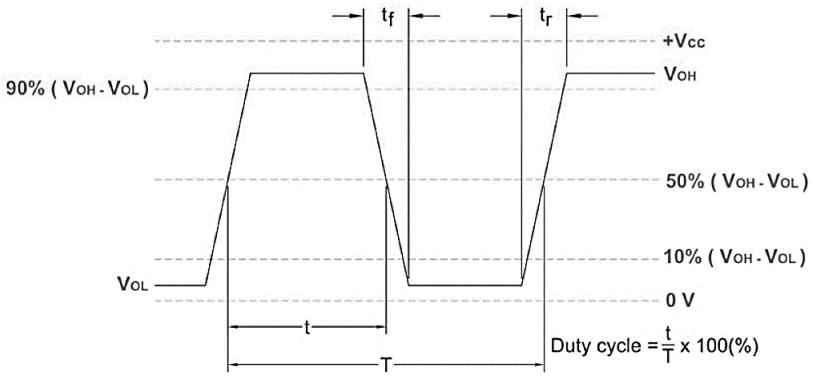


PIN CONNECTIONS	
1 *	Do Not Connect / Control Voltage (Vc)
2	GND
3 *	RF Output
4	Supply Voltage (Vcc)
* Depending on specification	

NOTE:

- The area between the pads is a keep-out area, no tracks or ground plane allowed on any layer
- Unit is mm

Test Circuit and Output Waveform (HCMOS)

Parameter	Test Condition / Description
a. Test circuit	
b. Output Waveform (HCMOS)	

Output Load *	C_L	R_L
HCMOS	15pF	∞
Clipped Sinewave	10pF	10kΩ
* Inclusive of probe impedance		