

# CFPT9400

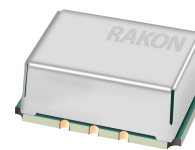


## Ultra High Frequency Temperature Compensated Voltage Controlled Crystal Oscillator

Ultra High Frequency Temperature Compensated Voltage Controlled Crystal Oscillator (TCVCXO) generating common telecoms frequencies.

### Product description

A surface mount, Temperature Compensated, Voltage Controlled Crystal Oscillator (TCVCXO) that uses High Frequency Fundamental (HFF) crystal technology and analogue (SAW based) multiplication circuitry to generate various common telecoms frequencies.



### Applications

- Communications

### Features

- Frequency stability sub- 20ppm for all causes
- LVPECL output

### Specifications

#### 1.0 SPECIFICATION REFERENCES

Line	Parameter	Description
1.1	Model description	CFPT9400
1.2	RoHS compliant	Yes. Part numbers with suffix 'LF'
1.3	Package size available	14.7mm x 9.2mm

#### 2.0 FREQUENCY CHARACTERISTICS

Line	Parameter	Test Condition	Value	Unit
2.1	Frequency range	Standard frequencies only: 622.080000MHz, 644.531250MHz, 669.326580MHz, 693.482990MHz, 666.514290MHz	600 to 700	MHz
2.2	Frequency calibration	@ Vc = 1.65V	±5 max	ppm
2.3	Reflow shift		±5 max	ppm
2.4	Operating Temperature range	Operating temperature range over which temperature stability is measured	-40 to 85	°C
2.5	Frequency stability	@ Vc = 1.65V, includes supply voltage variation ±5%	±10 to 30	ppm
2.6	Long term stability	20 years	±10 max	ppm

#### 3.0 POWER SUPPLY

Line	Parameter	Test Condition	Value	Unit
3.1	Supply voltage		3.135 to 3.465	V
3.2	Current	@Vs=3.3V	80 max	mA

#### 4.0 CONTROL VOLTAGE

Line	Parameter	Test Condition	Value	Unit
4.1	Control voltage range		0.33 to 2.97	V
4.2	Frequency tuning		±40 to 60	ppm
4.3	Port input impedance		50 min	k
4.4	Port input impedance		20 max	pF
4.5	Slope	Positive	30 to 44	ppm/V
4.6	Modulation bandwidth		100 min	kHz

**5.0 OSCILLATOR OUTPUT- LVPECL**

Line	Parameter	Test Condition	Value	Unit
5.1	Output waveform	LVPECL		
5.2	Symmetry		45 to 55	%
5.3	Rise and fall time		350 max	ps
5.4	Skew		20 max	ps
5.5	Sub-harmonics		-46 max	dBc
5.6	Spurious response		-65 max	dBc
5.7	Jitter	pk-pk	60 max	ps
5.8	Load 50Ω to Vs-2V (150Ω to GND)			

**6.0 PHASE NOISE**

Line	Parameter	Test Condition	Value	Unit
6.1	SSB phase noise power density at 1Hz offset	Typical values for a 622.08MHz oscillator at 25°C	-35	dBc/Hz
6.2	SSB phase noise power density at 10Hz offset	Typical values for a 622.08MHz oscillator at 25°C	-55	dBc/Hz
6.3	SSB phase noise power density at 100Hz offset	Typical values for a 622.08MHz oscillator at 25°C	-80	dBc/Hz
6.4	SSB phase noise power density at 1kHz offset	Typical values for a 622.08MHz oscillator at 25°C	-100	dBc/Hz
6.5	SSB phase noise power density at 10kHz offset	Typical values for a 622.08MHz oscillator at 25°C	-120	dBc/Hz
6.6	SSB phase noise power density at 100kHz offset	Typical values for a 622.08MHz oscillator at 25°C	-140	dBc/Hz

**7.0 OTHER FEATURES- TRISTATE CONTROL**

Line	Parameter	Description
7.1	Tristate control: output enabled	Pad 2 logic '0' (<0.8V or open): output enabled (internal 150kΩ pull down resistor)
7.2	Tristate control: output disabled	Pad 2 logic '1' (>2.0 V): Output disabled

**8.0 ENVIRONMENTAL**

Line	Parameter	Description
8.1	Shock	IEC 60068-2-27 test Ea. 980 m/s <sup>2</sup> acceleration for 6ms duration, 3 shocks in each direction along three mutually perpendicular axes
8.2	Vibration	IEC 60068-2-6 test Fc. 10-60Hz 1.5mm displacement, 60-2000Hz at 98.1 m/s <sup>2</sup> , 30 minutes in each of three mutually perpendicular axes at 1 octave per minute
8.3	Storage temperature	-55°C to 125°C

**9.0 PIN CONNECTIONS**

Line	Parameter	Description
9.1	Pin 1	Voltage Control
9.2	Pin 2	Enable / Disable
9.3	Pin 3	GND
9.4	Pin 4	Output
9.5	Pin 5	Complementary Output
9.6	Pin 6	+Vs

**10.0 MARKING**

Line	Parameter	Description
10.1	Type	Laser marked
10.2	Text	Shall include: model number; frequency; date code; antistatic symbol ( $\Delta$ denotes pad 1)

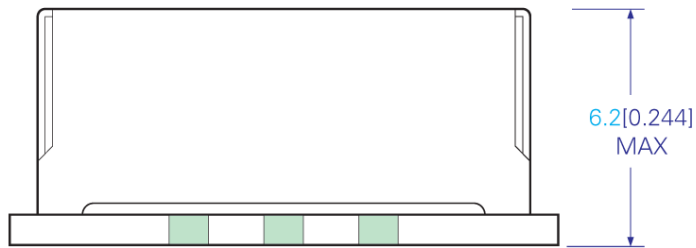
**11.0 MANUFACTURING INFORMATION**

Line	Parameter	Description
11.1	Solderability	Solderability: MIL-STD-202, method 208, category 3
11.2	Packaging description	Quantities $\geq$ 100 pieces will be supplied on tape & reel

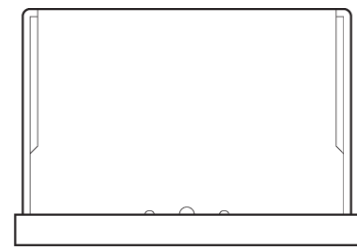
Drawing Name: CFPT9400 Model Drawing



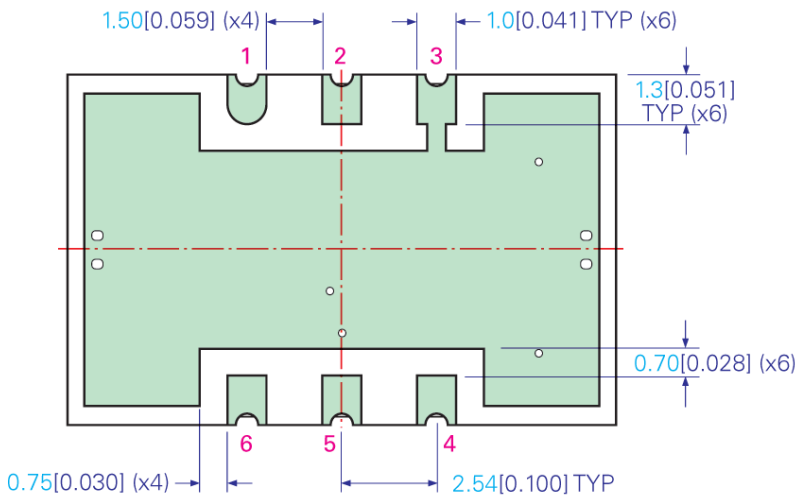
TOP VIEW



SIDE VIEW



END VIEW



BOTTOM VIEW

NOTE: Pin connections are detailed in the specification

TITLE: CFPT9400 MODEL OUTLINE DRAWING

FILENAME: CFPT9400\_MD

RELATED DRAWINGS:

REVISION: A

DATE: 26-Jul-10

SCALE: 5 : 1

Millimeters [inch]

Tolerance:

XX = ±0.5

X.X = ±0.2

X.XX = ±0.10

X.XXX = ±0.05

X° = ±1.0°

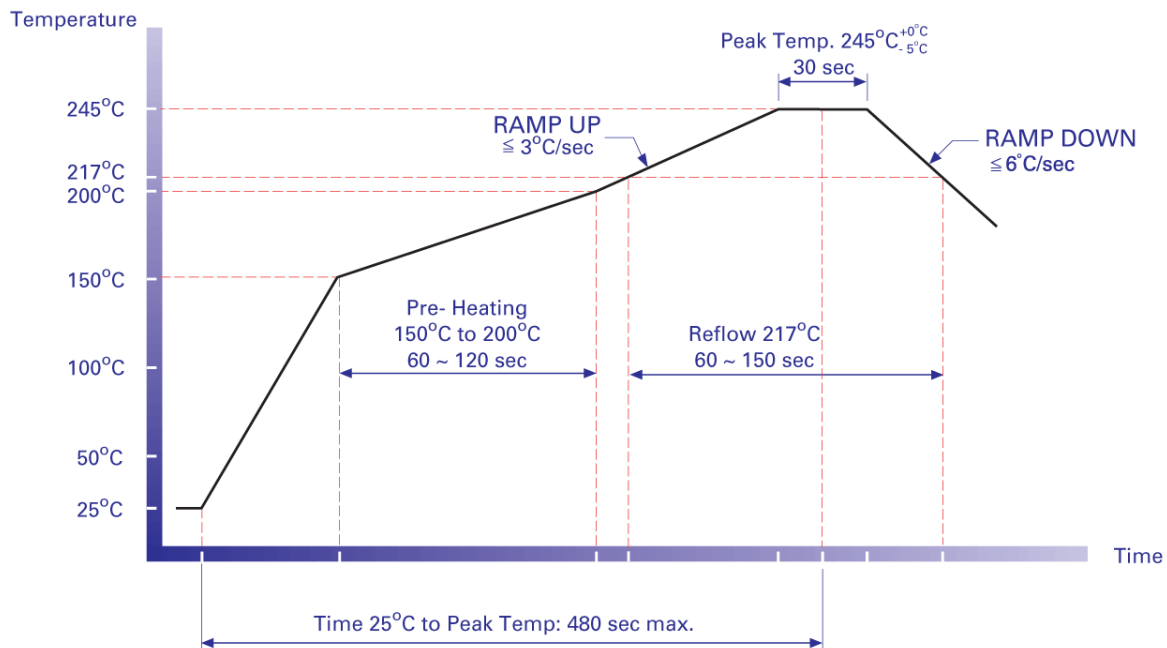
Hole = ±0.10

**rakon**

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Drawing Name: CFPT9400 SERIES REFLOW PROFILE

Pb-Free Reflow Soldering Profile \*



\* NOTE:

This profile was used during the qualification testing of the product and therefore represents worst case conditions. It is not recommended for use by the customer in the actual assembly of these parts.

TITLE: CFPT9400 SERIES REFLOW PROFILE

FILENAME: CFPT9400\_RF

RELATED DRAWINGS:

REVISION: B

DATE: 13-Sep-10

SCALE: NTS

Millimeters [inch]

Tolerance:

XX = ±0.5

X.X = ±0.2

X.XX = ±0.10

X.XXX = ±0.05

X° = ±1.0°

Hole = ±0.10



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<b>Specification History</b>				
<b>Current Version : 1.01</b>				
Version	User	Change	Note	Date