

**SMD Temperature Compensated Crystal Oscillator (PLUTO)**

A series of surface mountable 7.0x5.0mm Temperature Compensated Voltage Controlled Crystal Oscillators (TCVCXOs) for medium to high volume applications where small size and high performance are prerequisites.

**Product description**

The CFPT9000 uses Rakon's proprietary ASIC 'Pluto™', a single chip oscillator and analogue compensation circuit, capable of sub 0.2ppm performance over an extended temperature range. Its ability to function down to a supply voltage of 2.4V and low power consumption makes it particularly suitable for mobile applications.

**Applications**

- Communications
- Other

**Features**

- Sub 0.2ppm stability over extended temperature range
- Wide frequency range

**Specifications****1.0 SPECIFICATION REFERENCES**

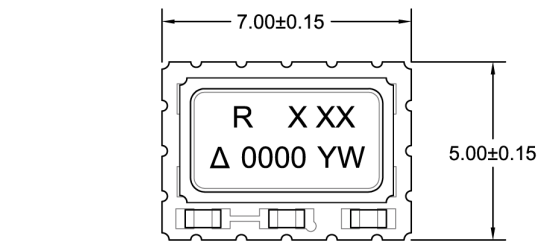
Line	Parameter	Description
1.1	Model description	CFPT9000
1.2	Part number format	Exxxx(LF)(T), issue A (YYYY-MM-DD)
1.3	RoHS compliant	Yes, part numbers with suffix 'LF' (non-RoHS version available upon request)
1.4	Package size	7.0mm x 5.0 x 2.25 mm. Please select footprint version P1~P4 in model code builder (for details see model drawings). P1: 10 pad (default) P2: 10 pad (inline) P3: 8 pad P4: 4 pad

**2.0 FREQUENCY CHARACTERISTICS**

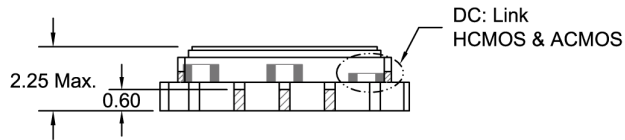
Line	Parameter	Test Condition	Value	Unit
2.1	Nominal frequency range	Frequency range available (note 1)	1.2 to 40	MHz
2.2	Frequency calibration	Initial calibration @ 25°C	±1 max	ppm
2.3	Reflow shift	Measured ≥ 60 minutes after reflow	±1 max	ppm
2.4	Frequency stability over temperature	Reference to (Fmax + Fmin)/2	±0.2 to 2.5	ppm
2.5	Temperature range	Operating temperature range over which temperature stability is measured (wider than -40 to 85°C available on request)	-40 to 85	°C
2.6	Supply voltage stability	±10% variation, reference to frequency at nominal supply voltage, typical value	±0.2	ppm
2.7	Load sensitivity	HCMOS, AC MOS: ±5pF variation, clipped sinewave / sinewave: ±10% variation, reference to frequency at nominal load, typical value	±0.2	ppm
2.8	Long term stability	First year, ≤ 20MHz	±1 max	ppm
2.9	Long term stability	First year, > 20MHz	±2 max	ppm
2.10	Long term stability	10 years, ≤ 20MHz	±3 max	ppm
2.11	Long term stability	10 years, > 20MHz	±5 max	ppm
2.12	Acceleration sensitivity	Gamma vector, 3-axes, 30-1500Hz, typically less than...	2	ppb/g

# Drawing Name: CFPT9000 Model Drawing - P1

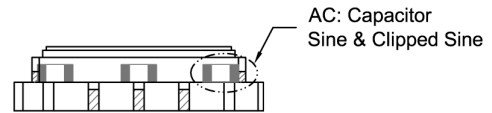
## MODEL DRAWING



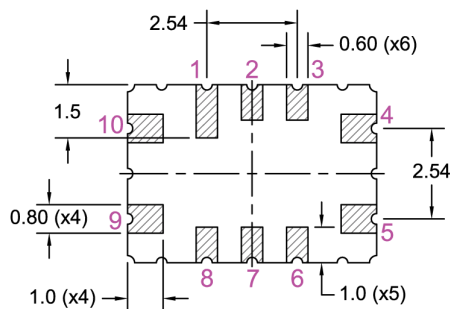
TOP VIEW



FRONT VIEW (DC)



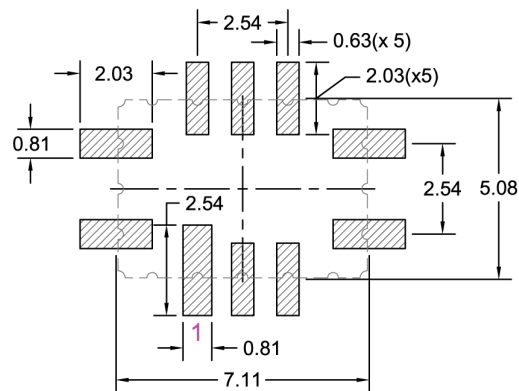
FRONT VIEW (AC)



BOTTOM VIEW

NOTE:  
Pin connections are detailed  
in the specification.

## RECOMMENDED PAD LAYOUT - TOP VIEW



TITLE: CFPT9000 Model 10P Standard (P1)

RELATED DRAWINGS:

FILENAME: CAT704

REVISION: A

DATE: 03-Aug-12

SCALE: 5 : 1

Millimetres

TOLERANCES:

XX = ±0.5

X.X = ±0.2

X.XX = ±0.10

X.XXX = ±0.05

X° = ±1.0°

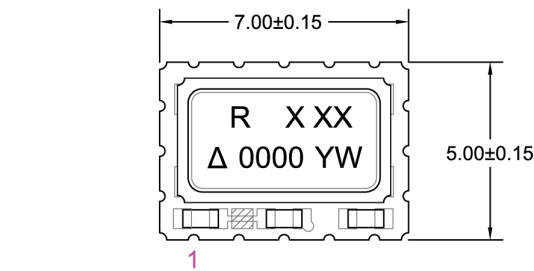
Hole = ±0.10

**rakon**

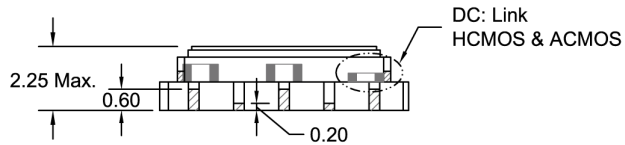
© 2009 Rakon Limited

# Drawing Name: CFPT9000 Model Drawing - P2

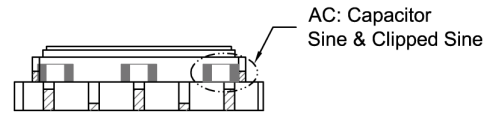
## MODEL DRAWING



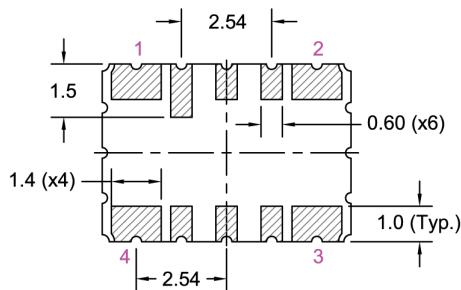
TOP VIEW



FRONT VIEW (DC)



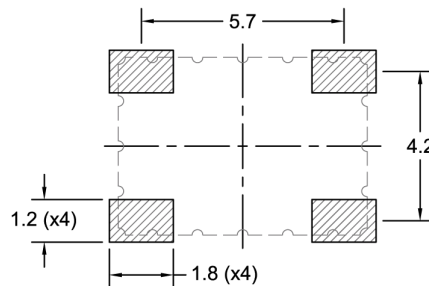
FRONT VIEW (AC)



BOTTOM VIEW

NOTE:  
Pin connections are detailed  
in the specification.

## RECOMMENDED PAD LAYOUT - TOP VIEW



TITLE: CFPT9000 Model 10P Inline (P2)

RELATED DRAWINGS:

FILENAME: CAT705

REVISION: A

DATE: 03-Aug-12

SCALE: 5 : 1

Millimetres

TOLERANCES:

XX = ±0.5

X.X = ±0.2

X.XX = ±0.10

X.XXX = ±0.05

X° = ±1.0°

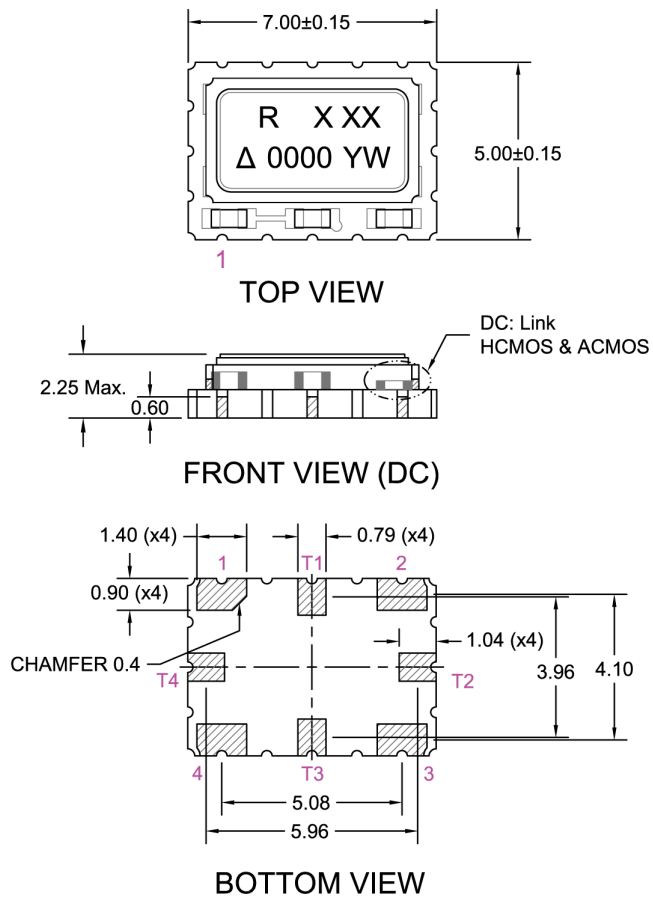
Hole = ±0.10

**rakon**

© 2009 Rakon Limited

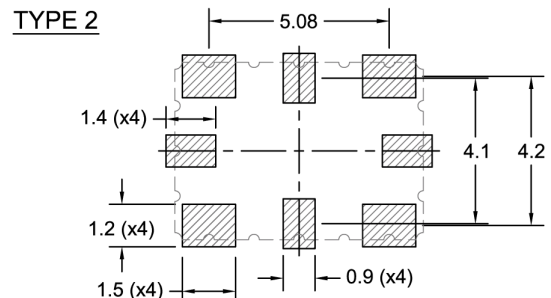
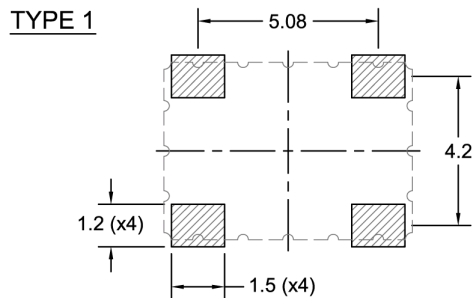
# Drawing Name: CFPT9000 Model Drawing - P3

## MODEL DRAWING



**NOTE:**  
Pin connections are detailed in the specification.

## RECOMMENDED PAD LAYOUT - TOP VIEW



TITLE: CFPT9000 Model 8P (P3)

RELATED DRAWINGS:

FILENAME: CAT706

REVISION: A

DATE: 03-Aug-12

SCALE: 5 : 1

Millimetres

TOLERANCES:

XX = ±0.5

X.X = ±0.2

X.XX = ±0.10

X.XXX = ±0.05

X° = ±1.0°

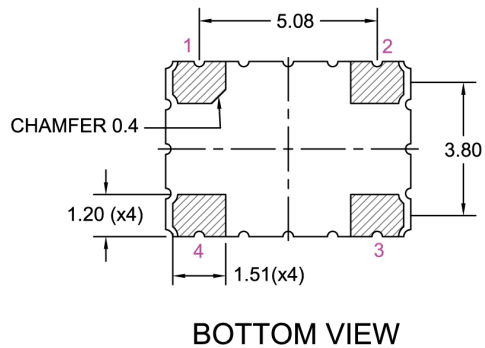
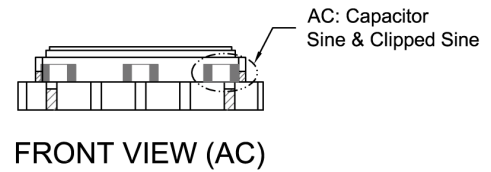
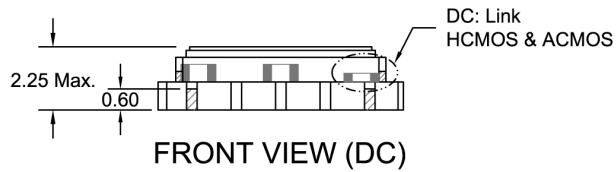
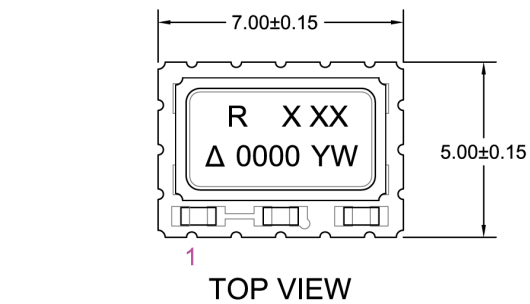
Hole = ±0.10

**rakon**

© 2009 Rakon Limited

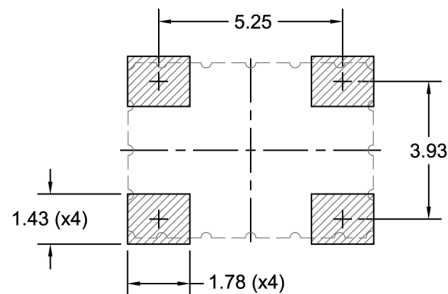
# Drawing Name: CFPT9000 Model Drawing - P4

## MODEL DRAWING



NOTE:  
Pin connections are detailed  
in the specification.

## RECOMMENDED PAD LAYOUT - TOP VIEW



TITLE: CFPT9000 Model 4P (P4)

RELATED DRAWINGS:

FILENAME: CAT707

REVISION: A

DATE: 03-Aug-12

SCALE: 5 : 1

Millimetres

TOLERANCES:

XX = ±0.5

X.X = ±0.2

X.XX = ±0.10

X.XXX = ±0.05

X° = ±1.0°

Hole = ±0.10

**rakon**

© 2009 Rakon Limited