

CFPT-9000 Series

ISSUE 7; 24 MARCH 2004

Recommended for New Designs

Delivery Options

- Please contact our sales office for current leadtimes

Description

- A series of surface mountable 7.0 × 5.0mm TCVCXOs for medium to high volume applications where small size and high performance are pre-requisites. This oscillator uses C-MAC's latest custom ASIC "Pluto", a single chip oscillator and analogue compensation circuit, capable of sub 1 ppm performance over an extended temperature range. Its ability to function down to a supply voltage of 2.4V and low power consumption make it particularly suitable for mobile applications

Standard Frequencies

- 3.2, 5.0, 6.4, 8.192, 9.6, 12.688375, 10.0, 12.8, 13.0, 14.4, 14.85, 16.384, 16.367, 16.8, 19.2, 19.44, 19.8, 20.0, 24.5535, 32.768, 38.88 and 40.0 MHz

Output Waveform

- Square HCMOS 15pF load
- Square AC MOS 50pF max. load (Available on request, contact sales office)
- Sinewave 10kΩ // 10pF, AC-coupled
- Clipped sinewave 10kΩ // 10pF, AC-coupled

Supply Voltage

- Operating range 2.4 to 6.0V, see table

Current Consumption

- HCMOS Typically $\approx 1 + \text{Frequency(MHz)} * \text{Supply(V)} * \{\text{Load(pF)} + 15\} * 10^{-3}$ mA
E. g. 20MHz, 5V, 15pF ≈ 4 mA
- Sinewave Typically ≤ 8 mA
- Clipped Sinewave Typically $\approx 1 + \text{Frequency(MHz)} * 1.2 * \{\text{Load(pF)} + 30\} * 10^{-3}$ mA

Package Outline

- 7.0 x 5.0 x 2.0mm SMD (Surface mount device) ceramic carrier

Ageing

- ± 1 ppm maximum in first year, frequency ≤ 20 MHz
- ± 2 ppm maximum in first year, frequency > 20 MHz
- ± 3 ppm maximum for 10 years, frequency ≤ 20 MHz
- ± 5 ppm maximum for 10 years, frequency > 20 MHz
- ± 1 ppm maximum after reflow

Frequency Stability

- Temperature: see table
- Typical Supply Voltage Variation $\pm 10\% \leq \pm 0.2$ ppm*
- Typical Load Coefficient 15pF ± 5 pF $\leq \pm 0.2$ ppm*
*Dependant on frequency and output type

Frequency Adjustment

- Three options with external Control Voltage applied to pad 10:
 - A - Ageing adjustment: $\geq \pm 5$ ppm, frequency ≤ 20 MHz (Standard Option)
 $\geq \pm 7$ ppm, frequency > 20 MHz
 - B - No frequency adjustment initial calibration @ 25°C $\leq \pm 1.0$ ppm
 - C - High Pulling ± 10 ppm to ± 50 ppm can be available depending on frequency and stability options. Please consult our sales office

- Linearity $\leq 1\%$
- Slope Positive
- Input resistance > 100 kΩ
- Modulation bandwidth > 2 kHz
- Standard control voltage ranges:
 - Without reference voltage - $V_s = 5.0V$ $2.5V \pm 1V$
 - Without reference voltage - $V_s = 3.3V$ $1.65V \pm 1V$
 - With reference voltage - $V_c = 0V$ to V_{ref}

Reference Voltage, Vref

- Optional reference voltage output on pad 1, suitable for potentiometer supply or DAC reference.
 1. No output (Standard option)
 2. 2.2V, for Min. $V_s > 2.4V$
 3. 2.7V, for Min. $V_s > 3.0V$
 4. 4.2V, for Min. $V_s > 4.5V$Maximum load current (mA) = $V_{ref}/10$

For manual frequency adjustment connect an external 50KΩ potentiometer between pad 1 (Reference Voltage) and pad 4 (Ground) with wiper connected to pad 10 (Voltage Control). Please specify reference voltage as part of the ordering code

Tri-state

- Pad 8 open circuit or $> 0.6V_s$ output enabled
- $< 0.2V_s$ Tri-state
- When Tri-stated, the output stage is disabled for all output options, but the oscillator and compensation circuit are still active (Current consumption < 1 mA)

Storage Temperature Range

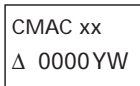
- 55 to 125°C

Environmental Specification

- Vibration: IEC 60068-2-6 Test Fc Procedure B4, 10-60Hz 1.5mm displacement, 60 -2000Hz at 10 gn, 30 minutes in each of three mutually perpendicular axes at 1 octave per minute
- Shock: IEC 60068-2-27, test Ea: 1500 gn acceleration for 0.5ms duration, half-sine pulse, 3 shocks in each direction along three mutually perpendicular axes.
- Soldering: SMD product suitable for Convection Reflow soldering. Peak temperature 260°C. Maximum time above 220°C, 60 secs.
- Solderability: MIL-STD-202, Method 208, Category 3
- Marking: Laser Marked

Marking Includes

- C-MAC
- Manufacturing identifier (xx)
- Pad 1 / Static sensitivity identifier (Triangle)
- Part Number (Four digits)
- Device date code (YW)



Minimum Order Information Required

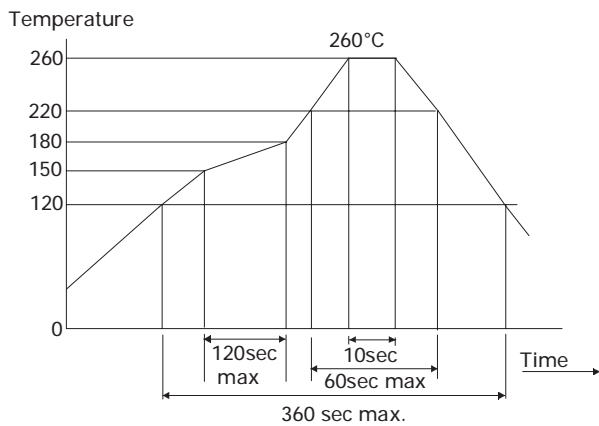
- Frequency + Model Number + Frequency Stability vs Operating Temperature Range Code + Reference Voltage Code + Frequency Adjustment Code

OR

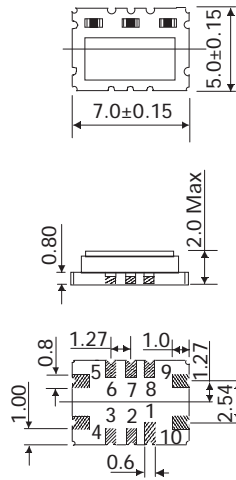
- Discrete part number for repeat orders

Please supply full information for non-standard options, if required

Reflow Solder Profile



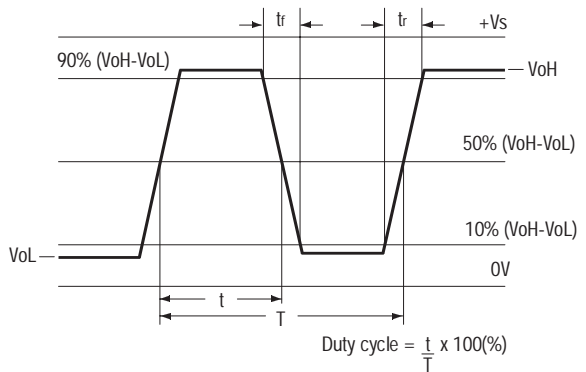
Outline in mm - (scale 2:1)



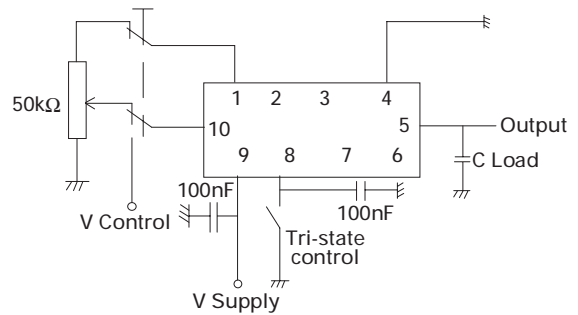
Pad Connections.

- 1.V ref
 - 2.NC
 - 3.DC Coupled Output (Do not connect)
 - 4.Gnd
 - 5.Output
 - 6.NC
 - 7.NC
 - 8.Tri State Control (Enable)*
 9. Supply,+Vs
 - 10.Voltage Control*
- *leave unconnected if not required.

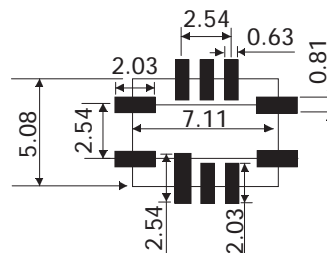
Output Waveform - HCMOS



Test Circuit



Pad layout



Phase Noise (typical figures)

Frequency	Frequency offset from carrier: 10Hz	Frequency offset from carrier: 100Hz	Frequency offset from carrier: 1kHz	Frequency offset from carrier: 10kHz	Frequency offset from carrier: 100kHz
13.0MHz	-95 dBc/Hz	-120 dBc/Hz	-135 dBc/Hz	-140 dBc/Hz	-145 dBc/Hz

Electrical Specification - limiting values when measured in test circuit

Frequency Range	Supply Voltage	Output Waveform	Output levels	Rise Time(tr)	Fall Time (tf)	Duty Cycle	Model Number
1.25 to 40.0MHz	3.3V±10%	Square HCMOS 15pF	Voh ≥ 90% Vs Vol ≤ 10% Vs	8ns	8ns	45/55%	CFPT-9006
1.25 to 40.0MHz	5.0V±10%	Square HCMOS 15pF	Voh ≥ 90% Vs Vol ≤ 10% Vs	7ns	7ns	45/55%	CFPT-9001
10.0 to 40.0MHz	3.3V±10%	Sine 10kΩ//10pF	≤ 20MHz: ≥ 1Vpp > 20MHz: ≥ 0.5Vpp	—	—	—	CFPT-9007
10.0 to 40.0MHz	5.0V±10%	Sine 10kΩ//10pF	≤ 20MHz: ≥ 1Vpp > 20MHz: ≥ 0.5Vpp	—	—	—	CFPT-9003
10.0 to 40.0MHz	3.3V±10%	Clipped Sinewave 10kΩ//10pF	Vpk-pk ≥ 0.8V	—	—	—	CFPT-9008
10.0 to 40.0MHz	5.0V±10%	Clipped Sinewave 10kΩ//10pF	Vpk-pk ≥ 0.8V	—	—	—	CFPT-9005

Frequency Stability Available Over Operating Temperature Ranges

Operating Temperature Ranges	Frequency Stabilities Vs Operating Temperature Range					
	±0.3ppm	±0.5ppm	±1.0ppm	±1.5ppm	±2.0ppm	±2.5ppm
0 to 50°C	Code AP	Code EP	Code FP	Code CP	Code GP	Code HP
0 to 70°C	Code AC*	Code EC	Code FC	Code CC	Code GC	Code HC
-20 to 70°C	Code AS*	Code ES	Code FS	Code CS	Code GS	Code HS
-30 to 75°C	Code AU*	Code EU*	Code FU	Code CU	Code GU	Code HU
-40 to 85°C	Code AX*	Code EX*	Code FX	Code CX	Code GX	Code HX

Ordering Example

Frequency _____ 10.0MHz
 Model number _____ CFPT-9001
 Frequency Stability Vs Operating Temperature Code _____ CX
 Reference Voltage Code _____ 1
 Frequency Adjustment Code _____ A

(For reference voltage and frequency adjustment codes see main text)

Note:* Codes may not be available for all frequencies

CFPT-9050 Series

ISSUE 4 ; 26 MARCH 2004

Recommended for New Designs

Delivery Options

- Please contact our sales office for current leadtimes

Description

- A highly versatile series of surface mountable 14.1 × 9.1mm TCVCXOs for applications where small size and high performance are pre-requisites. This oscillator uses C-MAC's latest custom ASIC "Pluto", a single chip oscillator and analogue compensation circuit, capable of sub 0.3 ppm performance. Its wide frequency range, operating temperature range, drive capability, coupled with its high stability and linear frequency pulling make it the ideal reference oscillator. Its ability to function down to a supply voltage of 2.4V and low power consumption makes it particularly suitable for mobile applications

Standard Frequencies

- 9.6, 10.0, 12.8, 19.44, 20.0, 38.88, 49.152, 51.84MHz

Waveform

- Square HCMOS 15pF load
- Square AC MOS 50pF max. load
- Sinewave 10kΩ // 10pF, AC-coupled
- Clipped sinewave 10kΩ // 10pF, AC-coupled

Supply Voltage

- Operating range 2.4 to 6.0V, see table

Current Consumption

- HCMOS Typically $\approx 1 + \text{Frequency(MHz)} * \text{Supply(V)} * \{\text{Load(pF)} + 15\} * 10^{-3}$ mA
eg. 20MHz, 5V, 15pF ≈ 4 mA
- AC MOS Typically $\approx 1 + \text{Frequency(MHz)} * \text{Supply(V)} * \{\text{Load(pF)} + 23\} * 10^{-3}$ mA
- Sinewave, 6 to 12 mA depending on frequency
- Clipped Sinewave, Typically $\approx 1 + \text{Frequency(MHz)} * 1.2 * \{\text{Load(pF)} + 30\} * 10^{-3}$ mA

Package Outline

- 14.1 x 9.1 x 5.9mm SMD (Surface Mount Device)

Ageing

- ± 1 ppm maximum in first year
- ± 3 ppm maximum for 10 years
- ± 1 ppm maximum after reflow

Frequency Stability

- Temperature: see table
- Typical Supply Voltage Variation $\pm 10\% \leq \pm 0.2$ ppm*
- Typical Load Coefficient 15pF ± 5 pF $\leq \pm 0.2$ ppm*

* Depending on frequency and output type

Frequency Adjustment

- Three options with external Control Voltage applied to pad 1:
 - A - Ageing adjustment: $\geq \pm 5$ ppm (Standard Option)
 - B - No frequency adjustment. Initial calibration @ 25°C $\leq \pm 0.5$ ppm
 - C - High Pulling ± 10 ppm to ± 50 ppm can be available depending on frequency and stability options. Please consult our sales office

- Linearity $\leq 1\%$
- Slope Positive
- Input resistance > 100 kΩ
- Modulation bandwidth > 2 kHz
- Standard control voltage ranges:
 - Without reference voltage - Vs=5.0V 2.5V ± 2 V
 - Without reference voltage - Vs=3.3V 1.65V ± 1 V
 - With reference voltage - Vc=0V to Vref

Reference Voltage, Vref (HCMOS/ACMOS only)

- Optional reference voltage output on pad 5, suitable for potentiometer supply or DAC reference.
 1. No output (Standard option)
 2. 2.2V, for Min. Vs > 2.4 V
 3. 2.7V, for Min. Vs > 3.0 V
 4. 4.2V, for Min. Vs > 4.5 VMaximum load current (mA) = Vref/10

For manual frequency adjustment (HCMOS/ACMOS output only) connect an external 50kΩ potentiometer between pad 5 (Reference Voltage) and pad 3 (Ground) with wiper connected to pad 1 (Voltage Control). Please specify reference voltage as a part of the ordering code.

Note: Please contact our sales office if a reference voltage is required in combination with sine or clipped sinewave output

Tri-state

- Pad 2 open circuit or > 0.6 Vs output enabled
- < 0.2 Vs Tri-state
- When Tri-stated, the output stage is disabled for all output options, but the oscillator and compensation circuit are still active (Current consumption < 1 mA)

Storage Temperature Range

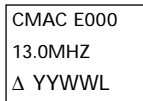
- 55 to 125°C

Environmental Specification

- Vibration: IEC 60068-2-6 Test Fc Procedure B4, 10-60Hz 1.5mm displacement, 60 -2000Hz at 98.1 ms², 30 minutes in each of three mutually perpendicular axes at 1 octave per minute
- Shock: IEC 60068-2-27 Test Ea, 980ms² acceleration for 6ms duration, 3 shocks in each direction along three mutually perpendicular axes
- Soldering: SMD product suitable for Convection Reflow soldering. Peak temperature 230°C. Maximum time above 200°C, 90 secs.
- Solderability: MIL-STD-202, Method 208, Category 3
- Marking: Laser Marked

Marking Includes

- C-MAC
- Part Number (E and four digits)
- Frequency (MHz)
- Pad 1 / Static sensitivity identifier (Triangle)
- Date code and manufacturing location code (YYWWL)



Minimum Order Information Required

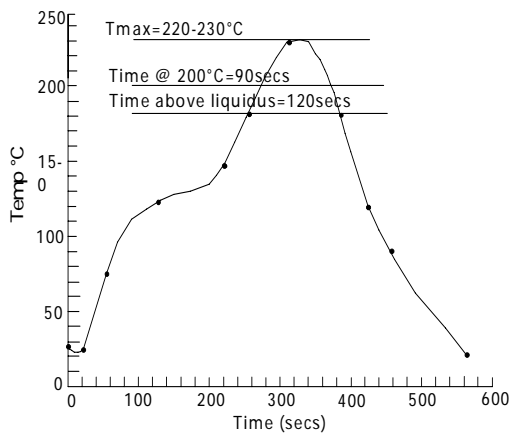
- Frequency + Model Number + Frequency Stability vs Operating Temperature Range Code + Reference Voltage Code + Frequency Adjustment Code

OR

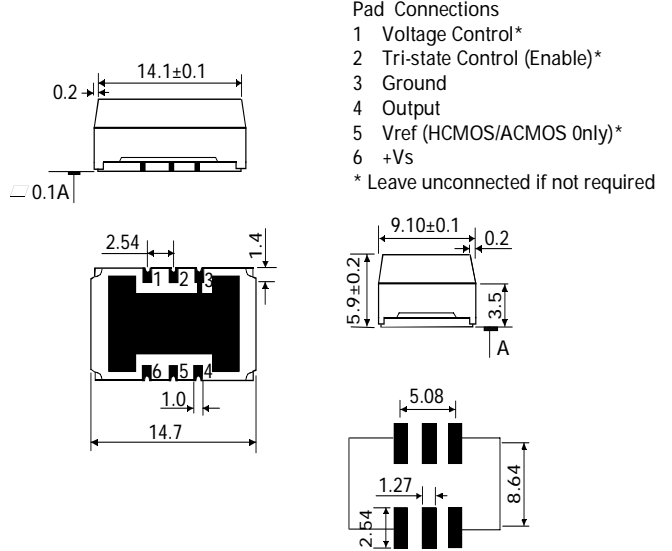
- Discrete part number for repeat orders

Please supply full information for non-standard options, if required

Reflow Solder Profile



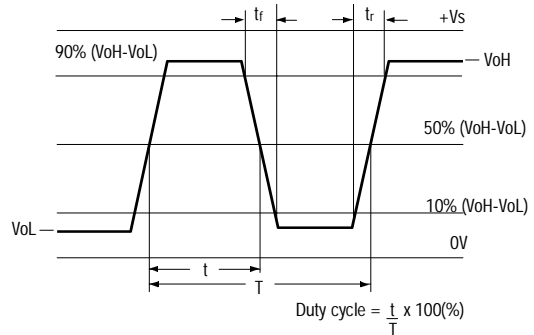
Outline in mm - (scale 1:1)



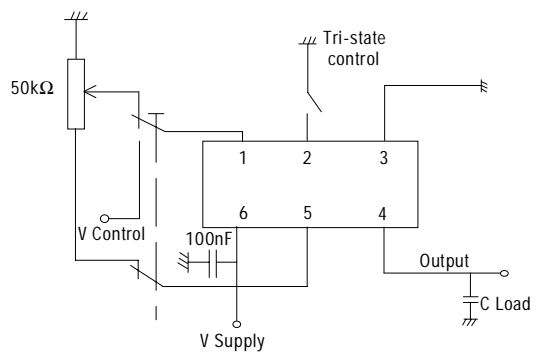
Pad Connections

- 1 Voltage Control*
 - 2 Tri-state Control (Enable)*
 - 3 Ground
 - 4 Output
 - 5 Vref (HCMOS/ACMOS Only)*
 - 6 +Vs
- * Leave unconnected if not required

Output Waveform - HCMOS



Test Circuit



Phase Noise (typical figures)

Frequency	Frequency offset from carrier: 10Hz	Frequency offset from carrier: 100Hz	Frequency offset from carrier: 1kHz	Frequency offset from carrier: 10kHz	Frequency offset from carrier: 100kHz
13.0MHz	-95 dBc/Hz	-120 dBc/Hz	-135 dBc/Hz	-140 dBc/Hz	-145 dBc/Hz

Electrical Specification - limiting values when measured in test circuit

Frequency Range	Supply Voltage	Output Waveform	Output levels	Rise Time(tr)	Fall Time (tf)	Duty Cycle	Model Number
1.0MHz to 50.0MHz	3.3V±10%	Square HCMOS 15pF	Voh ≥ 90% Vs Vol ≤ 10% Vs	8ns	8ns	45/55%	CFPT-9058
1.0MHz to 50.0MHz	5.0V±10%	Square HCMOS 15pF	Voh ≥ 90% Vs Vol ≤ 10% Vs	7ns	7ns	45/55%	CFPT-9051
8.0MHz to 50.0MHz	3.3V±10%	Sine 10kΩ//10pF	≤20.0MHz: ≥1.0 Vpp >20.0MHz: ≥0.5Vpp	—		—	CFPT-9059
8.0MHz to 50.0MHz	5.0V±10%	Sine 10kΩ//10pF	≤20.0MHz: ≥1.0 Vpp >20.0MHz: ≥0.5Vpp	—		—	CFPT-9053
1.0MHz to 80.0MHz	3.3V±10%	Square ACMOS 15pF	Voh ≥ 90% Vs Vol ≤ 10% Vs	3ns	3ns	45/55%	CFPT-9060
1.0MHz to 80.0MHz	5.0V±10%	Square ACMOS 15pF	Voh ≥ 90% Vs Vol ≤ 10% Vs	2ns	2ns	45/55%	CFPT-9055
8.0MHz to 50.0MHz	3.3V±10%	Clipped Sine 10kΩ//10pF	Vpk-pk ≥ 0.8V	—		—	CFPT-9061
8.0MHz to 50.0MHz	5.0V±10%	Clipped Sine 10kΩ//10pF	Vpk-pk ≥ 0.8V	—		—	CFPT-9057

Frequency Stability Available Over Operating Temperature Ranges

Operating Temperature Range	Frequency Stabilities Vs Operating Temperature Range					
	±0.3ppm	±0.5ppm	±1.0ppm	±1.5ppm	±2.0ppm	±2.5ppm
0 to 50°C	Code AP	Code EP	Code FP	Code CP	Code GP	Code HP
0 to 70°C	Code AC	Code EC	Code FC	Code CC	Code GC	Code HC
-20 to 70°C	Code AS*	Code ES	Code FS	Code CS	Code GS	Code HS
-30 to 75°C		Code EU	Code FU	Code CU	Code GU	Code HU
-40 to 85°C		Code EX*	Code FX	Code CX	Code GX	Code HX
-55 to 105°C			Code FY*	Code CY	Code GY	Code HY

Ordering Example

10.0MHz CFPT-9051 CS 1 A

Frequency _____

Model number _____

Frequency Stability Vs Operating Temperature Code _____

Reference Voltage Code _____

Frequency Adjustment Code _____

(For reference voltage and frequency adjustment codes see main text)

Note:* Codes may not be available for all frequencies

CFPT-125

ISSUE 5 ; 24th FEBRUARY 2004

Delivery Options

- Please contact our sales office for details

Package Outline

- 7.0 x 5.0 x 2.0mm SMD (surface mount device)

Description

- CFPT-125 is a surface mount temperature compensated voltage controlled oscillator providing a high degree of frequency stability over a wide temperature range

Supply Voltage

- 3.3V ± 5%

Frequency Stability

- Temperature ±0.9ppm (code T)
- Supply Voltage Variation ±0.3ppm *
- Load Variation (15pF ±10%) ±0.2ppm
- After Reflow ±1.0ppm

* Supply Voltage Variation :
 ≥30.0MHz to <40.0MHz, ±0.4ppm
 ≥40.0MHz, ±0.5ppm

Operating Temperature Range

- -20 to 70°C (code S)

Supply Current

- 3mA @ 20MHz typical

Output Compatibility

- HCMOS
- Load: 15pF nom.
- Vol: <10% Vsupply
- Voh: >90% Vsupply
- Duty Cycle: 45/55%
- Rise Time: 8ns
- Fall Time: 8ns

Ageing

- ±1ppm / year typical in 1st year @ 25°C

Standard Stock Frequencies (MHz)

- 10, 12.8, 13.0, 14.4, 16.32, 16.384, 19.44, 20.0, 26.0, 32.768, 40.0

Other frequencies may be available, please contact our sales office.

Frequency Adjustment

- >±5ppm by means of 1.65±1V control voltage

Marking

- CMAC and Batch Code
- Stab/Temp code + Frequency Code + Date Code

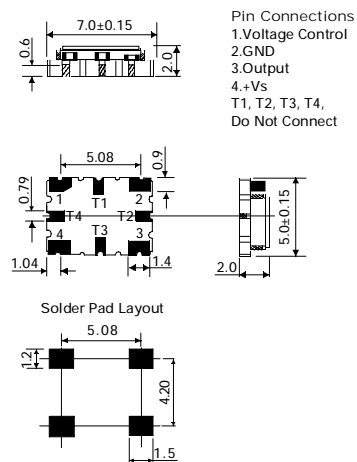
Minimum Ordering Information Required

- Frequency + Model Number (Example 10.0MHz CFPT-125)

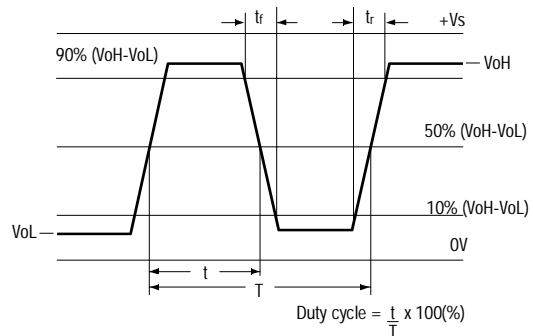
Environmental Specification

- Storage Temperature Range -55 to 125°C
- Vibration: IEC 60068-2-6 Test Fc Procedure B4, 10-60Hz 1.5mm displacement, at 98.1 ms⁻², 30 minutes in each of three mutually perpendicular axes at 1 octave per minute
- Shock: IEC 60068-2-27 Test Ea, 980ms⁻² acceleration for 6ms duration, 3 shocks in each direction along three mutually perpendicular axes
- Solderability: MIL-STD-202, Method 208, Category 3

Outline in mm (scale 2 : 1)



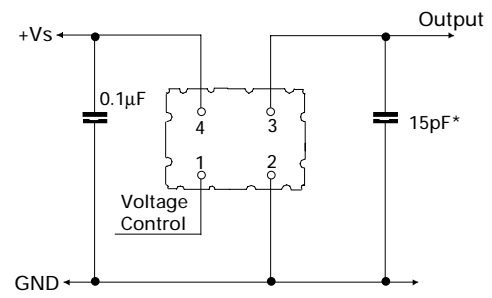
Output Waveform



Manufacturing Information

- Soldering: SMD product suitable for Convection Reflow soldering. Peak temperature 260°C. Maximum time above 220°C, 60 secs.
- Washing: Able to withstand aqueous washing process.
- Packaging: Tape and reel, details available on request.

Test Circuit



* inclusive of probe and jig capacitance

CFPT-126

ISSUE 1 ; 7 JANUARY 2005

Delivery Options

- Please contact our sales office for details

Package Outline

- 7.0 x 5.0 x 2.0mm SMD (surface mount device)

Description

- CFPT-126 is a surface mount temperature compensated voltage controlled oscillator (TCVCXO) providing a high degree of frequency stability over a wide temperature range

Supply Voltage

- 3.3V ± 5%

Frequency Stability

- Temperature ±0.5ppm (code E)
- Supply Voltage Variation ±0.3ppm *
- Load Variation (15pF ±10%) ±0.2ppm
- After Reflow ±1.0ppm

* Supply Voltage Variation :
 ≥30.0MHz to <40.0MHz, ±0.4ppm

Operating Temperature Range

- -40 to 85°C (code X)

Supply Current

- 3mA @ 20MHz typical

Output Compatibility

- HCMOS
- Load: 15pF nom.
- Vol: <10% Vsupply
- Voh: >90% Vsupply
- Duty Cycle: 45/55%
- Rise Time: 8ns
- Fall Time: 8ns

Ageing

- ±1ppm / year typical in 1st year @ 25°C

Standard Stock Frequencies (MHz)

- 10, 12.8, 13.0, 16.384, 19.44, 20.0, 26.0, 32.768, 40.0MHz
- Other frequencies may be available, please contact our sales office.

Frequency Adjustment

- >±5ppm by means of 1.65±1V control voltage

Marking

- CMAC and Batch Code
- Stab/Temp code + Frequency Code + Date Code

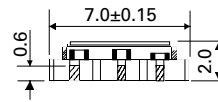
Minimum Ordering Information Required

- Frequency + Model Number (Example 10.0MHz CFPT-126)

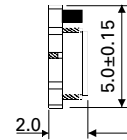
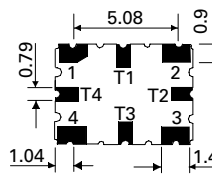
Environmental Specification

- Storage Temperature Range -55 to 125°C
- Vibration: IEC 60068-2-6 Test Fc Procedure B4, 10-60Hz 1.5mm displacement, at 98.1 ms⁻², 30 minutes in each of three mutually perpendicular axes at 1 octave per minute
- Shock: IEC 60068-2-27 Test Ea, 980ms⁻² acceleration for 6ms duration, 3 shocks in each direction along three mutually perpendicular axes
- Solderability: MIL-STD-202, Method 208, Category 3

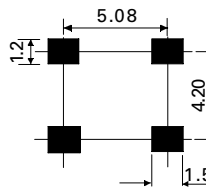
Outline in mm



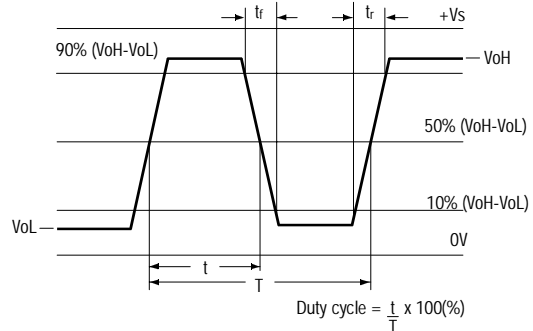
- Pad Connections
1. Voltage Control
 2. GND
 3. Output
 4. +Vs
- T1, T2, T3, T4,
Do Not Connect



Solder pad layout



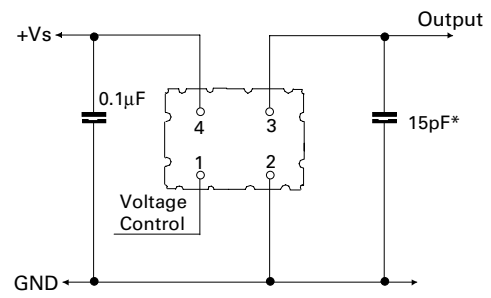
Output Waveform



Manufacturing Information

- Soldering: SMD product suitable for Convection Reflow soldering. Peak temperature 260°C. Maximum time above 220°C, 60 secs.
- Washing: Able to withstand aqueous washing process.
- Packaging: Tape and reel, details available on request.

Test Circuit



* inclusive of probe and jig capacitance

CFPT-5103, -5104, -5105, -5106, -5133, -5144

ISSUE 2; 8 SEPTEMBER 1999

Delivery Options

- Please contact our sales office for current leadtimes

Description

- The CFPT-5100 series of temperature compensated crystal oscillators provide for ultra high stabilities down to ± 1.5 ppm over an operating temperature range of -55 to $+95$ °C. Housed in an industry standard 14 pin DIL package. Output frequencies are available between 1.0kHz and 40.0MHz

Waveform

- Square HCMOS

Package Outline

- 14-pin compatible resistance welded enclosure, hermetically sealed with glass to metal seals

Standard Frequencies

- 1.0MHz, 1.0240MHz, 2.097152MHz, 3.840MHz, 4.0960MHz, 5.0MHz, 6.1440MHz, 8.1840MHz, 8.1920MHz, 9.60MHz, 10.0MHz, 10.520MHz, 10.949297MHz, 12.0MHz, 16.0MHz, 16.3840MHz, 20.0MHz, 20.460MHz, 21.0MHz, 24.0MHz, 30.0MHz, 38.880MHz

Ageing

- ± 1 ppm max. in first year
- ± 5 ppm max. for 10 years

Frequency Stability

- Temperature: see table
- Supply Voltage Variation $\pm 5\%$ ≤ 25 MHz $\leq \pm 0.2$ ppm
 > 25 MHz $\leq \pm 0.3$ ppm
- Load Coefficient 15pF ± 5 pF $\leq \pm 0.1$ ppm

Frequency Adjustment

- $\geq \pm 5$ ppm External Control Voltage 0.25V to 2.5V applied to pin 1 (CFPT-5103, -5133, -5105)
- $\geq \pm 5$ ppm External 100k Ω Potentiometer connected as a variable resistor from pin 1 to ground (CFPT-5104, -5144, -5106)

Storage Temperature Range

- -55 to $+95$ °C

Environmental Specification

- Bump: 1000 ± 10 bumps at 400m/s² in each of the three mutually perpendicular planes
- Shock: 981m/s² for 6ms duration, three shocks in each direction along the three mutually perpendicular planes

- Solderability: IEC 60068-2-20 Test Ta Method 1 (Solder Bath)(MIL-STD-202 Method 208), Temperature 235°C
- Vibration: 10 to 60Hz 0.75mm displacement, 60 to 500Hz 98.1m/s² acceleration, 30 minutes in each of three mutually perpendicular planes at 1 octave per minute
- Damp Heat: IEC 60068-2-3 Test Ca (Steady State), Duration 56 days, recovery time 12 hours
- Robustness of Termination: IEC 60068-2-21 Test Ua (Tensile)
- Sealing: IEC 60068-2-17 Test QC Method 2 (Gross Leak) IEC 60068-2-17 Test Qk (Fine Leak)
- Marking: Heat cured epoxy or engraving, resistant to all common solvents

Marking

- Manufacturer
- Date code (Year/Week)
- Part Number
- Frequency (MHz)
- Offset frequency at 25°C (Hz)
- Static Sensitivity Symbol Δ (denotes pin 1)

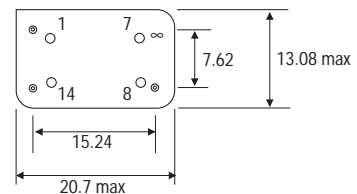
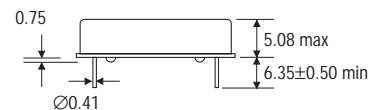
Minimum Order Information Required

- Discrete Part Number

OR

- Frequency + Model Number + Frequency Stability + Operating Temperature Range

Outline in mm



Pin connections
1. Frequency Adjust
7. Case Ground
8. Output
14. +Vs

Available Standard Specifications

Frequency Range	Supply Voltage	Supply Current	Output	Frequency Adjustment	Rise Time(t_r)	Fall Time(t_f)	Duty Cycle	Model Number
1.0kHz to 25.0MHz	3V±0.15	10mA	HCMOS 15pF	Ext. Control Voltage	4ns	4ns	40/60%	CFPT-5103
1.0kHz to 25.0MHz	3V±0.15	10mA	HCMOS 15pF	Ext. 100kΩ Potentiometer	4ns	4ns	40/60%	CFPT-5104
1.0kHz to 25.0MHz	3.3V±0.17	10mA	HCMOS 15pF	Ext. Control Voltage	4ns	4ns	40/60%	CFPT-5133
1.0kHz to 25.0MHz	3.3V±0.17	10mA	HCMOS 15pF	Ext. 100kΩ Potentiometer	4ns	4ns	40/60%	CFPT-5144
1.0kHz to 40.0MHz	5V±0.25	15mA	HCMOS 15pF	Ext. Control Voltage	4ns	4ns	40/60%	CFPT-5105
1.0kHz to 40.0MHz	5V±0.25	15mA	HCMOS 15pF	Ext. 100kΩ Potentiometer	4ns	4ns	40/60%	CFPT-5106

Frequency Stabilities Available Over Operating Temperature Ranges

Operating Frequency Range Ranges	Frequency Stabilities Vs Operating Temperature Range			
	±0.5ppm	±0.8ppm	±1.0ppm	±1.5ppm
-20 to 70°C	Code ES	Code BS	Code FS	Code CS
-30 to 75°C	—	Code BU	Code FU	Code CU
-30 to 85°C	—	—	Code FW	Code CW
-40 to 85°C	—	—	Code FX	Code CX
-55 to 95°C	—	—	—	Code CA

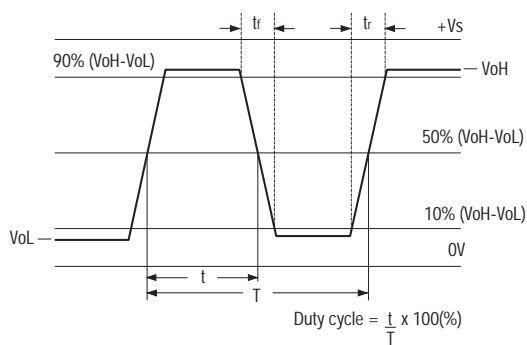
Ordering Example

Frequency _____ 23.0MHz

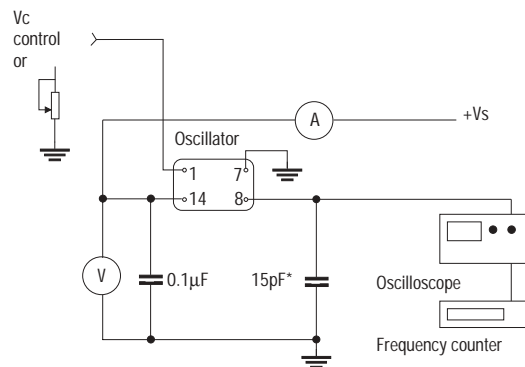
Model number _____ CFPT-5105

Frequency Stability Vs Operating Temperature Code _____ ES

Output Waveform - HCMOS



Test Circuit - HCMOS



*Inclusive of jigging & equipment capacitance