

Customer Part:

Description

- The CFPT-9301 is a 5.0 x 3.2mm surface mount temperature compensated voltage controlled crystal oscillator.
- with Frequency Adjustment
- Model CFPT-9301-A
- Model Issue number 8

Frequency Parameters

- Frequency 20.0MHz
- Frequency Tolerance $\pm 1.00\text{ppm}$
- Tolerance Condition @25°C
- Frequency Stability $\pm 1.00\text{ppm}$
- Operating Temperature Range -40.00 to 85.00°C
- Frequency Stability Note: Reference to $(F_{\text{max}} + F_{\text{min}})/2$
- Reflow Shift (measured ≥ 60 minutes after reflow): $\pm 1\text{ppm}$ max
- Load Variation (@ $\pm 5\text{pF}$ change):
Frequency <20MHz: $\pm 0.2\text{ppm}$ typ
Frequency 20MHz to 35MHz: $\pm 0.3\text{ppm}$ typ
Frequency 35MHz to 52MHz: $\pm 0.5\text{ppm}$ typ
- Ageing:
 $\leq 20\text{MHz}$: $\pm 1\text{ppm}$ max 1st year
 $\leq 20\text{MHz}$: $\pm 3\text{ppm}$ max 10 years
 $> 20\text{MHz}$: $\pm 2\text{ppm}$ max 1st year
 $> 20\text{MHz}$: $\pm 5\text{ppm}$ max 10 years
- Start Up Time: 5ms max

Electrical Parameters

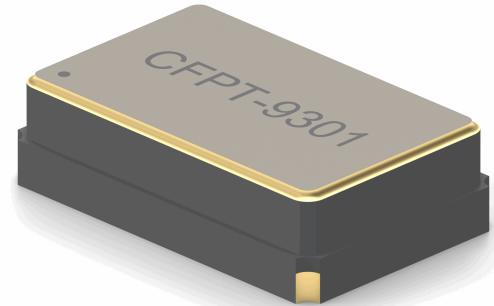
- Supply Voltage 3.3V $\pm 10\%$
- Supply Current (typ): $1 + \text{Frequency}(\text{MHz}) \times \text{Supply}(\text{V}) \times \{\text{Load}(\text{pF}) + 15\} \times 1\text{E}-3\text{mA}$, i.e @20MHz, 3.3V, 15pF=3mA
Calculation: $1 + (20 \times 3.3 \times (15 + 15) \times 0.001) = 2.98\text{mA}$
- Supply Voltage Tolerance: Parts will operate correctly with $\pm 10\%$ supply voltage variation but supply coefficient is measured with $\pm 5\%$ variation

Frequency Adjustment

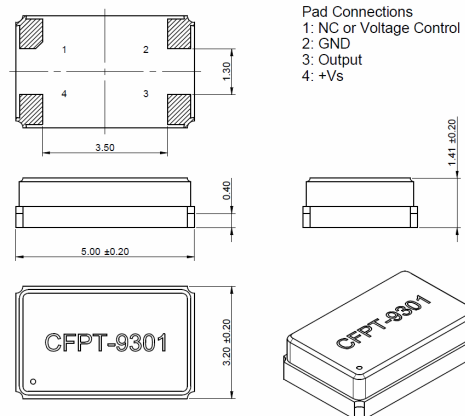
- Supply Voltage Variation (@ $\pm 5\%$ change):
 $< 20\text{MHz}$: $\pm 0.1\text{ppm}$ typ
20MHz to 35MHz: $\pm 0.3\text{ppm}$ typ
35MHz to 52MHz: $\pm 0.5\text{ppm}$ typ
- Option A - with Frequency Adjustment:
 $\leq 20\text{MHz}$: $\pm 5\text{ppm}$ min
 $> 20\text{MHz}$: $\pm 7\text{ppm}$ min
Linearity: 2% max
Slope: Positive
Input resistance: $\geq 100\text{k}\Omega$
Modulation bandwidth: 2kHz min
Standard control voltage range: 1.5V $\pm 1\text{V}$

Output Details

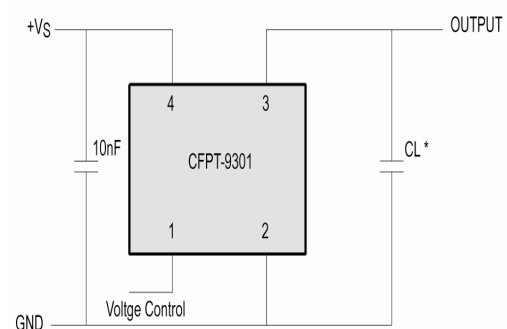
- Output Compatibility HCMOS
- Drive Capability 15pF max
- Rise and Fall Time 8.0ns max
- Duty Cycle 45/55



Outline (mm)



Test Circuit



* Load 15pF (HCMOS), inclusive of probe and jig capacitance

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Customer Part:

Output Levels

- Output Level:
VoH $\geq 90\%$ Vs
VoL $\leq 10\%$ Vs

Environmental Parameters

- Storage Temperature Range: -55 to 125°C
- Shock: IEC 60068-2-27 Test Ea, 1500g acceleration for 0.5ms, 3 shocks in each direction along three mutually perpendicular axes at octave per minute.
- Vibration: IEC 60068-2-6 Test Fc, 10~60Hz 1.5mm displacement, 60~2000Hz at 20g, 4 hours in each of three mutually perpendicular axes at octave per minute.

Manufacturing Details

- RoHS Terminations NiAu
- RoHS Reflow Temp 260°C max over 30 seconds

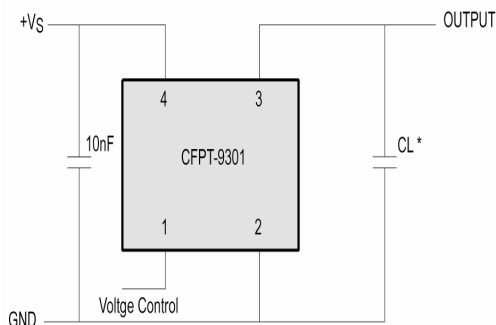
Compliance

- RoHS Status (2015/863/EU) Compliant
- REACH Status Compliant
- MSL Rating (JDEC-STD-033): 3

Packaging Details

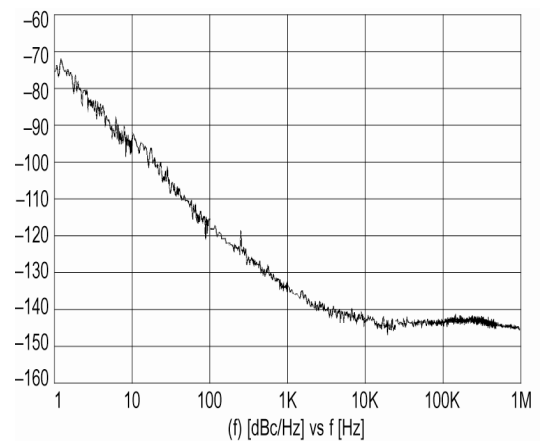
- Pack Style: Bulk Loose in bulk pack
Standard Pack Quantity: 10
- Alternative packing option available

Test Circuit



* Load 15pF (HCMOS), inclusive of probe and jig capacitance

Typical Phase Noise at 14.4MHz



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Chipset Approval Table

Ref No.		Frequency	Chipset Type	IC Supplier	
E4190LF		12.8MHz	ACS1790T, ACS9510, ACS9520T, ACS9522T, ACS9550, ACS9593T, ACS8522BT, ACS8509, ACS8510, ACS8514, ACS8515, ACS8520, ACS8520A, ACS8522	Semtech	
E4191LF		12.8MHz	ACS1790T, ACS9510, ACS9520T, ACS9522T, ACS9550, ACS9593T, ACS8522BT, ACS8509, ACS8510, ACS8514, ACS8515, ACS8520, ACS8520A, ACS8522	Semtech	
E4437LF		12.8MHz	ACS1790T, ACS9510, ACS9520T, ACS9522T, ACS9550, ACS9593T, ACS8522BT, ACS8509, ACS8510, ACS8514, ACS8515, ACS8520, ACS8520A, ACS8522	Semtech	
E4438LF		20MHz	ZL30152, ZL30155, ZL30157, ZL30159, ZL30160, ZL30165	Microsemi	
E4439LF		20MHz	ZL30152, ZL30155, ZL30157, ZL30159, ZL30160, ZL30165	Microsemi	
E4441LF		20MHz	ZL30152, ZL30155, ZL30157, ZL30159, ZL30160, ZL30165	Microsemi	
E4698LF		12.8MHz	ACS1790T, ACS9510, ACS9520T, ACS9522T, ACS9550, ACS9593T, ACS8522BT, ACS8509, ACS8510, ACS8514, ACS8515, ACS8520, ACS8520A, ACS8522	Semtech	

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