

Customer Part:

Description

- The CFPT-9301 is a 5.0 x 3.2mm surface mount temperature compensated voltage controlled crystal oscillator.
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- Model CFPT-9301 iss:7.03-B
- Model Issue number 8

Frequency Parameters

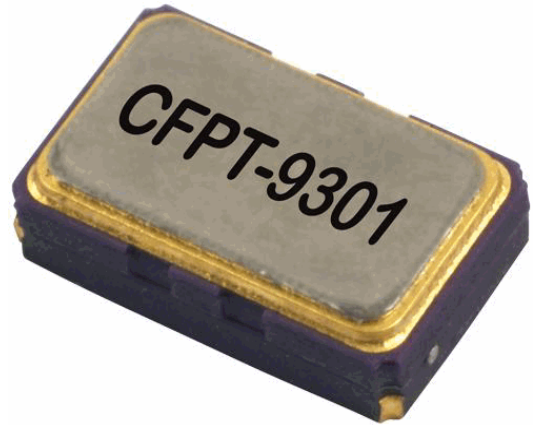
- Frequency 20.0MHz
- Frequency Tolerance $\pm 1.00\text{ppm}$
- Tolerance Condition @25°C
- Frequency Stability $\pm 0.30\text{ppm}$
- Operating Temperature Range -40.00 to 85.00°C
- Frequency Stability Note: Reference to $(F_{\text{max}} + F_{\text{min}})/2$
- Reflow Shift (measured ≥ 60 minutes after 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

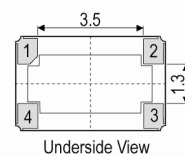
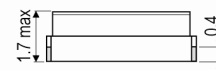
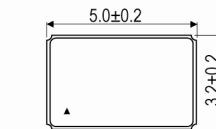
- Supply Voltage 3.3V $\pm 10\%$
- Supply Current (typical):
HCMOS: $1 + \text{Frequency}(\text{MHz}) * \text{Supply}(\text{V}) * \{\text{Load}(\text{pF}) + 15\} * 1\text{E}-3\text{mA}$
i.e @ 20MHz, 3.3V, 15pF $\approx 3\text{mA}$
Calculation: $1 + (20 \times 3.3 \times (15 + 15) \times 0.001) = 2.98\text{mA}$
- Supply Voltage Tolerance: Parts will operate correctly with $\pm 10\%$ supply voltage variation but supply coefficient is measured with $\pm 5\%$ variation
- Frequency Adjustment - option B
No frequency adjustment
Initial calibration: $\leq \pm 1.0\text{ppm}$
- Start Up Time: 5ms max

Frequency Adjustment

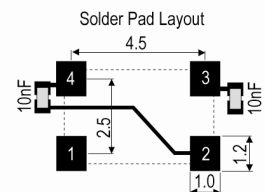
- Pulling Optional
- Frequency Adjustment - option A (standard):
Ageing adjustment by means of external Control Voltage applied to pad 1
Range (frequency $\leq 20\text{MHz}$): $\geq \pm 5\text{ppm}$
Range (frequency $> 20\text{MHz}$): $\geq \pm 7\text{ppm}$
Linearity: $\leq 2\%$
Slope: Positive
Input resistance: $\geq 100\text{k}\Omega$
Modulation bandwidth: $\geq 2\text{kHz}$
Standard control voltage range: 1.5V $\pm 1\text{V}$



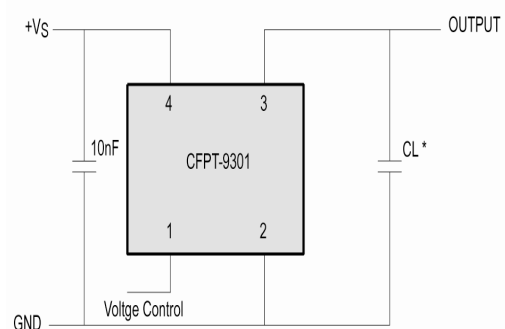
Outline (mm)



- Pad Connections
1. Voltage Control (Option A) or NC (Option B)
 2. GND
 3. Output
 4. +Vs



Test Circuit



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

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Customer Part:

Output Details

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

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

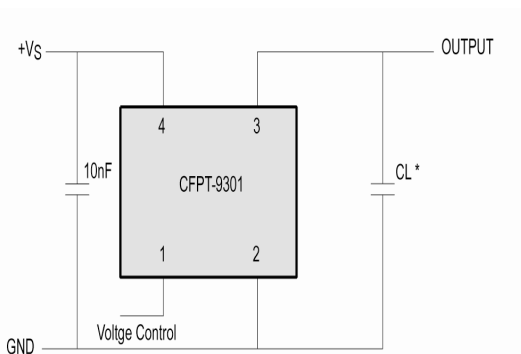
Compliance

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

Packaging Details

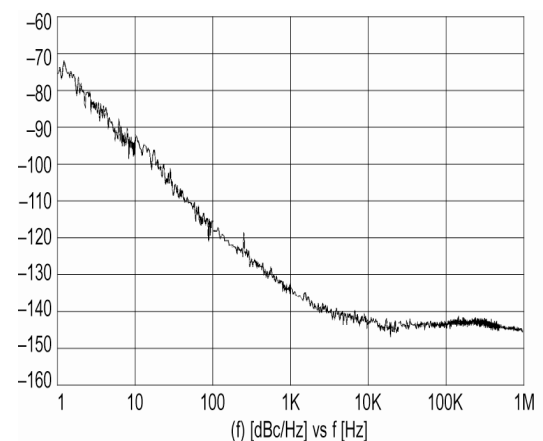
- Pack Style: Bulk Loose in bulk pack
Pack Size: 10
- Alternative packing option available

Test Circuit



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

Typical Phase Noise at 14.4MHz



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Customer Part:
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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