

**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-A
- Model Issue number 8

**Frequency Parameters**

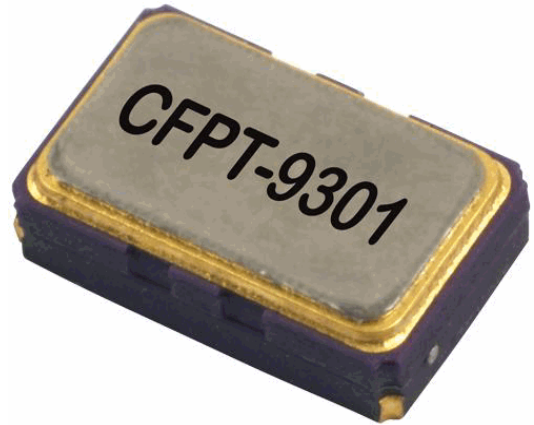
- Frequency 50.0MHz
- Frequency Tolerance ±1.00ppm
- Tolerance Condition @25°C
- Frequency Stability ±1.00ppm
- Operating Temperature Range -40.00 to 85.00°C
- Frequency Stability Note: Reference to (Fmax+Fmin)/2
- Reflow Shift (measured ≥60 minutes after reflow): ±1ppm max
- Load Variation (@±5pF change):  
 Frequency <20MHz: ±0.2ppm typ  
 Frequency 20MHz to 35MHz: ±0.3ppm typ  
 Frequency 35MHz to 52MHz: ±0.5ppm typ
- Ageing:  
 ≤20MHz: ±1ppm max 1st year  
 ≤20MHz: ±3ppm max 10 years  
 >20MHz: ±2ppm max 1st year  
 >20MHz: ±5ppm max 10 years
- Start Up Time: 5ms max

**Electrical Parameters**

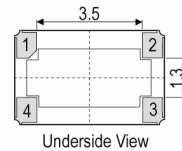
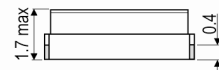
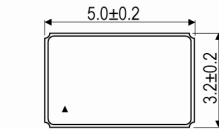
- Supply Voltage 3.3V ±10%
- Supply Current (typical):  
 HCMOS:  $1 + \text{Frequency(MHz)} * \text{Supply(V)} * \{\text{Load(pF)} + 15\} * 1E-3 \text{mA}$   
 i.e @ 20MHz, 3.3V, 15pF ≈ 3mA  
 Calculation:  $1 + (20 \times 3.3 \times (15 + 15) \times 0.001) = 2.98 \text{mA}$
- Supply Voltage Tolerance: Parts will operate correctly with ±10% supply voltage variation but supply coefficient is measured with ±5% variation
- Frequency Adjustment - option B  
 No frequency adjustment  
 Initial calibration: ≤ ±1.0ppm
- 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 ≤ 20MHz): ≥±5ppm  
 Range (frequency > 20MHz): ≥±7ppm  
 Linearity: ≤2%  
 Slope: Positive  
 Input resistance: ≥100kΩ  
 Modulation bandwidth: ≥2kHz  
 Standard control voltage range: 1.5V ±1V

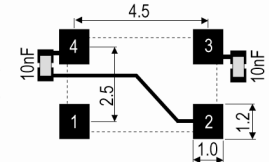


**Outline (mm)**

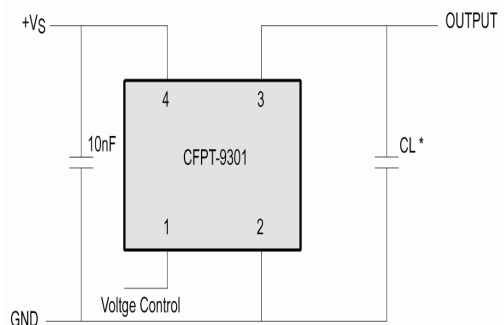


- Pad Connections
1. Voltage Control (Option A) or NC (Option B)
  2. GND
  3. Output
  4. +Vs

**Solder Pad Layout**



**Test Circuit**



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

**Sales Office Contact Details:**

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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 ≥90% Vs  
VoL ≤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

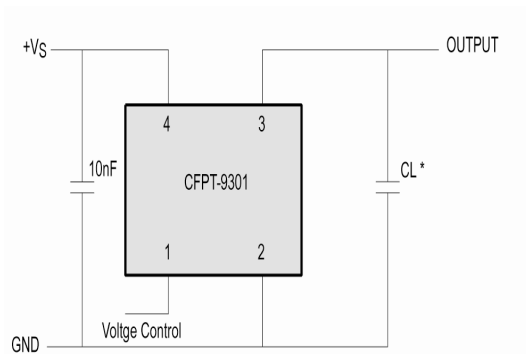
**Compliance**

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

**Packaging Details**

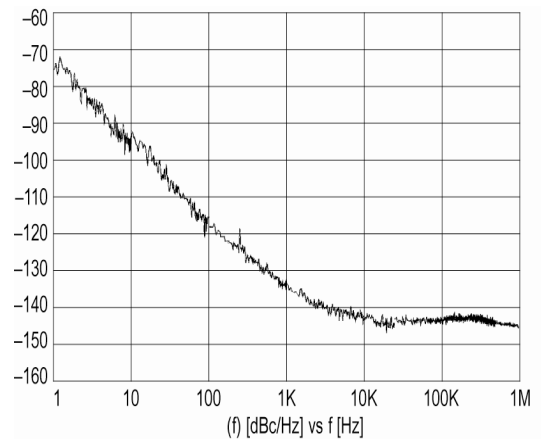
- Pack Style: Bulk            Loose in bulk pack  
Pack Size: 10
- *Alternative packing option available*

**Test Circuit**



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

**Typical Phase Noise at 14.4MHz**



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**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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