

## 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-A
- Model Issue number 8



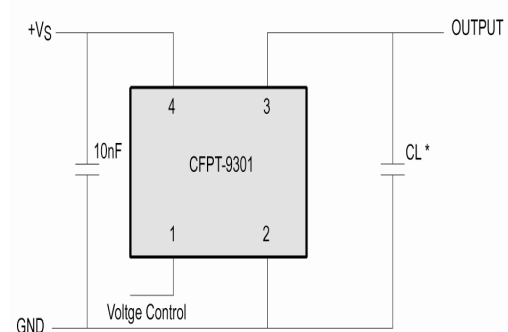
### Outline (mm)

### Frequency Parameters

- Frequency 10.0MHz
- 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  $\geq 60$  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

### Outline (mm)

### Test Circuit



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

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**Customer Part:**
**Electrical Parameters**

- Supply Voltage 3.3V ±10%
- Supply Voltage Variation (@±5% change):  
 <20MHz: ±0.1ppm typ  
 20MHz to 35MHz: ±0.3ppm typ  
 35MHz to 52MHz: ±0.5ppm typ
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 <20MHz: ±0.1ppm typ  
 20MHz to 35MHz: ±0.3ppm typ  
 35MHz to 52MHz: ±0.5ppm typ
- Supply Current (typ):  $1 + \text{Frequency(MHz)} \times \text{Supply(V)} \times \{\text{Load(pF)} + 15\} \times 1\text{E}-3\text{mA}$ , 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 ±10% supply voltage variation but supply coefficient is measured with ±5% variation

**Frequency Adjustment**

- Pulling Optional
- Option A - with Frequency Adjustment:  
 ≤20MHz: ±5ppm min  
 >20MHz: ±7ppm min  
 Linearity: 2% max  
 Slope: Positive  
 Input resistance: ≥100kΩ  
 Modulation bandwidth: 2kHz min  
 Standard control voltage range: 1.5V ±1V

**Output Details**

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

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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

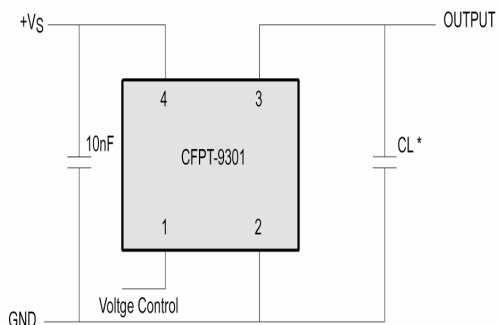
### Compliance

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

### Packaging Details

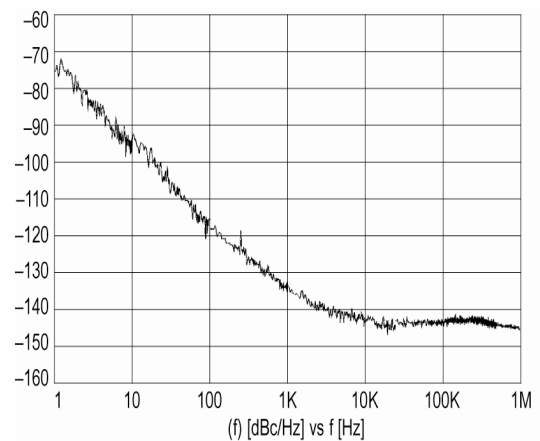
- Pack Style: Bulk Loose in bulk pack  
Standard Pack Quantity: 10
- Alternative packing option available

## Test Circuit



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

## Typical Phase Noise at 14.4MHz



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**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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