

**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

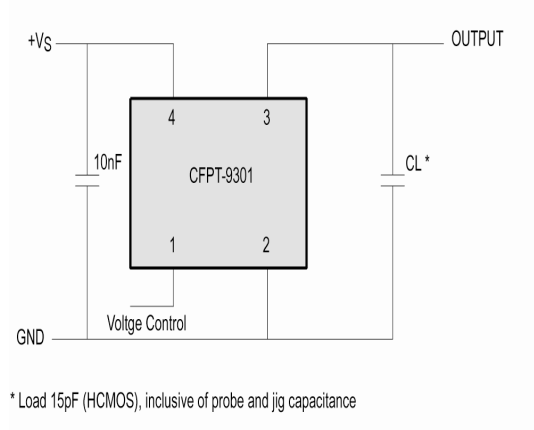
**Frequency Parameters**

- 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

**Outline (mm)**

**Outline (mm)**

**Test Circuit**



**Sales Office Contact Details:**

UK: +44 (0)1460 270200

Email: [info@iqdfrequencyproducts.com](mailto:info@iqdfrequencyproducts.com)

Web: [www.iqdfrequencyproducts.com](http://www.iqdfrequencyproducts.com)

### 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 to 35MHz: ±0.3ppm typ
  - 35MHz to 52MHz: ±0.5ppm typ
- Supply Current (typ):  $1 + \text{Frequency(MHz)} * \text{Supply(V)} * \{ \text{Load(pF)} + 15 \} * 1E-3 \text{mA}$ , i.e @20MHz, 3.3V, 15pF=3mA  
Calculation:  $1 + (20 * 3.3 * (15 + 15) * 0.001) = 2.98 \text{mA}$
- 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 ≥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

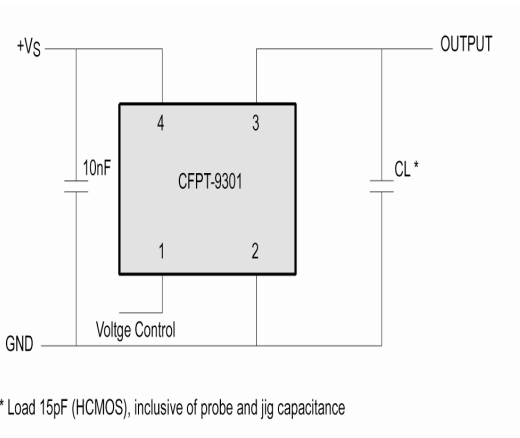
**Compliance**

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

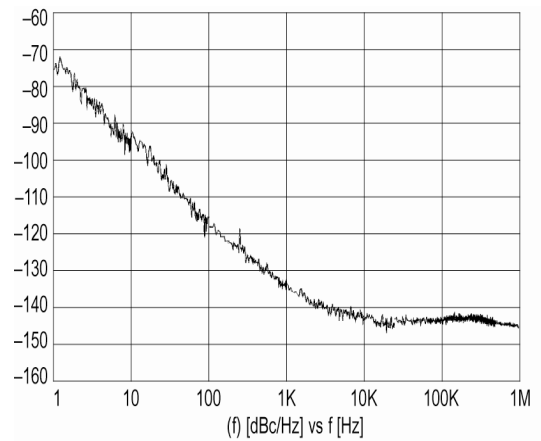
**Packaging Details**

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

**Test Circuit**



**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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