

Customer Part:

Description

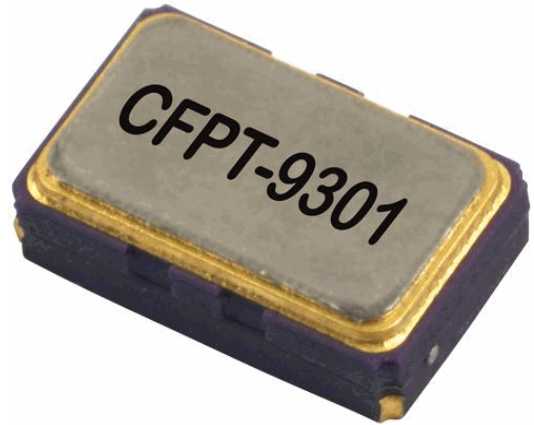
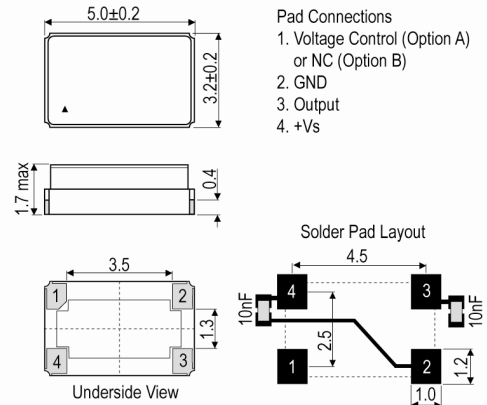
- Surface mount temperature compensated voltage controlled crystal oscillator.
- Freq Adj option
 Option A (standard):
 Ageing adjustment by means of external Control Voltage applied to pad 1
 Range (frequency \leq 20MHz) \geq ± 5 ppm
 Range (frequency $>$ 20MHz) \geq ± 7 ppm
 Linearity $\leq 2\%$
 Slope Positive
 Input resistance $\geq 100k\Omega$
 Modulation bandwidth $\geq 2kHz$
 Standard control voltage range 1.5V \pm 1V
- Model CFPT-9301-A
- Model Issue number 7

Frequency Parameters

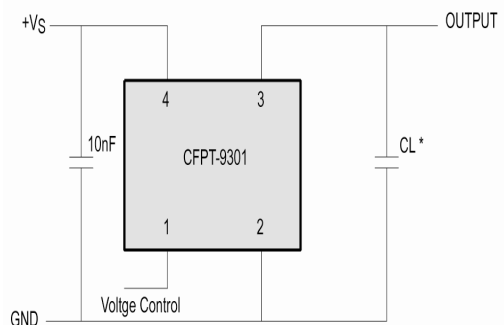
- Frequency 32.7680MHz
- Frequency Tolerance ± 1.00 ppm
- Frequency Stability ± 1.00 ppm
- Operating Temperature Range -40.00 to 85.00°C
- Ageing ± 1 ppm max in 1st year (see Note 1)
- Supply Voltage Variation (@ $\pm 5\%$ change):
 Frequency $<$ 20MHz: ± 0.1 ppm typ
 Frequency 20MHz to $<$ 35MHz: ± 0.3 ppm typ
 Frequency 35MHz to 52MHz: ± 0.5 ppm typ
- Load Variation (@ $\pm 5pF$ change):
 Frequency $<$ 20MHz: ± 0.2 ppm typ
 Frequency 20MHz to $<$ 35MHz: ± 0.3 ppm typ
 Frequency 35MHz to 52MHz: ± 0.5 ppm typ
- Note 1 Ageing:
 Frequency ≤ 20 MHz: ± 1 ppm max in 1st year
 Frequency ≤ 20 MHz: ± 3 ppm max for 10 years (including the 1st year)
 Frequency > 20 MHz: ± 2 ppm max in 1st year
 Frequency > 20 MHz: ± 5 ppm max for 10 years (including the 1st year)

Electrical Parameters

- Supply Voltage 3.3V $\pm 10\%$
- Supply Current (typical):
 HCMOS: $1 + \text{Frequency(MHz)} * \text{Supply(V)} * \{\text{Load(pF)} + 15\} * 1E-3$ mA
 i.e @ 20MHz, 3.3V, 15pF ≈ 3 mA
 Calculation: $1 + (20 \times 3.3 \times (15 + 15) \times 0.001) = 2.98$ 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: $\leq \pm 1.0$ ppm


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

Sales Office Contact Details:

UK: +44 (0)1460 270200
 Germany: 0800 1808 443

France: 0800 901 383
 USA: +1.760.318.2824

Email: info@iqdfrequencyproducts.com
 Web: www.iqdfrequencyproducts.com

Customer Part:
Frequency Adjustment

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

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 of 3 mutually perpendicular planes
- 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 1oct/min

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*

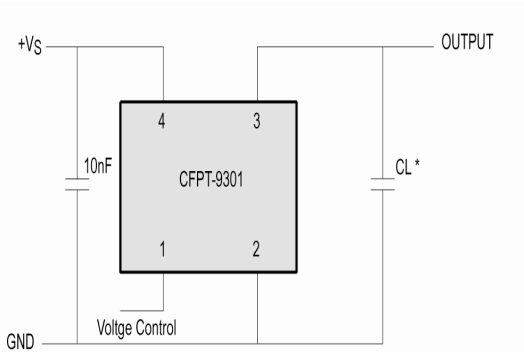
Test Circuit
Typical Phase Noise at 14.4MHz
Sales Office Contact Details:

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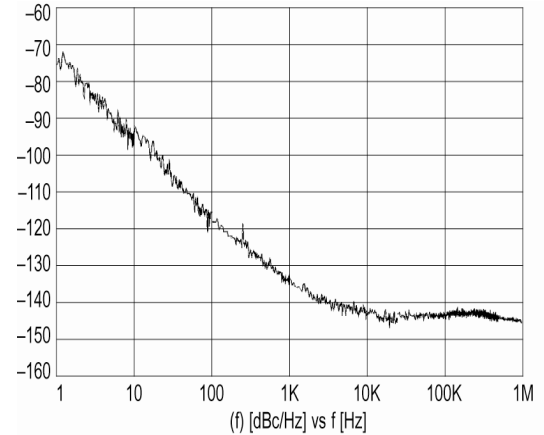
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* Load 15pF (HCMOS), inclusive of probe and jig capacitance



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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