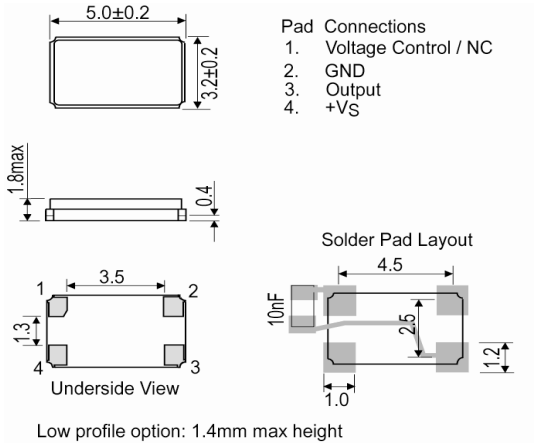
ISSUE 7; January 2016

Description

- Surface mount temperature compensated voltage controlled crystal oscillators for medium to high volume applications where small size and high performance are prerequisites. Capable of sub 0.3ppm performance over an extended temperature range. Its ability to function down to a supply voltage of 2.4V and low power consumption makes it particularly suitable for mobile applications.
- -A Freq Adj option
- 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
- -B No Freq Adj
- Option B:
  No frequency adjustment
  Initial Calibration ≤ ±1.0ppm

Outline (mm) -A = Freq Adj option



Low profile option: 1.4mm max height

Frequency Parameters

- Frequency 1.5MHz to 52.0MHz
- Frequency Tolerance ±0.00ppm to ±1.00ppm
- Frequency Stability ±0.20ppm to ±2.00ppm
- Ageing ±1ppm max in 1st year (see Note 1)
- Supply Voltage Variation (@ ±5% change):
  Frequency <20MHz: ±0.1ppm typ
  Frequency 20MHz to <35MHz: ±0.3ppm typ
  Frequency 35MHz to 52MHz: ±0.5ppm typ
- Load Variation (@ ±5pF change):
  Frequency <20MHz: ±0.2ppm typ
  Frequency 20MHz to <35MHz: ±0.3ppm typ
  Frequency 35MHz to 52MHz: ±0.5ppm typ
- Note 1 Ageing:
  Frequency ≤20MHz: ±1ppm max in 1st year
  Frequency ≤20MHz: ±3ppm max for 10 years (including the 1st year)
  Frequency >20MHz: ±2ppm max in 1st year
  Frequency >20MHz: ±5ppm max for 10 years (including the 1st year)

Electrical Parameters

- Supply Voltage 3.3V ±10%
- Supply Current (typical):
  HCMOS: 1+Frequency(MHz)*Supply(V)
  *{Load(pF)+15}*10–3mA
  e.g. 20MHz, 3.3V, 15pF ≈ 3mA
- 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

Sales Office Contact Details:
UK: +44 (0)1460 270200
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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

Operating Temperature Ranges

- -20 to 70°C
- -40 to 85°C

Output Details

- Output Compatability — HCMOS
- Drive Capability — 15pF max

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 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

Ordering Information

- Frequency*
  Model*
  Frequency Adjustment Option*
  Output
  Frequency Stability (over operating temperature range)*
  Operating Temperature Range*
  Supply Voltage
  (*minimum required)
- Example
  20.0MHz CFPT-9301-A
  HCMOS ±1ppm -20 to 70C 3.3V
- Stability/Temperature Range combinations may not be available for all frequencies, please contact our sales offices
- Supply Voltages in the range 2.4V to 6.0V are available to order, please contact our sales offices
- Low profile option (1.4mm max height) is available, please contact our sales offices
- Non standard requirements may be available upon request, please contact our sales offices

Compliance

- RoHS Status (2011/65/EU) — Compliant
- REACh Status — Compliant
- MSL Rating (JDEC-STD-033): — Not Applicable

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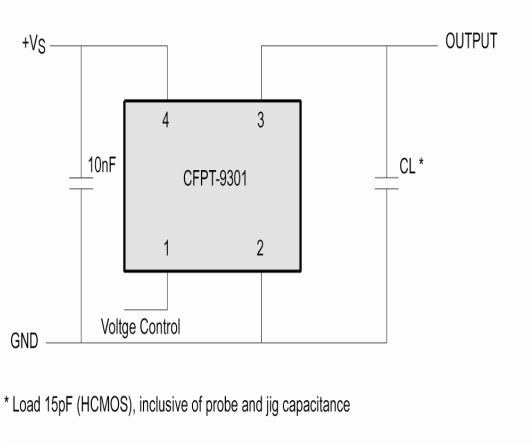
Packaging Details

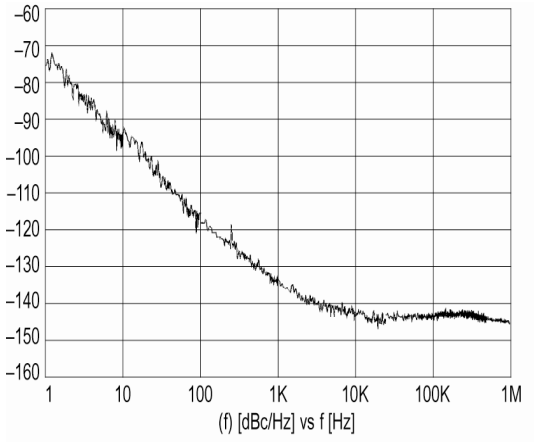
- Pack Style: Reel — Tape & reel in accordance with EIA-481-D
  Pack Size: 1,000
- Pack Style: Bulk — Loose in bulk pack
  Pack Size: 10

Test Circuit



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

Typical Phase Noise at 14.4MHz



Electrical Specification - maximum limiting values 3.3V ±10%

Frequency Min	Frequency Max	Temperature Range	Stability (Min)	Current Draw	Rise and Fall Time	Duty Cycle
		°C	ppm	mA	ns	%
1.5MHz	52.0MHz	-20 to 70	±0.2	-	8	45/55%
		-40 to 85	±0.3	-	8	45/55%

This document was correct at the time of printing; please contact your local sales office for the latest version.
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Chipset Approval Table

IQD Model		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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