



CPS
3.2 x 1.5 x 0.9 mm
Ceramic Package

Features

- Miniature low profile surface mount watch crystal.
- Package is ideal for automated surface mount assembly and reflow practices.
- Tape and Reel Packaging.
- 32.768 kHz

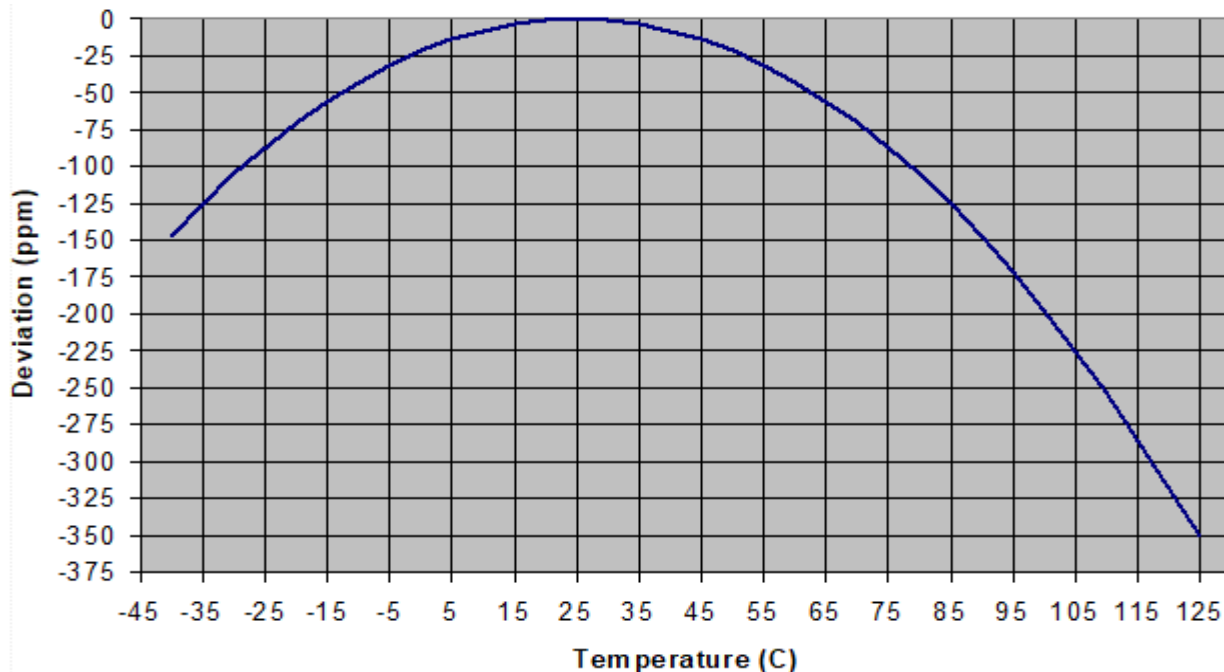
Applications

RTC

Electrical Characteristics

Parameter	Min	Typ	Max	Unit	Condition (Consult factory for other options)
Frequency Range	-	32.768	-	kHz	
Calibration Frequency Tolerance	-	-	±20	ppm	Standard at 25°C ± 3°C.
Frequency Stability	-0.028	-0.034	-0.04	ppm/Δ°C ²	
Turnover Temperature	20	25	30	°C	
Operating Temperature Range	-40	-	+85	°C	
Storage Temperature Range	-55	-	+125	°C	
Equivalent Series Resistance (ESR)	-	-	70	kΩ	
Drive Level	-	-	1	μW	
Q Factor	30000	-	-		
Shunt Capacitance (C0)	-	1.2	-	pF	Pad to Pad Capacitance
Motional Capacitance (C1)	-	3.7	-	fF	
Insulation Resistance	500	-	-	MΩ	@100VDC
Aging at 25°C ± 3°C	-	-	±3	ppm	for the first year at +25°C ± 3°C

Frequency versus Temperature - Typical Performance



Part Numbering (Example: CPSZ-A2C570-32.768D12.5)

Series Model	Packaging		Operating Temperature	Frequency Calibration Tolerance	Equivalent Series Resistance (ESR in kΩ)		Frequency (kHz)	Load Capacitance (CL)
CPS	Z	-	A2	C5	70	-	32.768	D12.5
	Z=Tape/Reel		A2 = -40 to +85°C	C5 = ±20 ppm				D12.5 = 12.5pF D9 = 9pF D7 = 7pF D6 = 6pF

Device Marking

1. Marking consists of a manufacturing date code
2. Orientation of marking may be mixed on the tape
3. Traceability of part's specification is lost once removed from reel

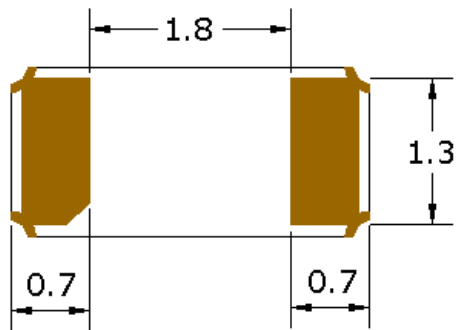
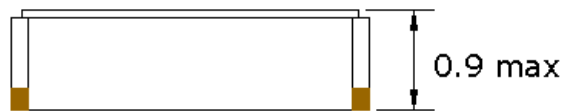
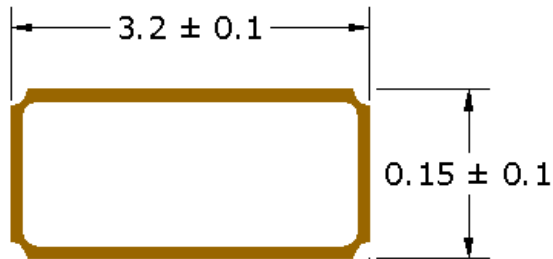
Reliability

Parameter	Condition
Mechanical Shock	JESD22-B104
Vibration	JESD22-B103
Solderability	IPC J-STD-002
Thermal Shock	MIL-STD-883 Method 1011, Condition A

Cardinal Components Inc. certifies this device is in accordance with the RoHS and REACH directives.

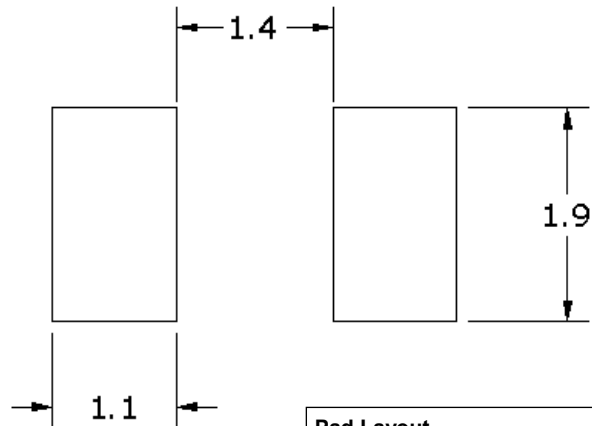
Cardinal guarantees the device does not contain the following: Cadmium, Hexavalent Chromium, Lead, Mercury, PBB's, PBDE's
 Weight of the Device: 0.011 grams
 Moisture Sensitivity Level: 1 As defined in J-STD-020D
 Second Level Interconnect code: e4

Mechanical Dimensions



Dimensions in mm

Suggested Solder Pad layout



Pad Layout

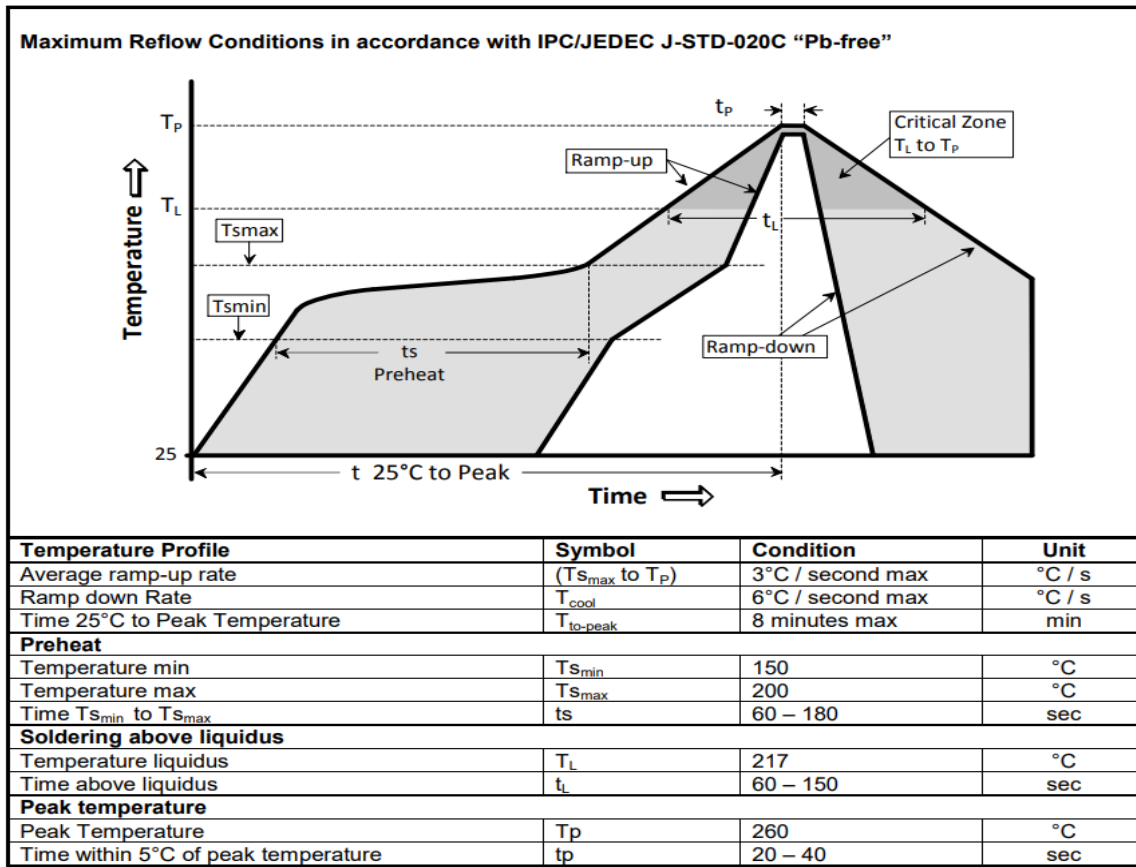
Disclaimer: Suggested layout shown. Adjust layout as needed for individual process requirements.

Contacts (pads): Gold (0.3 to 1µm) over Nickel (1.27 to 8.89 µm)

For Optimum Jitter Performance, Cardinal recommends:

- Trace lengths to the crystal should be kept as short as possible.
- The crystal connections are sensitive to noise.
- These very small crystals have high ESR, the oscillator start-up and operation should take this into consideration.

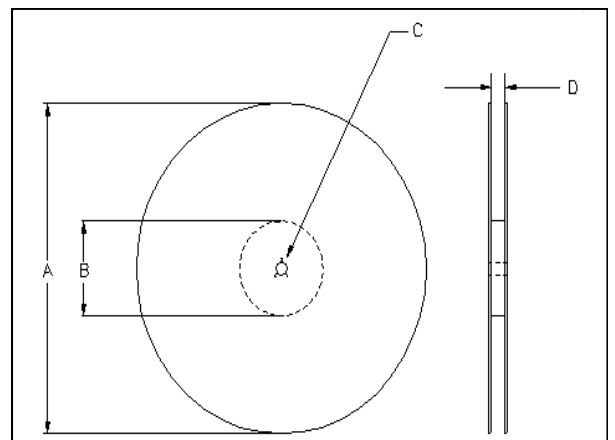
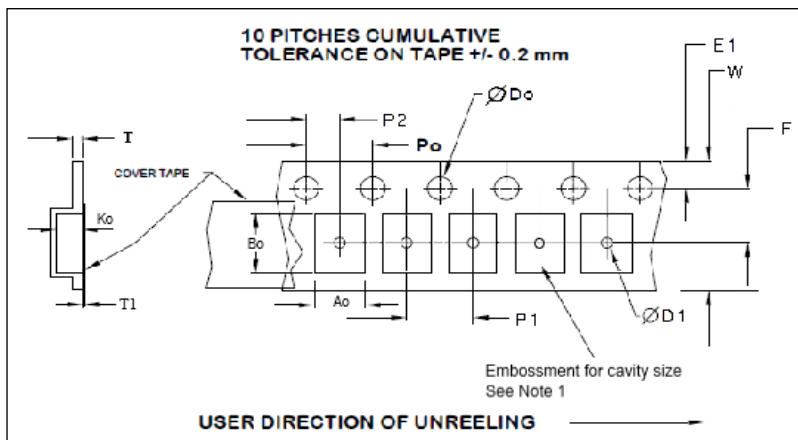
Reflow Cycle



The part may be reflowed 2 times without degradation (typical for lead free processing).

Tape and Reel

Tape and Reel available for quantities of 250 to 3000 per reel, cut tape for < 1000. 12mm tape, 4mm



Tape Size	F	P1	W max	Ao	Bo	Ko	Do	D1	E1	Po	P2	T	T1
12mm	5.5 ±0.1	4.0 ±0.1	12.3	1.7	3.4	1.2	1.5 +1.0 -0.0	1.0	1.75 ±0.1	4.0 ±0.1	2.0 ±0.05	0.3	0.1

Reel Size	A	B	C	D
	mm	mm	mm	mm
7	180	60	13.0 +0.5 -0.2	Tape size +0.4 +2.0 -0.0

Dimensions in mm

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