

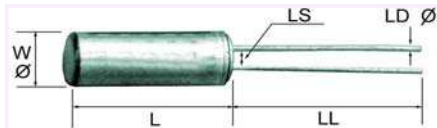
ACT1x5, 2x6 & 3x8 Watch Crystal

The ACT1x5, 2x6 & 3x8 are miniature cylindrical packages offering high vibration and shock resistance, together with high stability. They are suitable for portable equipment and where a close packing density is required. Two versions are offered, C1BLC: a low cost version and the HQM4E: a version with a higher Q value. The 1x5 device is only available in the High Q version.

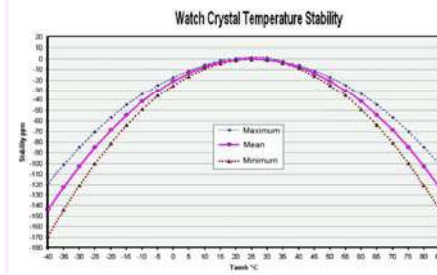


Specification

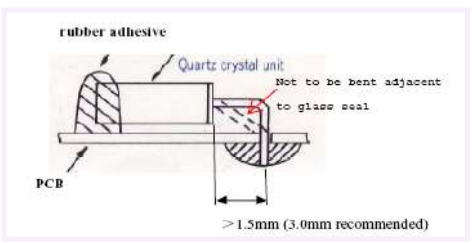
Parameter	fo	C1bLC Series		HQM4E Series	
		Specification		Specification	
Nominal Frequency	fo	32.768KHz			
Outline		3x8	2x6	1x5	2x6
Quality Factor (Typical)	Q	60,000	50,000	85,000	70,000
Shunt Capacitance (Typical)	C0	1.8pF	1.45pF	1.0pF	1.35pF
Equivalent Series Resistance	ESR	30KΩ max	35KΩ max	40KΩ max	35KΩ max
Motional Capacitance (Typical)	C1	0.0030pF	0.0028pF	0.0024pF	0.0024pF
Frequency Tolerance @25°C	Δf/fo	±20ppm std ±5, ±10ppm	±20ppm std ±10ppm	±20 standard	±20ppm standard ±5 & ±10ppm
Load Capacitance	CL	6pF~12.5pF(6, 12.5pF standard)		12.5pF	12.5, 6.0pF
Frequency v Temperature	Δf/t _{amb}	See Drawing -40 °C +85°C		See Drawing (-40 °C +85°C)	
Turnover Temperature	T _m	25°C ±5°C		25°C ±5°C	
Temperature Coefficient	β	-0.035±0.0086ppm / °C ²		-0.034+/-0.006ppm / °C ²	
Temp Operating Range	T _{opr}	-10 +60°C standard , (-20~+70, -40 +85°C Options)		-20 +70°C ,(-40 +85°C option)	
Temp Storage Range	T _{stg}	-40 ~ +85°C		-40~+85°C	
Drive Level	DL	1μ W max		1μ W max	
Insulation Resistance	IR	500MΩ / 100VDC min		500MΩ / 100VDC min	
Aging	Δf/yr	±5ppm First year, 25°C (±3ppm option)		+/-3ppm(25°C 1st year)	
Shock Resistance	Δf _{shock}	±5ppm		±5ppm	



		DIMENSIONS (mm)					
		L	W	LL	LD	LS	
C1bLC	2x6	6.0 +0.3/+0.2	2.0 +0.1	7 +0.3	0.20 +0.06	0.7 +0.15	
HQM4E	2x6	6.0 +0.2	2.0 +0.1	10 +0.2	0.26 +0.05	0.7 +0.2	
C1bLC	3x8	8.0 +0.3/+0.2	3.0 +0.1	9.6 +0.3	0.30 +0.01	0.8 +0.15	
HQM4E	3x8	8.0 +0.2	3.1 +0.1	10 +0.2	0.35 +0.04	1.1 +0.2	
HQM4E	1x5	5.0 +0.1	1.4 +0.1	4.3 +0.3	0.20 +0.05	0.45 +0.08	



Soldering
 Lead wires should be soldered within 10 seconds with a tip temperature not exceeding 270°C. The device should ideally be upright on the board. If the device can is required to be mechanically affixed to the board it should be stuck down with rubber adhesive. Under no circumstances should any solder connection be made to the can of the device.



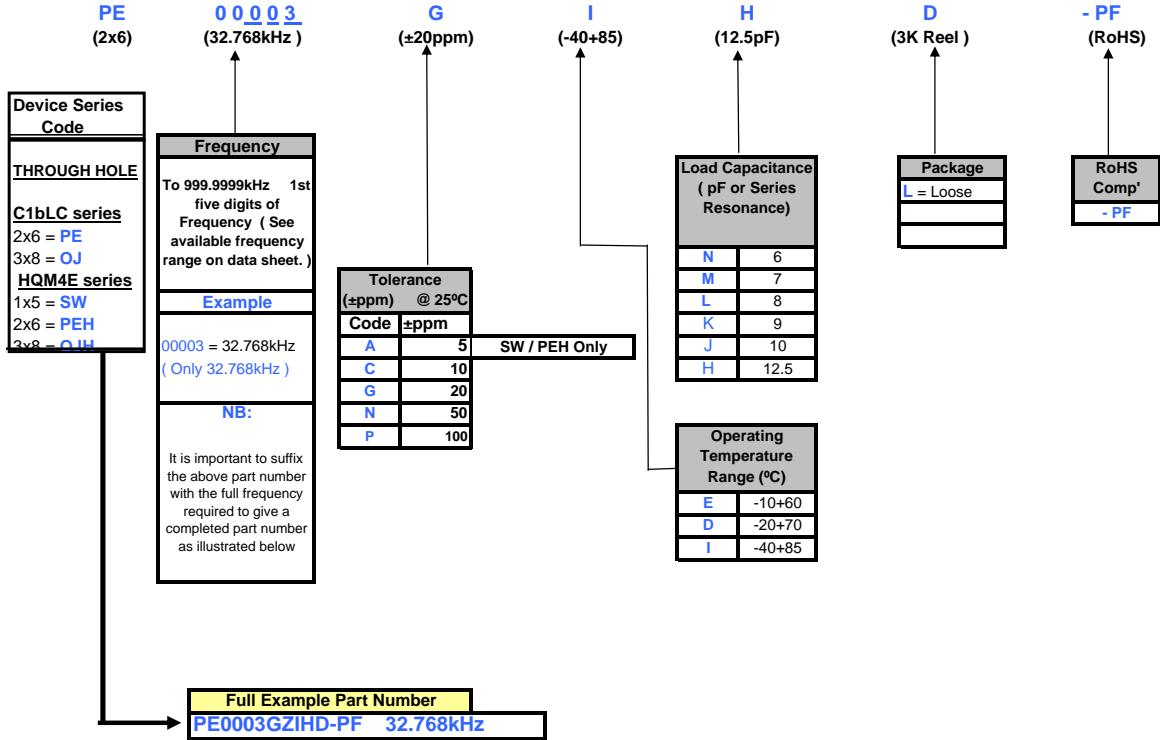
Please note that all parameters can not necessarily be specified in the same device
 Customer To specify : Frequency Tolerance, Load Capacitance, Operating Temperature Range
 In line with our ongoing policy of product evolution and improvement, the above specification may be subject to change without notice

ISO9001:2000 Registered

For quotations or further information please contact us at:
 3 The Business Centre, Molly Millars Lane, Wokingham, Berkshire, RG41 2EY, UK
<http://www.actcrystals.com>

ACT 1x5, 2x6 & 3x8 WATCH CRYSTALS (32.768kHz) - PART NUMBERING

Example :



NOTES :

- 1) Other Tolerances, CL's and other Operating Temperature Ranges may be available.
- 2) ACT are always happy to consider truly custom specification parts which may require non-standard specification parameters, specific testing, customer requested AQL requirements, non standard packaging or taping and reeling and custom marking. (MOQ DEPENDENT) Such devices would normally be allocated a custom specification (An ACT200A device may have a part number such as EK00003C- C1101-PF)
- 3) Stability Over Operating Temperature (°C) please refer to the data.