

## ACT200

The **ACT200** is an ultra miniature surface mount Watch Crystal with a low power consumption making it ideal for portable applications. Its small footprint renders it suitable for high density circuit boards or applications where space is limited. The tape and reel packaging means that it is ideal for automatic placement machines (loose product is also available).

The heart of the device is a heat resistant cylinder type crystal which provides for high stability characteristics sufficient to allow reflow soldering.

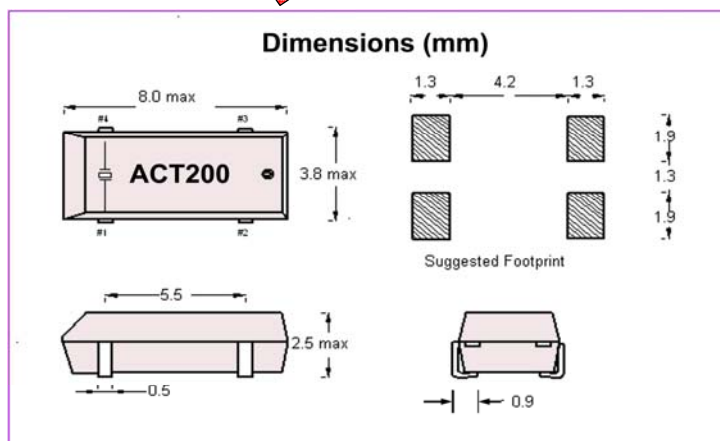
Compatible with Eu Directive  
 2002/95/EC - RoHS  
 Contains Pb>85% high melting  
 point solder exempted from  
 Article 4(1) of the directive



### Specification

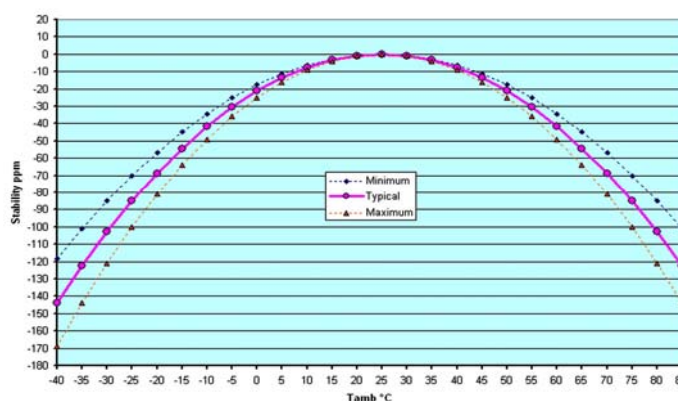
Parameter	Symbol	Specification	Condition
Nominal Frequency	$f_0$	32.768KHz	
Frequency Tolerance	$\Delta f/f_0$	$\pm 5, \pm 10, \pm 20, 30 \text{ ppm}$	@25°C
Frequency v Temp Characteristics	$\Delta f/f_0$	See drawing	-10 ~ +60°C
Turnover Temperature	$T_m$	25°C $\pm 2$	
Freq. Temp. coefficient	$\beta$	$\pm 0.4 \pm 0.006 \text{ ppm/}^\circ\text{C}^2$	
Temp Operating Range	$T_{opr}$	-10 ~ +85°C	
Temp Storage Range	$T_{stg}$	-55 ~ +125°C	
Equivalent Series Resistance	ESR	50K $\Omega$ max	@25°C
Shunt Capacitance	$C_0$	1.35pF Typical	
Load Capacitance	CL	6 & 12.5pF ( Other options available )	Please specify
Motional Capacitance	C1	0.003pF Typical	
Capacitance Ratio	$\gamma$	450 Typical	
Drive Level	P <sub>0</sub>	1 $\mu$ W max	
Insulation Resistance		500M $\Omega$ min	@ DC 100V $\pm 15$ V
Aging (first year)	$\Delta f/f_0$	$\pm 3 \text{ ppm}$ max	25°C $\pm 3^\circ\text{C}$

Product replaced by ACT200A



Pad surface material Sn Cu

Watch Crystal Temperature Stability



Please note that all parameters can not necessarily be specified in the same device

Customer to specify: Frequency Tolerance, Load Capacitance, Operating Temperature Range & Storage Temperature Range

In line with our ongoing policy of product evolution and improvement, the above specification may be subject to change without notice

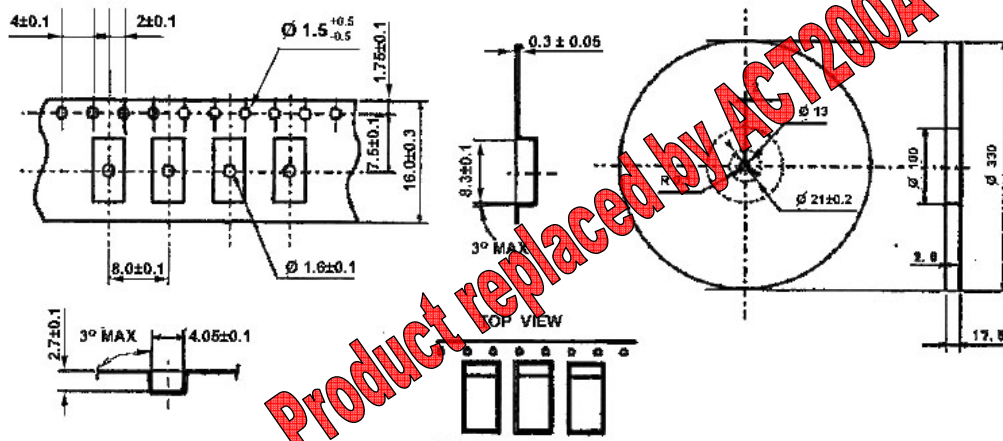
ISO9001:2000 Registered

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>

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 Date 30-06-06

## ACT200 TAPE AND REEL

Tape and Reel  
 3,000 pcs per Reel  
 Conforming to  
 JIS C0806 TB1608L & R16D  
 (EIAJ RC1088 TE1608L & R33)



## SOLDERING of SMD WATCH CRYSTALS

Reflow oven should be set up to emulate or better the maximum reflow profile shown in the diagram below. Note it is just as important to conform to the times given as well as the temperatures.

Pre-heat should not exceed 180°C ±5°C Maximum time 120s

Peak soldering temperature should not exceed 260°C.

Time at peak temperature should not exceed 10 seconds.

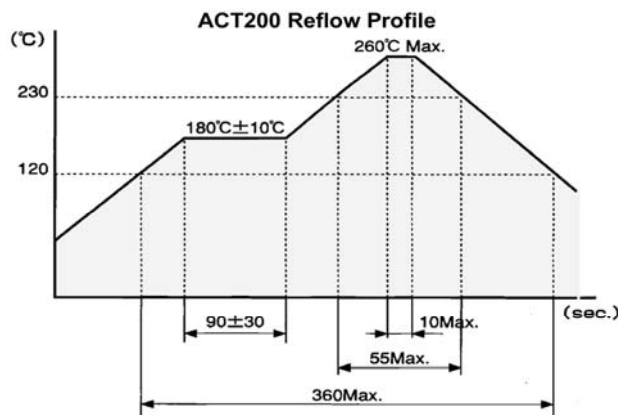
Total reflow time above 120°C should not exceed 6 minutes.

## WASH PROCESSES and SMD WATCH CRYSTALS

In order to achieve the optimum performance of plastic packaged watch crystals the plastic normally used is a polymer plastic which is porous.

With some wash processes (Involving total immersion of the unit) the moisture ingress causes an impedance across the internal crystal unit connections to stop it oscillating. In time (shortened by a drying process) the crystal will recover to its original characteristics. The performance with regard to damp heat (humidity) is not effected by the use of this plastic.

Devices using an epoxy plastic are an option to overcome this problem should it cause any inconvenience. But this type of package is increasingly becoming more difficult to obtain due to environmental problems with the use of epoxy plastics.



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