

“X4115” series 4.1x1.5x0.7 mm 32.768 KHz
Tuning Fork Surface Mount Crystal



MERCURY
 Since 1973

- ❑ Precision time piece in miniature ceramic package for SMD mounting.
- ❑ 100% RoHS compliant and lead-free product.
- ❑ Low aging. High shock and vibration resistant.
- ❑ Applications include real-time clocks, battery operated devices.

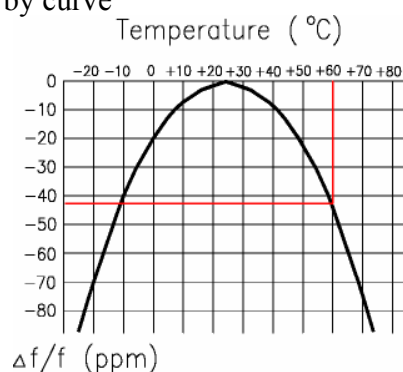


SPECIFICATIONS

Mercury Part No.	X4115-32.768K-12.5P
Green Requirement	RoHS compliant and lead free
Frequency	32.768KHz
Holder Type	4.1x1.5x0.7 mm ceramic SMD
Crystal Cut	X-CUT
Mode of Oscillation	Fundamental mode
Turnover Temperature	25°C ±5°C
Frequency Tolerance at 25°C	±20ppm
Frequency vs. Temperature	-0.035 ppm± 0.006 ppm/°C ² max. Parabolic
Equivalent Series Resistance	65 KΩ typical; 80 KΩ max.
Shunt Capacitance (Co)	1.1 pF typical; 2.0 pF max.
Motional Capacitance (C1)	2.0 fF typical
Load Capacitance (CL)	9 pF or 1 2.5pF
Quality Factor (Q)	53,000 typical
Drive Level	1 u W max.
Operable Temperature Range	-40°C to +85°C
Storage Temperature Range	-55°C~ + 125°C
Insulating Resistance	500 MΩ min. at 100 V _{DC} ±15V _{DC}
Aging at 25°C	±3 ppm / year max.
Shock	±5 ppm max. Free drops 3 times from 75 cm height onto hard wood board
Vibration	±5 ppm max. 3000 G, 1/2 sine wave, 0.3 ms, XYZ
Packaging	12 mm tape. 4 mm pitch, 180 mm reel, 3000 pcs per reel.

FREQUENCY TEMPERATURE CHARACTERISTIC CURVE

by curve



by calculation

Frequency deviation at one particular temperature (Tx) with respect to the frequency at +25°C is

$$\Delta f / f (\text{ppm}) = -0.035 * (Tx - 25)^2$$

Example: at +60°C, the frequency drifts -42.8 ppm.

$$\Delta f / f (\text{ppm}) = -0.035 * (60 - 25)^2 = -42.8 \text{ ppm}$$

MERCURY www.mercury-crystal.com

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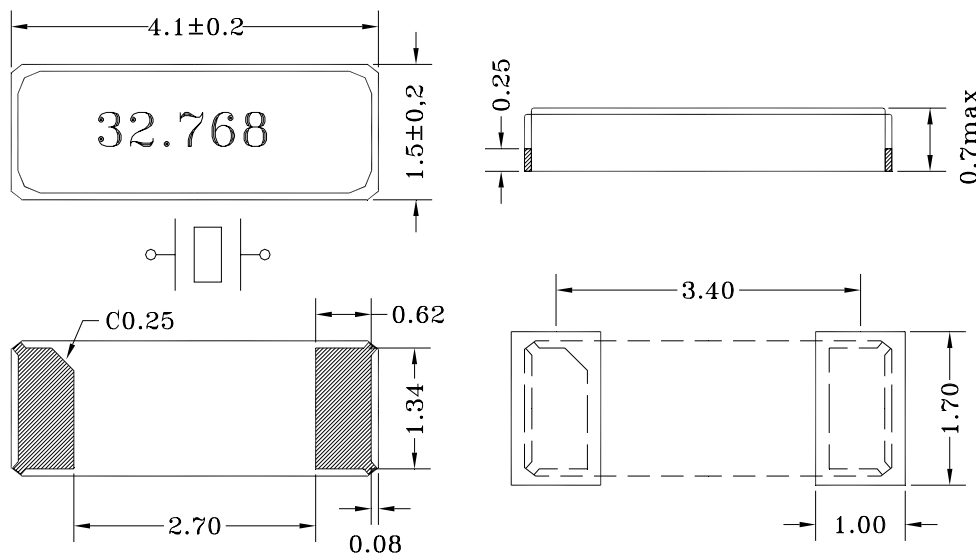
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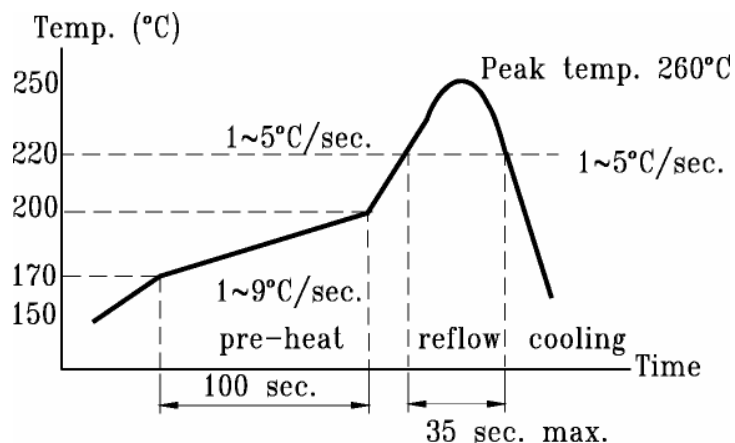
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PACKAGE DIMENSIONS AND RECOMMENDED LAND PATTERN

unit: mm



RECOMMENDED REFLOW SOLDERING PROFILE



HOW TO ORDER:

Please order either X4115-32.768K-9P or -12.5P					✍: Please specify
X4115	—	32.768K	—	9P	
❶		❷		❸	
❶: Crystal package prefix ; ❷: Frequency: 32.768 KHz; ❸: Load Capacitance (CL): 9P for 9 pF; 12.5P for 12.5 pF load capacitance.					