

# SMD WATCH CRYSTAL 32.768 kHz

SERIES „M3215 32.768 KHZ  $\pm 20$  PPM 12.5PF  $(-40/+85^{\circ}\text{C})$ “

## FEATURES

- + Cheapest available SMD-MINI-Watch-Crystal
- + Ultra low profile
- + Standard operating temperature range of  $-40/+85^{\circ}\text{C}$
- + Excellent clock generator for CPU's, Wireless, Mobile Comm., etc.

## GENERAL DATA

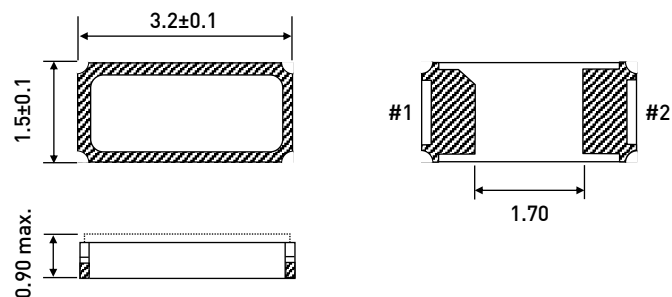
PARAMETERS	PRODUCT FEATURES AND CONDITIONS
SMD-CRYSTAL SERIES	M3215
NUMBER OF SOLDER PADS	2
FREQUENCY	32.768 kHz
FREQUENCY TOLERANCE AT $25^{\circ}\text{C}$	$\pm 20$ ppm
LOAD CAPACITANCE [ $C_L$ ]	12.5 pF
WORKING TEMPERATURE RANGE	$-40/+85^{\circ}\text{C}$
SERIES RESISTANCE	70 k $\Omega$ max.
SHUNT CAPACITANCE [ $C_0$ ]	1.1 pF typ.
TURNOVER TEMPERATURE	$+25^{\circ}\text{C} \pm 5^{\circ}\text{C}$
TEMPERATURE COEFFICIENT	$-0.03 \text{ ppm}/^{\circ}\text{C}^2 \pm 0.01 \text{ ppm}/^{\circ}\text{C}^2$
DRIVE LEVEL	0.1 $\mu\text{W}$ typ. (0.5 $\mu\text{W}$ max.)
AGING	$\pm 3$ ppm max. after first year
INSULATION RESISTANCE	$> 500 \text{ M}\Omega \text{ DC}/100\text{V} \pm 10\%$
STORAGE TEMPERATURE	$-55^{\circ}/+125^{\circ}\text{C}$
DELIVERY FORM	Tape and Reel (3.000 pcs per reel, other quantities on request as cut off tape or bulks)
RoHS	Lead free and RoHS compliant
MARKING	TxxxA (xxx = date code)
Ordering Code	M3215 32.768 kHz $\pm 20$ ppm 12.5pF $(-40/+85^{\circ}\text{C})$
Customer P/N	
PETERMANN-TECHNIK P/N	QEU10010016/4

### Notes

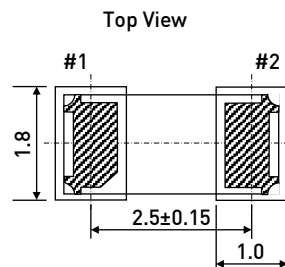
1. The reference temperature for all specified values and tests is  $+25^{\circ}\text{C}$ .
2. No Ultrasonic Cleaning: Do not subject the M3215 to an ultrasonic cleaning environment. Permanent damage or long term reliability issues to the structure may occur.
3. Do not design any ground line under the M3215.

## DIMENSIONS AND PATTERNS

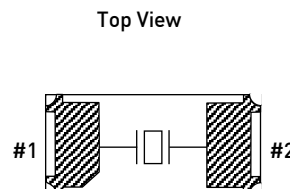
### PACKAGE SIZE – DIMENSIONS (UNIT:MM)



### RECOMMENDED LAND PATTERN

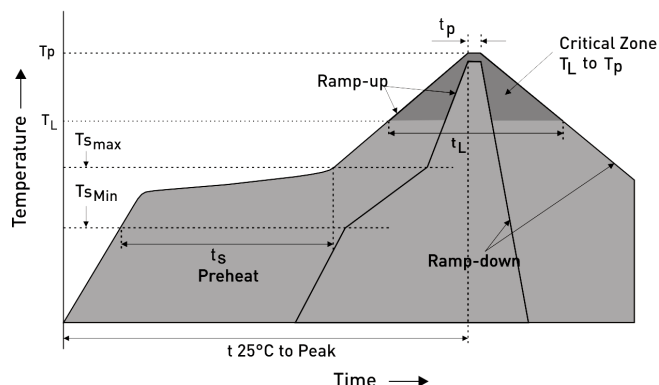


### INTERNAL CONNECTIONS



All dimensions in mm typical

## REFLOW SOLDER PROFILE



Preheat	
- Temperature Minimum (TS MIN)	150°C
- Temperature Maximum (TS MAX)	200°C
- Time (ts)	60 - 120 Seconds
Ramp-up Rate (TL to TP)	3°C/second Maximum
Time Maintained Above:	
- Temperature (TL)	217°C
- Time (TL)	60 - 150 Seconds
Peak Temperature (TP)	260±5°C
Target Peak Temperature (TP Target)	255°C
Time within 5°C of actual peak (tP)	20 - 40 seconds
Max. Number of Reflow Cycles	2
Ramp-down Rate	6°C/second Maximum
Time 25°C to Peak Temperature (t)	8 minutes Maximum



## PREMIUM QUALITY BY PETERMANN-TECHNIK



OUR COMPANY IS CERTIFIED ACCORDING TO ISO 9001:2015 AND 14001:2015

THIS IS FOR YOU TO ENSURE THAT THE PRINCIPLES OF QUALITY MANAGEMENT ARE FULLY IMPLEMENTED IN OUR QUALITY MANAGEMENT SYSTEM AND QUALITY CONTROL METHODS ALSO DOMINATE OUR QUALITY STANDARDS.