

# SMD WATCH CRYSTAL 32.768 kHz

SERIES M3215A (AEC-Q200)

## FEATURES

- + AEC-Q200 compliant
- + Cheapest available MINI-Watch-Crystal in ceramic package
- + Ultra low profile
- + Operating temperature range of -40/+125°C
- + Excellent clock generator for automotive applications



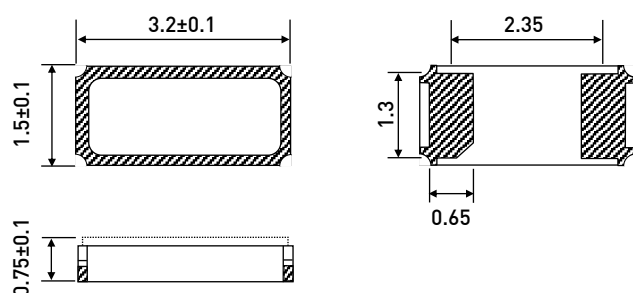
PB FREE / ROHS COMPLIANT

## GENERAL DATA

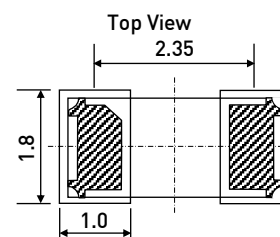
PARAMETERS	PRODUCT FEATURES AND CONDITIONS	
SMD-CRYSTAL SERIES	M3215A (AEC-Q200)	(3.2x1.5x0.75mm)
NUMBER OF SOLDER PADS	2	
FREQUENCY RANGE	32.768 kHz	
FREQUENCY TOLERANCES AT 25°C	±20 ppm	
LOAD CAPACITANCE (C <sub>L</sub> )	12.5 pF	
WORKING TEMPERATURE RANGE	-40/+125°C	
RESONANCE RESISTANCE	120 kΩ max.	
SHUNT CAPACITANCE (C <sub>0</sub> )	1.3 pF typ.	
TURNOVER TEMPERATURE	+25°C ±5°C	
PARABOLIC COEFFICIENT	-0.04 ppm/°C <sup>2</sup>	
DRIVE LEVEL	0.2 μW ±20% (1.0 μW max.)	
AGING	±3 ppm max. per year	
INSULATION RESISTANCE	>500 MΩ DC/100V ±15%	
STORAGE TEMPERATURE	-40/+125°C	
DELIVERY FORM	Tape and Reel (1.000 ~ 3.000 pcs per reel)	
<a href="#">SELECT YOUR REQUIRED CRYSTAL [PRODUCT CONFIGURATOR]</a>	<a href="#">REQUEST CRYSTAL SAMPLES [SAMPLE CONFIGURATOR]</a>	

## DIMENSIONS AND PATTERNS

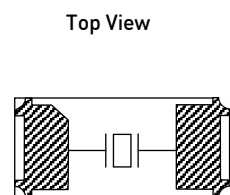
PACKAGE SIZE – DIMENSIONS (UNIT:MM)  
3.2 X 1.5 X 0.75 MM



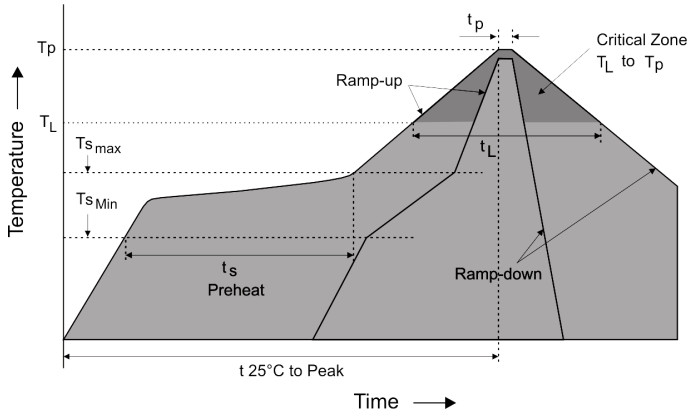
RECOMMENDED  
LAND PATTERN



INTERNAL  
CONNECTIONS

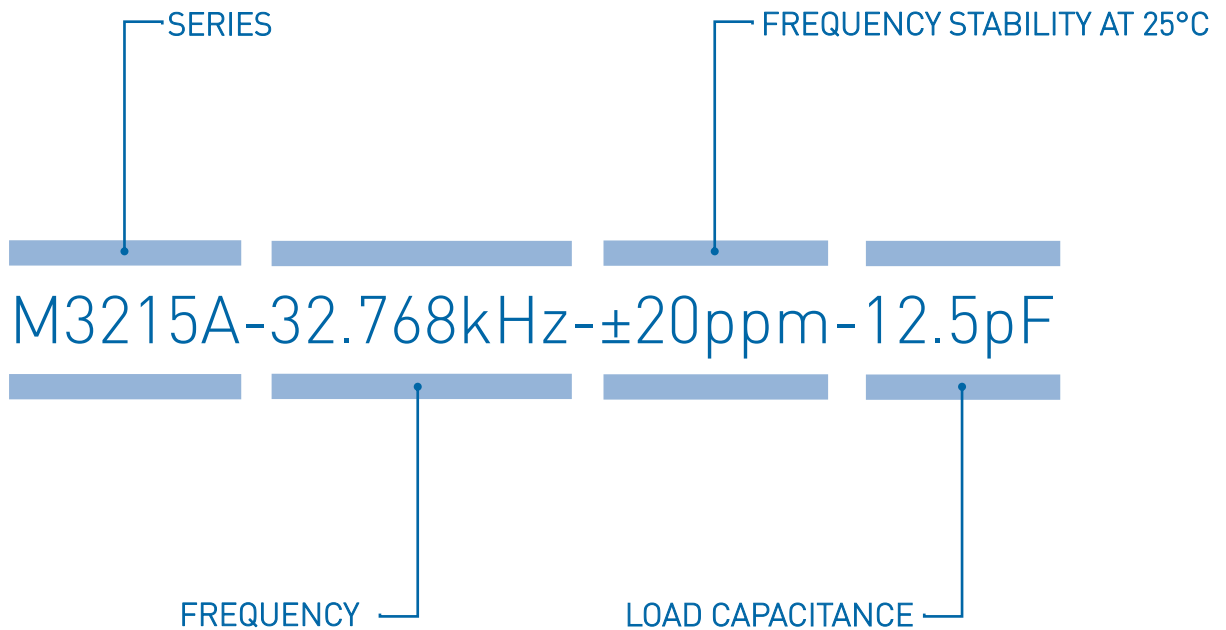


## REFLOW SOLDER PROFILE



Profile Feature	Pb-Free Assembly
Average ramp-up rate (TL to TP)	3°C/second max.
Preheat:	
Temperature Min (T <sub>smin</sub> )	150°C
Temperature Max (T <sub>smax</sub> )	200°C
Time (min to max) (t <sub>s</sub> )	60-180 seconds
Time maintained above:	
Temperature (T <sub>L</sub> )	217°C
Time (t <sub>L</sub> )	60-150 seconds
Peak/Classification Temperature (T <sub>p</sub> )	260°C
Time within 5°C of actual Peak Temperature (t <sub>p</sub> )	20-40 seconds
Ramp-down Rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max.

## ORDERING INFORMATION



EXAMPLE: M3215A-32.768kHz-±20ppm-12.5pF

PLEASE INDICATE YOUR REQUIRED PARAMETERS



## PREMIUM QUALITY BY PETERMANN-TECHNIK



OUR COMPANY IS CERTIFIED ACCORDING TO ISO 9001:2008 IN OCTOBER 2013 BY THE DMSZ CERTIFIKATION GMBH.

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.