PETERMANN-TECHNIK GmbH
Lechwiesenstr. 13 • D-86899 • Landsberg am Lech
Tel: +49/8191/305395 • Fax: +49/8191/305397
info@petermann-technik.com • www.petermann-technik.com

SMD WATCH CRYSTAL 32.768 kHz

SERIES M4115 STANDARD (2 pad housing 4.1x1.5mm)

FEATURES

+ Smallest available low cost watch crystal
+ Ultra low profile
+ Standard operating temperature range of -40/+85°C
+ Excellent clock generator for CPU's, Wireless, Mobile Comm., etc.

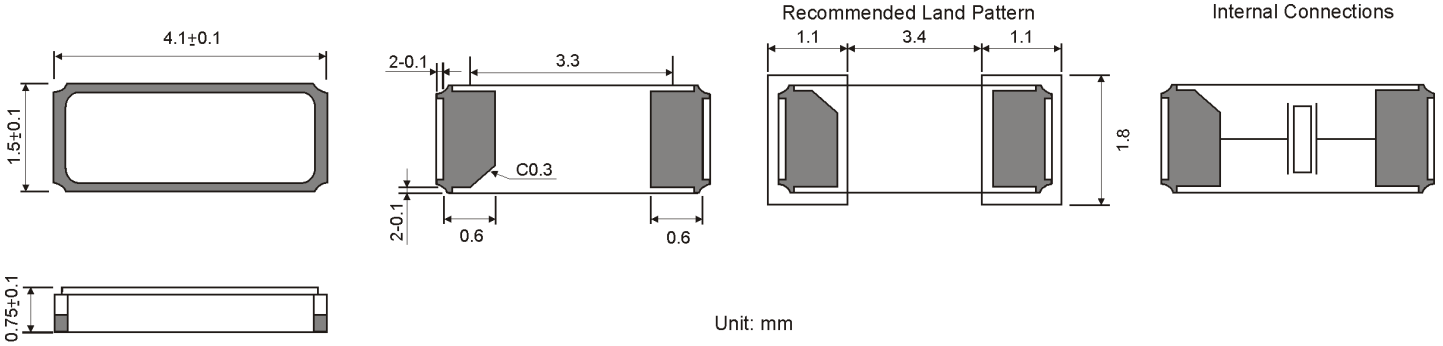


PB FREE / ROHS-2 2011/65/EU COMPLIANT

GENERAL DATA

PARAMETERS	PRODUCT FEATURES AND CONDITIONS
SMD-CRYSTAL SERIES	M4115
NUMBER OF SOLDER PADS	2
FREQUENCY RANGE	32.768 kHz
FREQUENCY TOLERANCES AT 25°C	±20 ppm (standard) / ±10 ppm ~ ±100 ppm (option)
LOAD CAPACITANCE (C_L)	12.5 pF (standard) 6,7,9 and 10pF available on request
WORKING TEMPERATURE RANGE	-40/+85°C
RESONANCE RESISTANCE	80 kΩ max.
SHUNT CAPACITANCE (C_0)	1.3 pF typ.
TURNOVER TEMPERATURE	+25°C ±5°C
PARABOLIC COEFFICIENT	-0.04 ppm/°C²
DRIVE LEVEL	0.2 µW typical (0.5 µW max.)
AGING	±3 ppm max. per year
INSULATION RESISTANCE	>500 MΩ DC/100V ±10%
STORAGE TEMPERATURE	-55°/+125°C
DELIVERY FORM	Tape and Reel (1.000 ~ 3.000 pcs per reel)
OTHER PARAMETERS ARE AVAILABLE ON REQUEST / CREATE HERE YOUR SPECIFICATION	

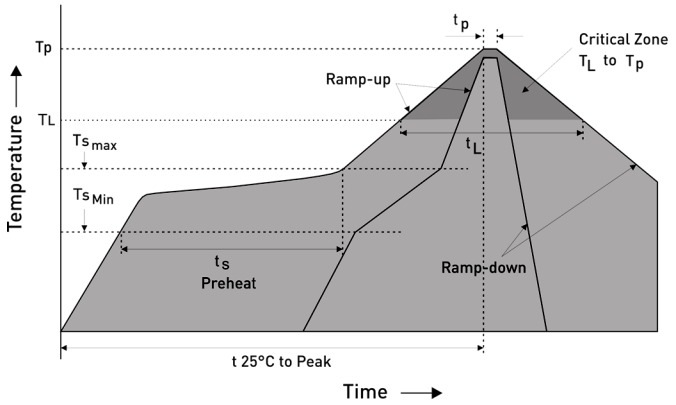
DIMENSIONS



Unit: mm

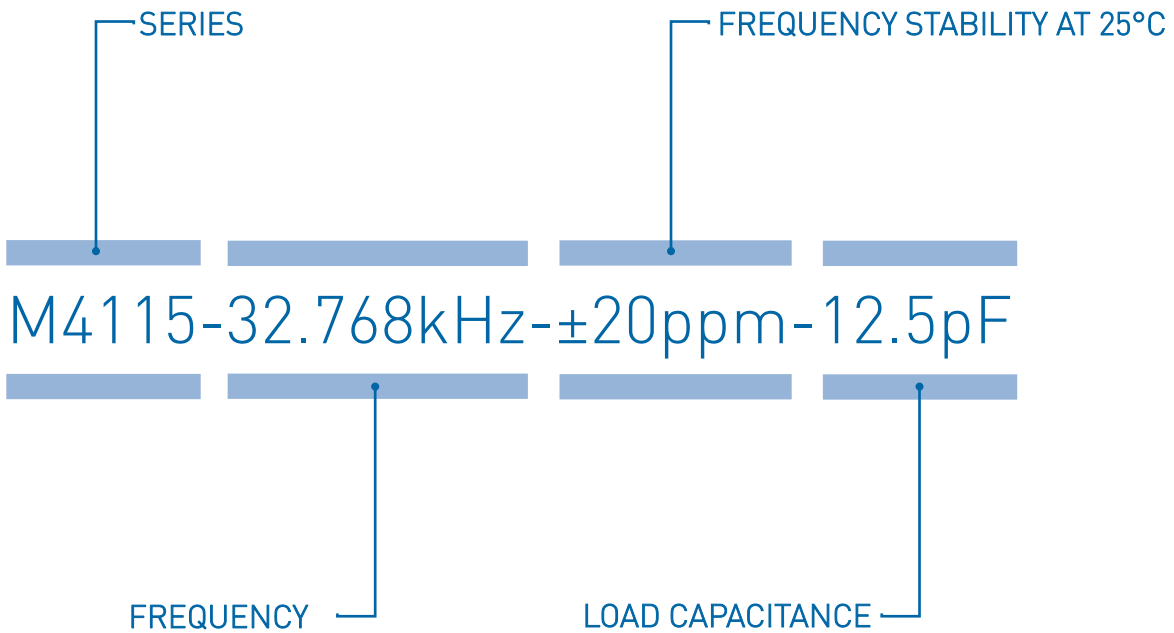
PETERMANN-TECHNIK GmbH
Lechwiesenstr. 13 • D-86899 • Landsberg am Lech
Tel: +49/8191/305395 • Fax: +49/8191/305397
info@petermann-technik.com • www.petermann-technik.com

REFLOW SOLDER PROFILE



Profile Feature	Pb-Free Assembly
Average ramp-up rate (TL to TP)	3°C/second max.
Preheat:	
Temperature Min (Tsmin)	150°C
Temperature Max (Tsmax)	200°C
Time (min to max) (ts)	60-180 seconds
Time maintained above:	
Temperature (TL)	217°C
Time (tL)	60-150 seconds
Peak/Classification Temperature (Tp)	240°C
Time within 5°C of actual Peak Temperature (tp)	20-40 seconds
Ramp-down Rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max.

ORDERING INFORMATION



EXAMPLE: M4115-32.768kHz-±20ppm-12.5pF
PLEASE INDICATE YOUR REQUIRED PARAMETERS

PETERMANN-TECHNIK GmbH
Lechwiesenstr. 13 • D-86899 • Landsberg am Lech
Tel: +49/8191/305395 • Fax: +49/8191/305397
info@petermann-technik.com • www.petermann-technik.com

PREMIUM QUALITY BY PETERMANN-TECHNIK

DMSZ certified according to ISO 9001 QM 00886

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.

© PETERMANN-TECHNIK GmbH 2015. The information contained herein is subject to change at any time without notice. PETERMANN-TECHNIK owns all rights, title and interest to the intellectual property related to PETERMANN-TECHNIK's products, including any software, firmware, copyright, patent, or trademark. The sale of PETERMANN-TECHNIK products does not convey or imply any license under patent or other rights. PETERMANN-TECHNIK retains the copyright and trademark rights in all documents, catalogs and plans supplied pursuant to or ancillary to the sale of products or services by PETERMANN-TECHNIK. Unless otherwise agreed to in writing by PETERMANN-TECHNIK, any reproduction, modification, translation, compilation, or representation of this material shall be strictly prohibited.