

SMD QUARTZ CRYSTAL SPECIFICATION

SERIES „SMD02016/4 38.400 MHZ 10/20/-40+85/10PF“

FEATURES

- + Ultra compact top seller SMD-Crystal in ceramic package
- + High reliability for low cost
- + LRT-TECHNOLOGY Inside (LRT is Low ESR Resonator-Technology^[1])
- + Our top quality promise / depth of production:
 - Only use of crystal blanks from our in-house production
 - Excellent product features guaranteed by multiple 100% tests
 - 100% quality monitoring from crystal raw material to the end product



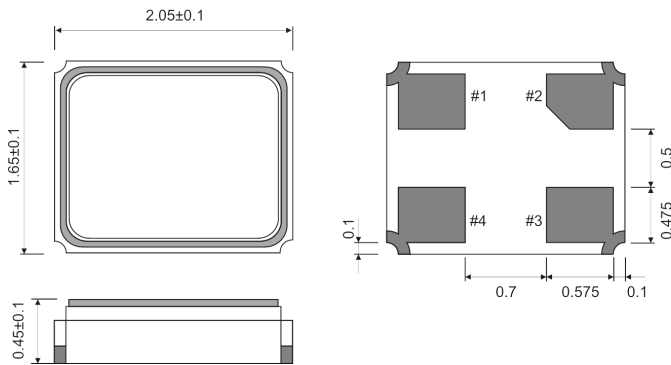
GENERAL DATA

| PARAMETERS | PRODUCT FEATURES AND CONDITIONS |
|-------------------------------------|-----------------------------------------------------------|
| SMD-CRYSTAL SERIES | SMD02016/4 |
| PACKAGE HEIGHT | 0.55 mm max. |
| FREQUENCY | 38.400 MHz |
| MODE OF VIBRATION | AT-FUNDAMENTAL |
| EQUIVALENT SERIES RESISTANCE | 55 Ω max. |
| FREQUENCY TOLERANCE AT 25°C | ±10 ppm |
| LOAD CAPACITANCE (CL) | 10 pF |
| WORKING TEMPERATURE RANGE | -40/+85°C |
| TEMPERATURE STABILITY | ±20 ppm over -40/+85°C (referred to +25°C) |
| SHUNT CAPACITANCE (C ₀) | 1.5 pF max. |
| AGING | ±2 ppm max. after first year, ±10 ppm max. after 10 years |
| DRIVE LEVEL | 100 μW typ. / 200 μW max. |
| INSULATION RESISTANCE | >500 MΩ DC/100V ±15V |
| STORAGE TEMPERATURE | -55/+125°C |
| PRODUCT WEIGHT | 0.006 g |
| G-SENSITIVITY | 0.3 ppb/G typ. / 1.0 ppb/G max. |
| DELIVERY FORM | Tape & Reel (3.000 pcs) |
| RoHS | Lead free and RoHS compliant |
| SOLDERING CONDITION | See reflow solder profile |
| MARKING | Line 1 = P38W10 Line 2 = xxxx (xxxx = date code) |
| ORDERING CODE | SMD02016/4 38.400 MHz 10/20/-40+85/10PF |
| CUSTOMER P/N | |
| PETERMANN-TECHNIK P/N | QEU9310137 |

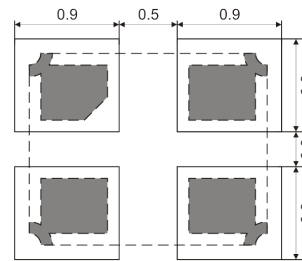
Note:

1. LRT is optimized low ESR resonator design for fast and secure oscillation start-up.
2. The reference temperature for all specified values and tests is +25°C.
3. Do not use cleaning baths operating at ultrasonic frequencies or ultrasonic welding processes.
4. Do not solder with hot air gun.

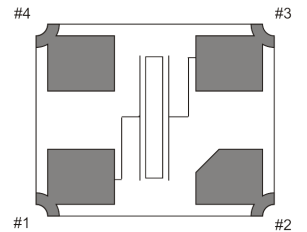
DIMENSIONS



Reference soldering pattern



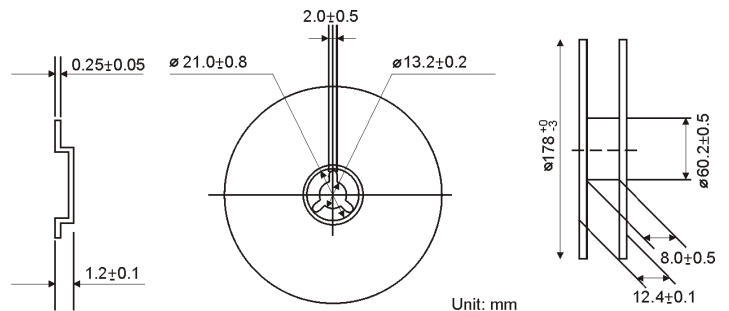
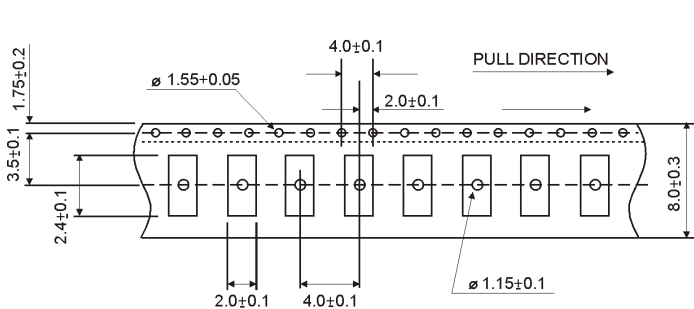
Internal connections (Top View)



PIN CONNECTION:
#1 & #3 connected to the quartz
#2 & #4 connected to the cover
#2 & #4 can be connected to ground

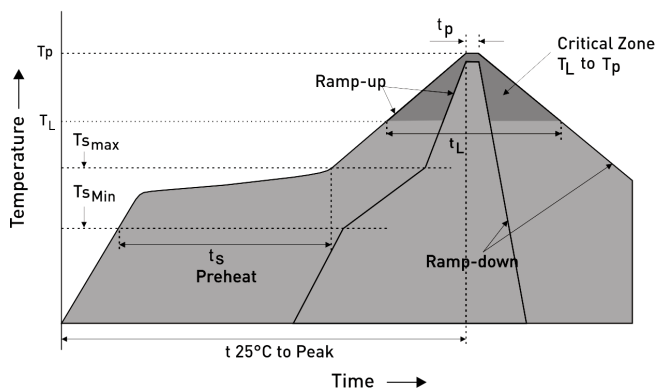
Unit: mm

REEL SPECIFICATION



Unit: mm

REFLOW SOLDER PROFILE



| IPC/JEDEC Standard | IPC/JEDEC J-STD-020 |
|-------------------------------------|---------------------|
| Moisture Sensitivity Level | Level 1 |
| TS MAX to TL (Ramp-up Rate) | 3°C/second Maximum |
| Preheat | |
| - Temperature Minimum (TS MIN) | 150°C |
| - Temperature Typical (TS TYP) | 175°C |
| - Temperature Maximum (TS MAX) | 200°C |
| - Time (tS) | 60 - 180 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) | 265°C Maximum |
| 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 |



REVISION HISTORY^[5]

| VERSION | RELEASE DATE | AMENDMENTS SUMMARY |
|---------|--------------|------------------------------|
| 01 | 02/20/2024 | + Revised Features and Notes |

Notes:

- 5. Based on Datasheet version from April 2020/SPEC 01/REV.00



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 QM-SYSTEM AND QUALITY CONTROL METHODS.