

# 1X Series 2.0 x 1.6 mm SMD Crystal

1 : 2.0×1.6×0.45 mm | SMD2016-4P

X : Crystal Resonator

## Feature

- AT-cut Crystal Construction
- Ultra miniature Seam sealed ceramic surface mount
- High temperature, high precision and reliability Characteristics
- Package Size: 2.0 x 1.6 x 0.45mm
- Pb-free and RoHS/Green compliant

## Applications

- Audio Devices
- Portable devices
- Short-range Wireless module
- Computers, Modems, Microprocessors



## Electrical Specifications

| Item                      | Symb.            | Min.                 | Typ. | Max.     | Unit | Notes                         |
|---------------------------|------------------|----------------------|------|----------|------|-------------------------------|
| Frequency Range           | Freq.            | 16.000               |      | 54.000   | MHz  |                               |
| Oscillation Mode          |                  | Fundamental (AT-cut) |      |          |      |                               |
| Frequency Tolerance       | $\Delta f/f$     |                      |      | $\pm 10$ | ppm  | at 25°C $\pm 2^\circ\text{C}$ |
| Operating Temperature     | T <sub>use</sub> | -20                  |      | 70       | °C   |                               |
|                           |                  | -40                  |      | 85       | °C   |                               |
| Storage Temperature Range | T <sub>sta</sub> | -55                  |      | 125      | °C   |                               |
| Shunt Capacitance         | C <sub>0</sub>   |                      |      | 3        | pF   |                               |
| Drive Level               | DL               |                      | 10   | 100      | μW   |                               |
| Load Capacitance          | CL               | 6                    |      | 20       | pF   |                               |
| Insulation Resistance     | IR               |                      |      | 500      | MΩ   | at DC 100V                    |
| Aging                     | f <sub>age</sub> |                      |      | 3        | ppm  | 1st. Year at 25°C             |

## Frequency Stability & Operating Temperature Range

| Temp. \ FT     | $\pm 10\text{ppm}$ | $\pm 15\text{ppm}$ | $\pm 20\text{ppm}$ | $\pm 30\text{ppm}$ |
|----------------|--------------------|--------------------|--------------------|--------------------|
| -20°C to +70°C | $\triangle$        | ★                  | ★                  | ★                  |
| -40°C to +85°C |                    | $\triangle$        | ★                  | ★                  |

★: Available     $\triangle$ : Conditional

## Equivalent Series Resistance

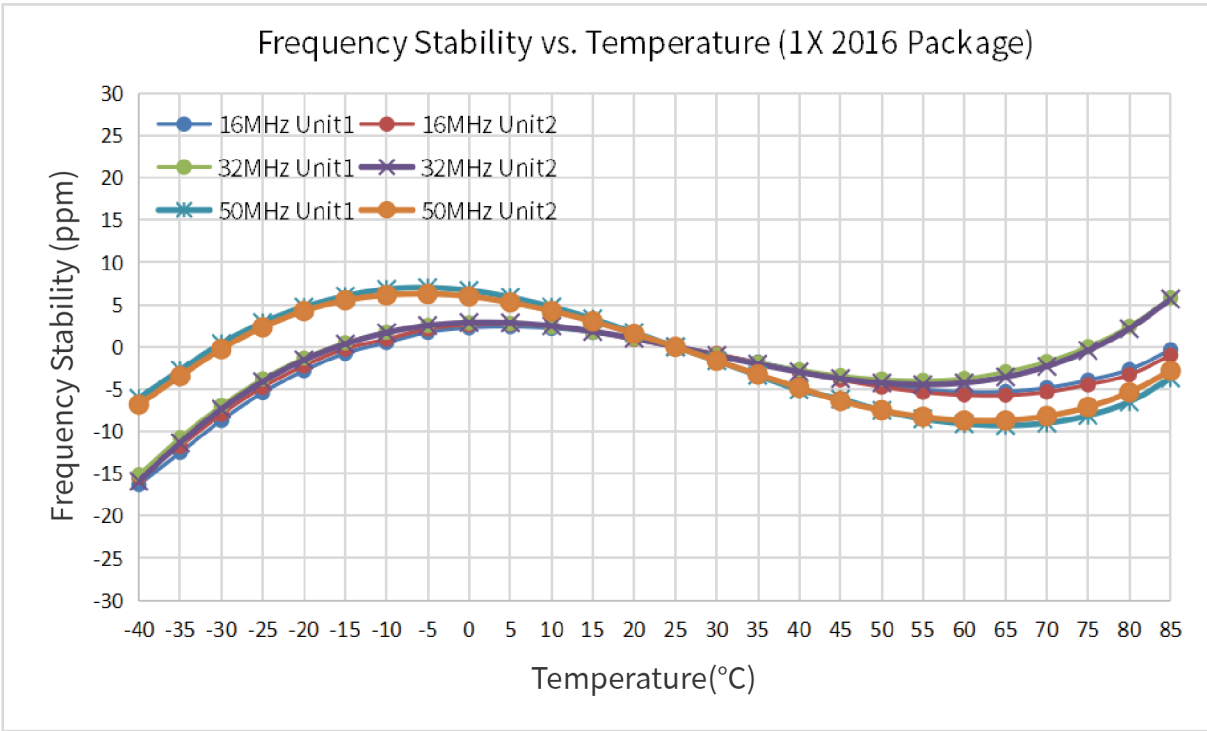
| Frequency Range                 | ESR(Max.)    |
|---------------------------------|--------------|
| 16MHz $\leq$ Freq. < 24MHz      | 200 $\Omega$ |
| 24MHz $\leq$ Freq. < 26MHz      | 80 $\Omega$  |
| 26MHz $\leq$ Freq. < 40MHz      | 60 $\Omega$  |
| 40MHz $\leq$ Freq. $\leq$ 54MHz | 50 $\Omega$  |

**X : Crystal Resonator**

# 1X Series 2.0 x 1.6 mm SMD Crystal

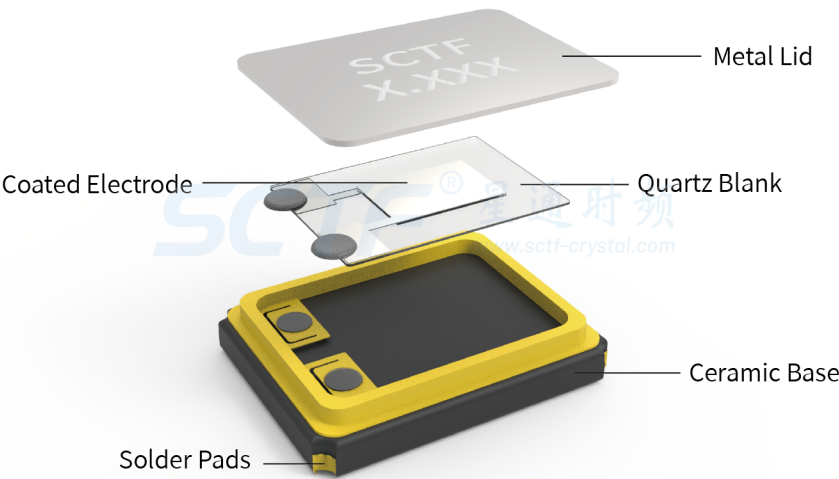
1 : 2.0×1.6×0.45 mm | SMD2016-4P X : Crystal Resonator

## Frequency Temperature Characteristics

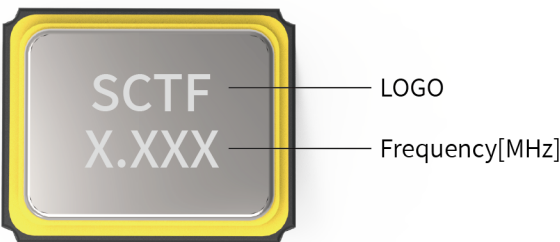


## Product Structure&Marking Information

### Product Structure



### Marking Information

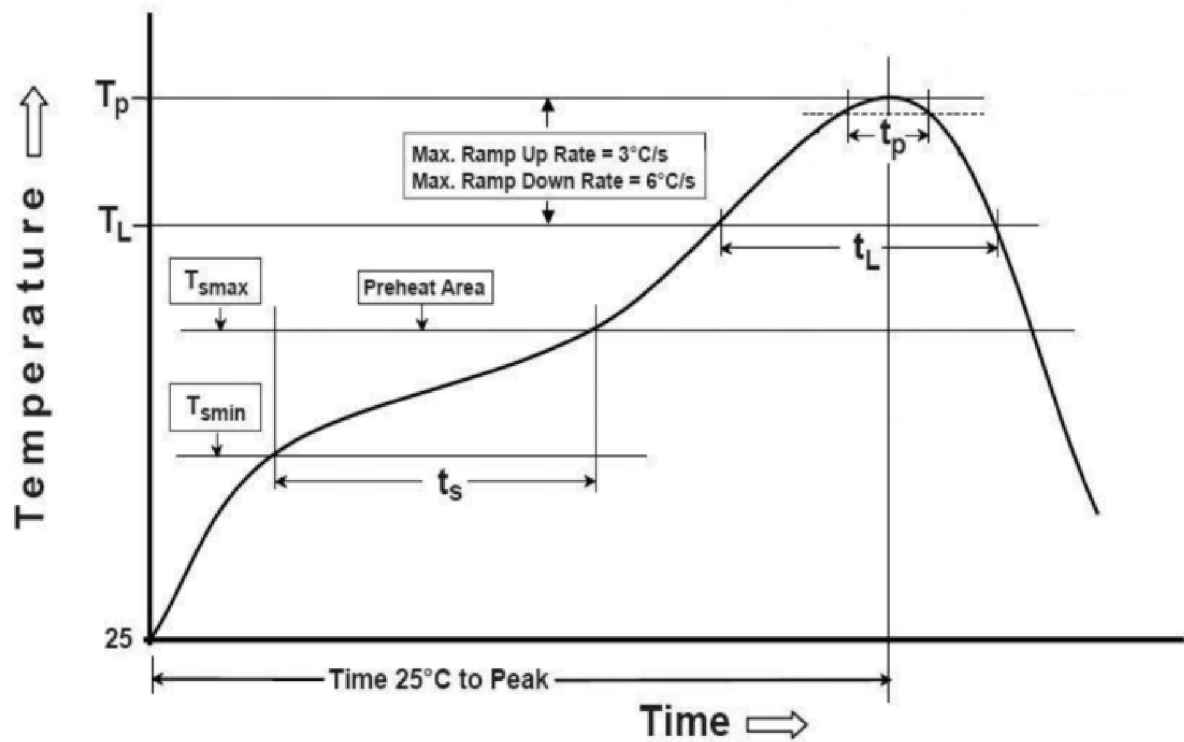


# 1X Series 2.0 x 1.6 mm SMD Crystal

1 : 2.0×1.6×0.45 mm | SMD2016-4P

X : Crystal Resonator

## Suggested Reflow Profile



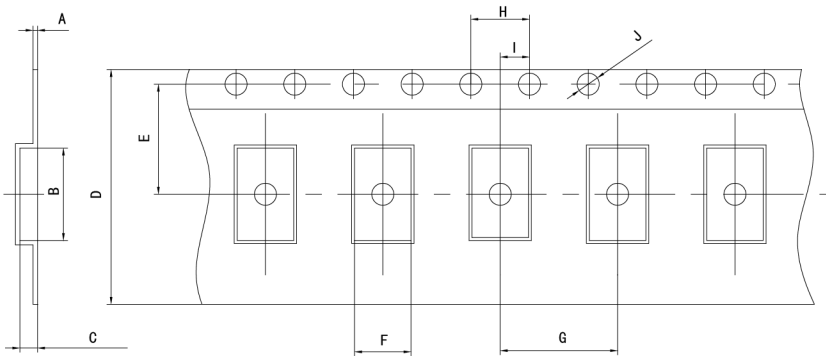
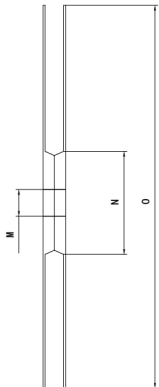
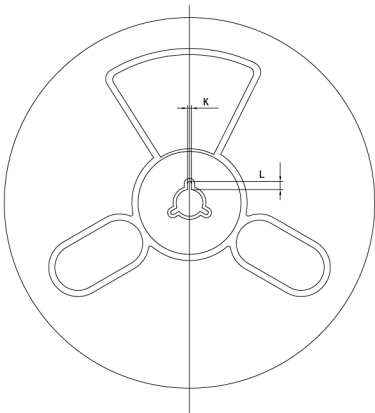
| Profile Feature                                                                                                                                                      | Sn - Pb Eutectic Assembly        | Preheat / Soak                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|----------------------------------|
| Preheat / Soak <ul style="list-style-type: none"><li>● Temperature Min ( Ts min )</li><li>● Temperature Max ( Ts max )</li><li>● Time ( Ts min to Ts max )</li></ul> | 100°C<br>150°C<br>60-120 seconds | 150°C<br>200°C<br>60-120 seconds |
| Ramp - up rate ( TL to Tp )                                                                                                                                          | 3°C/ second max.                 | 3°C/ second max.                 |
| Time maintained above <ul style="list-style-type: none"><li>● Liquidous temperature ( TL )</li><li>● Time ( tL ) maintained above TL</li></ul>                       | 183°C<br>60-150 seconds          | 217°C<br>60-150 seconds          |
| Peak package body temperature ( Tp )                                                                                                                                 | 235°C                            | 260°C                            |
| Time within 5° C of the specified classification temperature ( Tp )                                                                                                  | 20 seconds                       | 30 seconds                       |
| Ramp - down rate ( Tp to TL )                                                                                                                                        | 6°C/ second max.                 | 6°C/ second max.                 |
| Time 25° C to peak temperature                                                                                                                                       | 6 minutes max.                   | 8 minutes max.                   |
| Suggest reflow times                                                                                                                                                 | 2 Times max.                     |                                  |

# 1X Series 2.0 x 1.6 mm SMD Crystal

1 : 2.0×1.6×0.45 mm | SMD2016-4P X : Crystal Resonator

## Packaging Information

T=Tape and reel (3,000pcs/reel)



Pocket Tape Dimensions(mm)

| Series | A         | B        | C       | D       | E       | F        | G       | H       | I       | J        | K       | L       | M       | N     | O      |
|--------|-----------|----------|---------|---------|---------|----------|---------|---------|---------|----------|---------|---------|---------|-------|--------|
| 1X     | 0.25±0.05 | 2.25±0.1 | 0.7±0.1 | 8.0±0.3 | 3.5±0.1 | 1.85±0.1 | 4.0±0.1 | 4.0±0.1 | 2.0±0.1 | φ1.5±0.1 | 2.0±0.2 | 4.0±1.0 | φ13±0.5 | φ60±1 | φ180±1 |

## Common Frequencies – MHz

| 1X Series |        |        |        |        |
|-----------|--------|--------|--------|--------|
| 16.000    | 19.200 | 20.000 | 24.000 | 24.305 |
| 24.576    | 25.000 | 26.000 | 27.000 | 27.120 |
| 30.000    | 32.000 | 32.768 | 36.000 | 37.400 |
| 38.400    | 40.000 | 48.000 | 50.000 | 52.000 |
| 54.000    |        |        |        |        |

## X-ON Electronics

Largest Supplier of Electrical and Electronic Components

*Click to view similar products for [Crystals](#) category:*

*Click to view products by [SCTF](#) manufacturer:*

Other Similar products are found below :

[CX3225GB25000M0PPSZ1](#) [FL2000085](#) [99-BU](#) [H10S-12.000-18-EXT-TR](#) [AB-11.0592MHZ](#) [ABC2-6.000MHZ-D4Z-T](#) [ABLS-20.000MHZ-D2-T](#) [ABM3B-27.000MHZ-D4Y-T](#) [ABS071-32.768KHZ-6-T](#) [R38-32.768-12.5-5PPM-NPB](#) [21U15A-21.4MHZ](#) [RTX-781DF1-S-20.950](#) [LFX TAL066198Cutt](#) [9C-14.31818MBBK-T](#) [A-11.000MHZ-27](#) [ABL-27.000MHZ-B4Y-T](#) [ABM11-132-24.000MHZ-T3](#) [ABM3B1-25.000MHZ-D2Y-T](#) [SSPT7F-9PF20-R](#) [LFX TAL065253Cutt](#) [LFX TAL066431Cutt](#) [7A-24.576MBBK-T](#) [CX2520DB16000H0HPQCC](#) [6504-202-1501](#) [6526-202-1501](#) [ABM3B-24.000MHZ-R60-D1W-](#) [ABLS-12.000MHZ-B2Y-T](#) [SG636PCE-20.000MC](#) [3404](#) [CM315D32768EZFT](#) [C1E-19.200-12-1530-X-R](#) [ABM11-16.000MHZ-9-B1U-T](#) [FL5000014](#) [EUCA18-3.1872M](#) [FX0800015](#) [425F35E027M0000](#) [FP0800018](#) [MS3V-T1R-32.768kHz-7pF-20PPM-TA-QC-Au](#) [VXM7-1C1-16M000](#) [MS3V-T1R-32.768kHz-9pF-20PPM-TA-QC-Au](#) [17000](#) [GB1200038](#) [NTE661](#) [R38-32.768-12.5-EXT](#) [4133-VBO-168.62MHZ](#) [4133-VBO-171.750MHZ](#) [NX8045GB-12M-STD-CSF-4](#) [FC1610AN 32.7680KA-A3](#) [FC5BSHFEM25.0-T1](#) [FC5AQCCMF10.0-T1](#)