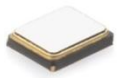
# Automotive Grade
# SX-A21

- AEC-Q200 Compliant
- Seam Sealed Package
- Fundamental Crystal Design
- Excellent Vibration Resistance & Shock Resistance
- High Frequency Stability
- TS-16949 Certified
- Pb-free and RoHS Compliance



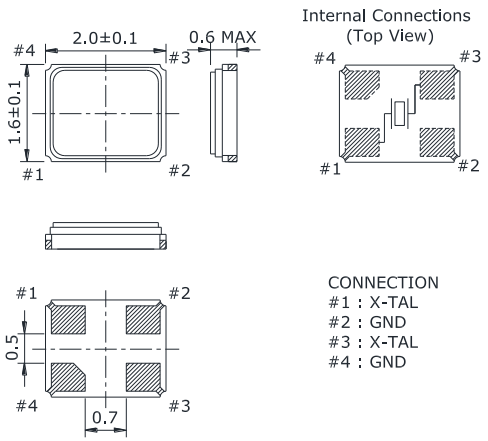
## ■ ELECTRICAL SPECIFICATIONS

| | |
|---|---|
| Frequency Range | 20.000 to 60.000 MHz |
| Operating Temperature Range | -40 to +105 ℃, -40 to +125 ℃ |
| Storage Temperature Range | -55 to +125 ℃ |
| Frequency Tolerance (at 25 ℃) | ±15, ±30, ±50 ppm(STD), or specify |
| Frequency Stability<br>Over Operating Temperature Range | ±30 to ±100 ppm(-40 to +105 ℃)<br>±50 to ±100 ppm(-40 to +125 ℃) |
| Load Capacitance (CL) | 8 pF(STD), Custom CL≥6 pF or Series Resonant |
| Drive Level | 10 μW(100 μW) Max. |
| Shunt Capacitance (C0) | 5.0 pF Max. |
| Aging (at 25 ℃) | ±5 ppm/year Max. |
| Insulation Resistance | 500 MΩ Min. at 100 $V_{DC}$ |

## ■ EQUIVALENT SERIES RESISTANCE(ESR)

| Frequency Range(MHz) | ESR(Ω Max.) | Mode of Oscillation |
|---|---|---|
| 20.000 ~ 23.999 | 150 | Fundamental |
| 24.000 ~ 25.999 | 100 | Fundamental |
| 26.000 ~ 39.999 | 80 | Fundamental |
| 40.000 ~ 60.000 | 60 | Fundamental |

## ■ MECHANICAL DIMENSIONS (mm)



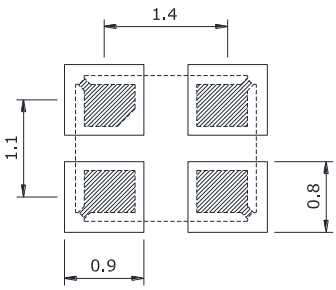

Internal Connections
(Top View)




CONNECTION
#1 : X-TAL
#2 : GND
#3 : X-TAL
#4 : GND

## ■ LAND PATTERN (mm)

<Top View>



## ■ PART NUMBERING GUIDE

**S R 10 1 30 M7 – 27.00000 – T&R**

**PACKAGE TYPE**
SX-A21(2.0×1.6mm)
**LOAD CAPACITANCE**
10 : 10 pF
SR : SERIES
**MODE OF OSCILLATION**
1 : FUNDAMENTAL
**FREQUENCY TOLERANCE AT 25℃**
30 : ±30 ppm
**XX: Two digit for Tolerance**
**PACKAGE OPTION**
BLANK : BULK
T&R : TAPE & REEL
**FREQUENCY**
**TABLE 1.**
XX: Two digit for Stability

## ■ TABLE 1.

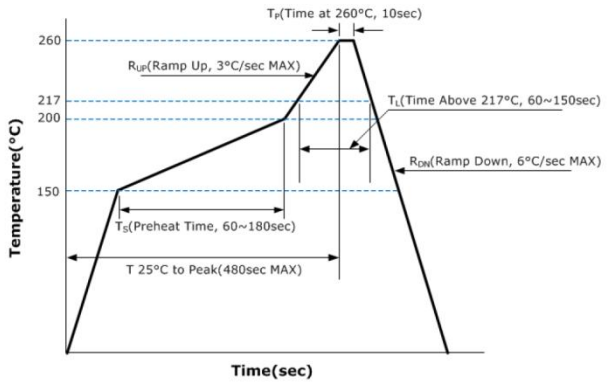
**FREQUENCY STABILITY VS. TEMPERATURE RANGE**

| Temp \ Stability | | ±10 | ±15 | ±20 | ±30 | ±50 | ±100 |
|---|---|---|---|---|---|---|---|
| | | 3 | 4 | 5 | 6 | 7 | 8 |
| -10~70℃ | D | * | * | * | * | * | * |
| -20~70℃ | E | * | * | * | * | * | * |
| -30~60℃ | F | * | * | * | * | * | * |
| -20~85℃ | G | | * | * | * | * | * |
| -30~70℃ | H | | | * | * | * | * |
| -30~85℃ | I | | | * | * | * | * |
| -40~85℃ | J | | | * | * | * | * |
| -40~90℃ | K | | | | * | * | * |
| -40~105℃ | L | | | | * | * | * |
| -40~125℃ | M | | | | | * | * |

## ■ ENVIRONMENTAL & MECHANICAL SPECIFICATIONS

| | |
|---|---|
| High Temperature Exposure | MIL-STD-202 Method 108 |
| Temperature Cycling | JESD22 Method JA-104 |
| Biased Humidity | MIL-STD-202 Method 103 |
| Operational Life | MIL-STD-202 Method 108 |
| Mechanical Shock | MIL-STD-202 Method 213, Conditions C |
| Vibration | MIL-STD-202 Method 204 |
| Resistance to Soldering Heat | MIL-STD-202 Method 210, Condition B |
| Solderability | J-STD-002, Method B, D |

## ■ REFLOW PROFILE




## ■ MARKING GUIDE

**LINE 1 : XX.XXX**
**LINE 2 : S Y WW**

Sunny
Year
Week
Frequency in MHz

## ■ TAPE AND REEL DIMENSIONS

3,000pcs/reel

