

7VA Series 7.0 x 5.0 mm SMD Crystal Oscillator

7 : 7.0×5.0×1.45 mm | SMD7050-6P

VA : VCXO Crystal Oscillator [6PAD]

Feature

- Ceramic surface mount with Metal Lid
- Wide Absolute pulling range: ±50ppm min.
- CMOS compatible logic levels
- RoHS Compliant / Pb Free

Applications

- Networking, SONET/SDH
- Direct Digital Synthesis (DDS)
- DSL/ADSL
- Base Terminal Stations



Electrical Specifications

| Item | Symb. | Min. | Typ. | Max. | Unit | Notes |
|------------------------------|--------|--------|------|--------|------|---|
| Frequency Range | Freq. | 2.048 | | 54.000 | MHz | |
| Operating Temperature | T_use | -20 | | +70 | °C | |
| | | -40 | | +85 | °C | |
| Storage Temperature Range | T_stg | -55 | | +125 | °C | |
| Supply Voltage | Vdd | 2.97 | 3.3 | 3.63 | V | |
| Output Load | L_CMOS | | 15 | | pF | |
| Current Consumption | Icc | | | 10 | mA | 2.4MHz ≤ Freq. < 36MHz |
| | | | | 15 | | 36MHz ≤ Freq. < 54MHz |
| Absolute Pull Range | APR | ±50 | | | ppm | |
| Center Voltage | Vcont | | 1.65 | | V | |
| Control Voltage Range | Vc | 0.3 | | 3.0 | V | |
| Linearity | L | | | 10 | % | |
| Modulation Band Width | MBW | 15 | | | KHz | |
| VC Input Impedance | Rin | 5 | | | MΩ | |
| Duty Cycle | SYM | 45 | | 55 | % | 50 % Vdd level, L_CMOS ≤ 15 pF |
| High output voltage | VoH | 0.9Vdd | | | V | |
| Low output voltage | VoL | | | 0.1Vdd | V | |
| Enable Voltage High(Logic 1) | VIH | 0.7Vdd | | | V | Output will be disable if OE is Logic 0 Output will be enable if OE is Logic 1 or open |
| Enable Voltage Low(Logic 0) | VIL | | | 0.3Vdd | V | |
| Rise / Fall Time | TR/TF | | | 5 | nS | 10% Vdd to 90% Level |
| Start-up Time | T_str | | | 2 | mS | To 90% of Final Amplitude |
| Aging | f_age | | | 3 | ppm | 1st. Year at 25°C |

Frequency Stability & Operating Temperature Range

| Temp. | FT | ±25ppm | ±50ppm |
|----------------|----------------|--------|--------|
| | -20°C to +70°C | ★ | ★ |
| -40°C to +85°C | △ | ★ | |

★: Available △: Conditional

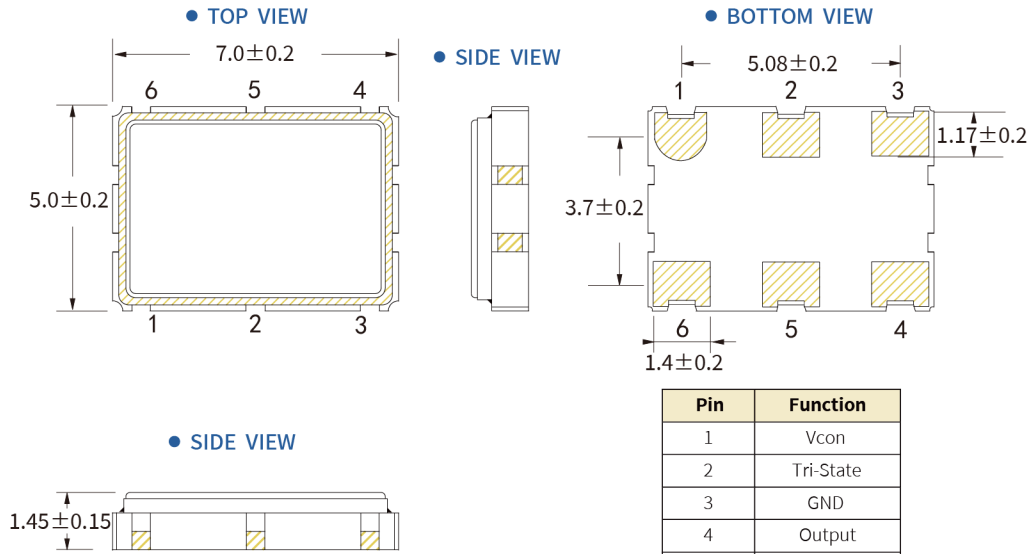
All condition: Include 25°C tolerance, operating temperature range, input voltage change, aging, load change.

7VA Series 7.0 x 5.0 mm SMD Crystal Oscillator

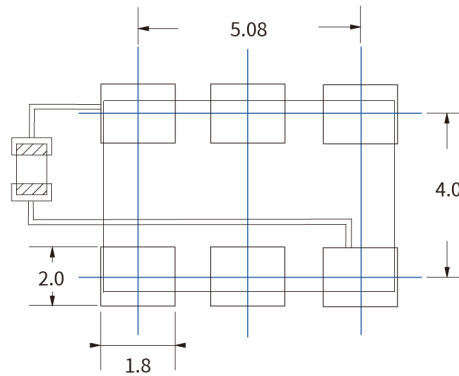
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Dimensions (UNIT:mm)



Solder pad layout (UNIT:mm)



To ensure optimal oscillator performance, place a by-pass capacitor of 0.1μF as close to the part as possible between Vdd and GND pads.

Options and Part Identification : Example SX7V10.000B20050F30TNNS

| Company | Ceramic Package | Frequency Code [MHz] | Supply Voltage | Frequency Tolerance | Pullability | Operating Temperature | Frequency Drift | Output Symetry | Output Level | Phase Noise | PAD |
|--------------|---|----------------------|----------------|--------------------------|---|------------------------------------|-------------------------------------|---------------------|-------------------|------------------|----------------------|
| SX | 7V | X.XXX | B | 20 | 050 | F | 30 | T | N | N | S |
| Code Company | Code Ceramic Package | Frequency | Code Voltage | Code Frequency Tolerance | Code Pullability | Code Operating Temperature | Code Frequency Drift | Code Output Symetry | Code Output Level | Code Phase Noise | Code PAD |
| SX SCTF | 7V 7.0×5.0×1.3mm 5V 5.0×3.2×1.2mm 3V 3.2×2.5×0.95mm | 10.000 | B 3.3V | 10 ±10ppm 20 ±20ppm | 050 ±50ppm 070 ±70ppm 085 ±85ppm 100 ±100ppm | E -20°C ~ +70°C F -40°C ~ +85°C | 15 ±15ppm 20 ±20ppm 30 ±30ppm | T Squarewave | N CMOS | N Standard | Blank 4PAD S 6PAD |

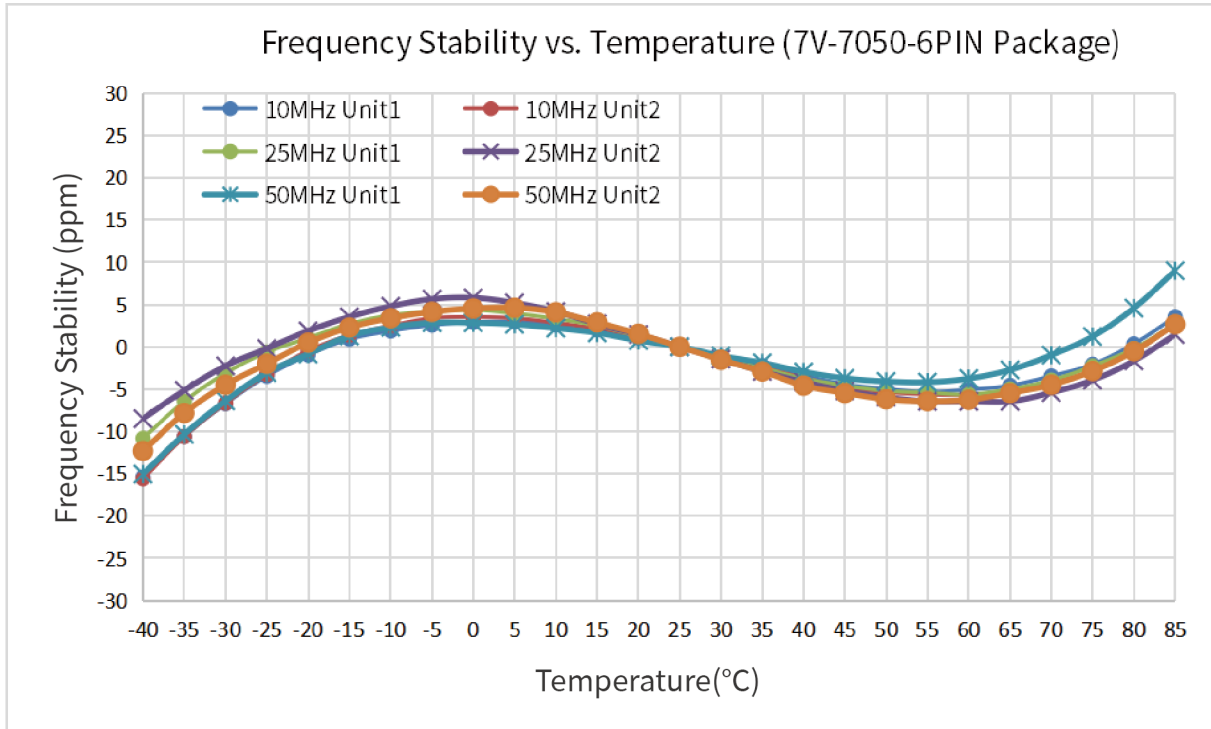
If you have other parameter requirements, you can contact **SCTF** at any time.

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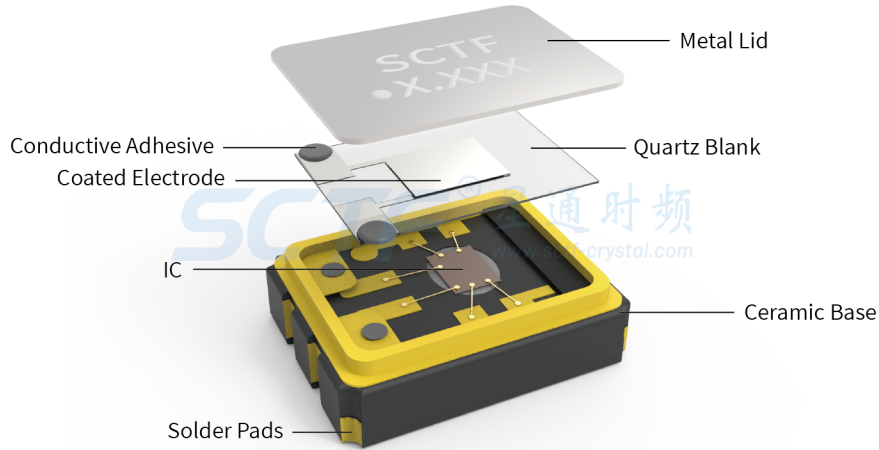
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Frequency Temperature Characteristics

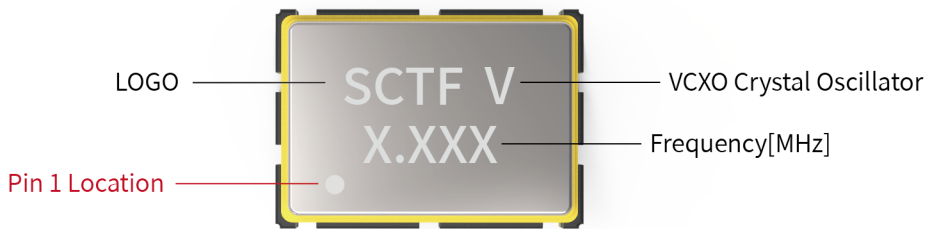


Product Structure & Marking Information

Product Structure



Marking Information

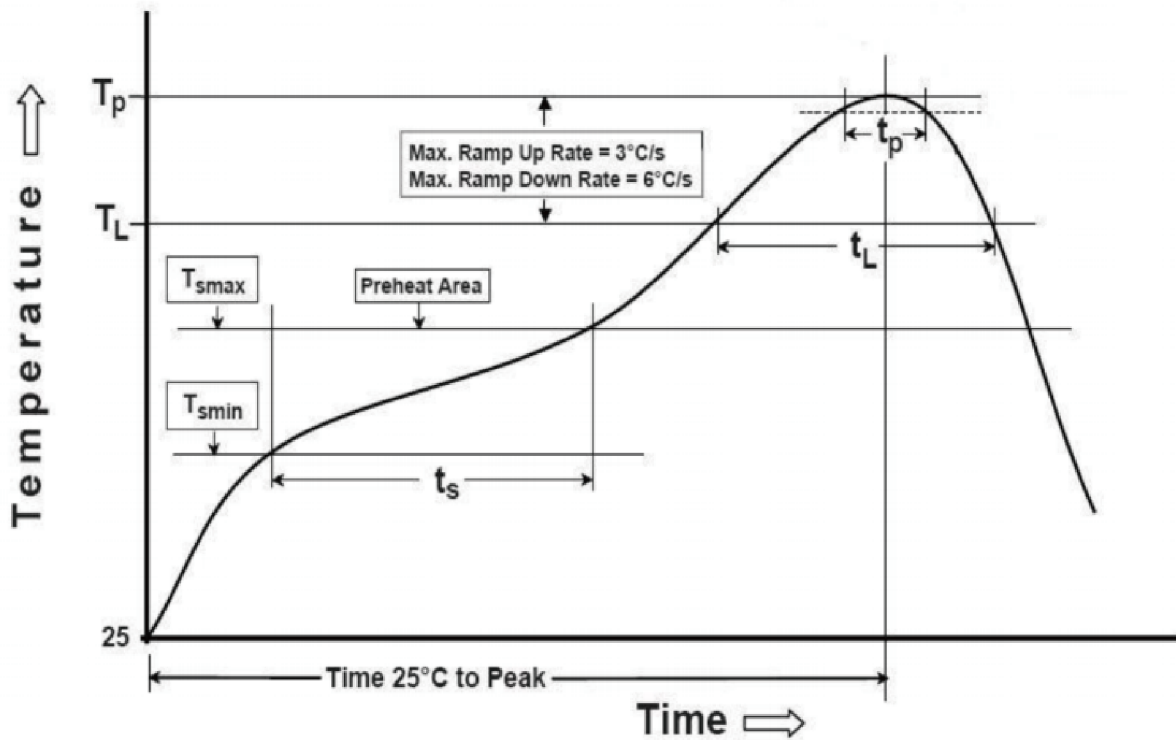


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Suggested Reflow Profile



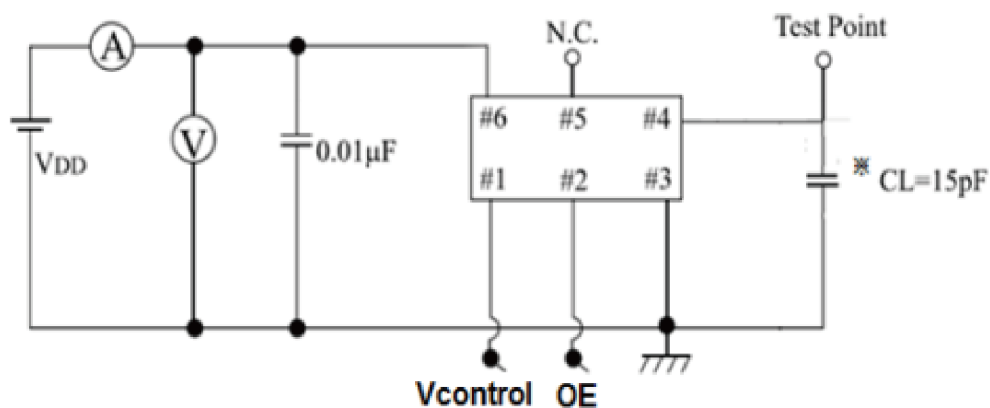
| Profile Feature | Sn - Pb Eutectic Assembly | Preheat / Soak |
|---|----------------------------------|----------------------------------|
| Preheat / Soak <ul style="list-style-type: none"> ● Temperature Min (Ts min) ● Temperature Max (Ts max) ● Time (Ts min to Ts max) | 100°C 150°C 60-120 seconds | 150°C 200°C 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"> ● Liquidous temperature (TL) ● Time (tL) maintained above TL | 183°C 60-150 seconds | 217°C 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. | |

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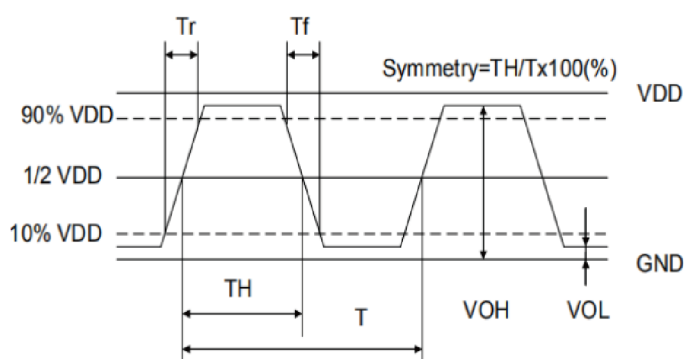
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Testing Circuit



※ Notes: Test point load should include stray and probe capacitance.

Waveform Conditions



Waveform measurement system should have a min. bandwidth of 5 times the frequency being tested.

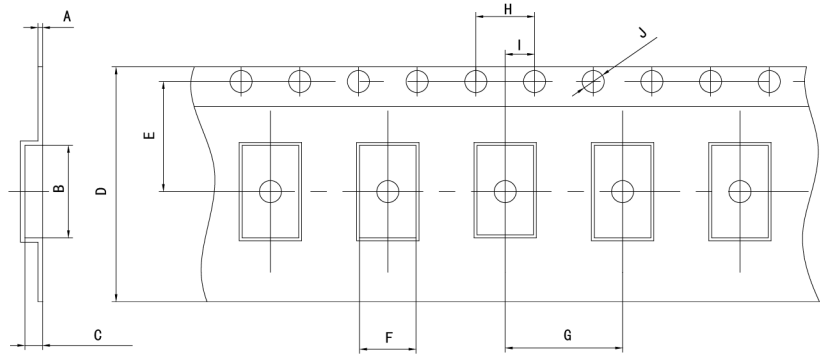
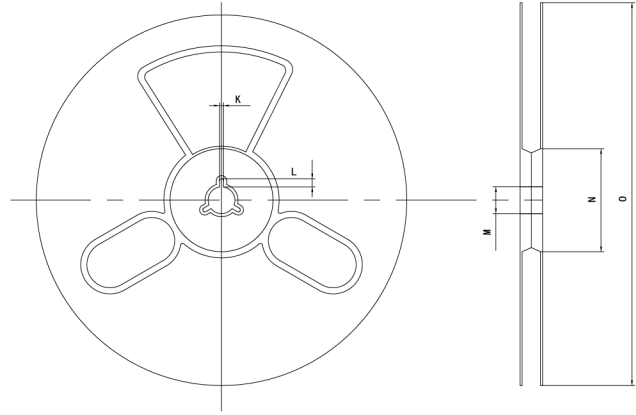
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Packaging Information

T=Tape and reel (1,000pcs/reel)



Pocket Tape Dimensions(mm)

| Series | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O |
|--------|----------|---------|---------|--------|---------|---------|---------|---------|---------|----------|---------|---------|---------|-------|--------|
| 7VA | 0.3±0.05 | 7.6±0.1 | 2.0±0.1 | 16±0.3 | 7.5±0.1 | 5.4±0.1 | 8.0±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

| 7VA Series | | | | |
|------------|---------|---------|---------|---------|
| 2.048 | 4.000 | 4.096 | 4.9152 | 6.000 |
| 7.3728 | 7.680 | 8.000 | 8.192 | 10.000 |
| 11.0592 | 11.2896 | 12.000 | 12.288 | 13.000 |
| 14.7456 | 16.000 | 16.384 | 18.432 | 19.200 |
| 19.440 | 20.000 | 22.5792 | 24.000 | 24.576 |
| 25.000 | 26.000 | 27.000 | 29.4912 | 30.000 |
| 32.000 | 32.768 | 33.000 | 40.000 | 45.1584 |
| 48.000 | 49.152 | 50.000 | 52.000 | 54.000 |

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