

Surface Mount Type

| | | |
|----------------------------------|----------------------------------|----------------------------------|
| 1N [2.0×1.6×0.70 mm] | 2N [2.5×2.0×0.80 mm] | 3N [3.2×2.5×1.00 mm] |
|----------------------------------|----------------------------------|----------------------------------|

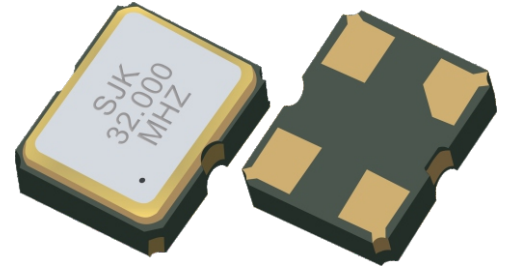
| |
|---------------|
| Output |
| CMOS |

| |
|------------------|
| Supply Voltage |
| 1.8V~3.3V |

| |
|-----------------------|
| Frequency Range |
| 32 kHz~220 MHz |

Features

- Ultra smallest size SMD crystal oscillator with 2.0×1.6 (2016), 2.5×2.0 (2520), 3.2×2.5 (3225).
- Simple Package Crystal Oscillator (SPXO)
- CMOS output, frequency range from 32.768 kHz to 220 MHz
- Low voltage operation and low current consumption
- RoHS Compliant
- Automatic mount and re-flow soldering
- Tri-state available
- Applications: Ethernet, Fibre channel, Telecommunications, Graphics, HDTV, Radio communications, and more



Standard Specifications

| Item / Type | 1N (SMD 2016 SPXO) | 2N (SMD 2520 SPXO) | 3N (SMD 3225 SPXO) |
|-------------------------------------|-----------------------------|---------------------------|---------------------------|
| Dimensions | 2.0×1.6×0.70 mm | 2.5×2.0×0.80 mm | 3.2×2.5×1.00 mm |
| Output | CMOS | | |
| Output load | 15pF, or specify | | |
| Output frequency range | 1 MHz~220 MHz | 32.768 kHz~220 MHz | 32.768 kHz~220 MHz |
| Supply voltage | 1.8 V~3.3 V | | |
| Frequency tolerance (All condition) | ±25 ppm, ±50 ppm, ±100 ppm | | |
| Operating temperature | -20~+70°C, -40~+85°C | | |
| Supply consumption | 7mA max. (@1.8V) | 10mA max. (@2.5V) | 15mA max. (@3.3V) |
| Stand-by current | 2.1µA max. (@1.8V) | 2.5µA max. (@2.5V) | 2.7µA max. (@3.3V) |
| Symmetry | 45 % to 55 % | | |
| Output voltage Voh (min.) | 90% Vcc min. /Vcc-0.4V min. | | |
| Output voltage Vol (max.) | 10% Vcc max. /0.4V max. | | |
| Input voltage Vih (min.) | 80% Vcc min. | | |
| Input voltage Vil (max.) | 20% Vcc max. | | |
| Rise time / Fall time | 3ns max. | | |
| Start-up time | 3ms max. | | |
| Storage temperature | -55~+125°C | | |
| Aging | ±3ppm /year max. | | |

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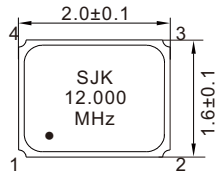
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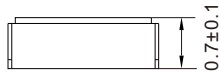
| |
|------------------------|
| Frequency Range |
| 32 kHz~220 MHz |

Outline Dimensions (Unit: mm)

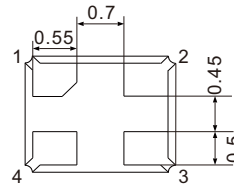
1N (SMD 2016 SPXO)



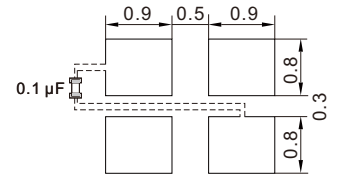
Top View



Side View

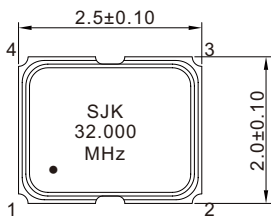


Bottom View

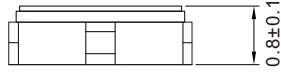


Footprint (Recommender)

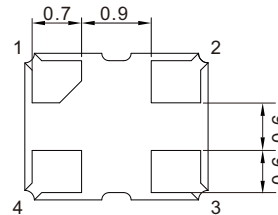
2N (SMD 2520 SPXO)



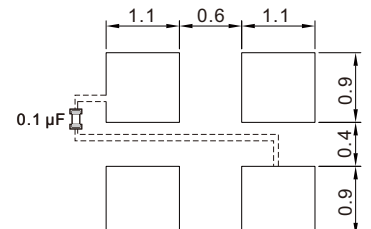
Top View



Side View

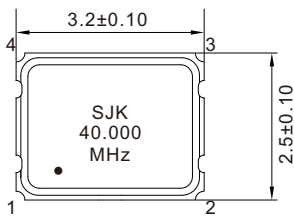


Bottom View



Footprint (Recommender)

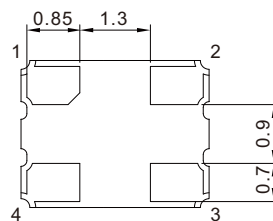
3N (SMD 3225 SPXO)



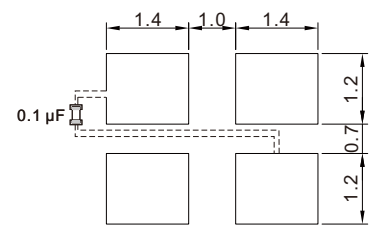
Top View



Side View



Bottom View



Footprint (Recommender)

Pin Map

| Pin | Connection | Function | | |
|-----|-----------------|--------------------------|--------------------|-----------------------------|
| | | \overline{ST} function | Oscillator circuit | Output |
| 1 | \overline{ST} | High or "open" | Oscillation | Specified frequency: Enable |
| | | LOW | Oscillator stop | High impedance: Disable |
| | | Ground | | |
| 2 | GND | Ground | | |
| 3 | OUT | Clock output | | |
| 4 | Vcc | Power supply | | |