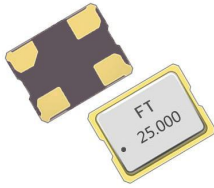


SMD QUARTZ CRYSTAL OSCILLATOR

4 Pad Version 5.0×3.2 mm

- ±20 ppm type available
- Excellent Reliability Performance
- EMI shielding possible by grounded lid
- Reflow soldering temperature: 260°C max
- Ceramic Seam Weld package



RoHS compliant

★ PARAMETERS

| PARAMETERS | SPECIFICATION |
|-----------------------------|--|
| Frequency Range | 1 ~ 160MHz, 32.768KHz |
| Supply voltage | 1.8V、2.5V、2.8V、3.3V |
| Input Current | See Below |
| Frequency Stability Overall | ±20ppm ~ ±50ppm |
| Operating Temp. Range | -10~+60°C to -40~+85°C, (-40~+125°C available) |
| Storage Temp. Range | -55 ~ +125°C |
| Output Load | HCMOS 15pF |
| Symmetry | 45% ~ 55% typ. (40% ~ 60% max.) at 0.5×V _{DD} |
| Start-up time | 10mS max |
| Enable/ Disable Function | E/D |

◎ All specification subject change without notice.

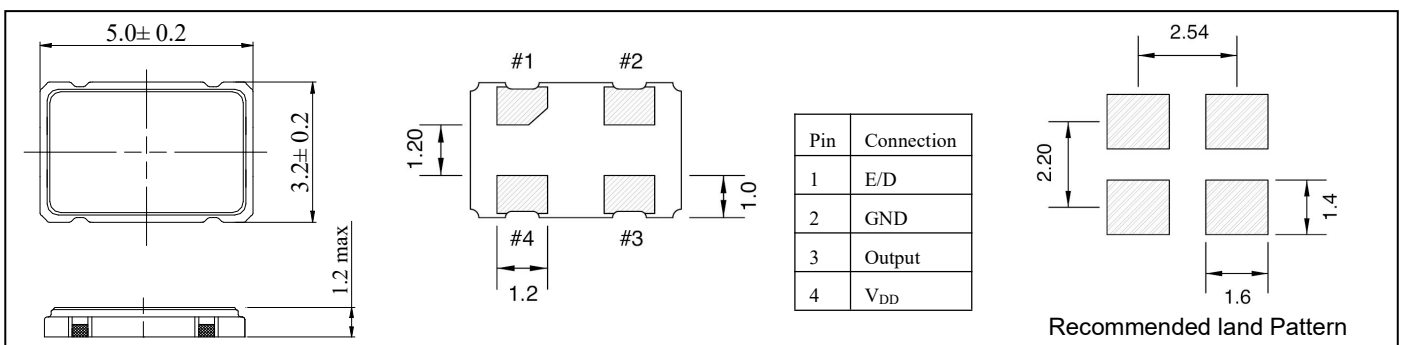
★ FREQUENCY STABILITY VS. TEMPERATURE

| Operation Temperature Range | Frequency Stability | | | |
|-----------------------------|---------------------|--------|--------|--------|
| | ±20ppm | ±25ppm | ±30ppm | ±50ppm |
| -10°C~+60°C | ○ | ● | ○ | ○ |
| -20°C~+70°C | ○ | ○ | ● | ○ |
| -40°C~+85°C | ○ | ○ | ○ | ● |

● standard ○ available

★ Rise & Fall TIME MAX.

| Frequency | Rise & Fall Time | Note |
|---------------|------------------|--|
| 1.0~9.9 MHz | 6nS max | rise time: 0.1 V _{DD} ~ 0.9 V _{DD} fall time: 0.9 V _{DD} ~ 0.1 V _{DD} |
| 10.0~39.9 MHz | 5nS max | |
| 40.0~80.9 MHz | 4nS max | |

★ DIMENSIONS& LAND PATTERN LAYOUT (Unit: mm)

★ PART NUMBER GUIDE

e.g. FXO12.000MAA3SM5-50D (*SM5=5.0×3.2 SMD TYPE)

| Logo | Quartz Crystal Oscillator | Frequency Hz | Supply voltage V _{DD} | Package | Frequency Stability ppm | Operating Temp. Range |
|------|---------------------------|--------------|--------------------------------|---------|-------------------------|-----------------------|
| F | XO | 12.000 | 3.3 | SM5 | 50 | D |

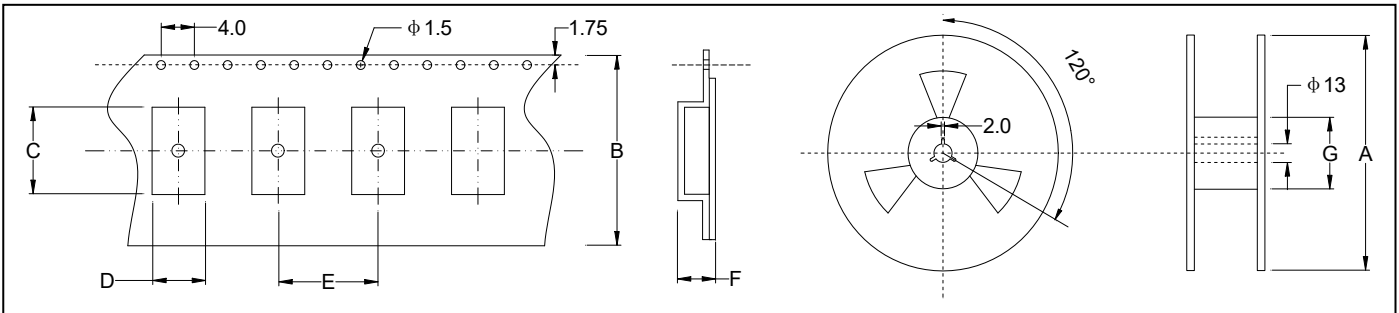


| Definition | Description | |
|-----------------------------|----------------------|------------------------------|
| Operating Temperature Range | A: -10~+60°C | B: -20~+70°C |
| | C: -30~+80°C | D: -40~+85°C |
| | E: -30~+105°C | F: -40~+105°C |
| | G: -40~+125°C | S: Customer specified |

★ INPUT CURRENT

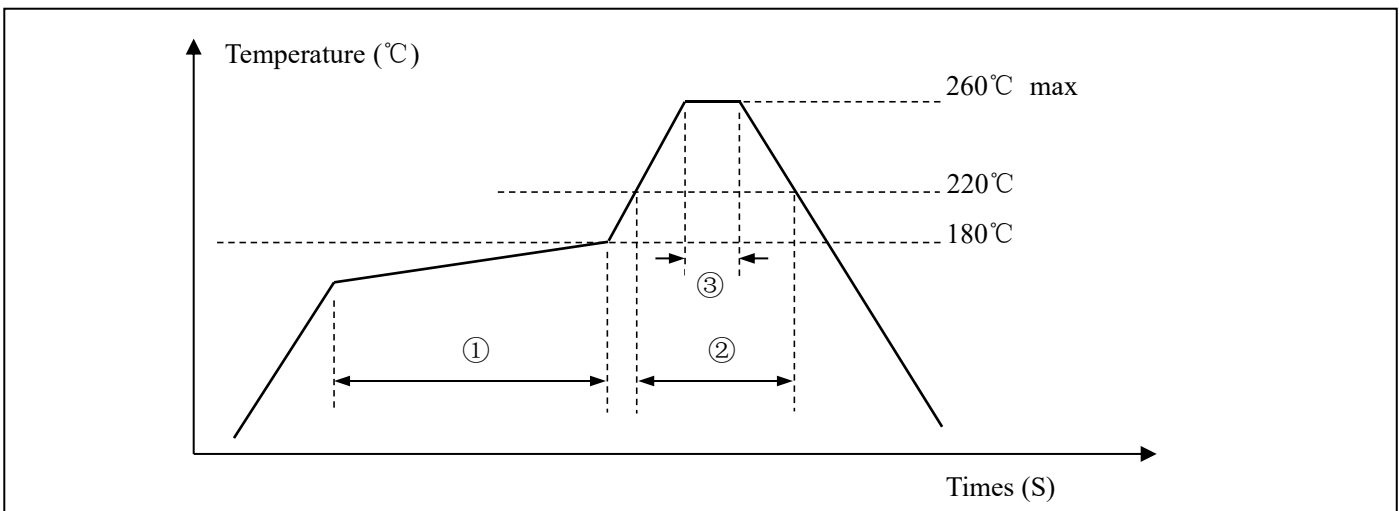
| $V_{DD}=3.3V$ | | | | $V_{DD}=1.8V$ | | | |
|-------------------|-------|-----------------|-------|-------------------|-------|-----------------|-------|
| 15pF load | | 30pF load | | 15pF load | | 30pF load | |
| 1.0 ~ 19.9 MHz | 4 mA | 1.0 ~ 19.9 MHz | 6 mA | 1.0 ~ 19.9 MHz | 2 mA | 1.0 ~ 19.9 MHz | 6 mA |
| 20.0 ~ 39.9 MHz | 7 mA | 20.0 ~ 39.9 MHz | 13 mA | 20.0 ~ 39.9 MHz | 3 mA | 20.0 ~ 29.9 MHz | 10 mA |
| 40.0 ~ 59.9 MHz | 19 mA | 40.0 ~ 49.9 MHz | 24 mA | 40.0 ~ 59.9 MHz | 10 mA | 30.0 ~ 40.0 MHz | 12 mA |
| 60.0 ~ 99.9 MHz | 30 mA | 50.0 ~ 60.0 MHz | 35 mA | 60.0 ~ 80.0 MHz | 15 mA | | |
| 100.0 ~ 125.0 MHz | 40 mA | | | 100.0 ~ 125.0 MHz | 30 mA | | |

★ TAPING SPECIFICATION (Unit: mm)



| | A | B | C | D | E | F | G |
|-------------------|---------|----------|-----------|-----------|---------|---------|----------|
| OSC-SMD5032 | 178±2.0 | 12.0±0.3 | 3.55±0.10 | 2.80±0.10 | 4.0±0.1 | 1.4±0.1 | 60.5±1.0 |
| 1000 pcs per reel | | | | | | | |

★ REFLOW SOLDERING PROFILE



| | | | | |
|---------------------|---|--------------|-----------|-------------|
| Pb free reflow A | ① | Preheat | 160~180°C | 120sec. max |
| | ② | Primary heat | 220°C | 60sec. max |
| | ③ | Peak | 260°C | 10sec. max. |