



3.2×2.5×0.7mm typ

12MHz up to 60MHz



Feature

A small surface mount type crystal unit, especially suited for small-sizing requirements.

- Ultra compact and thin. (3.2×2.5×0.7 mm typ.)
- Tight Tolerance 10ppm available.
- Application: Bluetooth ; Mobile phone; W-LAN; Office Automation; Audio & Visual.
- Meets the requirements for re-flow profiling using lead-free solder.

Specifications

| Item | Type | TX3-Type | | | |
|-----------------------------|------|---|------------|------------|----------|
| | | 12~13MHz | 13~19.5MHz | 19.5~27MHz | 27~60MHz |
| Frequency Range | | 12~13MHz | 13~19.5MHz | 19.5~27MHz | 27~60MHz |
| Oscillator Mode | | Fundamental | | | |
| Load Capacitance | | Series, 6~32pf, or specify | | | |
| Drive Level | | 10μW(200μW max.) | | | |
| Frequency Tolerance | | ±10×10 ⁻⁶ , ±20×10 ⁻⁶ , ±30×10 ⁻⁶ , ±50×10 ⁻⁶ (at 25°C) | | | |
| Series Resistance | | 150Ω max. | 80Ω max. | 60Ω max. | 50Ω max. |
| Operating Temperature Range | | -10~+60°C, -20~+70°C, -40~+85°C | | | |
| Storage Temperature Range | | -55~+125°C | | | |
| Packing Unit | | 3000pcs/reel(Ø180) | | | |

Outline Drawing(mm)



Frequency Stability Vs. Temperature Range

| Temp.(°C) | Ppm | ±5 | ±10 | ±15 |
|-----------|-----|----|-----|-----|
| -10 ~ +60 | | + | ✓ | ✓ |
| -20 ~ +70 | | × | ✓ | ✓ |
| -40 ~ +85 | | × | × | + |

| Temp.(°C) | Ppm | ±15 | ±20 | ±30 | ±50 |
|------------|-----|-----|-----|-----|-----|
| -40 ~ +105 | | + | ✓ | ✓ | ✓ |
| -40 ~ +125 | | × | × | + | ✓ |

✓ Available + Conditional × Not Available

Oscillation Circuit of Fundamental Mode





Model Numbering Guide – Crystal Units

Available options

| ① | ② | ③ | ④ | | ⑤ | | | | | | |
|------|-----------------|-----------------|-----------------------|------------------------|-----------------------|--------------------------------------|--|--|------------|----------------|------|
| Type | package (mm) | Frequency range | Load Capacitance (pF) | Freq. Tol. @25°C (ppm) | Freq. Stability (ppm) | Temp. Range(°C) | Special Requirement | Oscillator Mode | Appearance | Lead Free | Dash |
| 1612 | 1.6x1.2 | 3.00~100.00MHZ | 6 | ± 5 | ± 5 | A:~20~+70 B:~40~+85 J:~40~+105 | For Automotive Spurious DLD No Special Pullability Several | AT Fundamental AT 3 rd Overtone | Normal | RoHs Compliant | - |
| 2016 | 2.0x1.6 | | 7 | ± 10 | ± 10 | | | | | | |
| 2520 | 2.5x2.0 | | 8 | ± 15 | ± 15 | | | | | | |
| 3225 | 3.2x2.5 | | 9 | ± 20 | ± 20 | | | | | | |
| 5032 | 5.0x3.2 (4Pads) | | 10 | ± 25 | ± 25 | | | | | | |
| 6035 | 6.0x3.5 | | 12 | ± 30 | ± 30 | | | | | | |
| 3225 | 3.2x2.5 | | 15 | ± 40 | ± 40 | | | | | | |
| 5032 | 5.0x3.2 (2Pads) | | 16 | ± 50 | ± 50 | | | | | | |
| 8045 | 8.0x4.5 | | 18 | ± 100 | ± 100 | | | | | | |
| 49S | 11.1x4.68 | | 20 | ± 150 | ± 150 | | | | | | |
| 49MD | 13.0x4.85 | | 22 | | | | | | | | |
| | | | 25 | | | | | | | | |
| | | 30 | | | | | | | | | |
| | | 32 | | | | | | | | | |

example



① package ② Frequency range ③ Load Capacitance ④ Freq. Tol. @25°C X10⁻ⁿ, +25°C ⑤ Temp. Range(°C)

3225-12.00-20-20-A

① ② ③ ④ ⑤

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