



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 <sup>-6</sup> , ±20×10 <sup>-6</sup> , ±30×10 <sup>-6</sup> , ±50×10 <sup>-6</sup> (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
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 <sup>rd</sup> 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<sup>-n</sup>, +25°C ⑤ Temp. Range(°C)

3225-12.00-20-20/A

① ② ③ ④ ⑤

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