



No.11-3 Jianguo Rd., T.E.P.Z. 42760 Taiwan, ROC

All dimensions are millimeters.

CAD: TCR

Review: EG

Appr: JL

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**Specification Title:**

**Microprocessor Crystal Unit  
Low Profile  
2.5 x 2.0 millimeter Surface Mount - 4 Pad  
General Product Specification**

**Series Name: C2E Series**

**Electrical Specifications:**

Frequency Range		12.000 to 133.000	MHz
Mode of Oscillation	Fundamental	12.000 to 66.999	MHz
	Third Overtone	67.000 to 133.000	MHz
Frequency Tolerance at 25°C	Standard	±30	PPM Max (Note 1)
	Optional	±50	
		±20	
		±15	
		±10	
Frequency Stability over Temperature Range	Standard	±50	PPM Max (Note 1)
	Optional	±100	
		±30	
		±25	
		±20	
		±15	
±10*			
Operating Temperature Range	Standard	-20 to +70	°C
	Extended	-40 to +85	
		-40 to +125	
Storage Temperature Range		-55 to +125	
Aging		±3	PPM Max/Year
Load Capacitance	6 to 47 and Series Resonance		pF
Shunt Capacitance	3.0		
Equivalent Series Resistance(ESR)	See ESR Table		Ohm
Drive Level	100		uW Max
Insulation Resistance	500 at 100 Vdc ± 15 Vdc		M Ohm

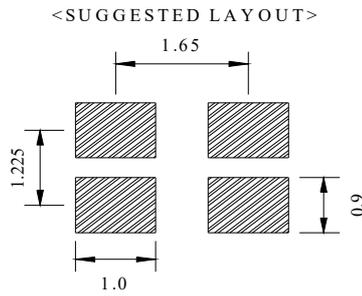
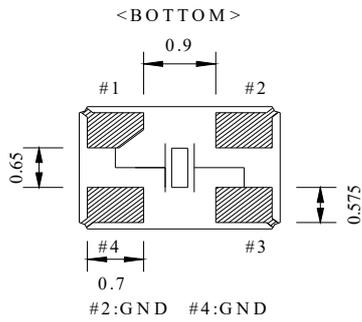
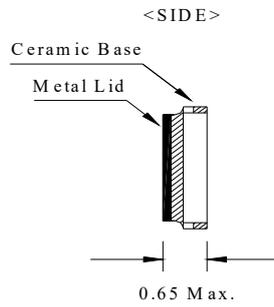
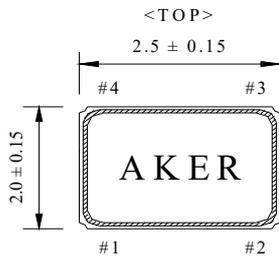
**Frequency Range and ESR Values:**

Frequency Range in MHz	ESR Ohm Max	Mode of Operation	Frequency Range in MHz	ESR Ohm Max	Mode of Operation
12.000 to 15.999	150	Fundamental	67.000 to 99.999	150	Third Overtone
16.000 to 19.999	80	Fundamental	100.000 to 133.000	100	Third Overtone
20.000 to 24.999	60	Fundamental			
25.000 to 29.999	50	Fundamental			
30.000 to 34.999	45	Fundamental			
35.000 to 66.999	40	Fundamental			

**RoHS Compliant  
Pb - Lead Free**

Ltr	Revisions	Date	Appr

**Mechanical Outline:**



**Package is Seam Sealed Ceramic-Metal.  
 Dimensions are millimeters.**

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**How to build a Part Number:**

Series		C	Parameter
Package		2E	2.5 x 2.0 mm - 4 Pad
		-	
Frequency		12.000 to 133.000	MHz
		-	
Load Capacitance		7	7pF
		10	10 pF
		12	12 pF
		16	16 pF
		18	18 pF
		20	20 pF
		32	32 pF
		S	Series
		-	
Frequency Tolerance (Note 1)	Standard	30	±30PPM
	Option	25	±25PPM
		20	±20PPM
		15	±15PPM
		10	±10PPM
Frequency Stability (Note 1)	Standard	50	±50PPM
	Option	100	±100PPM
		30	±30PPM
		25	±25PPM
		20	±20PPM
		15	±15PPM
	10	±10PPM*	
		-	
Temperature Range	Standard	See Notes	-20 to +70 °C
	Option	X	-40 to +85 °C
	Option	X1	-40 to +125 °C
	Option	X2	-40 to +105 °C
		-	
Packaging		M	250pcs Reel
		R	1000pcs Reel
		R3	3000pcs Reel

**Part Number Example:**

**C2E-50.000-18-3050-R**

**C2E- 2.5 x 2.0 mm SMD Seam Seal Crystal Unit - 4 Pad**

**50.000 MHz Nominal Frequency**

**18 pF Load Capacitance**

**3050: ±30 PPM Frequency Tolerance and ±50 PPM Frequency Stability**

**Fundamental Mode**

**-10 to +70° C Temperature Range**

**R: Tape and Reel Packaging**

**Notes:**

**1- Frequency Tolerance and Stability options are limited due to physical size.**

**\* ±10 PPM Temperature Stability is only available from -30 to +85° C.**

**2- Standard Temperature Range does not need to be included in Part Number description.**

**3- Product is shipped in Tape and Reel configuration.**

**4- Quantities less than 250pcs are shipped in tape only.**

**5- Specification subject to change without notice.**

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