

ISSUE 14; September 2022

### Description

- Standard 7 x 5mm SMD crystal. 7 x 5mm SMD crystal available in three different pad designs and two different package materials. 12SMX-A, -C, -D are ceramic package with a resin sealed ceramic lid, hermetically sealed. 12SMX-B is a ceramic package with a seam sealed metal lid, hermetically sealed. Please Note: 12SMX-B is the standard package style. For low profile version of a 7 x 5mm crystal please see our 14SMX. For tighter tolerances and stabilities please see our 14SMX. Stock parts available.
- A 2 pad (ceramic lid)
- A ceramic package with a resin sealed ceramic lid, hermetically sealed. 2 pad device.
- B 4 pad (metal lid)
- A ceramic package with a seam sealed metal lid, hermetically sealed. 4 pad device metal lid.
- C 2 into 4 pad (ceramic lid)
- A ceramic package with a resin sealed ceramic lid, hermetically sealed. 2 into 4 pad device.
- D 4 pad (ceramic lid)
- A ceramic package with a resin sealed ceramic lid, hermetically sealed. 4 Pad device, ceramic lid

### Frequency Parameters

- |                     |                         |
|---------------------|-------------------------|
| Frequency           | 6.0MHz to 84.0MHz       |
| Frequency Tolerance | ±20.00ppm to ±100.00ppm |
| Frequency Stability | ±20.00ppm to ±100.00ppm |
| Ageing              | ±5ppm per year max      |

### Electrical Parameters

- |                   |                  |
|-------------------|------------------|
| Load Capacitance  | 10.0pF to 75.0pF |
| Shunt Capacitance | 7pF max          |
| Drive Level       | 100µW max        |

### Operating Temperature Ranges

- 0 to 50°C
- 10 to 60°C
- 20 to 70°C
- 40 to 85°C

### Environmental Parameters

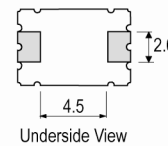
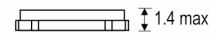
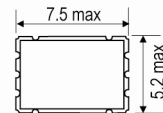
- Storage Temperature Range: -40 to 125°C

### Manufacturing Details

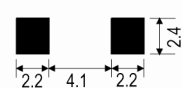
- |                   |             |
|-------------------|-------------|
| RoHS Terminations | NiAu        |
| RoHS Reflow       | 260degC 10s |



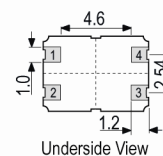
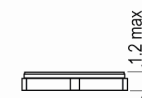
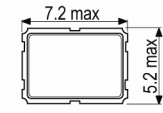
### Outline (mm) -A = 2 pad (ceramic lid)



#### Solder Pad Layout



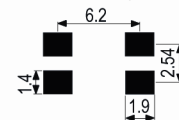
### Outline (mm) -B = 4 pad (metal lid)



#### Pad connections

1. Crystal
2. GND & Lid
3. Crystal
4. GND & Lid

#### Solder Pad Layout



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**Ordering Information**

- Frequency\*
- Model\*
- Variant\*
- Frequency Tolerance (@25°C)\*
- Frequency Stability (over operating temperature range)\*
- Operating Temperature Range\*
- Load Capacitance\*
- Overtone
- Example
- 10.0MHz 12SMX-B
- 50/50/-20 to 70C/10 FUND

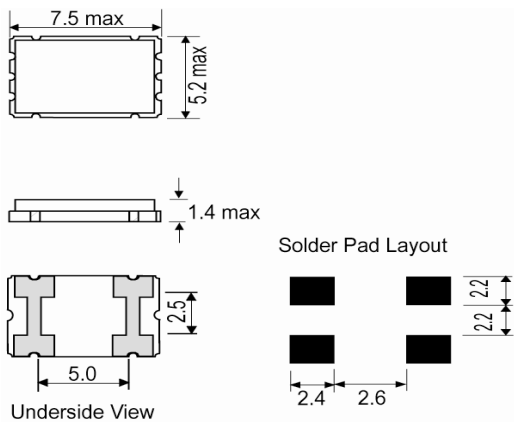
**Compliance**

- RoHS Status (2015/863/EU)      Compliant
- REACH Status                      Compliant
- MSL Rating (JDEC-STD-033):    Not Applicable

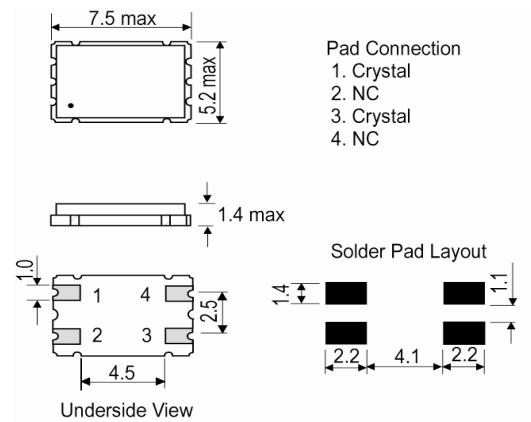
**Packaging Details**

- Pack Style: Cutt                      In tape, cut from a reel
- Pack Size: 100
- Pack Style: Reel                      Tape & reel in accordance with EIA-481-D
- Pack Size: 1,000

**Outline (mm) -C = 2 into 4 pad (ceramic lid)**



**Outline (mm) -D = 4 pad (ceramic lid)**



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Electrical Specification - maximum limiting values

Frequency Min	Frequency Max	Temperature Range	Stability (Min)	Over Tone Order	ESR
		°C	ppm		Ω
6.0MHz	7.999999MHz	0 to 50	±20	Fundamental	150
		-10 to 60	±20		150
		-20 to 70	±20		150
		-40 to 85	±30		150
8.0MHz	9.999999MHz	0 to 50	±20	Fundamental	80
		-10 to 60	±20		80
		-20 to 70	±20		80
		-40 to 85	±30		80
10.0MHz	15.999999MHz	0 to 50	±20	Fundamental	60
		-10 to 60	±20		60
		-20 to 70	±20		60
		-40 to 85	±30		60
16.0MHz	49.999999MHz	0 to 50	±20	Fundamental	40
		-10 to 60	±20		40
		-20 to 70	±20		40
		-40 to 85	±30		40
50.0MHz	84.0MHz	0 to 50	±20	3rd Overtone	60
		-10 to 60	±20		60
		-20 to 70	±20		60
		-40 to 85	±30		60

\*Stability Maximum values ±100ppm

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