

E3XA

Automotive surface mount crystal resonator MHz

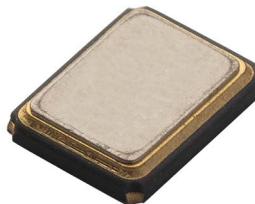


Photo is representative

Product features

- 1210 (3225 metric) package
- Moisture sensitivity level (MSL): 1
- AEC-Q200
- Frequency range 12 MHz to 48 MHz
- Variety of frequency tolerance and stability options

Applications

- Tire-pressure monitoring system (TPMS)
- Remote keyless entry (RKE)
- Front lighting system
- ADAS
- Camera/radar system
- In-vehicle infotainment (IVI)
- Car audio
- Battery management systems (BMS)

Environmental compliance and general specifications

- Operating temperature range: -40 °C to +125 °C
- Storage temperature range (component): -40 °C to +125 °C



Part number system

E	3	X	260	08	1	Z	A1
	Size code	Product category	Frequency	Load capacitance	Frequency tolerance	Frequency stability	Internal code
E = Eaton	3 = 3225 metric, 1210 imperial	X = crystal	260 = 26 MHz	08 = 8 pF 10 = 10 pF 12 = 12 pF	1 = ± 10 ppm 7 = ± 15 ppm 2 = ± 20 ppm 3 = ± 25 ppm 4 = ± 30 ppm 5 = ± 50 ppm	U = ± 10 ppm G = ± 15 ppm X = ± 20 ppm W = ± 25 ppm Y = ± 30 ppm H = ± 35 ppm Z = ± 50 ppm Q = ± 100 ppm	(A1 - A9, AA - AZ without I&O) for automotive

Electrical specifications

Items	Parameters
Frequency range	12 MHz to 48 MHz
Oscillation mode	Fundamental
Frequency tolerance at $+25^{\circ}\text{C}$	$\pm 10, \pm 15, \pm 20, \pm 30, \pm 50$ ppm
Frequency stability vs. operating temperature range	See table below
Equivalent series resistance	See table below
Drive level	10, 100, 200 μW or specify
Insulation resistance	500 $\text{M}\Omega$ minimum at 100 Vdc
Load capacitance	8, 10, 12 pF or specify
Shunt capacitance (C_0)	3 pF maximum or specify
Aging at $+25^{\circ}\text{C}$	± 3 ppm (first year)

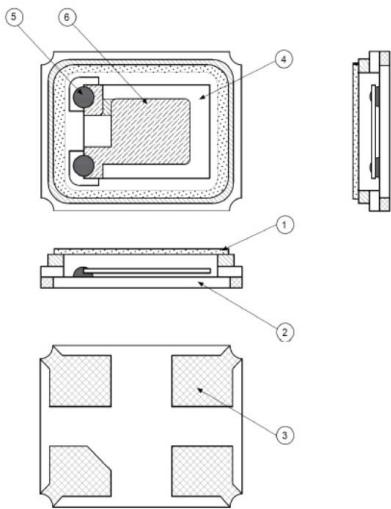
Frequency stability vs. operating temperature range table

ppm	± 50	± 100
Operating temperature -40°C to $+125^{\circ}\text{C}$	x	x

Equivalent series resistance table

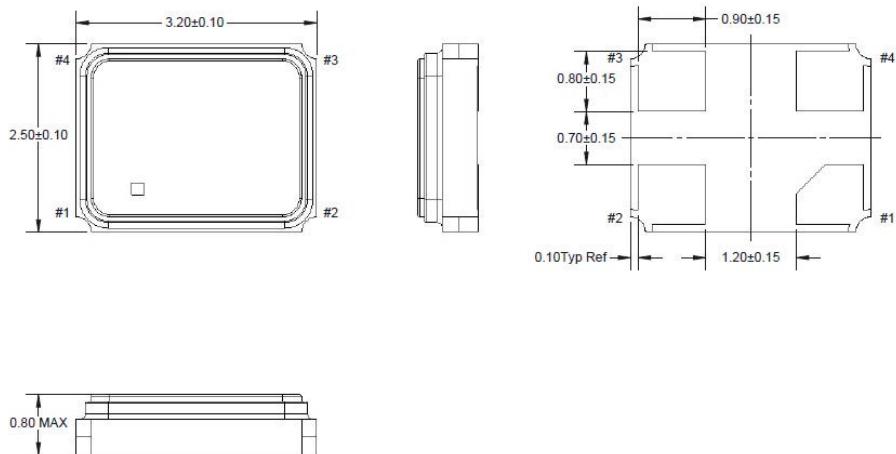
Frequency (MHz)	ESR (Ω) maximum	Oscillation mode
$12 \leq f < 16$	80	
$16 \leq f < 32$	50	Fundamental
$32 \leq f \leq 48$	30	

Construction

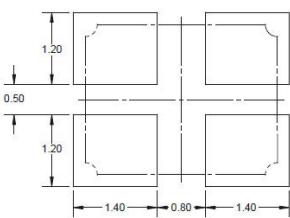


Item number	Component	Description
1	Cap (lid)	Kovar (Fe-Ni-Co)
2	Base (package)	Almina Ceramic (Al_2O_3)
3	Pad (package)	Ni + Au
4	Crystal blank	SiO_2
5	Conductive adhesive	Ag
6	Electrode	Cr + Au

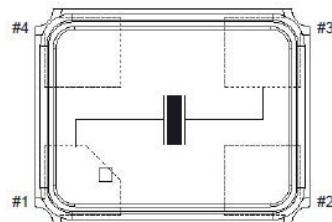
Dimensions -mm



Pad layout -mm



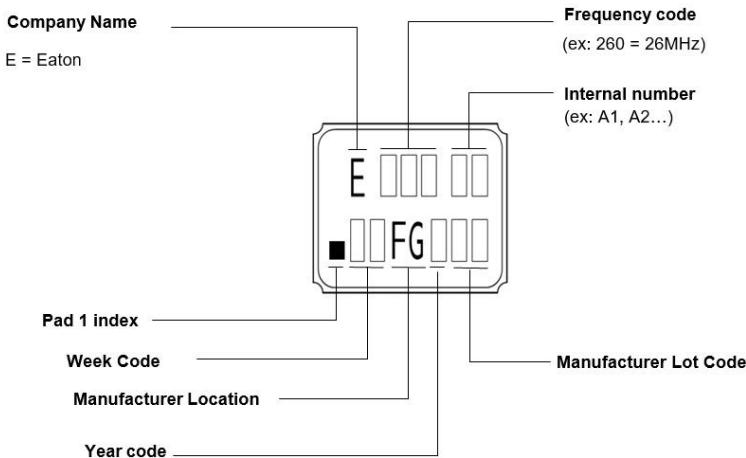
Function diagram



Pad	Function
1	In / out
2	Ground
3	Out / in
4	Ground

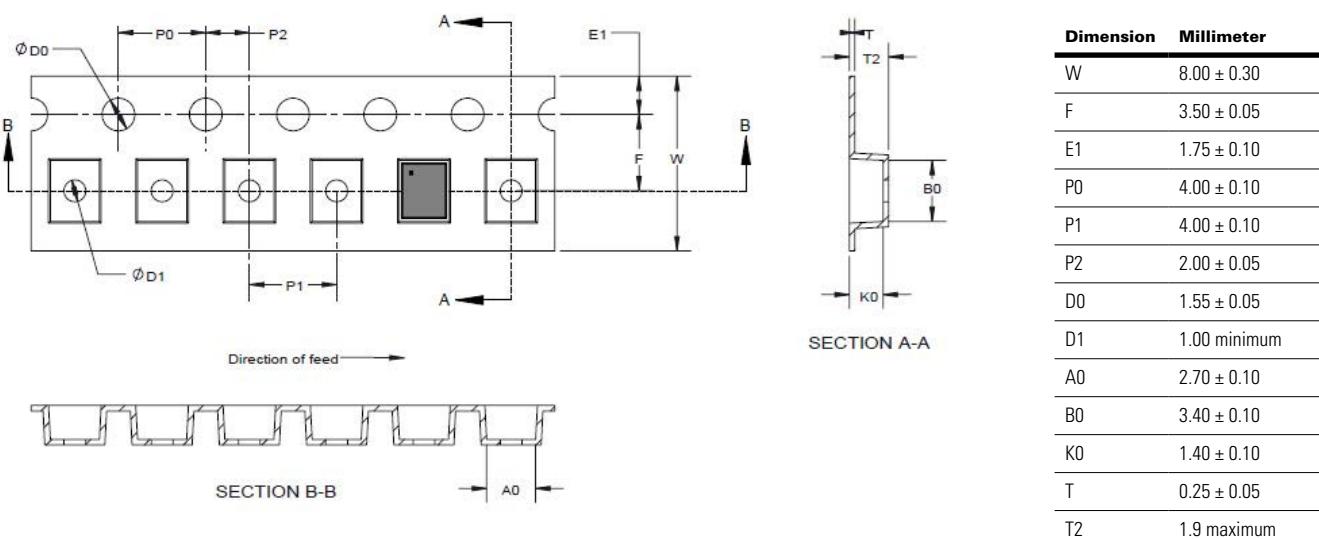
Tolerance unless otherwise specified: ± 0.1 mm

Part marking



Packaging information - mm

3,000 parts on a 7 inch tape and reel (Drawing not to scale)



Solder reflow profile

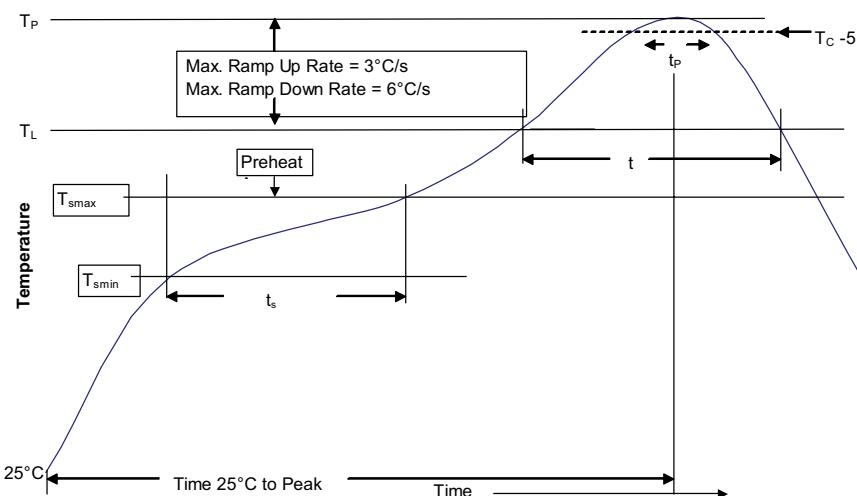


Table 1 - Standard SnPb solder (T_c)

Package thickness	Volume mm ³ <350	Volume mm ³ ≥350
<2.5 mm)	235 °C	220 °C
≥2.5 mm	220 °C	220 °C

Table 2 - Lead (Pb) free solder (T_c)

Package thickness	Volume mm ³ <350	Volume mm ³ 350 - 2000	Volume mm ³ >2000
<1.6 mm	260 °C	260 °C	260 °C
1.6 - 2.5 mm	260 °C	250 °C	245 °C
>2.5 mm	250 °C	245 °C	245 °C

Reference J-STD-020

Profile feature	Standard SnPb solder	Lead (Pb) free solder
Preheat and soak	<ul style="list-style-type: none"> Temperature min. (T_{smin}) Temperature max. (T_{smax}) Time (T_{smin} to T_{smax}) (t_s) 	100 °C 150 °C 60-120 seconds 60-120 seconds
Ramp up rate T_L to T_p	3 °C/ second max.	3 °C/ second max.
Liquidus temperature (T_L)	183 °C	217 °C
Time (t_L) maintained above T_L	60-150 seconds	60-150 seconds
Peak package body temperature (T_p)*	Table 1	Table 2
Time (t_p)* within 5 °C of the specified classification temperature (T_c)	20 seconds*	30 seconds*
Ramp-down rate (T_p to T_L)	6 °C/ second max.	6 °C/ second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

* Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.

Manual solder

+350 °C maximum, 4 seconds maximum by soldering iron, 2 times maximum, generally manual, hand soldering is not recommended

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Eaton
Electronics Division
1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com/electronics

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