E3XA

Automotive surface mount crystal resonator MHz

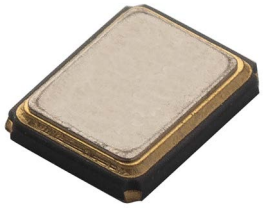


Photo is representative

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

Powering Business Worldwide

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 4 = ±30 ppm 5 = ±50 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 °C	±10, ±15, ±20, ±30, ±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 MΩ minimum at 100 Vdc
Load capacitance	8, 10, 12 pF or specify
Shunt capacitance (C0)	3 pF maximum or specify
Aging at +25 °C	±3 ppm (first year)

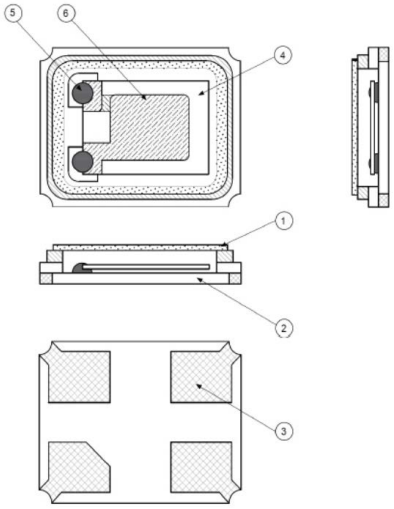
Frequency stability vs. operating temperature range table

ppm	±50	±100
Operating temperature -40 °C to +125 °C	x	x

Equivalent series resistance table

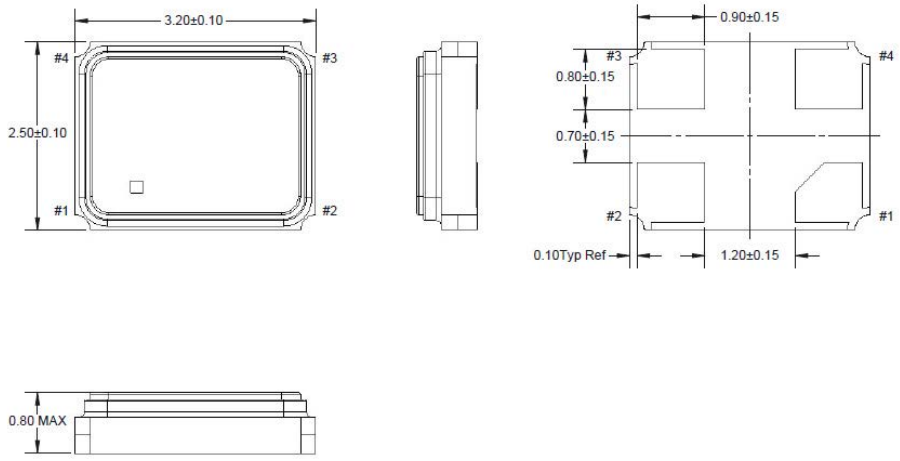
Frequency (MHz)	ESR (Ω) maximum	Oscillation mode
12 ≤ f < 16	80	Fundamental
16 ≤ f < 32	50	
32 ≤ f ≤ 48	30	

Construction

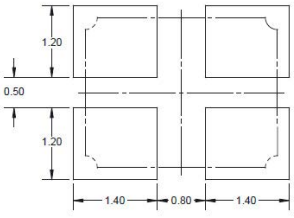


Item number	Component	Description
1	Cap (lid)	Kovar (Fe-Ni-Co)
2	Base (package)	Almina Ceramic (Al_2O_3)
3	Pad (package)	Ni + Au
4	Crystal blank	SiO_2
5	Conductive adhesive	Ag
6	Electrode	Cr + Au

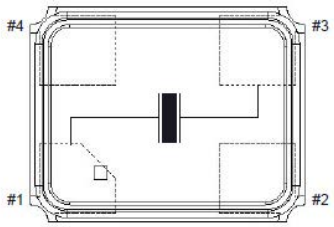
Dimensions -mm



Pad layout -mm



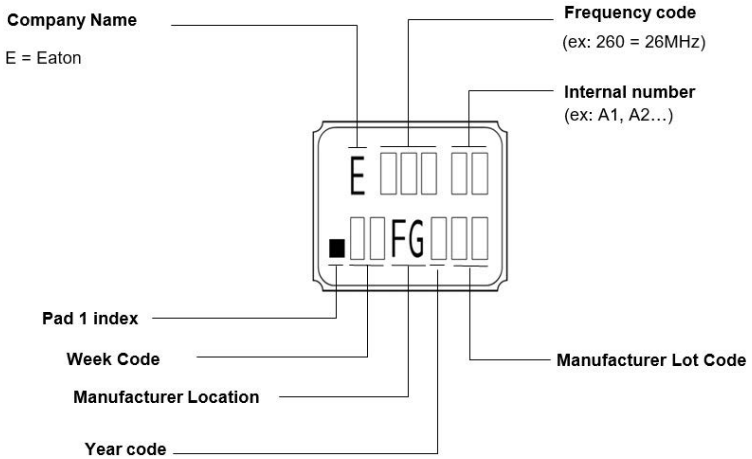
Function diagram



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

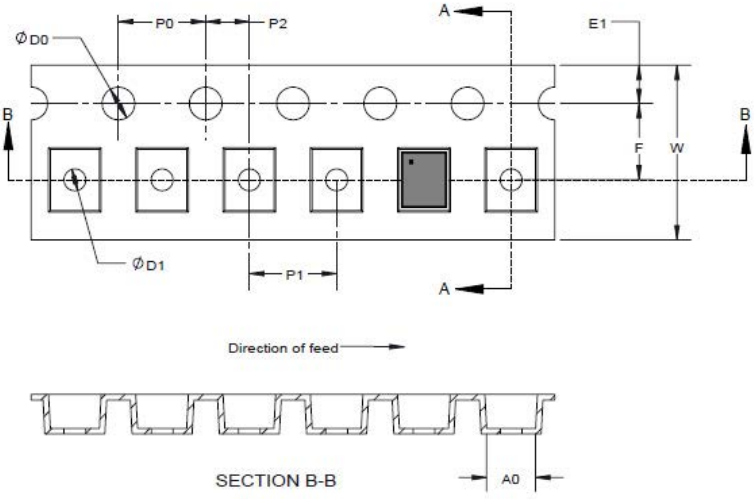
Tolerance unless otherwise specified: ±0.1 mm

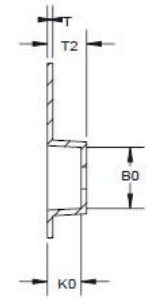
Part marking



Packaging information - mm

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





Dimension	Millimeter
W	8.00 ± 0.30
F	3.50 ± 0.05
E1	1.75 ± 0.10
P0	4.00 ± 0.10
P1	4.00 ± 0.10
P2	2.00 ± 0.05
D0	1.55 ± 0.05
D1	1.00 minimum
A0	2.70 ± 0.10
B0	3.40 ± 0.10
K0	1.40 ± 0.10
T	0.25 ± 0.05
T2	1.9 maximum

Solder reflow profile

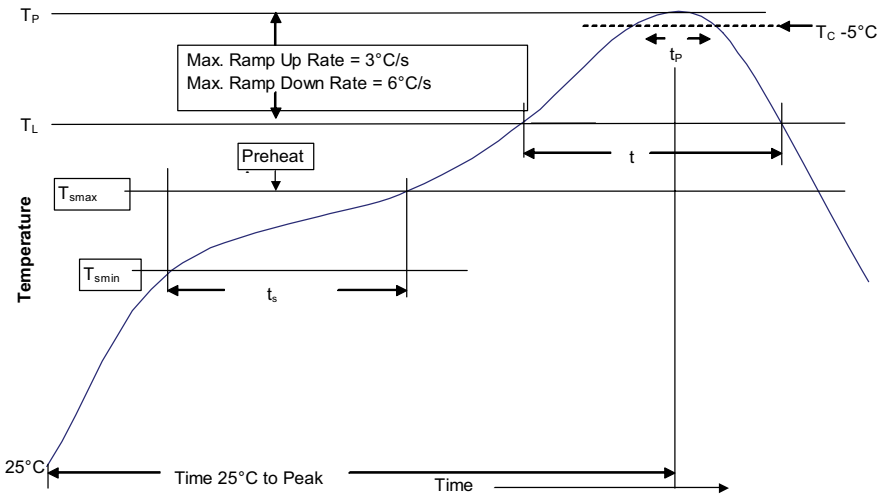


Table 1 - Standard SnPb solder (T_C)

Package thickness	Volume mm3 <350	Volume mm3 ≥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 mm³ <350	Volume mm³ 350 - 2000	Volume mm³ >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	• Temperature min. (T_{smin})	100 °C	150 °C
	• Temperature max. (T_{smax})	150 °C	200 °C
	• Time (T_{smin} to T_{smax}) (t_s)	60-120 seconds	60-120 seconds
Ramp up rate T_L to T_p		3 °C/ second max.	3 °C/ second max.
Liquidous temperature (T_L) Time (t_L) maintained above T_L		183 °C 60-150 seconds	217 °C 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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