

E2X

Surface mount crystal resonator MHz

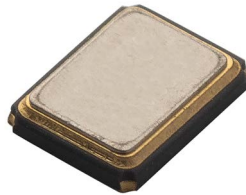


Photo is representative

Product features

- 1008 (2520 metric) package
- Moisture sensitivity level (MSL): 1
- Frequency range 16 MHz to 54 MHz
- Variety of frequency tolerance and stability options

Applications

- Wireless applications
- Cell phone
- Modems
- Communication and test equipment
- Laptop
- Network cameras
- Frequency converters

Environmental compliance and general specifications

- Operating temperature range: -40 °C to +85 °C
- Storage temperature range (component): -40 °C to +105 °C



Part number system

E	2	X	260	08	1	G	01
	Size code	Product category	Frequency	Load capacitance	Frequency tolerance	Frequency stability	Internal code
E = Eaton	2 = 2520 metric, 1008 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	G = ± 15 ppm X = ± 20 ppm Z = ± 50 ppm	01 - 99

Electrical specifications

Items	Parameters
Frequency range	16 MHz to 54 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 μ W or specify
Insulation resistance	500 M Ω 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)

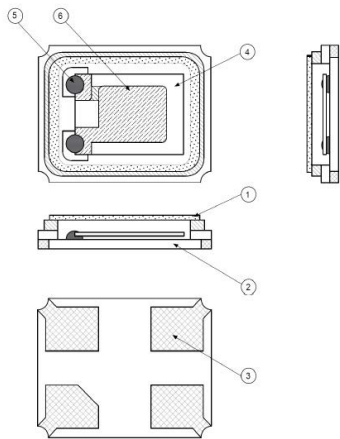
Frequency stability vs. operating temperature range table

ppm	± 15	± 20	± 50
Operating temperature -40 °C to +85 °C	x	x	x

Equivalent series resistance table

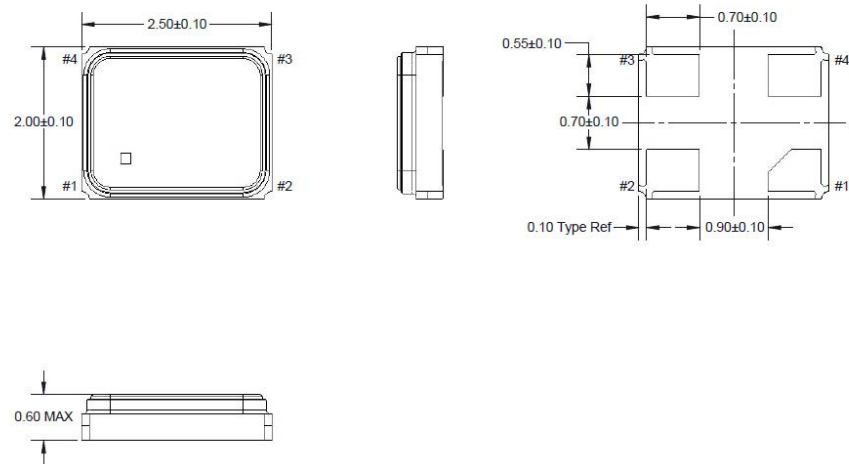
Frequency (MHz)	ESR (Ω) maximum	Oscillation mode
16 to 20	80	Fundamental
20 to 30	40	
30 to 54	30	

Construction

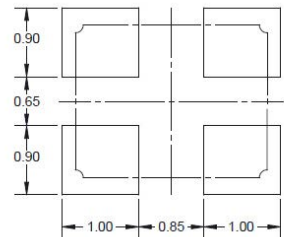


Item number	Component	Description
1	Cap (lid)	Kovar (Fe-Ni-Co)
2	Base (package)	Almina Ceramic (Al ₂ O ₃)
3	Pad (package)	Ni + Au
4	Crystal blank	SiO ₂
5	Conductive adhesive	Ag
6	Electrode	Cr + Ag

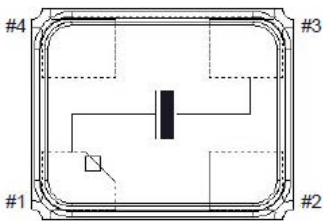
Dimensions -mm



Pad layout -mm



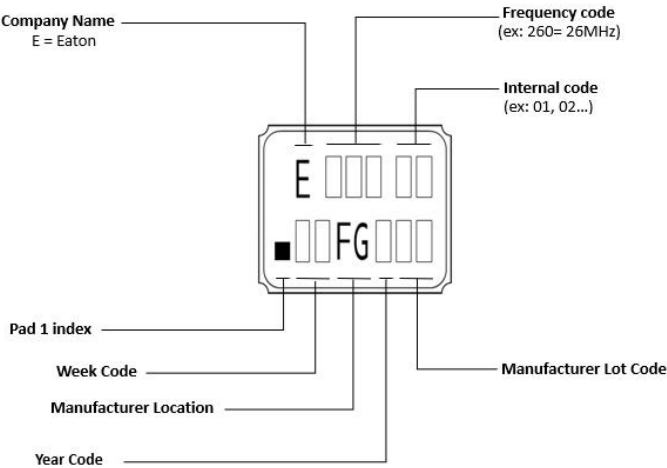
Function diagram



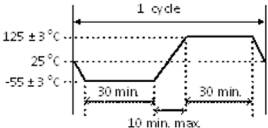
Pad	Function
1	In / out
2	Ground
3	Out / in
4	Ground

Tolerance unless otherwise specified: ±0.1 mm

Part marking

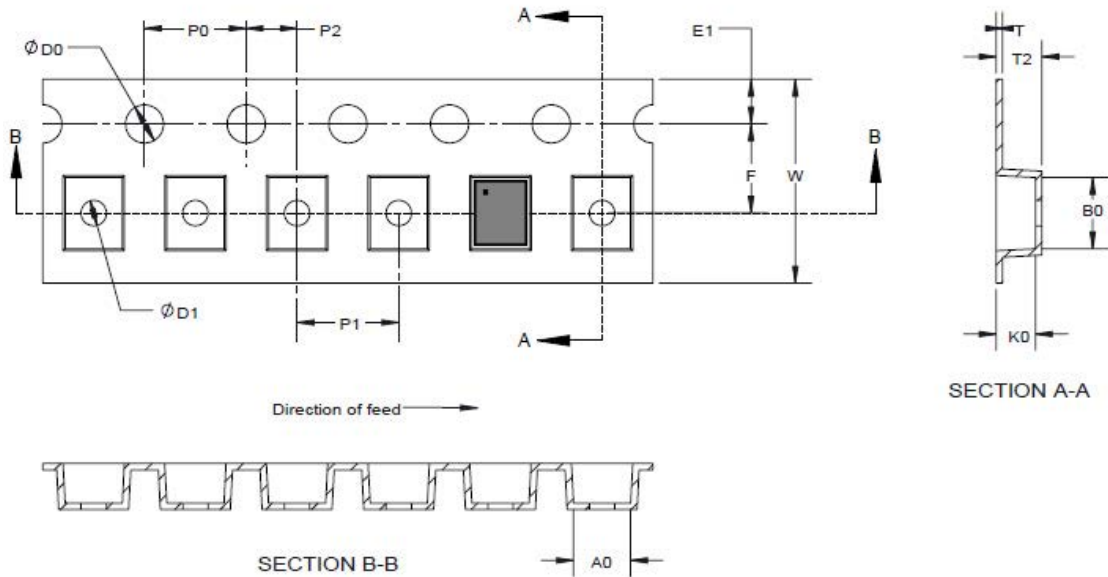


General specifications

Test item	According to	Test specification
Gross leak	MIL-STD-883 method 1014	Standard sample for automatic gross leak detector, test pressure: 2 kg/cm ²
Fine leak	MIL-STD-883 method 1014	Helium bombing 5.0 kg/cm ² for 2 hours
Drop test	JIS C6701	150 cm height, free fall onto stainless plate 3 times
Vibration	MIL-STD-202 method 201	Frequency range = 10 to 55 Hz Amplitude = 1.52 mm Test time of each perpendicular axis = 2 hours (x, y, z axis) Total test time = 6 hours
Mechanical shock	MIL-STD-202 method 213	Half sine wave, 1000 g, 0.5 ms duration along three mutually perpendicular axes (±X, ±Y, and ±Z). Each direction for 3 shocks (total 18 shocks)
Resistance to soldering heat	MIL-STD-202 method 210	Test temperature: +260 °C ±5 °C Test time: 10 seconds ±1 second
Solderability	J-STD-002	Temperature: +245 °C ± 5 °C Immersing depth: 0.5 mm minimum Immersion time: 5 ± 1 seconds Flux: rosin resin methyl alcohol solvent (1:4)
High temperature storage	MIL-STD-202 method 108	+125 °C ± 3 °C for 500 hours
Low temperature storage	IEC 60068-2-1	-40 °C ± 3 °C for 500 hours
Thermal shock	MIL-STD-883 method 1011.9	Total 100 cycles of the following temperature cycle. 
High temperature & humidity	JIS C5023	+85 °C ±3 °C, RH 85%, 500 hours
High temperature operating life	MIL-STD-202 method 108	1000 hours at +85 °C with VDD applied

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	1.0 minimum
A0	2.25 ± 0.10
B0	2.70 ± 0.10
K0	0.80 ± 0.10
T	0.25 ± 0.05
T2	1.3 maximum

Solder reflow profile

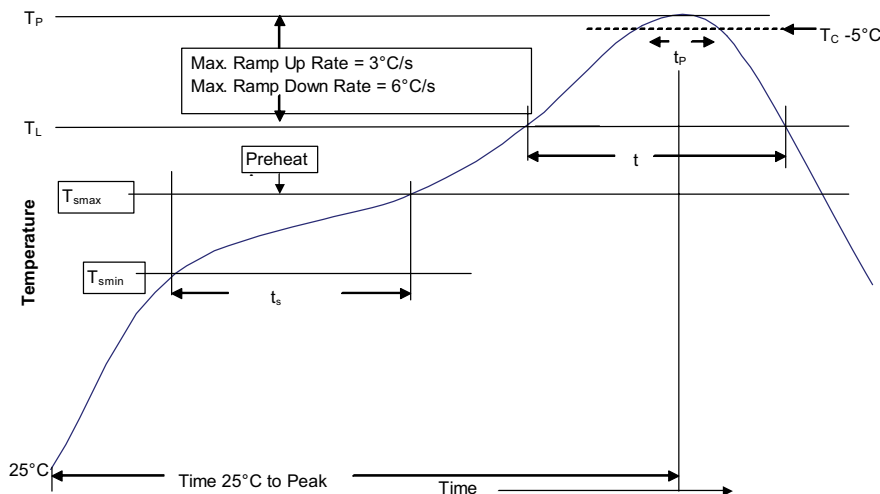


Table 1 - Standard SnPb solder (T_c)

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		
• 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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