

E3K

Surface mount crystal resonator kHz



Photo is representative

Product features

- 1206 (3215 metric) package
- Moisture sensitivity level (MSL): 1
- Frequency 32.768 kHz
- Variety of frequency tolerance

Applications

- Digital electronics
- Consumer products
- Mobile communications
- Bluetooth
- Wireless LAN

Environmental compliance



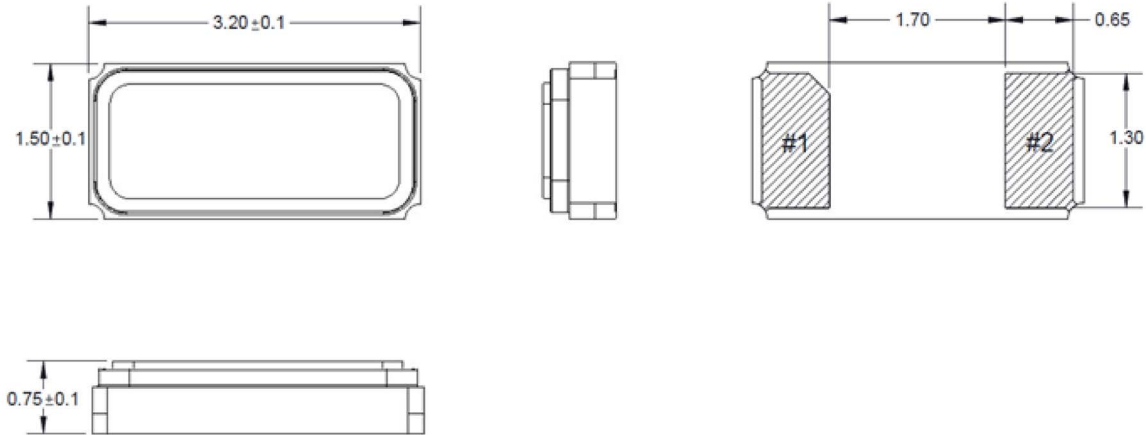
Part number system

E	3	K	327	07	1	4	01
	Size code	Product category	Frequency	Load capacitance	Frequency tolerance	Frequency stability	Internal code
E = eaton	3 = 3215 metric, 1206 imperial	K = kHz	327 = 32.768000 kHz	06 = 6 pF 07 = 7 pF 09 = 9 pF 12 = 12.5 pF	1 = ± 10 ppm 7 = ± 15 ppm 2 = ± 20 ppm	4 = -0.04 ppm / °C	01 - 99

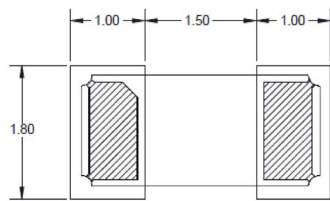
Electrical specifications

Items	Parameters
Nominal frequency	32.768000 kHz
Cutting type	X-cut
Oscillation mode	Fundamental
Frequency tolerance at 25 °C	± 10, ± 15, ± 20 ppm
Operating temperature range	-40 °C to +85 °C
Equivalent series resistance	70 kΩ maximum or 50 kΩ maximum
Turnover temperature	+25 ± 5 °C
Frequency vs. temperature coefficient	-0.04 ppm / °C minimum
Drive level	1.0 μW maximum
Insulation resistance	500 MΩ minimum at 100 V _{dc}
Load capacitance	6, 7, 9, 12.5 pF or specify
Shunt capacitance (C0)	1.2 pF typical
Motional capacitance (C1)	4.7 fF typical
Aging at +25 °C	±3 ppm (first year)

Dimensions - mm



Pad layout - mm



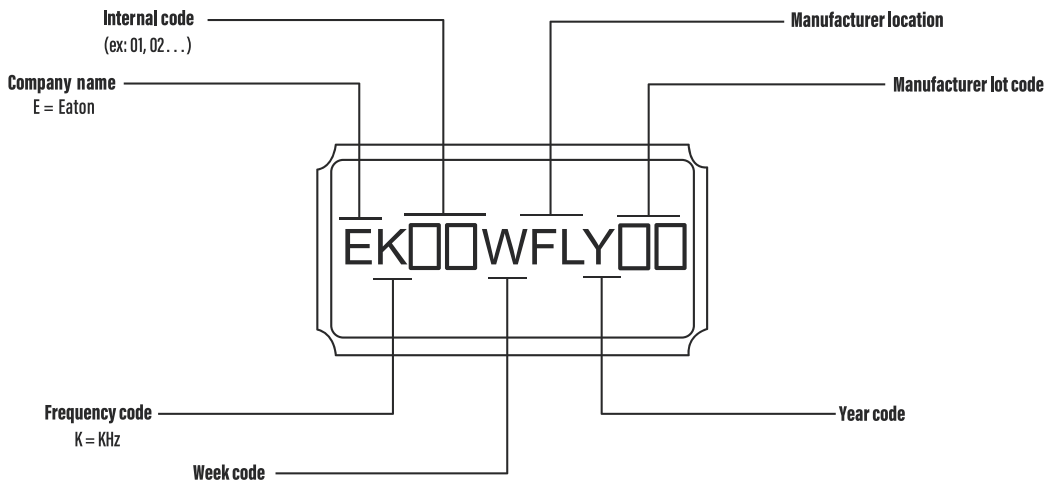
Function diagram



Pad	Function
1	In / out
2	Out / in

Tolerance unless otherwise specified: ± 0.15 mm

Part marking

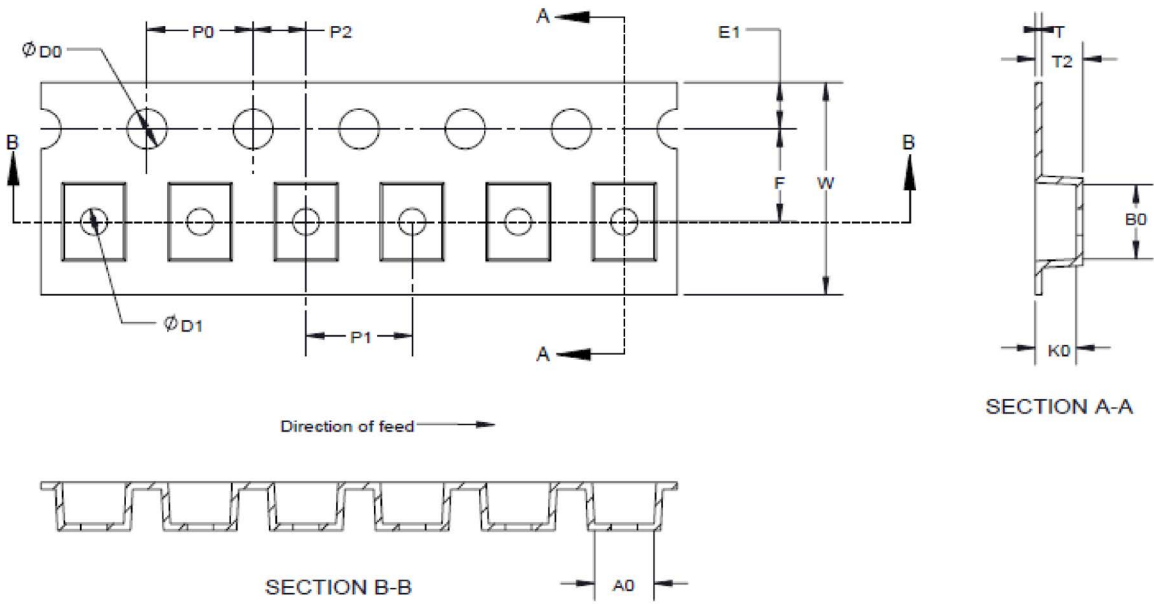


General specifications

Items	Reference standard	Condition
Operating temperature	-	-40 °C to +85 °C with proper correction factor applied
Drop test	JIS C6701	150 cm height, free fall onto concrete 10 times
Vibration	MIL-STD-202 method 201	Frequency range: 10 to 500 Hz Amplitude total: 0.75 mm (10 to 55 Hz) 98 m/s ² (55 to 2000 Hz) Test time of each perpendicular axis: 2 hours (x, y, z axis) Total test time: 6 hours
Shear Strength	IEC 60068-2-21	Pressuring force: 20 N Test time: 10 ±1 second
Bending test	IEC 60068-2-21	Bending: 3 mm Thickness of the testing board: 1 mm Test time: 5 ±1 seconds
Solderability	J-STD-002	Temperature: +245 °C ±5 °C Immersing depth: 0.5 mm minimum Immersion time: 5 ±1 second Flux: rosin resin methyl alcohol solvent (1:4)
High temperature storage	MIL-STD-202 method 108	+125 °C ± 3 °C for 1000 hours
Low temperature storage	IEC 60068-2-1	-55 °C ±3 °C for 1000 hours
Thermal shock	IEC 60068-2-14	Total 100 cycles of the following temperature cycle: -55 °C ±3 °C to +125 °C ±3 °C for 30 minutes each
High temperature and humidity	MIL-STD-202 method 103	+85 °C ±3 °C, relative humidity 85%, 1000 hours
ESD	ANSI/ESDA/JEDEC JS-001	Human body model (HBM) 2 kV
High temperature operating life	MIL-STD-202 method 108	1000 hours at +125 °C with DL 0.5 μW
Shelf life	-	18 months, +15 °C to +35 °C and 30% to 70% relative humidity

Packaging information - mm

Supplied in tape and reel packaging, 3000 parts per 7" (178 mm) diameter reel
(Drawing not to scale)



Dimension	Millimeter
W	12.0 ± 0.30
F	5.50 ± 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 minimum
A0	1.70 ± 0.10
B0	3.40 ± 0.10
K0	1.00 ± 0.10
T	0.30 maximum
T2	1.50 maximum

Solder reflow profile

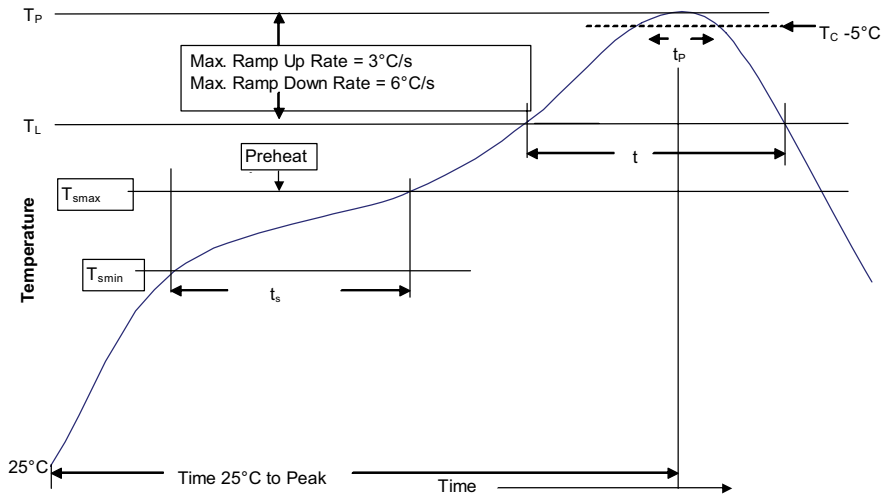


Table 1 - Standard SnPb solder (T_c)

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 to 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 minimum (T_{smin}) Temperature maximum (T_{smax}) Time (T_{smin} to T_{smax}) (t_s) 	<ul style="list-style-type: none"> 100 °C 150 °C 60 to 120 seconds
Ramp-up rate T_L to T_p	3 °C/ second maximum	3 °C/ second maximum
Liquidous temperature (T_L) Time (t_L) maintained above T_L	<ul style="list-style-type: none"> 183 °C 60 to 150 seconds 	<ul style="list-style-type: none"> 217 °C 60 to 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 maximum	6 °C/ second maximum
Time 25 °C to peak temperature	6 minutes maximum	8 minutes maximum

* 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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