

kHz Range Crystal unit

FC-135R

SEIKO EPSON CORPORATION

Product name

FC-135R 32.768000 kHz 12.5 +20.0-20.0

Product Number / Ordering code

X1A0001410003xx

Please refer to the 5.Packing information about xx (last 2 digits)

Complies with EU RoHS directive

Reference weight Typ. 11 mg

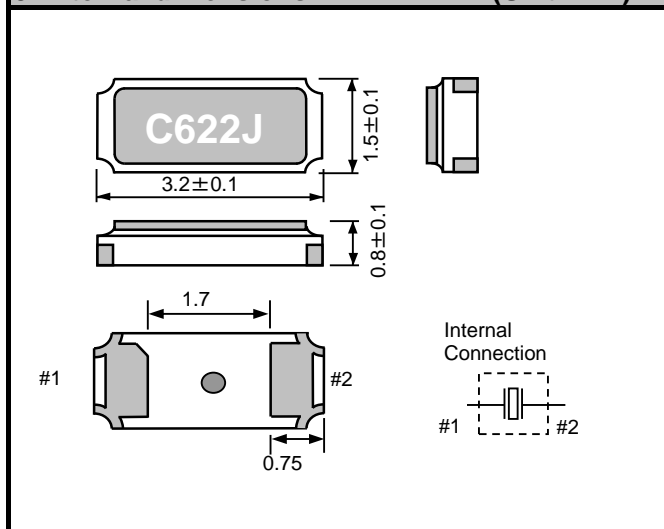
**1.Absolute maximum ratings**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions / Remarks
Storage temperature	T_stg	-55	-	+125	°C	Storage as single product
Maximum drive level	GL	-	0.5	-	μW	

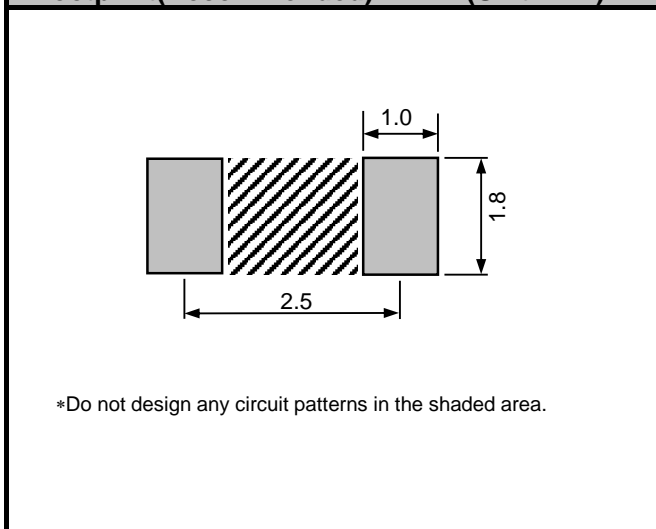
**2.Specificatoins(characteristics)**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions / Remarks
Nominal frequency	f_nom	-	32.768	-	kHz	
Operating temperature	T_use	-40	-	+85	°C	
Level of drive	DL	-	0.1	-	μW	
Frequency tolerance	f_tol	-20	-	+20	x 10 <sup>-6</sup>	+25°C DL=0.1μW
Turnover temperature	Ti	+20	+25	+30	°C	
Parabolic coefficient	B	-	-	-0.04	x 10 <sup>-6</sup> /°C <sup>2</sup>	
Load capacitance	CL	-	12.5	-	pF	
Motional resistance (ESR)	R1	-	35	50	k Ω	
Motional capacitance	C1	-	3.4	-	fF	
Shunt capacitance	C0	-	1.0	-	pF	
Motional inductance	L1	-	7.0	-	kH	
Frequency aging	f_age	-3	-	+3	x10 <sup>-6</sup> /yea	@+25°C, First year

**3.External dimensions (Unit: mm)**



**4.Footprint(Recommended) (Unit: mm)**



**5.Packing information**

[ 1 ]Product number last 2 digits code (xx) description

The recommended code is "00"

X1A0001410003xx

Code	Condition	Code	Condition
01	Any Q'ty vinyl bag(Tape cut)	14	1000pcs / Reel
11	Any Q'ty / Reel	15	2000pcs / Reel
12	250pcs / Reel	00	3000pcs / Reel
13	500pcs / Reel		

[ 2 ] Taping specification

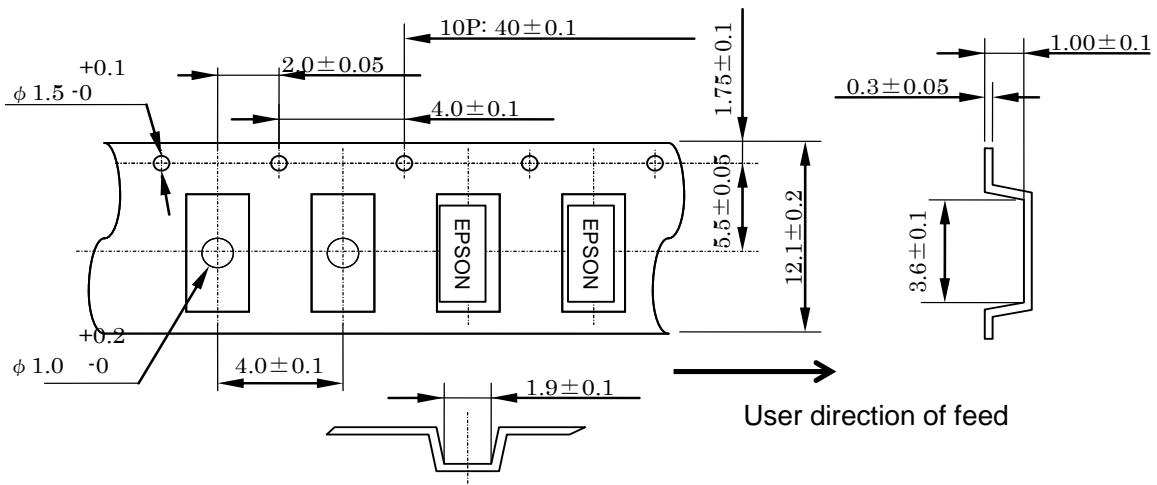
Subject to EIA-481 & IEC-60286

(1) Tape dimensions TE1204L

Material of the Carrier Tape : PS

Material of the Top Tape : PET+PE

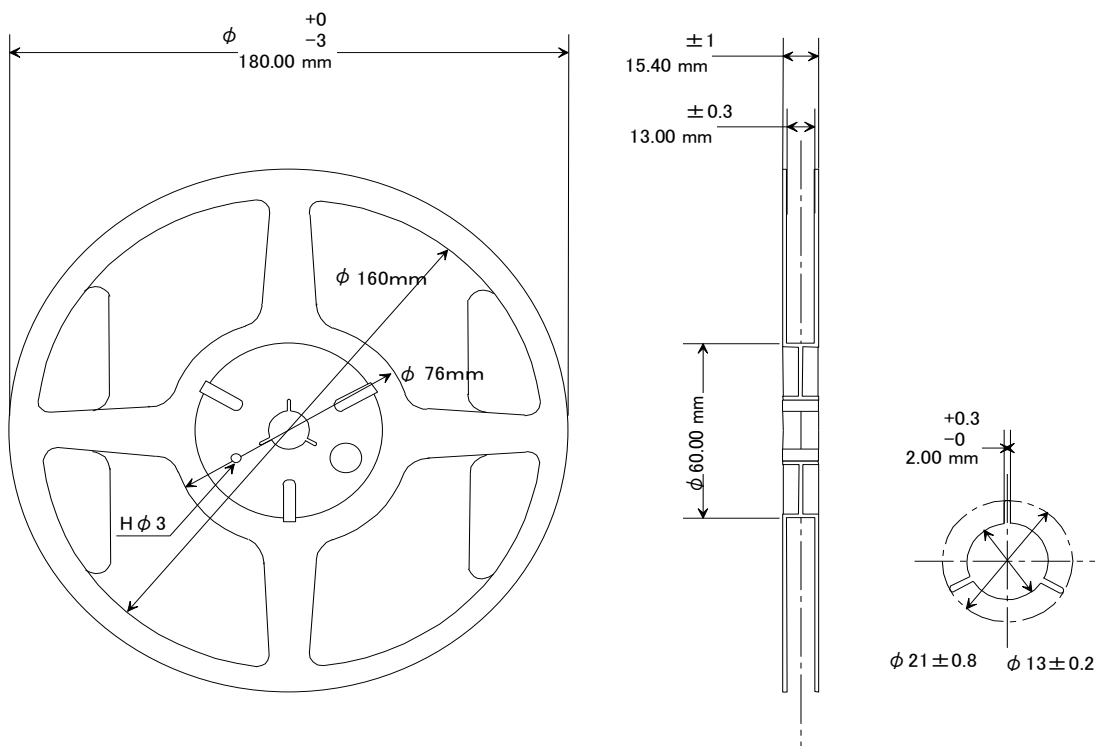
Unit: mm



(2) Reel dimensions

Material of the Reel : PS

Unit: mm



**Reflow profile**

Pre Heating Temperature

Tp1 ~ Tp2 = + 170 °C

Heating Temperature

TMit = + 220 °C

Peak Temperature

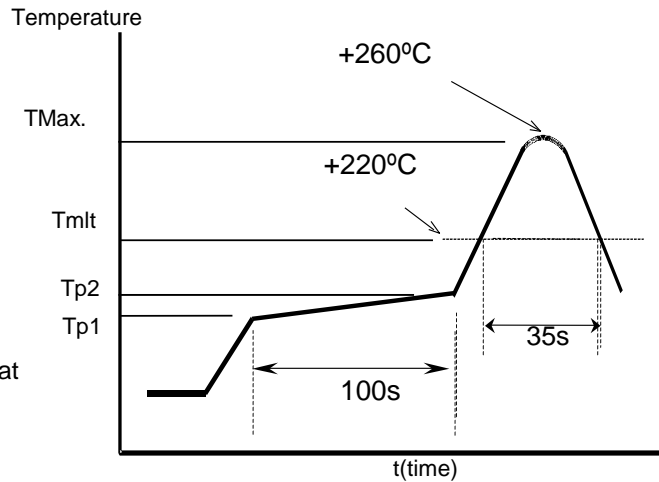
TMax. = + 260 °C

Point of measuring

In case of Solder ability

Terminal.

In case of Resistance to soldering heat  
Surface.

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