kHz Range Crystal unit FC-135

SEIKO EPSON CORPORATION

Product name FC-135 32.768000 kHz 12.5 +30.0-30.0
Product Number / Ordering code Q13FC13500017xx

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

Complies with EU RoHS directive
Reference weight Typ. 11 mg

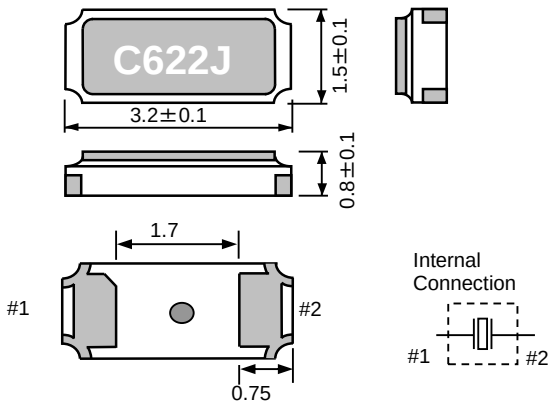
1.Absolute maximum ratings

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

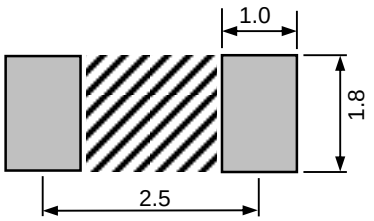
2.Specificatoins(characteristics)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions / Remarks
Nominal frequency	f_nom	-	32.768	-	kHz	
Operating temperature	T_use	-40	-	85	ºC	
Level of drive	DL	-	-	0.5	µW	
Frequency tolerance	f_tol	-30.0	-	+30.0	x 10^{-6}	+25ºC DL=0.1µW
Turnover temperature	Ti	20	25	30	ºC	
Parabolic coefficient	B	-	-	-0.04	x 10^{-6}/ºC^2	
Load capacitance	CL	-	12.5	-	pF	
Motional resistance (ESR)	R1	-	55	70	k Ω	
Motional capacitance	C1	-	3.4	-	fF	
Shunt capacitance	C0	-	1	-	pF	
Motional inductance	L1	-	7.1	-	kH	
Frequency aging	f_age	-3	-	3	x10^{-6} /yea	@+25ºC, First year

3.External dimensions (Unit: mm)



4.Footprint(Recommended) (Unit: mm)



∗Do not design any circuit patterns in the shaded area.

5.Packing information

[1]Product number last 2 digits code (xx) description The recommended code is "00"

Q13FC13500017xx

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

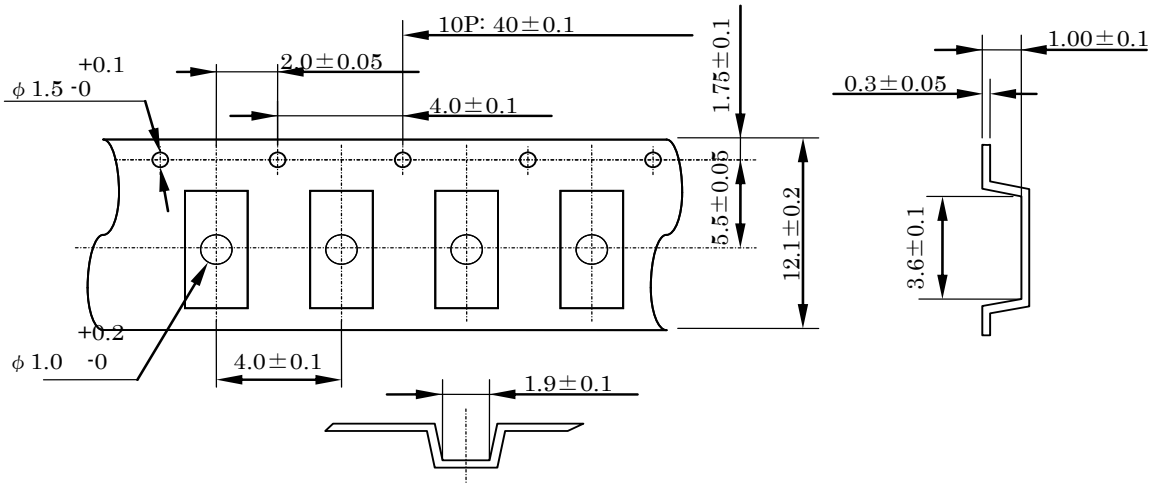
Subject to EIA-481 & IEC-60286

(1) Tape dimensions TE1204L

Material of the Carrier Tape : PS

Material of the Top Tape : PET+PE

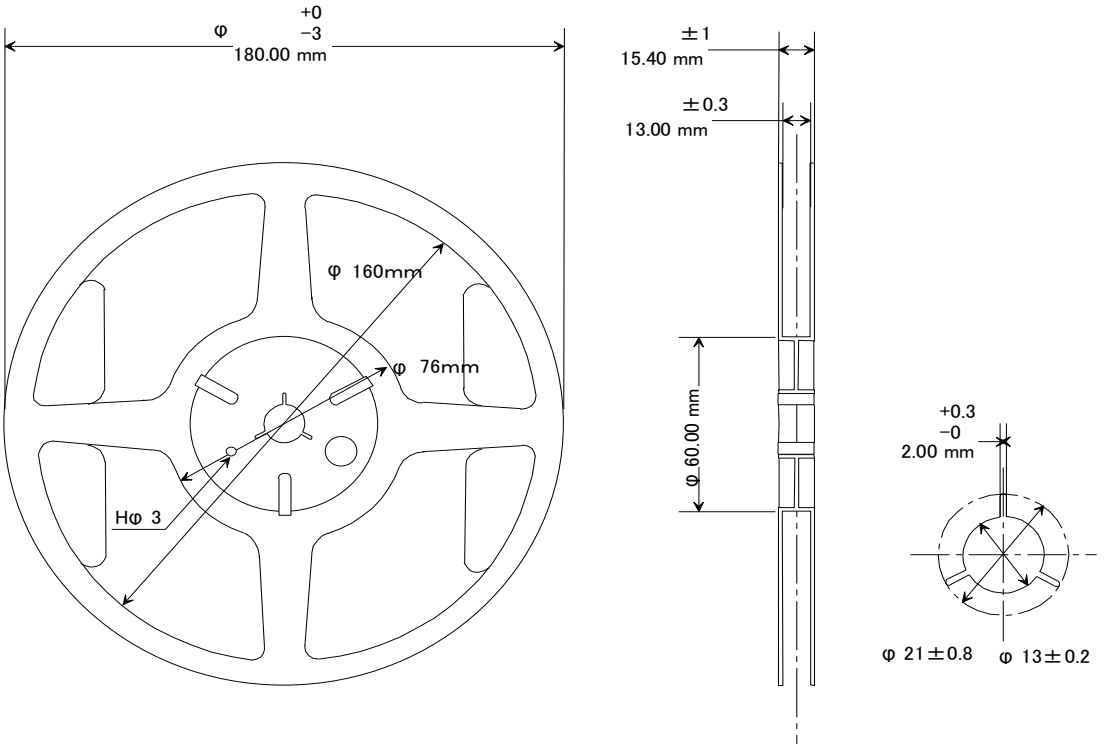
Unit: mm



(2) Reel dimensions

Material of the Reel : PS

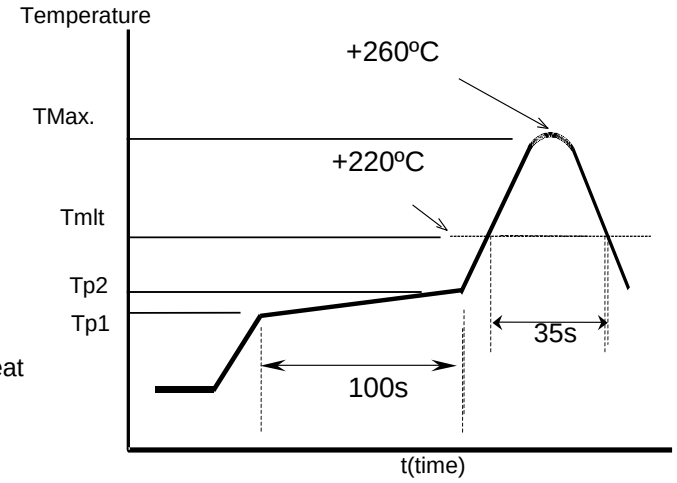
Unit: mm



Reflow profile

Pre Heating Temperature
Tp1 ~ Tp2 = + 170 °C
Heating Temperature
TMlt = + 220 °C
Peek 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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