kHz Range Crystal unit FC-12M **SEIKO EPSON CORPORATION**

Product name FC-12M 32.768000 kHz 9.0 +10.0-10.0
Product Number / Ordering code X1A0000610024xx
Please refer to the 5.Packing information about xx (last 2 digits)

Pb free / Complies with EU RoHS directive
Reference weight Typ. 5 mg

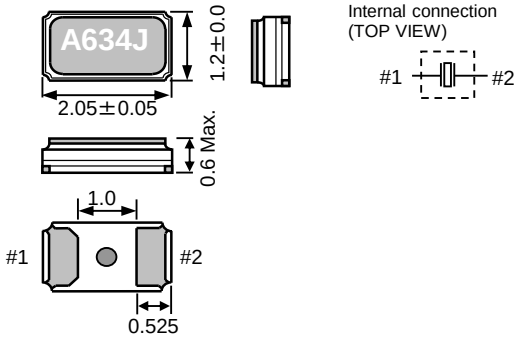
1.Absolute maximum ratings

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	

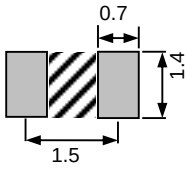
2.Specificatoins(characteristics)

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	-10.0	-	+10.0	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	-	9.0	-	pF	
Motional resistance (ESR)	R1	-	65	90	k Ω	
Motional capacitance	C1	-	6.4	-	fF	
Shunt capacitance	C0	-	1.3	-	pF	
Motional inductance	L1	-	3.7	-	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

5.Packing information

[1]Product number last 2 digits code (xx) description The recommended code is "18"

X1A0000610024xx

Code	Condition	Code	Condition
01	Any Q'ty vinyl bag(Tape cut)	00	3000pcs / Reel
11	Any Q'ty / Reel	18	5000pcs / Reel
12	250pcs / Reel		
14	1000pcs / Reel		

[2] Taping specification

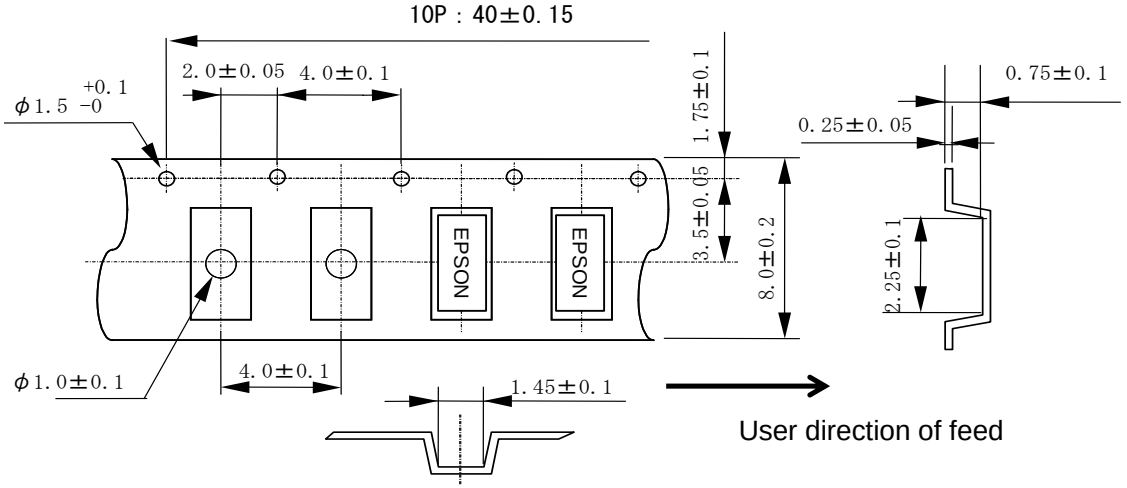
Subject to EIA-481 & IEC-60286

(1) Tape dimensions TE0804L

Material of the Carrier Tape : PS

Material of the Top Tape : PET+PE

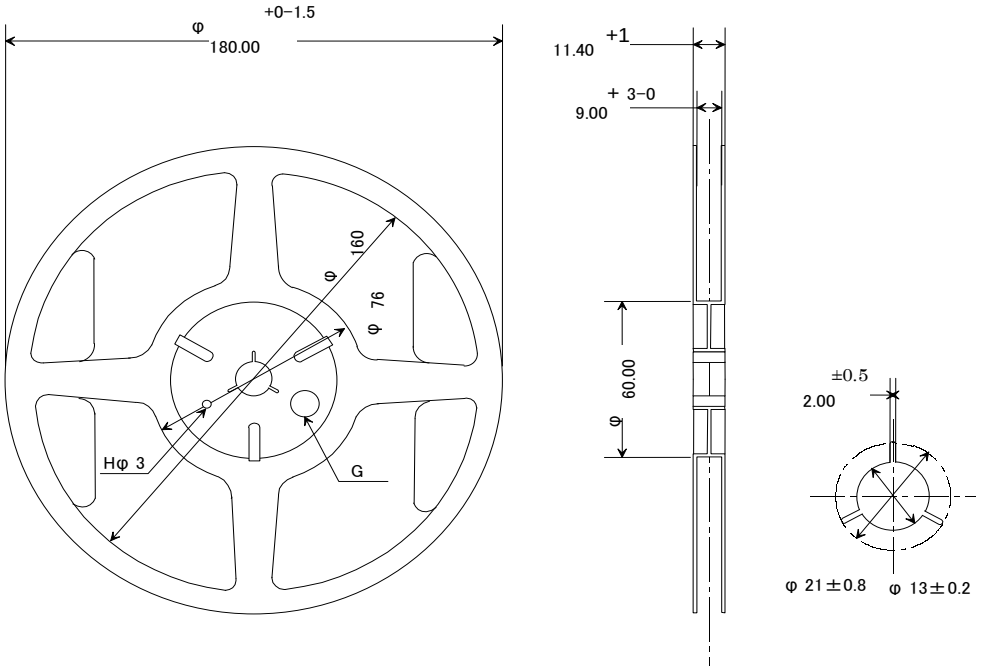
Unit: mm



(2) Reel dimensions

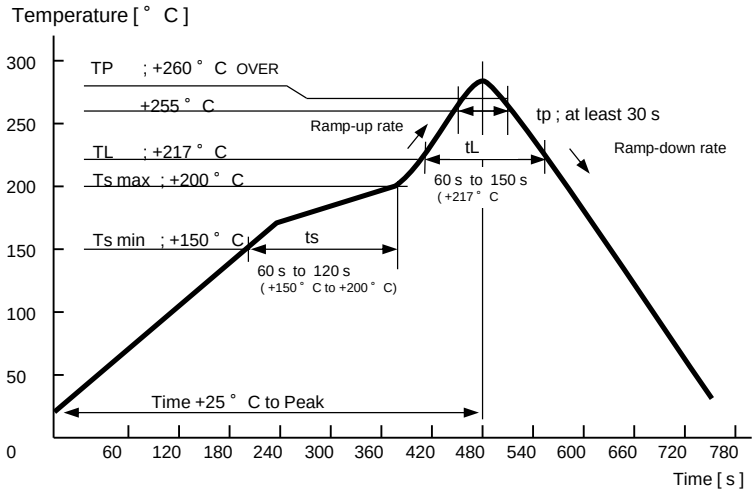
Material of the Reel : PS

Unit: mm



Reflow profile

Reflow condition (Follow of JEDEC STD-020D.01)



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