

kHz Range Crystal unit

FC-12M

SEIKO EPSON CORPORATION

Product name

FC-12M 32.768000 kHz 12.5 +20.0-20.0

Product Number / Ordering code

X1A0000610002xx

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**

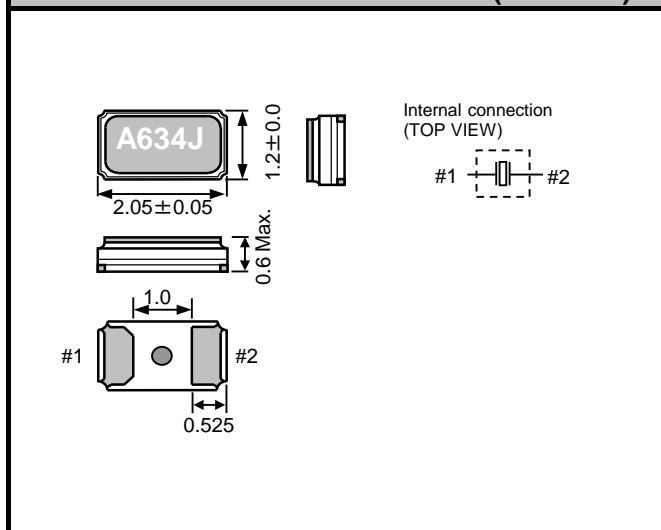
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions / Remarks
Storage temperature	T_stg	-55	-	+125	°C	Storage as single product
Maximum drive level	GL	-	-	0.5	μW	

**2.Specifications(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	-	-	0.5	μW	
Frequency tolerance	f_tol	-20.0	-	+20.0	$\times 10^{-6}$	+25°C DL=0.1μW
Turnover temperature	Ti	+20	+25	+30	°C	
Parabolic coefficient	B	-	-	-0.04	$\times 10^{-6}/^{\circ}\text{C}^2$	
Load capacitance	CL	-	12.5	-	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	-	+3.0	$\times 10^{-6} / \text{yea}$	@+25°C, First year

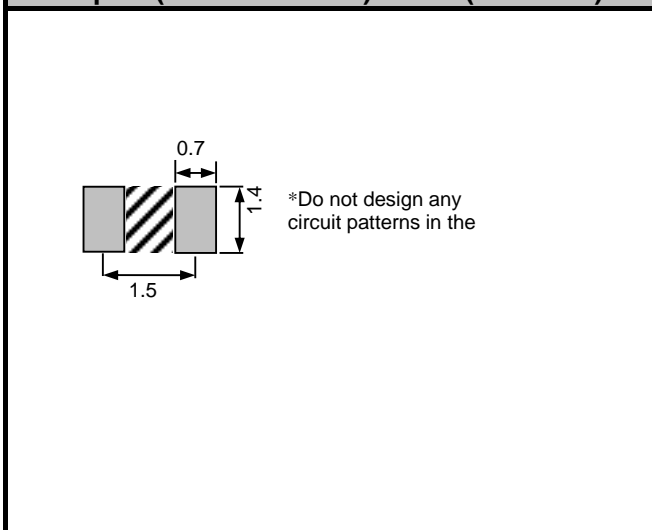
**3.External dimensions**

(Unit: mm)



**4.Footprint(Recommended)**

(Unit: mm)



**5.Packing information**

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

The recommended code is "18"

X1A0000610002xx

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

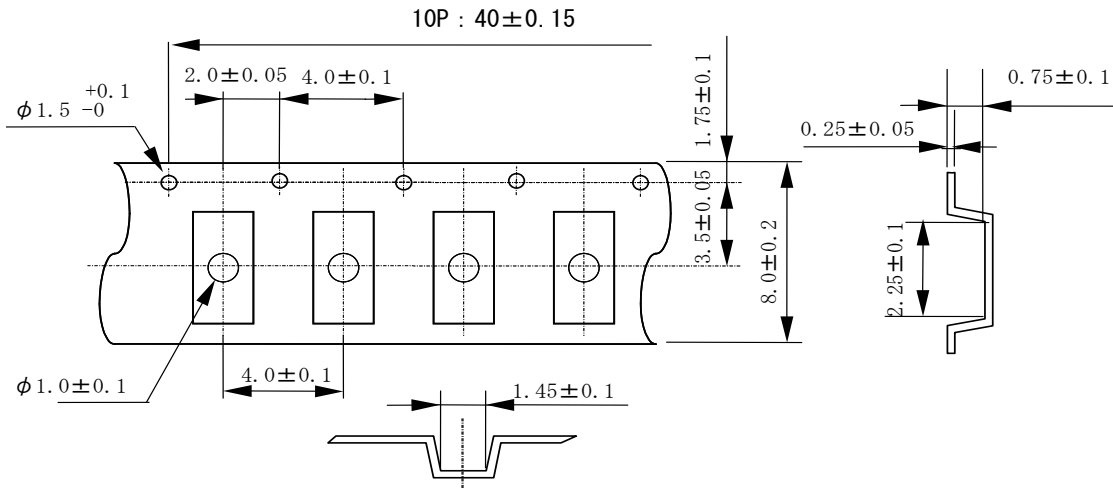
Subject to EIA-481 & IEC-60286

(1) Tape dimensions TE0804L

Material of the Carrier Tape : PS

Material of the Top Tape : PET+PE

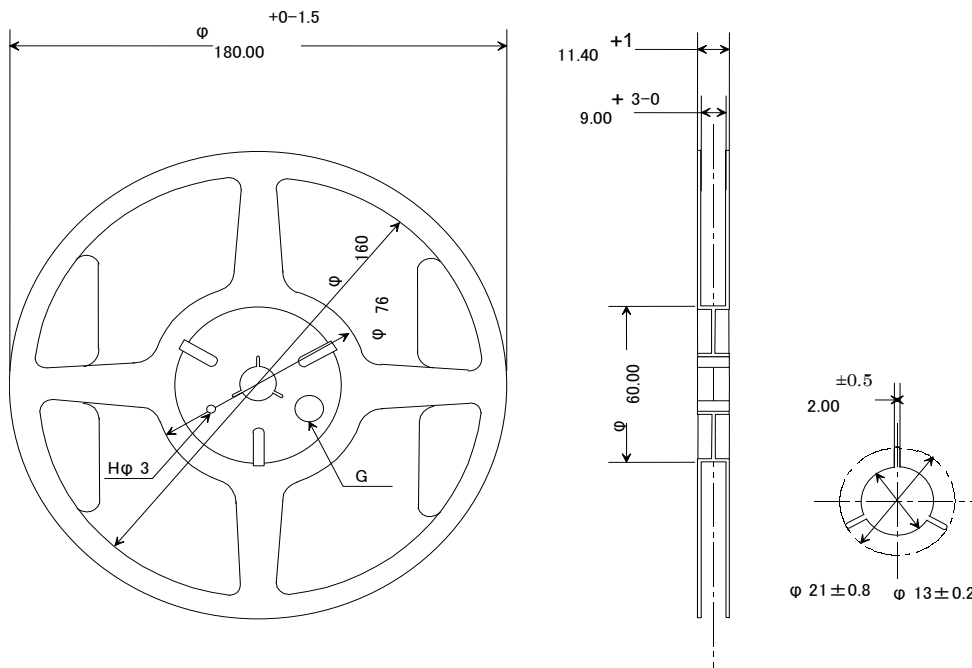
Unit: mm



(2) Reel dimensions

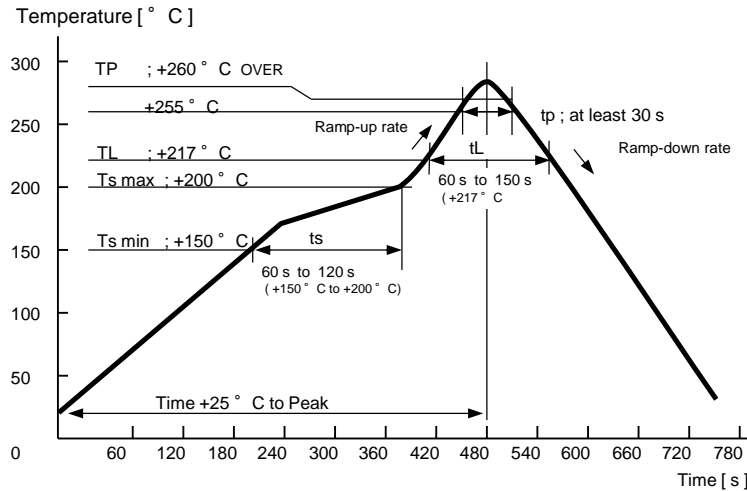
Material of the Reel : PS

Unit: mm



**Reflow profile**

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

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