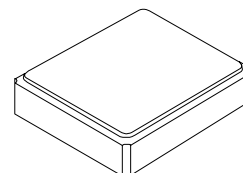


XTC4022

**32.768 KHz
TCXO**



SM2113-4

Features:

- Miniature SMD Package
- Moisture Sensitivity Level (MSL) : Level 2

Description and Applications:

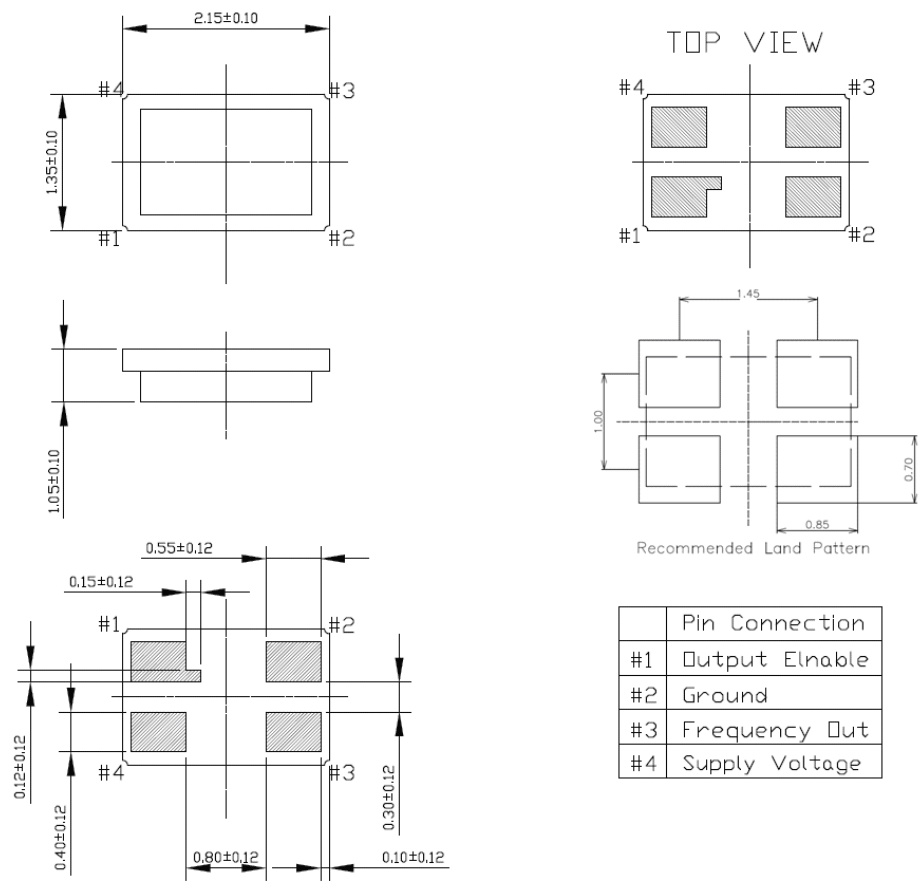
Surface mount 2.1mm x 1.3mm TCXO

Electrical Specifications:

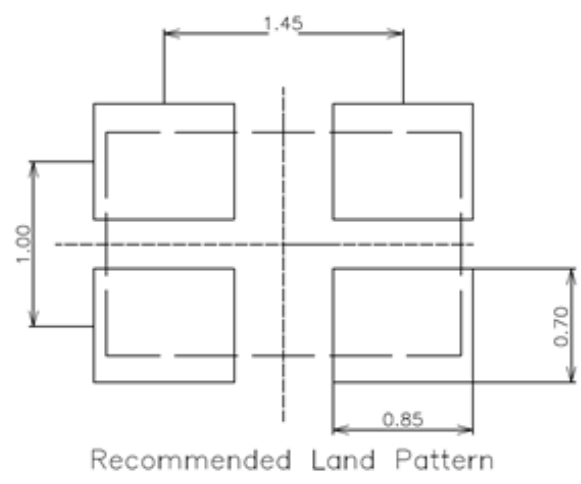
	Specifications
Nominal Frequency, Fo	32.768 KHz
Storage Temperature Range	-55°C to +85°C
Operating Temperature Range	-40°C to +85°C
Power Supply Voltage, Vdd	3.3 V +/- 5%
Output Waveform	CMOS Square Wave
Output Load	15 pF
Power Supply Current, Icc	1uA typical 2uA max without load
Initial Frequency Tolerance	+/- 1.5 ppm max @ 25°C +/- 3°C
Duty Cycle	40% ~ 60% Typical
Rise Time (20% -> 80% of final RF level in Vp-p) Fall Time (80% -> 20% of final RF level in Vp-p)	100 nsec max. 100 nsec max.
Frequency Stability a. Vs. Temperature (-40~85°C) b. Vs. Load varied 15pF +/-10% c. Vs. Supply Voltage Delta Freq/V	+/- 5.0 ppm reference to 25°C +/- 0.2 ppm +/- 1 ppm/V
Timing error over time	+/-0.432 sec/day max per day +/-12.960 sec/month max per month +/-2.628 min/year max per year
Reflow	+/-1 ppm max
Start –Up Time	1.0 s max @ 25°C, 3 s max over -40°C to +85°C
Aging	+/-3 ppm per year
"0" Level "1" Level	0.4V max I _{OL} =0.1mA Vdd-0.4V min I _{OH} =0.1mA

Tri-State Enable Voltage (High) Disable Voltage (Low) output Tri-state Open	80% Vdd min 20% Vdd max Forbidden
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Mechanical Dimensions (mm):



Recommended Land Pattern: (unit: mm)



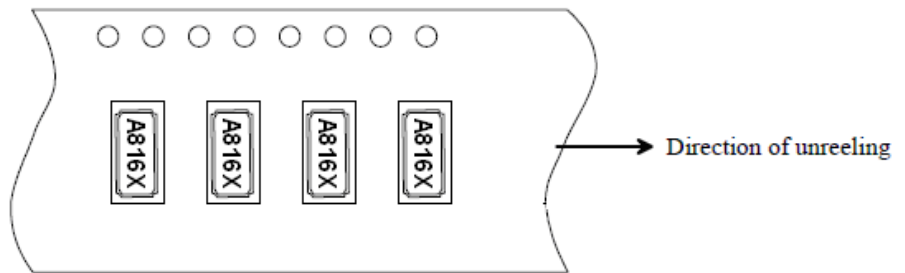
Marking:

A816X

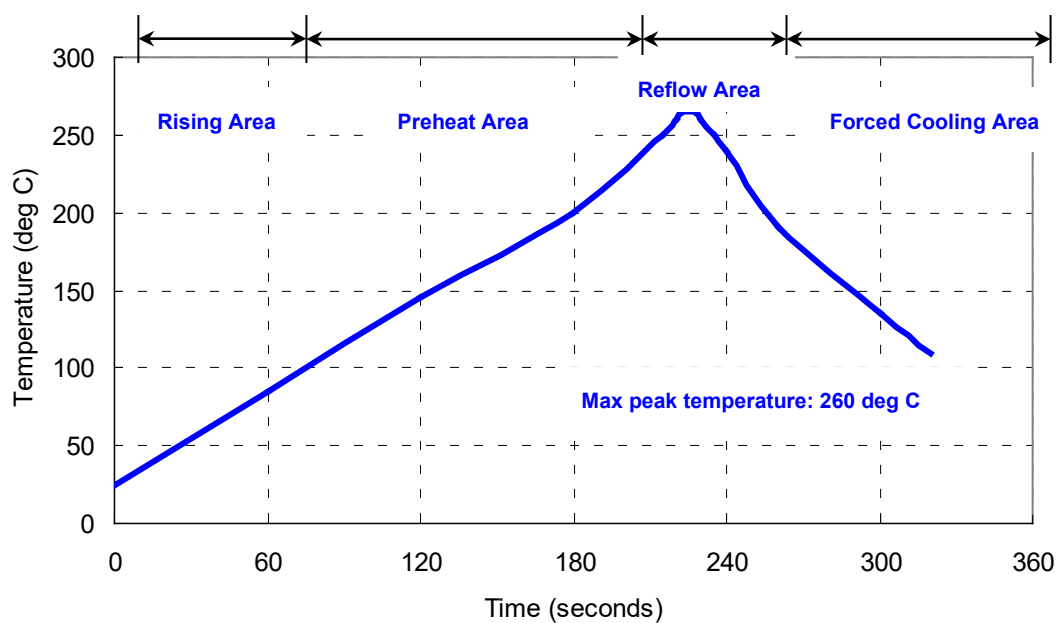
A : Nominal Frequency 32.768KHz

8 : Year code : 8 for 2018

16X : Traceability code

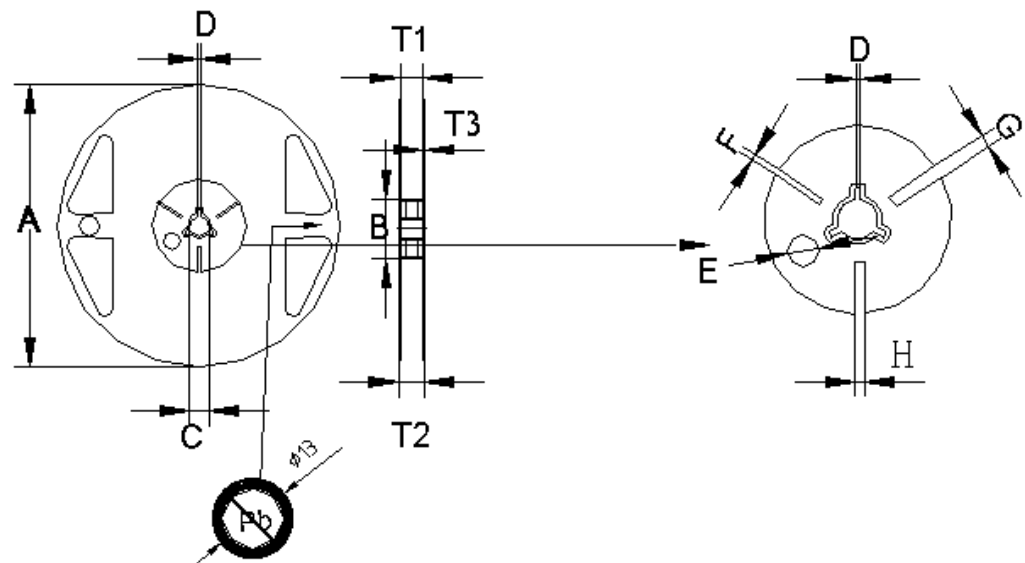


Reflow Profile:



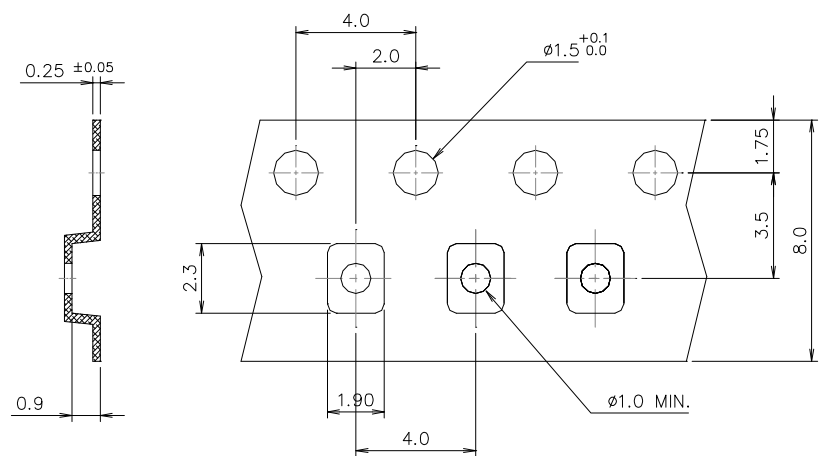
Packing (mm):

Reel Dimension



	A	B	C	D	E	F	H	G	T2	T1	T3
Dimensions	180	60	13.0	2.0	9.1	2.9	3.9	4.9	11.4	9.0	1.2
Tolerance	±1.0	±1.0	±0.2	±0.5	±0.5	±0.5	±0.5	±0.5	±1.0	±0.3	±0.1

Tape Dimension



Notes of the Usage:

1. Touch the solder iron at 260 ± 5 deg C onto the leads for 10 ± 2 sec max or touch the solder at 350 ± 5 deg C onto the leads for 3 ± 0.5 sec.
2. In the customer's reflow process, if it will remain some mechanical stress at the soldering terminals, also make some cracks on the soldering termination. Some cracks will cause open or short circuit and cause of thermal increasing or smoking. Don't make any excess mechanical stress to soldering points.
3. In case of giving a heavy shock to the products, it may make an open or short circuit and cause of thermal increasing and smoking. To avoid heavy shock impact applying to products is strictly required.
4. Ultrasonic cleaning should be avoided to prevent damage to the crystal.
5. Do Not Use Ultrasonic-Wave Soldering or Wave Solder with Package Immersed in Solder.

Notes of the Storage:

1. To keep products under the condition at the room temperature ($-5\sim 35$ deg C) with normal humidity (45~75%). Absorption of moisture and dewdrop may make inferiority of characteristics and a short circuit.
2. Oxidization of terminals shall make the solderability more inferior. Dusts and corrosive gas will make a cause of the open or short circuit. Keep it in the clean place where is not in dusty and no corrosive gas.
3. Use the anti-static material to the storage package.
4. Don't put any excess weight to the VCTCXO in the storage process.
5. Don't move the product from the cold place to the hot place in the short time, otherwise it may make some dew-drop, then a short circuit may happen in case.
6. Storage periods should be maximum 6 months under condition of above item 1 after delivery from the factory.
7. Once open the bag, there is possibility of electrical characteristics deterioration due to absorption of moisture. So, please use parts within 7 days after opening the bag.
8. If you have to keep parts without using after opening the bag, please put the drying agent in the bag, fold the bag and keep it in the place where temperature and humidity are controlled (nitrogen atmosphere box etc.)

Reliability Specifications

Test name	Test process / method	Reference standard
Mechanical characteristics		
resistance to Soldering heat (IR reflow)	Temp./ Duration : 265°C /10sec ×2 times Total time : 4min.(IR-reflow)	EIAJED-4701 -300(301)M(II)
Vibration	Total peak amplitude : 1.5mm Vibration frequency : 10 to 2000 Hz Sweep period : 20 minute Vibration directions : 3 mutually perpendicular Duration : 2 hr / direc.	MIL-STD 202G method 204
Mechanical Shock	directions : 3 impacts per axis Acceleration : 3000g's, +20/-0 % Duration : 0.3 ms (total 18 shocks) Waveform : Half-sine	MIL-STD 202G method 213
Solderability	Solder Temperature:265±5°C Duration time: 5±0.5 seconds.	J-STD-002
Environmental characteristics		
Thermal Shock	Heat cycle conditions -40 °C (30min) ↔ 85 °C (30min) * cycle time : 10 times	MIL-STD 883G method 1010.8
Humidity test	Temperature : 85 ± 2 °C Relative humidity : 85% Duration : 96 hours	MIL-STD 202G method 103
Dry heat (Aging test)	Temperature : 125 ± 2 °C Duration : 168 hours	MIL-STD 202G method 108A
Cold resistance (Low Temp Storage)	Temperature : -40 ± 2 °C Duration : 96 hours	IEC 60068-2-1