

SM2016-4

## Features:

- Surface Mount Hermetic Package
- Excellent Reliability Performance
- Good Frequency Perturbation and Stability over temperature
- Ultra Miniature Package
- AEC-Q200 compliance
- Moisture Sensitivity Level (MSL) : Level-1

## Description and Applications:

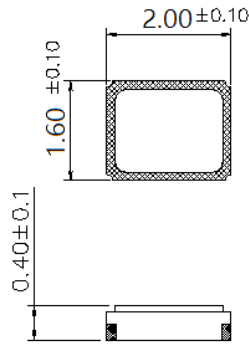
Surface mount 2.0mmx1.6mm crystal unit for use in wireless communications devices, especially for a need of ultra miniature package for mobility.

## Electrical Specifications:

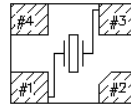
<b>XTL2010</b>	<b>Specification</b>
Nominal Frequency	40.000000 MHz
Mode of Oscillation	Fundamental
Storage Temperature Range	-40°C to +125°C
Operating Temperature Range	-40°C to +125°C
Frequency Stability over Operating Temperature Range	+/-30 ppm (referred to the value at 25°C) -40~105°C +/-70 ppm (referred to the value at 25°C) 105~125°C
Frequency Make Tolerance (FL)	+/-20 ppm @ 25°C +/- 3°C
Equivalent Series Resistance (ESR)	50 Ω max
Nominal Drive Level	50uW typical and 200uW max
Shunt Capacitance (Co)	3.0 pF max
Load Capacitance (CL)	6 pF
Tuning sensitivity (TS)	25~38ppm/pF
C motional (C1)	2.55~3.45fF
Aging	+/-1ppm/first year , +/-1.5ppm/second year +/-2.5ppm/5 years, +/-5ppm/10 years
Insulation Resistance	500 MΩ min./DC 100V
Marking	Laser Marking
Unit Weight	5.7mg+/-0.5mg

# Mechanical Dimensions (mm):

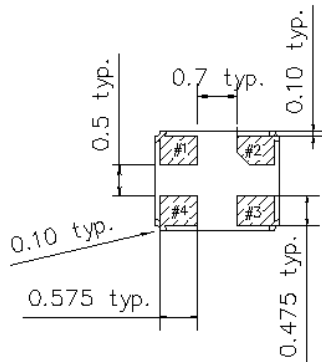
## Base



Internal Connections  
(Top View)

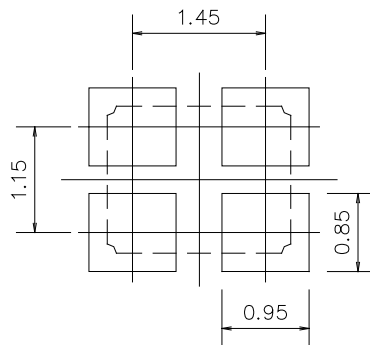


[NOTE] #2, #4 is connected with a metal cover



	Pin connection
#1 Pin	IN/OUT
#2 Pin	GND
#3 Pin	IN/OUT
#4 Pin	GND

## Recommended Land Pattern: (unit: mm)

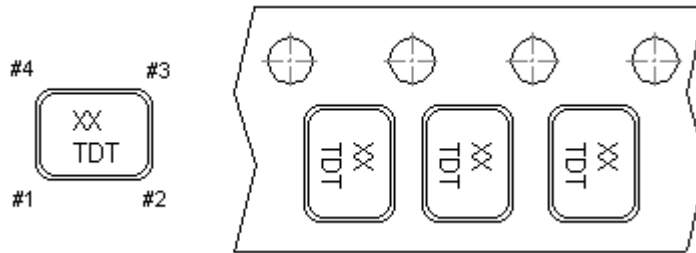


Recommended Land Pattern

# Marking:

Line 1: XX; Frequency (40)

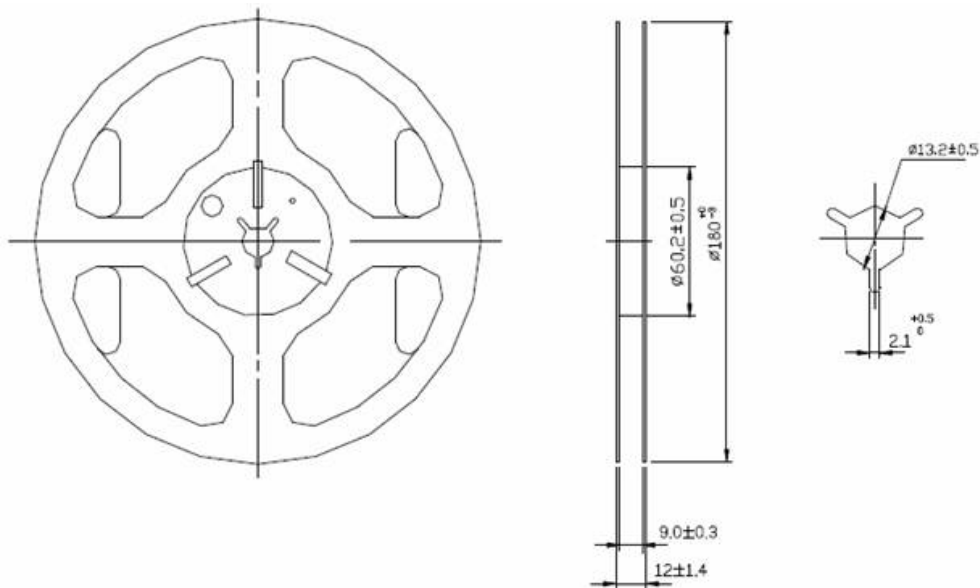
Line 2: T; Traceable Code + D; date Code of Year/Month+T ; Traceability code (1 or no letter



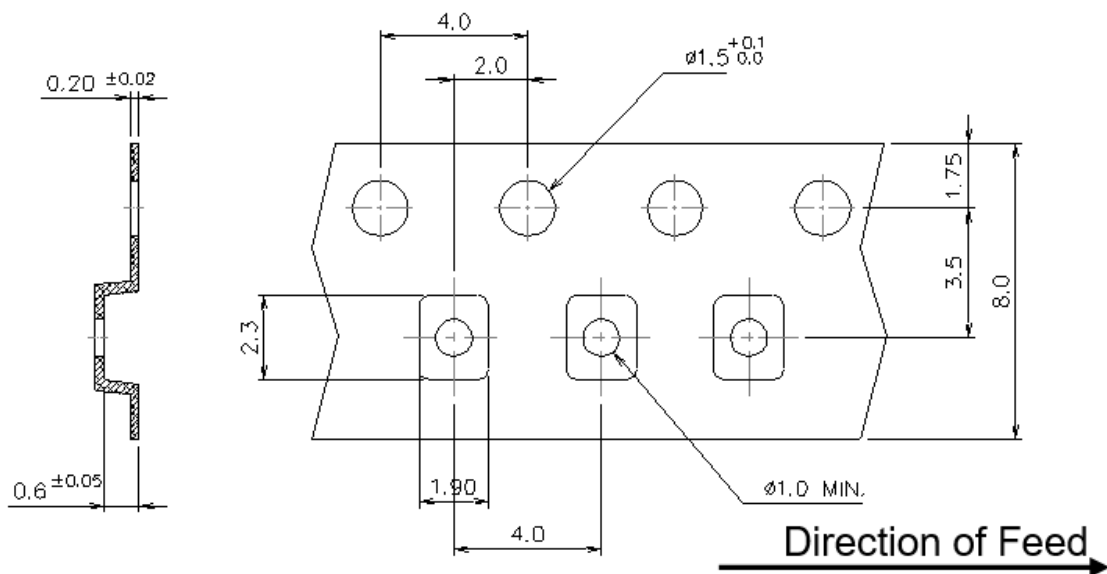
## Date Code Table: Year/Month

Year/Month	1	2	3	4	5	6	7	8	9	10	11	12
2009	n	p	q	r	s	t	u	v	w	x	y	z
2010	A	B	C	D	E	F	G	H	J	K	L	M
2011	N	P	Q	R	S	T	U	V	W	X	Y	Z
2012	a	b	c	d	e	f	g	h	i	j	k	m
2013	n	p	q	r	s	t	u	v	w	x	y	z
2014	A	B	C	D	E	F	G	H	J	K	L	M
2015	N	P	Q	R	S	T	U	V	W	X	Y	Z
2016	a	b	c	d	e	f	g	h	i	j	k	m
2017	n	p	q	r	s	t	u	v	w	x	y	z
2018	A	B	C	D	E	F	G	H	J	K	L	M
2019	N	P	Q	R	S	T	U	V	W	X	Y	Z
2020	a	b	c	d	e	f	g	h	i	j	k	m
2021	n	p	q	r	s	t	u	v	w	x	y	z

## Reel Dimensions (mm):



## Tape Dimensions (mm):

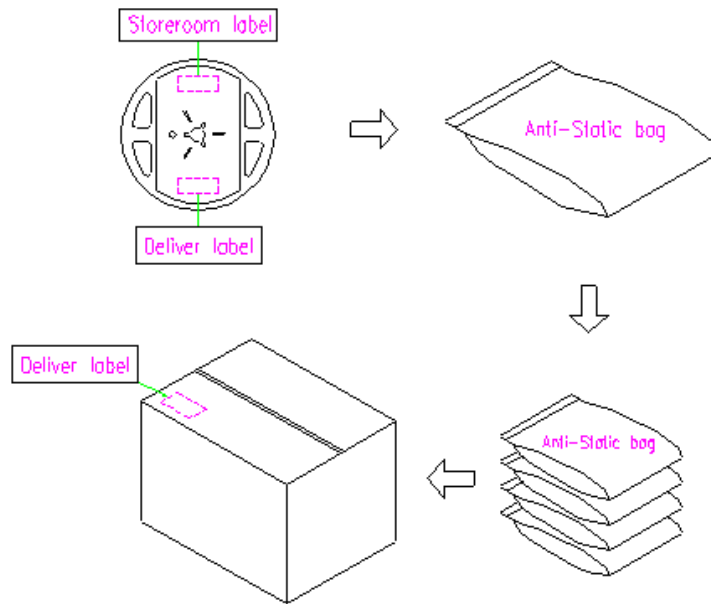


### [NOTE]:

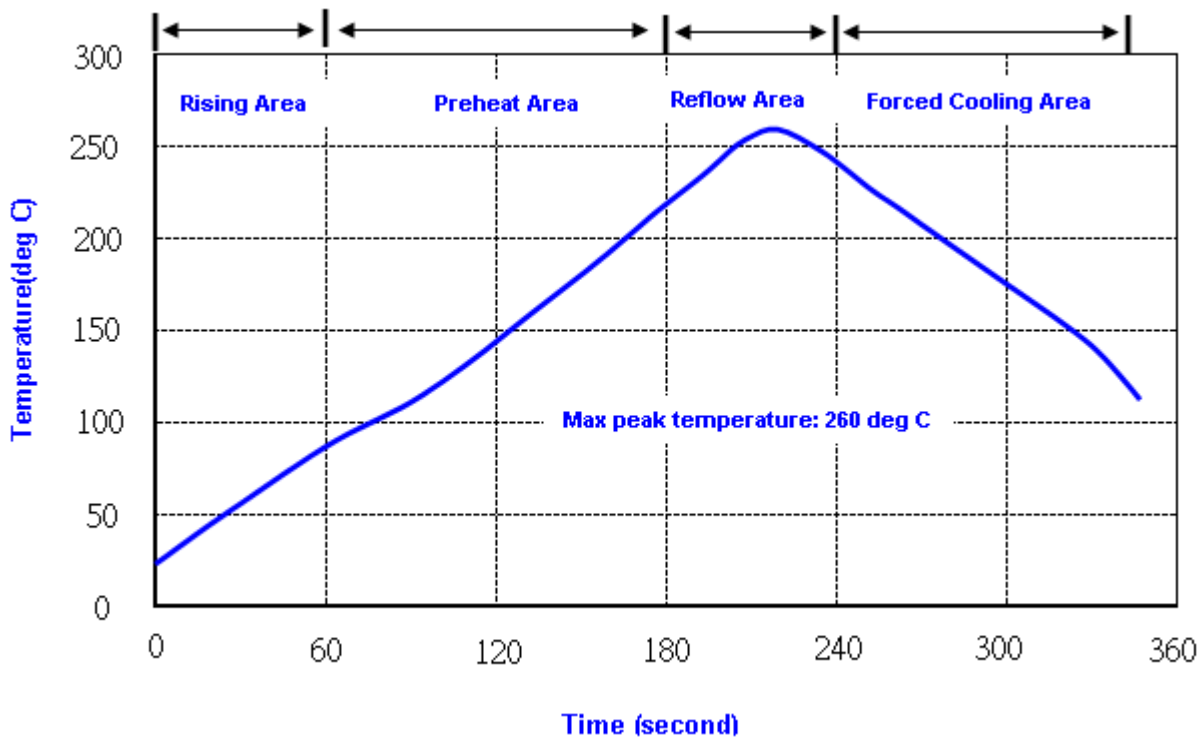
1. Unless otherwise specified tolerance on dimension  $\pm 0.1$  mm.
2. Material: conductive polystyrene with color black.
3. 10 pitch cumulative tolerance  $\pm 0.2$  mm.

# Packing Quantity/Packing:

3K pcs maximum per reel



# Reflow Profile:



**Note:** 1. Max peak temperature: 260+/-5 deg C; Time: 10+/-2 sec  
2. Temperature: 217+/-5 deg C; Time: 90~100 sec

## Reliability Specifications (AEC-Q200)

Test name	Test process / method	Reference standard
<b>Mechanical characteristics</b>		
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	MIL-STD 202G method 204
Mechanical Shock	directions : 3 impacts per axis Acceleration : 6000g'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
<b>Environmental characteristics</b>		
Thermal Shock	Heat cycle conditions -55 °C (30min) ↔ 125 °C (30min) * cycle time : 1000 times	MIL-STD 883G method 1010.8
Humidity test	Temperature : 85 ± 2 °C Relative humidity : 85% Duration : 1000 hours	MIL-STD 202G method 103
Dry heat ( Aging test )	Temperature : 125 ± 2 °C Duration : 1000 hours	MIL-STD 202G method 108A
Cold resistance (Low Temp Storage)	Temperature : -40 ± 3 °C Duration : 1000 hours	IEC 60068-2-1



**CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.**

1. The design, manufacturing process, and specifications of this device are subject to change.
2. US or International patents may apply.
3. RoHS compliant from the first date of manufacture.