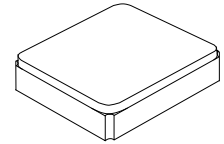


**XTL2004**

**96.000000 MHz**  
**Crystal Unit**



SM2016-4

- Surface Mount Hermetic Package
- Excellent Reliability Performance
- Good Frequency Perturbation and Stability over temperature
- Ultra Miniature Package
- 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:

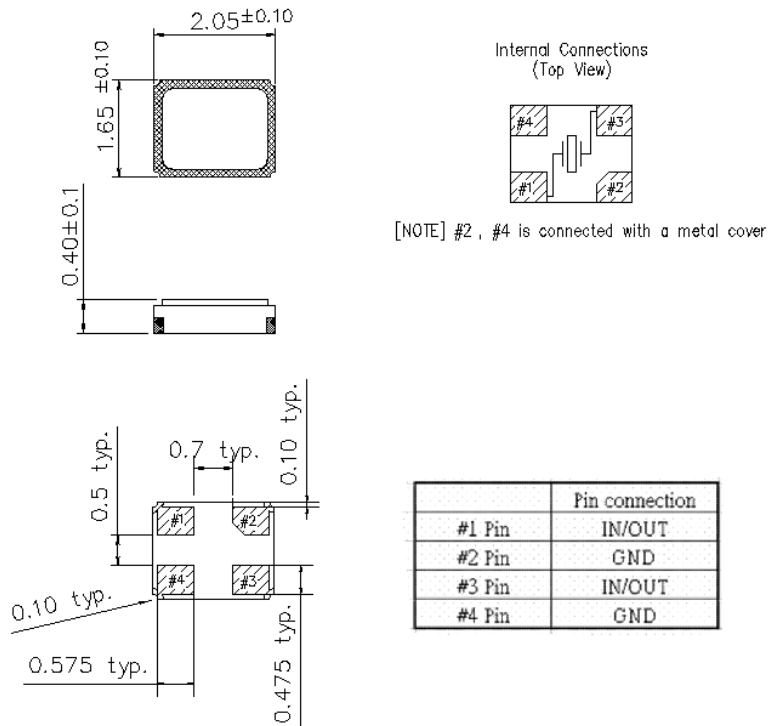
## Electrical Specifications:

XTL2004	Specification				
	Characteristic	Min	Nom	Max	Unit
Nominal Frequency		96.000000			MHz
Mode of Oscillation		Fundamental			°C
Storage Temperature Range	-40		105		°C
Operating Temperature Range	-40		105		°C
Initial frequency tolerance(25°C ± 3°C)(offset -30ppm)	-12		12		ppm
Frequency drift after reflow(After two reflows)	-2		2		ppm
Tolerance over temperature(-40°C to 105°C)					ppm
Frequency perturbation(-40°C to 105°C)	-16		16		ppm
Aging(Five years)					ppm
Equivalent Series Resistance (ESR)		8	20		Ω
Spurious mode series resistance	1100				Ω
Motional inductance	0.5	1.0	1.2		mH
Motional capacitance	2	2.7	4.2		fF
Shunt capacitance	0.5	1.0	1.2		pF
Load Capacitance (CL) (Measure by Saunders(S&A) Network Analyzer 250B)		9.9			pF
Nominal Drive Level	0.01	100	400		uW

Insulation Resistance(DC 100V)	500			MR
Package size		2.0x1.6		mm <sup>2</sup>
Package height			0.50	mm

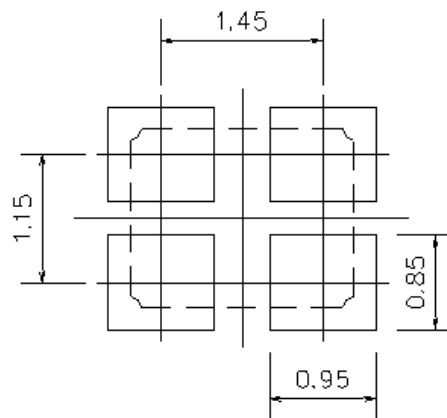
## Mechanical Dimensions (mm):

### Base



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

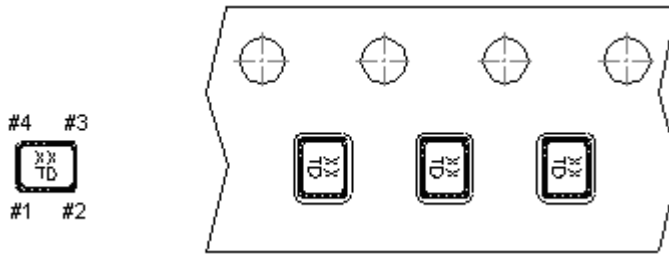
### Recommended Land Pattern: (unit: mm)



# Marking:

Line 1: XX; Frequency (96)

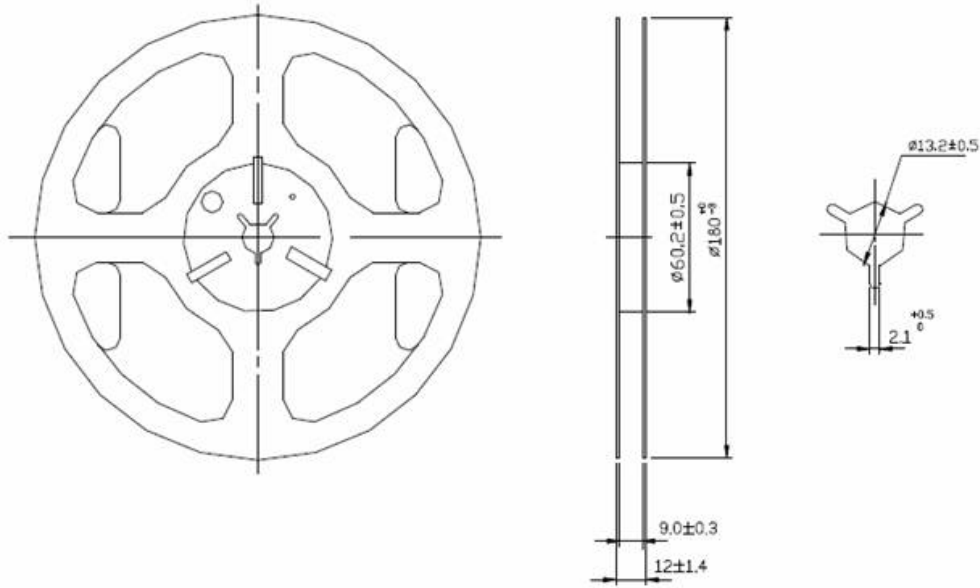
Line 2: T; Traceable Code + D; date Code of Year/Month



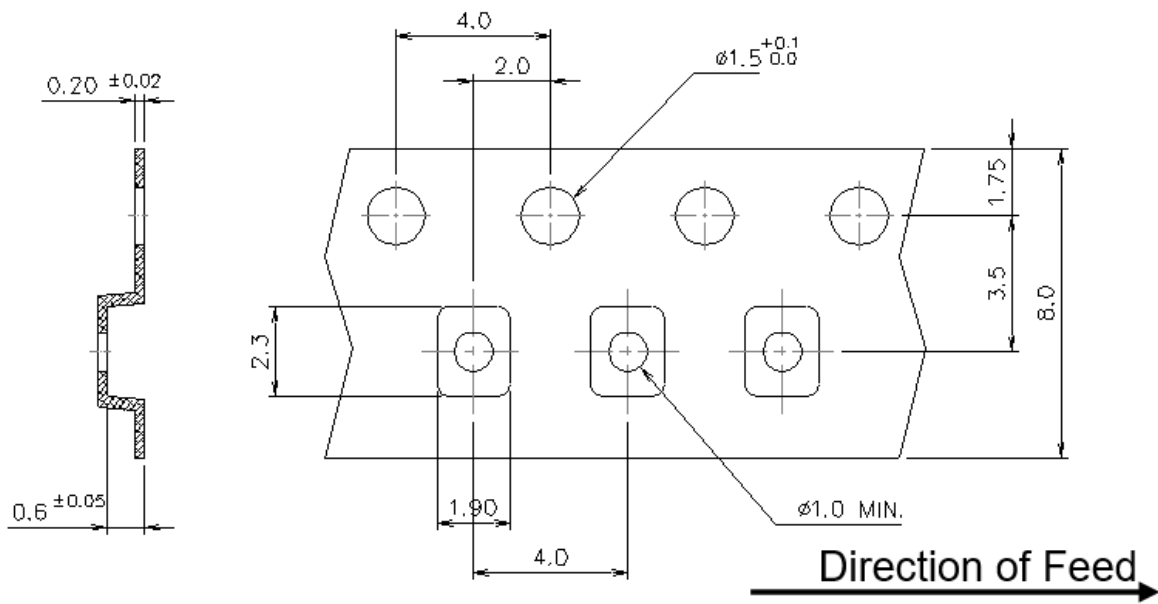
## Date Code Table: Year/Month

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):

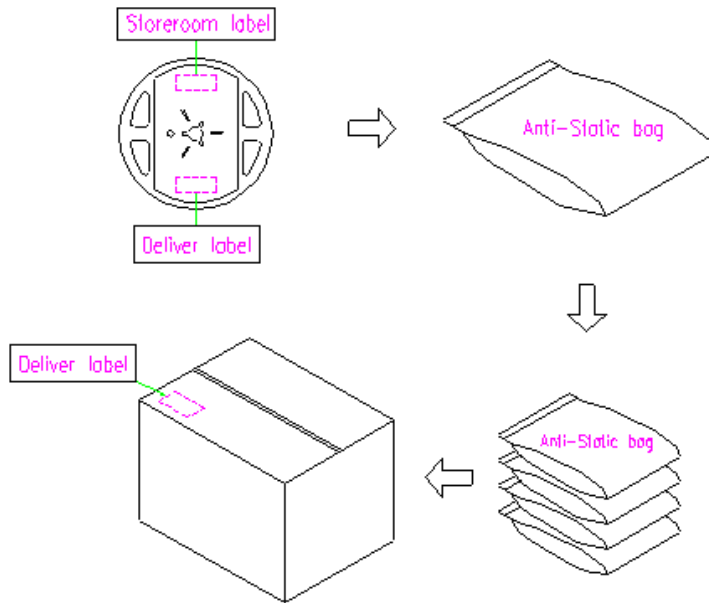


### [NOTE]:

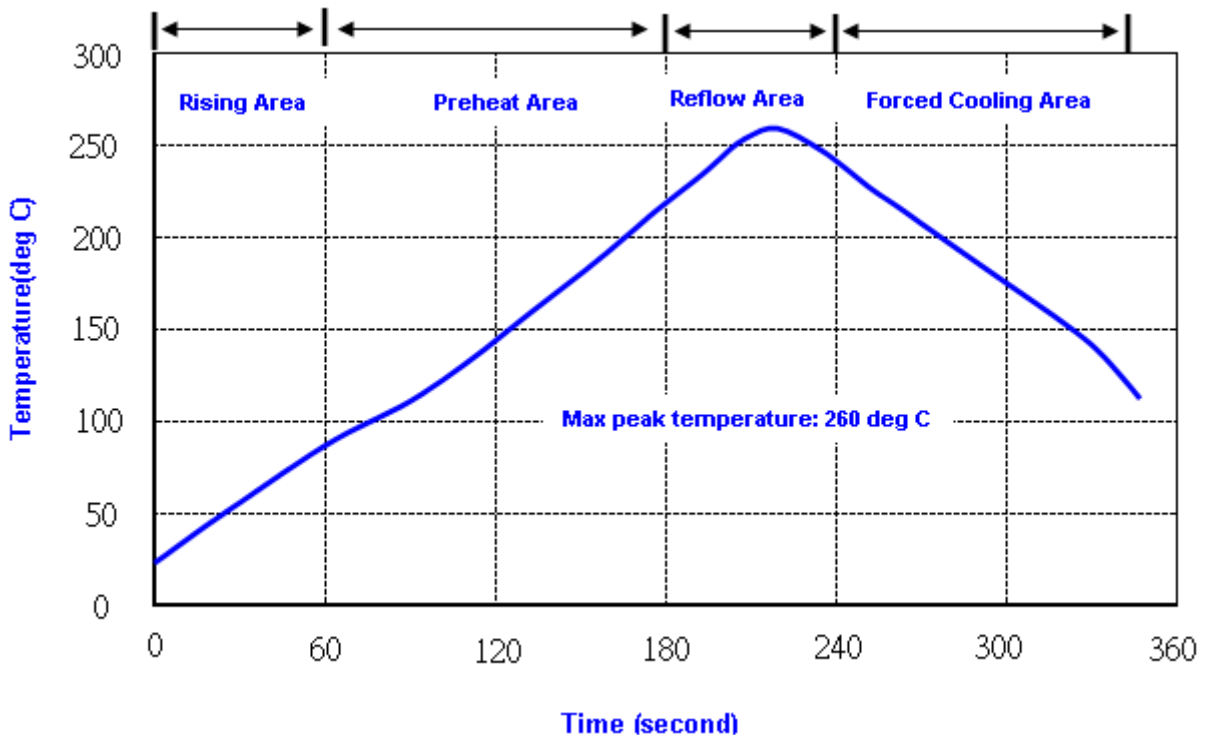
1. Unless otherwise specified tolerance on dimension  $\pm 0.1$  mm.
2. Material: conductive polystyrene with color black.
3. 10 pitch cumulative tolerance  $\pm 0.2$  mm.

# Packing Quantity/Packing:

3K pcs maximum per reel



# Reflow Profile:



- Note: 1. Max peak temperature: 260 $\pm$ 5 deg C; Time: 10 $\pm$ 2 sec
- 2. Temperature: 217 $\pm$ 5 deg C; Time: 90~100 sec

## Reliability Specifications

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 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
<b>Environmental characteristics</b>		
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



**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.