



RFM Integrated Device, Inc.

PRODUCT SPECIFICATION

Part Number: XTL2009

XTAL, 60 MHz, +/-20 ppm @
25C +/- 3C

Crystal Unit SMD 2.0x1.6 60.0MHz

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:

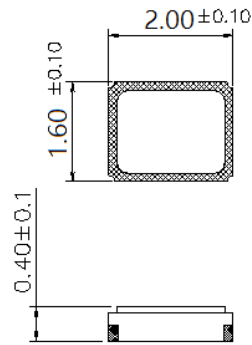
Surface mount 2.0mmx1.6mm crystal unit for use in wireless communications devices, especially for a need of ultra miniature package for mobility.

Electrical Specifications:

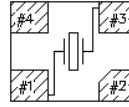
XTL2009	Specification
Nominal Frequency	60.000000 MHz
Mode of Oscillation	Fundamental
Storage Temperature Range	-40°C to +125°C
Operating Temperature Range	-40°C to +125°C
Frequency Stability over Operating Temperature Range	+/-30 ppm (referred to the value at 25°C -40~105°C) +/-70 ppm (referred to the value at 25°C 105~125°C)
Frequency Make Tolerance (FL)	+/-20 ppm @ 25°C +/- 3°C
Equivalent Series Resistance (ESR)	40 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

Base

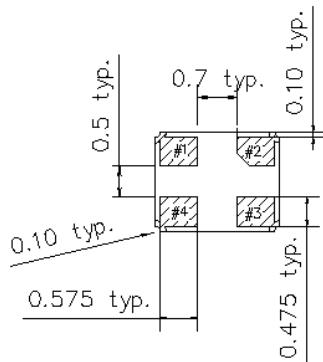
Mechanical Dimensions (mm):



Internal Connections
(Top View)

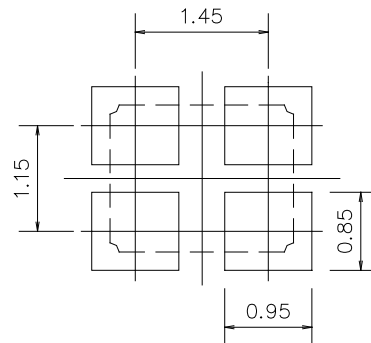


[NOTE] #2, #4 is connected with a metal cover



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

Recommended Land Pattern: (unit: mm)

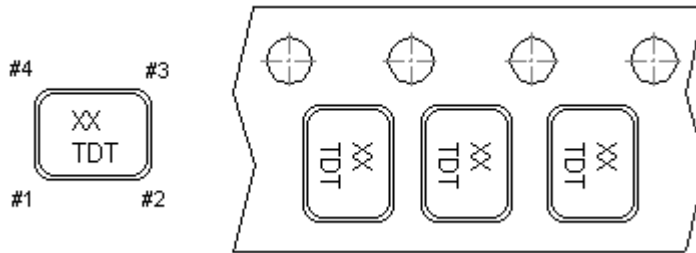


Recommended Land Pattern

Marking:

Line 1: XX; Frequency (60)

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

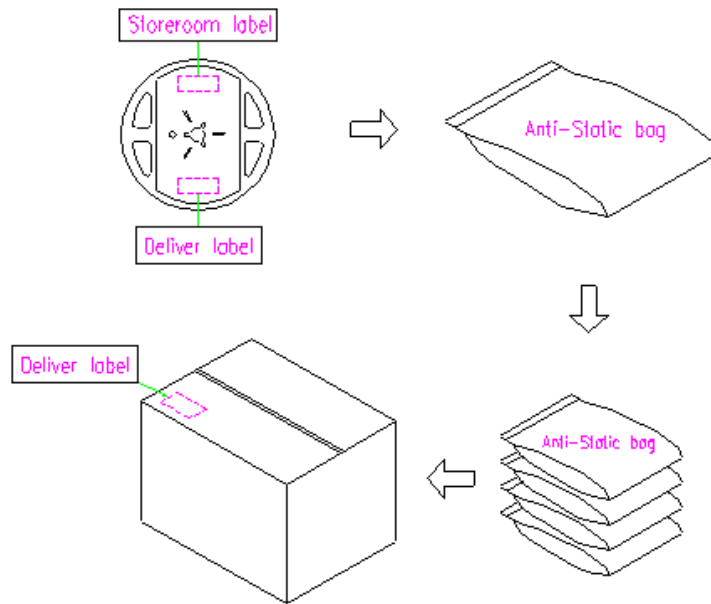


Date Code Table: Year/Month

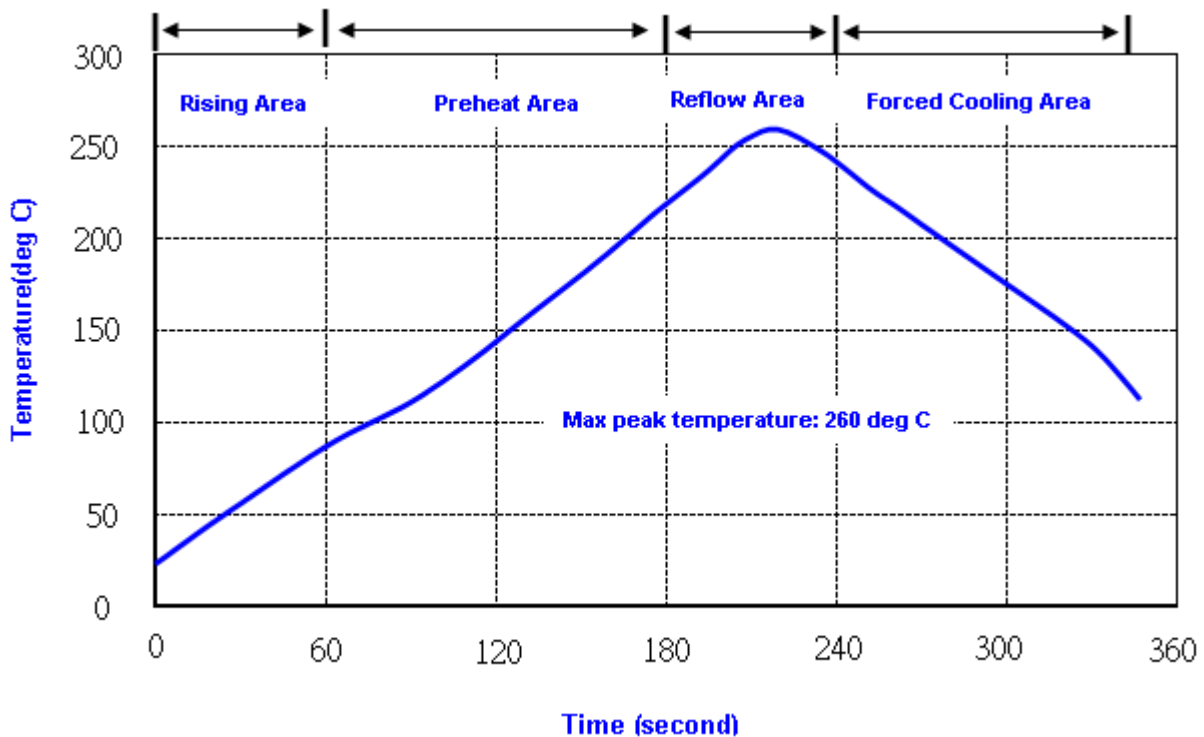
Year/Month	1	2	3	4	5	6	7	8	9	10	11	12
2009	n	p	q	r	s	t	u	v	w	x	y	z
2010	A	B	C	D	E	F	G	H	J	K	L	M
2011	N	P	Q	R	S	T	U	V	W	X	Y	Z
2012	a	b	c	d	e	f	g	h	i	j	k	m
2013	n	p	q	r	s	t	u	v	w	x	y	z
2014	A	B	C	D	E	F	G	H	J	K	L	M
2015	N	P	Q	R	S	T	U	V	W	X	Y	Z
2016	a	b	c	d	e	f	g	h	i	j	k	m
2017	n	p	q	r	s	t	u	v	w	x	y	z
2018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

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
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	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
Environmental characteristics		
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