



# PRODUCT APPROVAL SHEET

Product Type	TCXO TME-SMD2520 Quartz Oscillator
CREC's P/N	01.T.ME.GTHRAN0040000000
Description	TCXO TME-SMD2520 40.000000MHz 3.3V ±1ppm -20~70°C
Customer Number	LBY001
Customer P/N	-
Customer Name	-
Veision	B0
Spec No.	LBY001TME001

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Assembly				
Test				
Web Site	www.chinacrec.com			





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## 1 Parts explanation

This part is a miniature AT cut stirp Oscillator units with TME-SM miniature BASE. It is mainly used in WLAN/WiMAX, Mobile Phone, DSC, Set-Top Box, HDTV application.

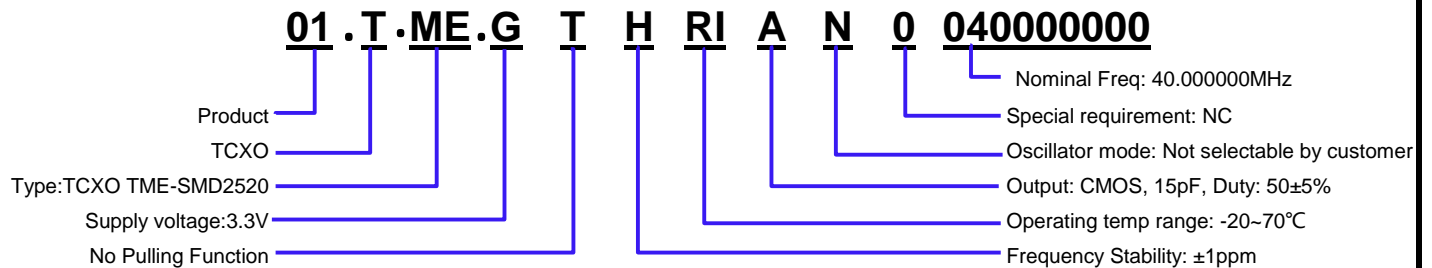
## 2 SCOPE

This specification only covers CREC's 01.T.ME.GTHRIAN0040000000

## 3 Reference Standard

- 3.1 MIL-STD-883H :Environmental tests' Mechanical tests.
- 3.2 MIL-STD-202 : Test Methods for Electronic and Electrical component part.
- 3.3 IEC 60068-2 :Environmental tests' Mechanical tests.
- 3.4 ANSI/EIA-481-C : 8mm through 200mm embossed carrier taping and 24mm punched
- 3.5 JEDEC J-STD-020C: Soldering

## 4 Title Guide



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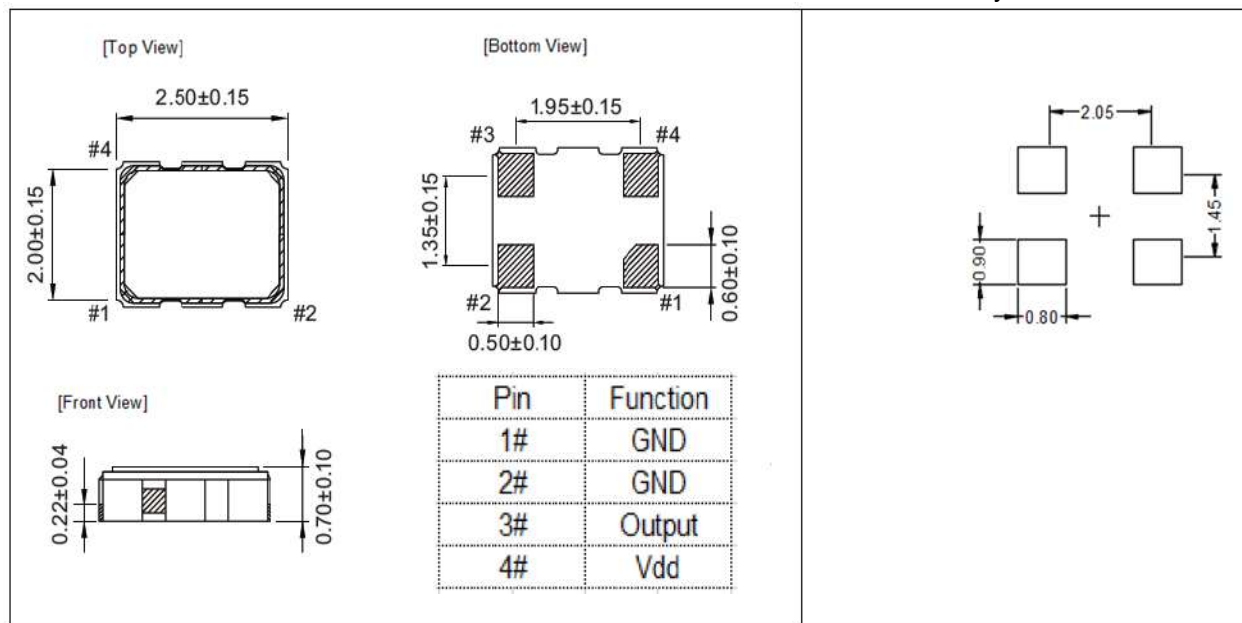
### 5 Performance

Electrical Performance. Electrical characteristics measured by S&A280.

No.	Item	Symb.	Electrical Specification				Remark (Humidity: 40%~60%)	
			Min.	Type	Max.	Unit		
1	Nominal Frequency	F0	40.000000				MHz	-
2	Frequency Tolerance	FL	-1	-	1	ppm	at 25±3°C	
3	Frequency Stability to temp	Ft	-1	-	1	ppm	-20-70°C	
4	Frequency Stability to Vdd	-	-0.2	-	0.2	ppm	Vdd±5%	
5	Frequency Stability to Load	-	-0.2	-	0.2	ppm	Load±5%	
6	Frequency Stability to Aging	-	-1	-	1	ppm	1 <sup>st</sup> Year(25±3°C)	
7	Operating Temperature	T <sub>OPR</sub>	-20	-	70	°C	-	
8	Storage Temperature	T <sub>STG</sub>	-55	-	125	°C	-	
9	Supply Voltage	Vdd	3.135	3.3	3.465	V	-	
10	Current Consumption	I <sub>CC</sub>	-	-	10	mA	at 25±3°C	
11	Output Waveform	-	CMOS				-	-
12	Output Load	CL	-	-	15	pF	-	
13	Symmetry	Duty	45	-	55	%	at 25±3°C	
14	Transition Time	Rise Time	Tr	-	-	8	nSec	at 10% to 90% Vdd
		Fall Time	Tf	-	-	8	nSec	at 10% to 90% Vdd
15	Output Level	Output High	VOH	90%Vdd	-	-	V	at 25±3°C
		Output Low	VOL	-	-	10%Vdd	V	at 25±3°C
16	Start Time	S <sub>T</sub>	-	-	5	mSec	at 25±3°C	

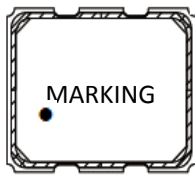
### 6 Figure

#### 6.1 Product Dimensions and Solder Pad Layout Dimensions



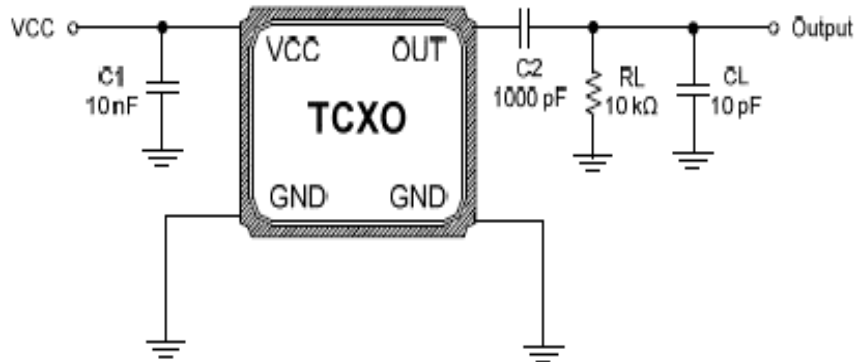
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### 6.2 Marking

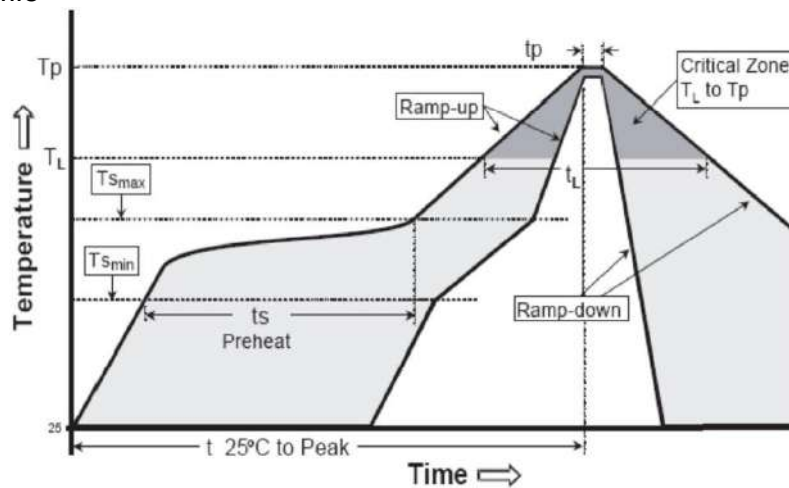


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### 6.3 Measurement Circuit



### 7 IR Reflow Profile



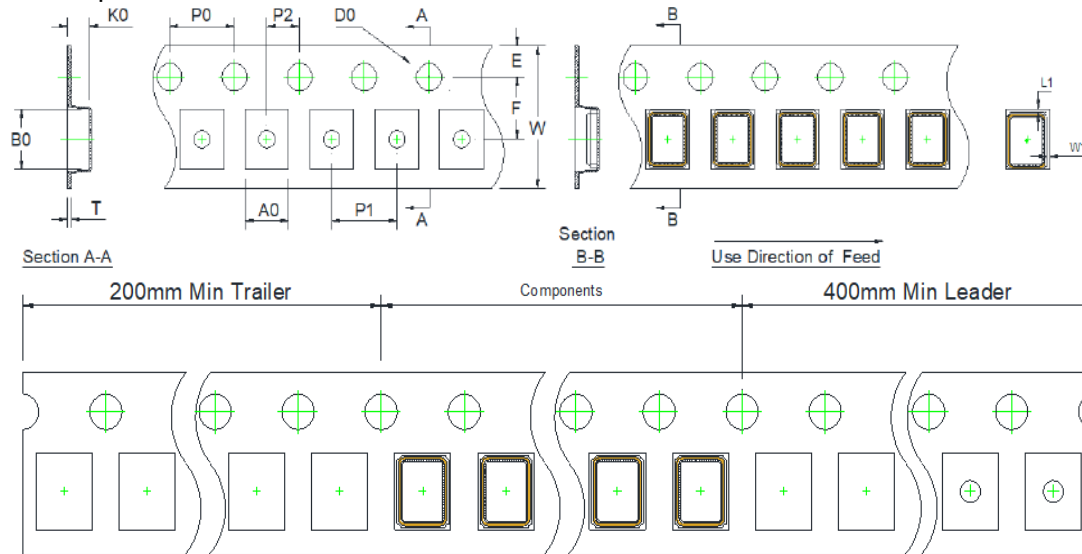
Remark: Reference JEDEC J-STD-020C

Profiles Feature	Pb-Free Assembly
Average Ramp-up Rate (Ts max to Tp)	3°C/second max.
Preheat	
■ Temperature Min (Ts min)	125°C
■ Temperature Max (Ts max)	200°C
■ Time (ts min to ts max)	60~180 seconds
Time maintained above	
■ Temperature (T <sub>L</sub> )	217°C
■ Time (t <sub>L</sub> )	60~150 seconds
Peak/Classification Temperature (T <sub>p</sub> )	260°C
Time within 5°C of actual Peak	20~40 seconds
Temperature (t <sub>p</sub> )	
Ramp-down rate	6°C/second Max
Time 25°C to Peak Temperature	8 minutes Max
Suggest reflow times	3 times

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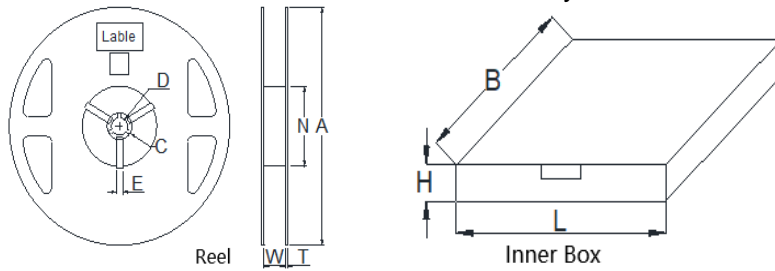
### 8 Packing specification

#### 8.1 Tape Dimensions



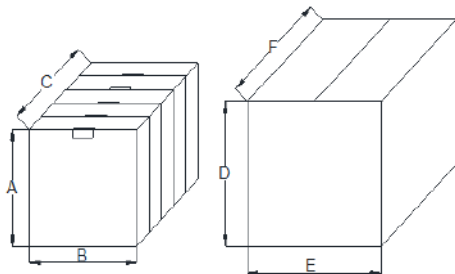
ITEM	W	P1	E	F	D0	P0	P2	A0	B0	K0	T	L1	W1
Spec(mm)	8.00	4.00	1.75	3.50	1.55	4.00	2.00	2.25	2.70	1.15	0.25	0.20	0.20
Tol.(mm)	±0.30	±0.10	±0.22	±0.10	±0.05	±0.10	±0.10	±0.10	±0.10	±0.10	±0.05	±0.05	±0.05

#### 8.2 Reel and Inner Box Dimensions and Q'ty



Item	Reel							Inner Box		
	A	W	N	C	D	E	T	L	B	H
SPEC(mm)	178	9.3	60.0	20.0	13.0	2.3	1.4	180	180	30
Tol.(mm)	±2.0	±0.5	±0.5	±1.0	±0.5	±0.5	±0.2	-	-	-
Q'ty (pcs)	3K/Reel Max							6K/Box Max		

#### 8.3 Carton Dimensions and Q'ty



Item	Small Carton					
	A	B	C	D	E	F
SPEC(mm)	180	180	150	230	230	230
Q'ty (pcs)	30K/Carton Max					

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## 9 Reliability Test Item

No.	Item	Test Condition	Reference
1	Drop Test	Hight: 50cm Times: 2 times on hardWood	IEC68-2-32 Free Fall
2	Vibration	Frequency: 20 to2000Hz, full wave Amplitude: 1.5 mm (Peak to Peak) Sweep/Cycle: 2 minutes Accelerated Speed: 20g Direction: X, Y,Z Duration: 4min ,4 times in each direction	IEC68-2-6 Vibration
3	Solderability	Temperature: 235±5℃ Time: 10±1 Sec	MIL-STD-202 Method 210B Condition B
4	Aging	Temperature: 100℃ Time:168 hours	MIL-STD-883H Method 1008.2
5	Fine Leak	Helium Bombing:0.4~0.5Mpa Time:1 hour	MIL-STD-883H METHOD 1014.13
6	High Temperature Storage	Temperature: 85℃ ± 5℃ Time 96 hours	IEC 60068-2-2
7	Temperature Cycle	Conditions: 25℃ ± 3℃ for 10 minutes -40℃ ± 3℃for 30 minutes 25℃ ± 3℃ for 10 minutes 125℃± 3℃ for 30 minutes 100 cycles	MIL-STD-883H METHOD 1010.8
8	Resistance to Soldering Heat	Pre-Heating:125℃ 60~120 Sec Solder temperature: 260± 5℃ Time: 20±5 sec	MIL-STD-202 Method 210B Condition B
9	Humidity	Temperature: 60℃ ± 2℃ Relative Humidity: 95% Time: 96 hours.	IEC 60068-2-3 Damp Heat
10	Thermal shock	-40℃ ± 3℃ to 100℃ ± 3℃, soak 15 minutes at each point, transfer time within 15 seconds, 20 cycles.	MIL-STD-883H METHOD 1011.9
11	Low Temperature Storage	Temperature: -40℃ ± 5℃ Time: 96 hours	IEC 60068-2-1
12	IR Reflow	Pre-Heating:150℃ to 200℃, 60-120 Sec Heating:217℃, 60 to 150 Sec Peak temp:260℃±5℃,20±5 Sec Times: 2 times	JEDEC J-STD-020C
13	Salt Spray	Temperature: 35±2℃ Salinity: 5% Time:24hrs	MIL-STD-883H Method 1009.8 Condition A

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## 10 Product handling and control procedure

### 10.1 Precautions for storage

Storage of crystal units under higher temperature or high humidity for a long term may affects frequency stability or solderability. Please store the crystal units under the normal temperature and humidity without exposing to direct sunlight and dew condensation, and avoid the storage of crystal units for more than 6 months, and mount them as soon as possible after unpacking.

Item		Electrical Specification			
		Min.	Type	Max.	Unit
Storage period	After customer assembly	15		-	Year
	Crystal unused	-		2	Year

### 10.2 Mounting of SMD Type products

When using an automatic loading machine, please test and confirm to cause no damage to the crystal units before mounting. Bending the circuit board in the process of cleaving boards after mounting and soldering crystal units may cause peeling off the soldering or package cracks by mechanical stress.

### 10.3 Ultrasonic cleaning

General cleaning solutions or ultrasonic cleaning method may be used to clean CREC's products. However, under certain circumstances, ultrasonic cleaning machine could generate resonance at the oscillation frequency of our products and thus deteriorate the electrical characteristics in devices, and even damage the overall structure of devices. Therefore, verification test is recommended before cleaning.

### 10.4 Ultrasonic welding

Avoid mounting and processing by Ultrasonic welding this method has a possibility of an excessive vibration spreading inside the crystal products and becoming the cause of characteristic deterioration and not oscillating. If Ultrasonic welding is being used in process, please notify us in advance to verify it.

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