rakon Xpress

RST3225N

1.0 Specification References

Parameter	Description
a. Rakon part number	T6450
b. Description	26.0 MHz RST3205N TCXO
c. Package	L x W x H: 3.02 x 2.5 x 0.9 mm nom.

2.0 Absolute Maximum Rating [1]

Parameter	Min.	Max.	Unit
a. Power supply	-0.3	+4.6	V
b. Storage temperature	-40	85	°C

3.0 Frequency Characteristics

Parameter	Min.	Typ.	Max.	Unit	Test Condition / Description
a. Nominal frequency		26.0		MHz	
b. Frequency calibration			±1.0	ppm	Offset from nominal frequency measured at 25°C±2°C.
c. Reflow shift			±1.0	ppm	Two consecutive reflows as per attached profile after 2 hours relaxation at 25°C.
d. Temperature range	-40		85	°C	The operating temperature range over which the frequency stability is measured
e. Frequency stability over temperature			±0.5	ppm	Referenced to the midpoint between minimum and maximum frequency value over the specified temperature range[2]
f. Frequency slope			±0.1	ppm/°C	Minimum of one frequency reading every 2°C over the operating temperature range[2]
g. Static temperature hysteresis			0.6	ppm	Frequency change after reciprocal temperature ramped over the operating range. Frequency measured before and after at 25°C
h. Sensitivity to supply voltage variations			±0.1	ppm	Supply voltage varied ±5% at 25°C
i. Sensitivity to load variations			±0.2	ppm	±10% load change at 25°C[3]
j. Long term stability			±1 ±3 ±5	ppm	Frequency drift over 1 year at 25°C Frequency drift over 3 years at 25°C Frequency drift over 10 years at 25°
k. Acceleration sensitivity			2	ppb/g	Gamma vector of all three axes from 30Hz to 1500Hz

4.0 Power Supply

Parameter	Min.	Typ.	Max.	Unit	Test Condition / Description
a. Supply voltage (V_{DD})		2.55		V	With a tolerance of ±5%.
b. Supply current			2.0	mA	At maximum V_{DD}[3]

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[1] Operating beyond this limit may result in change or permanent damage to the device.

[2] Parts should be shielded from drafts causing unexpected thermal gradients. Temperature changes due to ambient air currents on the oscillator can lead to short term frequency drift.

[3] Specified for load stated in oscillator output section at 25°C.

5.0 Oscillator Output

Parameter	Min.	Typ.	Max.	Unit	Test Condition / Description
a. Output waveform					DC coupled clipped sinewave[4]
b. Output voltage level	0.8			Vpk-pk	At minimum supply voltage[3]
c. Output load	9	10	11	kΩ/pF	(10kΩ // 10pF) ±10%
d. Start-up time (amplitude)			0.5	ms	Within 90% of the minimum specified output level.
e. Start-up time (frequency)			2	ms	Within ±0.5ppm of steady state frequency.

6.0 SSB Phase Noise (26.0 MHz, at 25°C)

Parameter	Typ.	Max.	Unit.	Test Condition / Description
a. 1Hz offset	-62		dBc/Hz	
b. 10Hz offset	-92		dBc/Hz	
c. 100Hz offset	-118		dBc/Hz	
d. 1kHz offset	-140		dBc/Hz	
e. 10kHz offset	-157		dBc/Hz	
f. 100kHz offset	-161		dBc/Hz	
g. 1MHz offset	-164		dBc/Hz	

7.0 Marking

Parameter	Test Condition / Description
a. Type	Engraved
b. Line 1	[R ##M# YM] R = Rakon, ##M# = Frequency (M=MHz, e.g. 19M2=19.2MHz)[5], YM = Date code*
c. Line 2	[• XXXX XXX] • = Pin 1, XXXX = Internal Code, XXX = Lot Code
d. Date code*	

Y - Year Code

Code	Year	Code	Year	Code	Year
A	2010	J	2019	S	2028
B	2011	K	2020	T	2029
C	2012	L	2021	U	2030
D	2013	M	2022	V	2031
E	2014	N	2023	W	2032
F	2015	O	2024	X	2033
G	2016	P	2025	Y	2034
H	2017	Q	2026	Z	2035
I	2018	R	2027		

M - Month Code

Code	Month	Code	Month
1	Jan	7	Jul
2	Feb	8	Aug
3	Mar	9	Sep
4	Apr	A	Oct
5	May	B	Nov
6	Jun	C	Dec

8.0 Manufacturing Information

Parameter	Test Condition / Description
a. Reflow	Solder reflow processes as per profile attached
b. Packaging description	Tape and reel. Standard packing quantity (SPQ) is 3000 units/reel

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[4] External AC-Coupling capacitor required. 1nF or greater recommended.
[5] Frequency marking is only represented by the first three significant digits. For example, on an RST2016N TCXO at 16.368MHz, its frequency code marking will be 16M3.

9.0 Environmental Specification

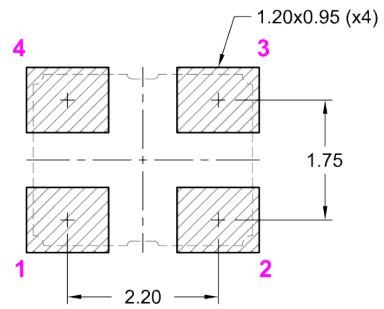| Parameter	Test Condition / Description
a. RoHS compliant	Yes
b. Shock	Free dropping from 150 cm height 5 times on a hard wooden board
c. Moisture resistance	500 ±12 hours at 60°C ±3°C, 85% relative humidity[6]
d. Thermal cycling	The unit shall be subjected to 100 successive change of temperature cycles, then 25 ±2℃ over 2 hours before testing, each cycle as below: **Temperature** **Duration:** 1. -40 +0/-6°C 30 ±3 minutes 2. 25°C ±2°C 2 – 3 minutes 3. 85 +4/-0°C 30 ±3 minutes 4. 25°C ±2°C 2 – 3 minutes
e. Vibration	Frequency: 10 – 200 Hz Amplitude (total excursion): 1.5 mm (10 – 36 Hz), 4G (36 – 200 Hz) Sweep time: 1 oct/min 3 direction time: 2 hours for each X, Y, Z axis

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[6] Frequency shift ≤2ppm after environmental conditions.

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10.0 Model Outline

MODEL OUTLINE

TOP VIEW

SIDE VIEW

FRONT VIEW

BOTTOM VIEW
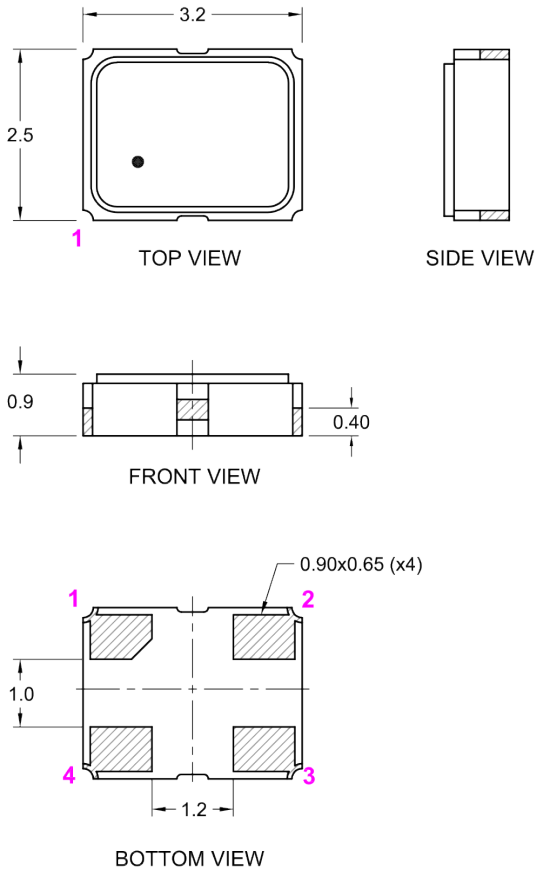
RECOMMENDED PAD LAYOUT - TOP VIEW

1.20x0.95 (x4)

1.75

2.20

Pin	Connections
1	GND / NC
2	GND
3	OUTPUT
4	Supply Voltage (V$_{DD}$)

TITLE: RST/RIT3225 MODEL 4P – Sinewave (Package A)

RELATED DRAWINGS:

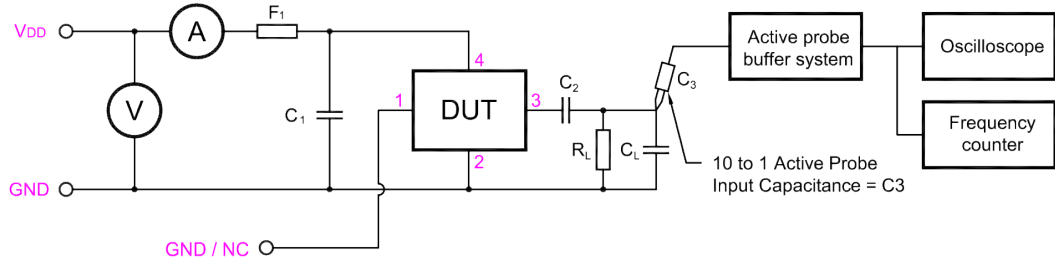FILENAME: CAT1502

REVISION: B

DATE: 31-Aug-2018

SCALE: 10 : 1

Millimetres

TOLERANCES:
XX =
X.X = ±0.2
X.XX = ±0.10
X.XXX =
X° =
Hole =

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11.0 Test Circuit

CLIPPED SINEWAVE:

C_1: 100nF	$C_T = C_L + C_3$ (C_3 - Oscilloscope probe capacitance)
C_2: ≥1nF	C_T as stated in OSCILLATOR OUTPUT section
R_L: 10K	F_1: A ferrite bead or a resistor between 22Ω ~ 47Ω recommended.

TITLE: RIT/RST N SERIES HS-TCXO TEST CIRCUIT (Package A)   FILENAME: CAT1563

RELATED DRAWINGS:

REVISION: A
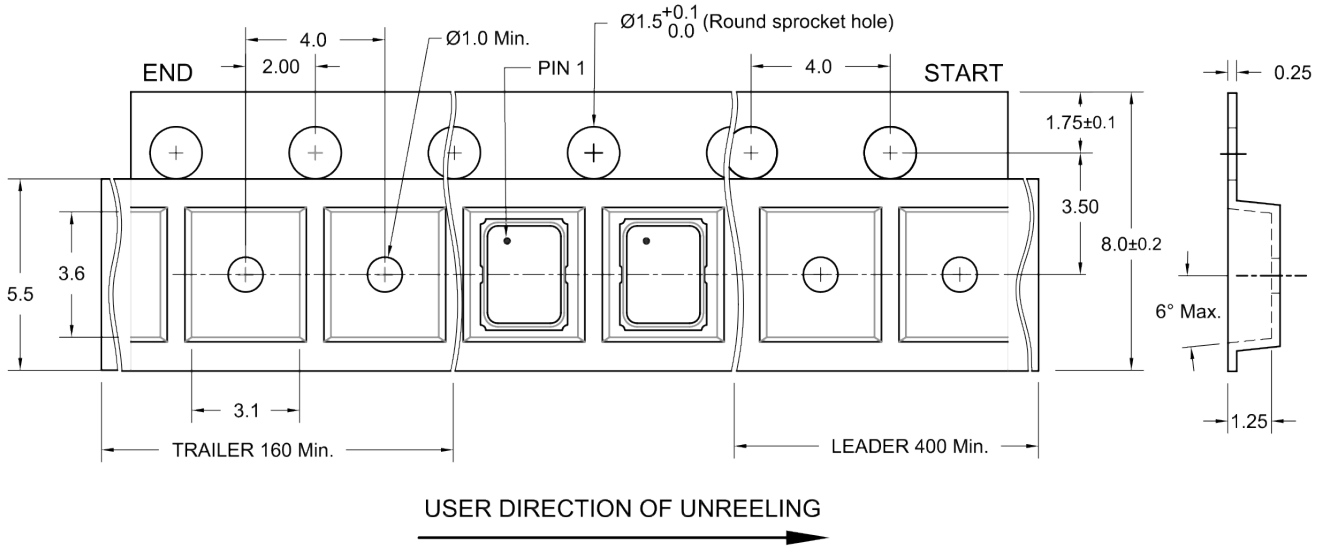DATE: 01-Dec-2020
SCALE: NTS
Millimetres

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12.0 Tape and Reel

TAPE DETAILS

REEL DETAILS

Note: The tape & reel packaging specifications follow the guidelines of the EIA Standard EIA-481.

TITLE: 3225 SERIES TAPE & REEL (Package A/AG)	FILENAME: CAT1108	TOLERANCES:
RELATED DRAWINGS:	REVISION: B	XX =
	DATE: 17-Apr-2020	X.X = ±0.2
	SCALE:	X.XX = ±0.10
	Millimetres	X.XXX =
		X° =
		Hole =

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13.0 Reflow

CLIPPED SINEWAVE:

C_1: 100nF	$C_T = C_L + C_3$ (C_3 - Oscilloscope probe capacitance)
C_2: ≥1nF	C_T as stated in OSCILLATOR OUTPUT section
R_L: 10K	F_1: A ferrite bead or a resistor between 22Ω ~ 47Ω recommended.

TITLE: RIT/RST N SERIES HS-TCXO TEST CIRCUIT (Package A)   FILENAME: CAT1563
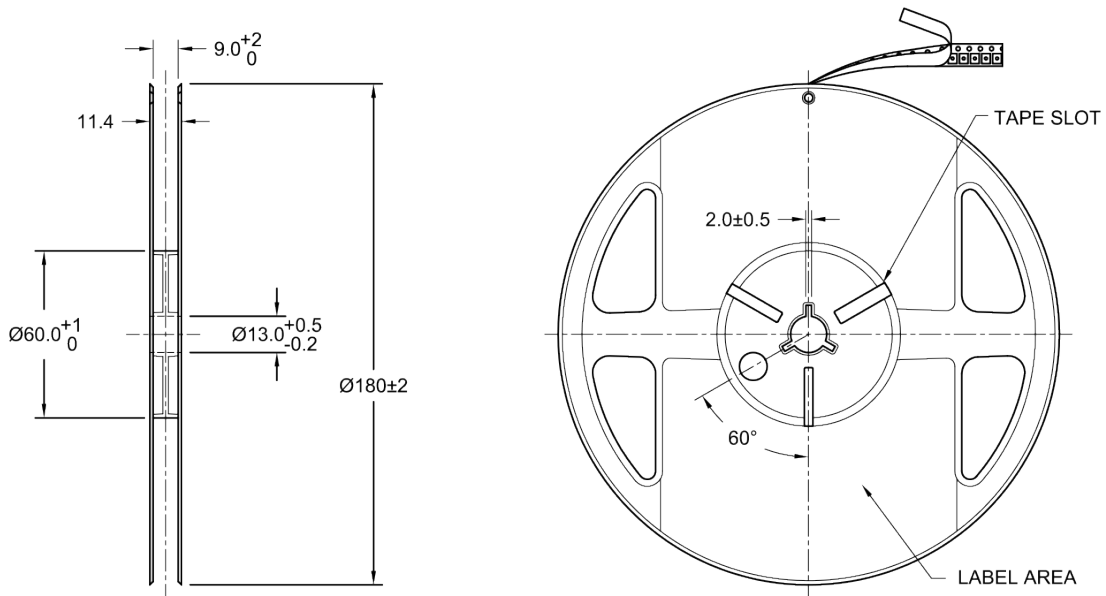
RELATED DRAWINGS:

REVISION: A

DATE: 01-Dec-2020

SCALE: NTS

Millimetres

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14.0 Specification History

Revision	User	Notes	Approver(s)	Date
A	TXP	Standard 2016 TCXO specification created	CG	2021-02-12
B	TXP	Pin 1 can be GND or NC. No Power Down function	CG	2021-03-18
C	RXP	Change TemesXpress to RakonXpress	CG	2022-12-05

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