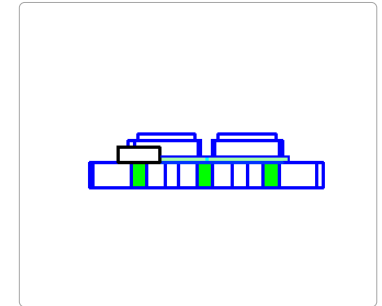


E5310



1.0 Specification References

Parameter	Description
a. Rakon part number	E5310
b. Description	27.48 MHz Hi-G TCXO 9x7mm Dual Xtal
c. Version	9 (2017-02-14)
d. Package	L x W: 9.02 x 7.37 mm nom, H: 2.4 mm max (6 pad)

2.0 Absolute Maximum Ratings ¹

Parameter	Min.	Max.	Unit.
a. Junction temperature		150	°C
b. Supply voltage (Vcc)	-0.5	7	V
c. All other inputs	-0.5	Vcc + 0.5	V
d. Power dissipation		100	mW

3.0 Frequency Characteristics

Parameter	Min.	Typ.	Max.	Unit	Test Condition / Description
a. Nominal frequency (Fn)		27.48		MHz	
b. Calibration tolerance			±1	ppm	At 25°C
c. Reflow shift			±1	ppm	Pre to post reflow ΔF (measured ≥ 60 minutes after reflow)
d. Frequency stability over temperature, ΔT/Δt ≤ 2°C/minute			±1 ±3	ppm	-50°C to 88°C -55.5°C to 90°C Reference to (F _{MAX} + F _{MIN})/2
e. Frequency slope over temperature, ΔT/Δt ≤ 2°C/minute			±0.25 ±1.5	ppm/°C	-50°C to 88°C -55.5°C to 90°C Reference to (F _{MAX} + F _{MIN})/2
f. Micro-jumps			40	ppb	Up-ramp high resolution screening with differential frequency processing
g. Supply voltage stability		±0.65		ppm	±5% variation, reference to frequency at nominal supply voltage
h. Long term stability			±2 ±7	ppm	1 st year 21 years
i. Acceleration sensitivity, 20Hz to 2kHz			0.9 1.6	ppb/g	worst axis gamma vector
j. Spurious outputs		< -70		dBc	Fn ± 1MHz

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

4.0 Power Supply

Parameter	Min.	Typ.	Max.	Unit	Test Condition / Description
a. Supply voltage (Vcc)		3.3		V	±5%
b. Supply current			8	mA	

5.0 Oscillator Output – ACMOS

Parameter	Min.	Typ.	Max.	Unit	Test Condition / Description
a. Output voltage level low (V _{OL})			10% Vcc	V	
b. Output voltage level high (V _{OH})	90% Vcc			V	
c. Rise and fall time			8	ns	10% to 90% level
d. Duty cycle	45		55	%	At 50% level
e. Load					52pF + 11Ω // 1.8MΩ

6.0 Pin Connections

Parameter	Connection
a. Pin 1	Do not connect
b. Pin 2	Do not connect
c. Pin 3	Ground
d. Pin 4	RF Output
e. Pin 5	Do not connect
f. Pin 6	Supply Voltage (Vcc)

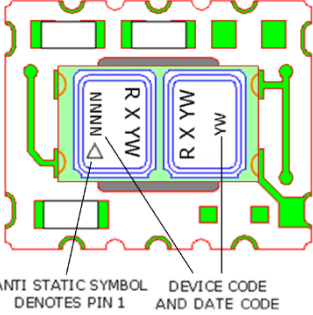
7.0 SSB Phase Noise (static)

Parameter	Typ.	Max.	Unit	Test Condition / Description
a. 1Hz offset	< -50		dBc/Hz	
b. 10Hz offset	< -75		dBc/Hz	
c. 20Hz offset	< -84		dBc/Hz	
d. 100Hz offset	< -104		dBc/Hz	
e. 1kHz offset	< -124		dBc/Hz	
f. ≥ 10kHz offset	< -135		dBc/Hz	

8.0 Root Allan Variance

Parameter	Typ.	Max.	Unit	Test Condition / Description
a. Root Allan Variance	1.5·10 ⁻¹⁰ 1.5·10 ⁻¹⁰	3·10 ⁻¹⁰ 3·10 ⁻¹⁰		tau = 100ms tau = 1s

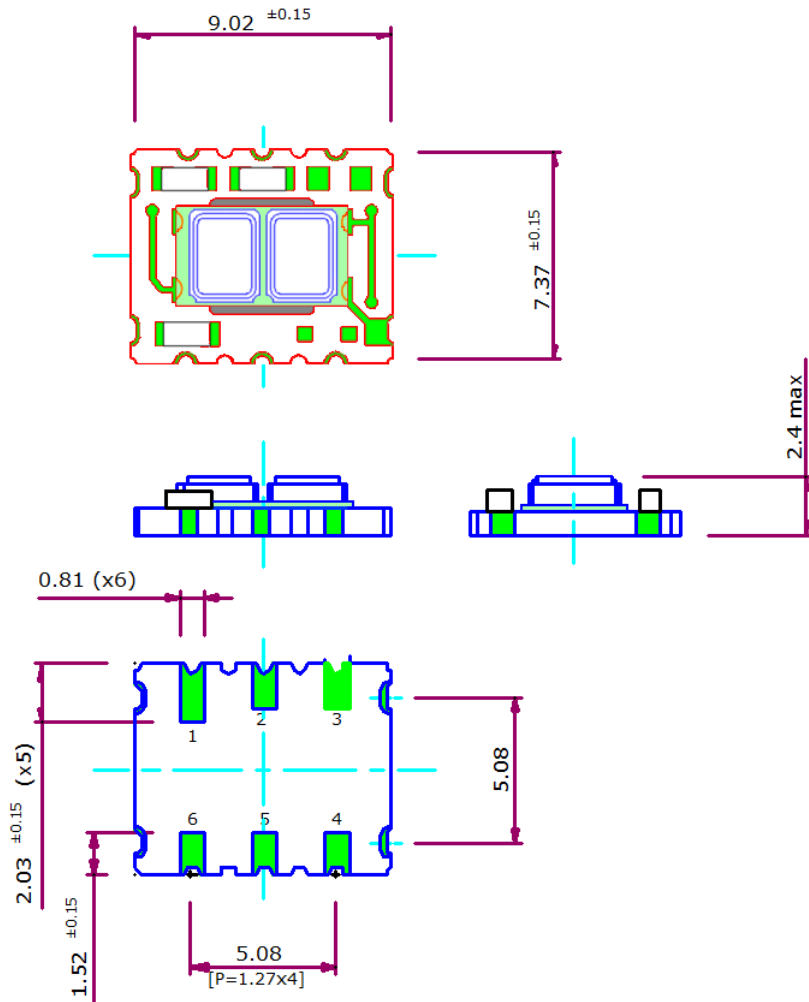
9.0 Marking

Parameter	Description
a. Type	Laser marked
b. Appearance	 <p>ANTI STATIC SYMBOL DENOTES PIN 1 DEVICE CODE AND DATE CODE</p>

10.0 Environmental Specification

Parameter	Description
a. Storage Temperature Range	-55.5°C to +125°C
b. Shock	IEC 60068-2-27 Test Ea, 980ms ⁻² acceleration for 6ms duration, 3 shocks in each direction along three mutually perpendicular axes
c. Vibration	IEC 60068-2-6 Test Fc, 10-60Hz 1.5mm displacement, at 98.1 ms ⁻² , 30 minutes in each of three mutually perpendicular axes at 1 octave per minute
d. Soldering	IPC/JEDEC J-STD-020, max. reflow temperature Sn-Pb eutectic process 235°C, see profile attached
e. Solderability	MIL-STD-202, Method 208, Category 3
f. Termination Finish	Tin-Lead solder-dipped (63% Sn + 37% Pb), thickness 60 ± 10 μm, Underplate: Nickel, thickness 1.27 to 8.89 μm.

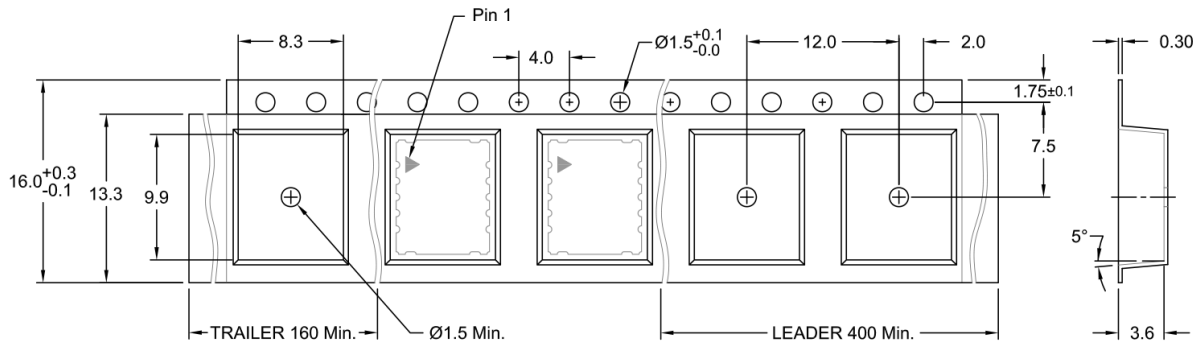
11.0 Model Outline:



12.0 Tape and Reel:

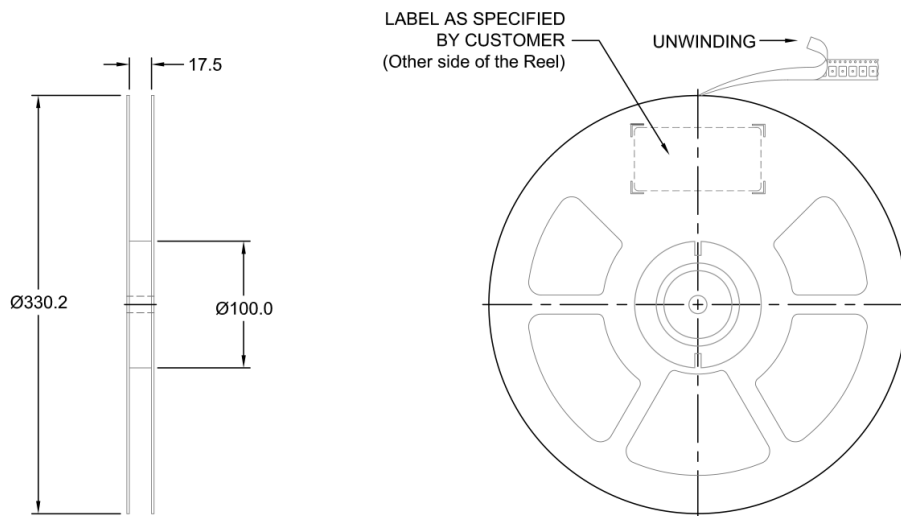
TAPE DETAILS

(Scale 2 : 1)



REEL DETAILS

(Scale 1 : 5)



TITLE: 9070 Series TCXO TAPE & REEL

RELATED DRAWINGS:

FILENAME: CAT916

REVISION: A

DATE: 05-Sep-2014

SCALE:

Millimetres

TOLERANCES:

XX =

X.X = ± 0.1

X.XX = ± 0.05

X.XXX =

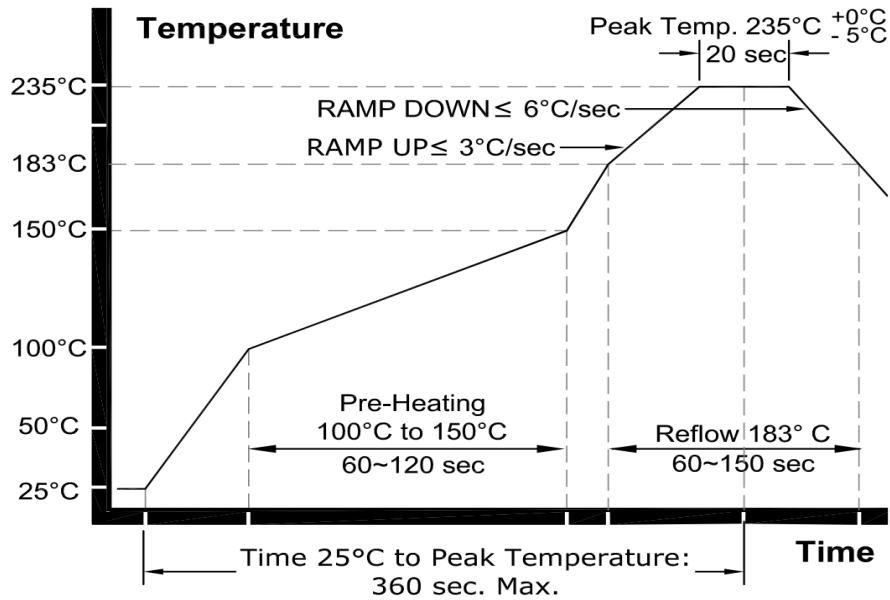
X° =

Hole =

rakon

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13.0 Sn-Pb Eutectic Reflow Soldering Profile:



*Note this profile was used during the qualification testing of the product and therefore represents worst case conditions. It is not recommended for use by the customer in the actual assembly of these parts.

14.0 Specification History

Version	User	Changes	Approver	Date
8	JO	Re-issued in new format	JM	2014-11-19
9	JO	Micro-jump screening added (ECR 10372)	HP/JM	2017-02-14