

E8526LF

1.0 Specification References

Parameter	Description
a. Rakon part number	E8526LF
b. Description	27.0MHz RPT5032N TCXO
c. Version	A (2021-04-22)
d. Package	L x W x H: 5.0 x 3.2 x 1.3 mm nom. (4 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		27.0		MHz	
b. Frequency calibration			±1	ppm	Initial accuracy at 25°C ±2°C
c. Reflow shift (2x reflow)			±1	ppm	Pre to post reflow ΔF (measured ≥ 60 minutes after reflow)
d. Operating temperature range	-30		+85	°C	
e. Frequency stability over temperature ²			±2.5	ppm	
f. Slope over temperature			±0.5	ppm/°C	ΔF/ΔT
g. Supply voltage stability			±0.2	ppm	±5% variation, reference to frequency at nominal supply voltage
h. Load sensitivity			±0.2	ppm	±5pF variation, reference to frequency at nominal load
i. Long term stability (aging at 25°C)			±1 ±4	ppm ppm	1 year 10 years
j. Acceleration sensitivity		1.3		ppb/g	Gamma vector of all 3 axes from 30 to 1500 Hz
k. Start-up time			15	ms	90% amplitude

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

² Reference to (F_{MAX} + F_{MIN})/2

4.0 Power Supply

Parameter	Min.	Typ.	Max.	Unit	Test Condition / Description
a. Supply voltage (Vcc)	3.14	3.3	3.47	V	
b. Supply current		4.5	6	mA	

5.0 Oscillator Output – HCMOS

Parameter	Min.	Typ.	Max.	Unit	Test Condition / Description
a. Output waveform					HCMOS (LVCMOS & LVTTTL compatible as per JESD8C)
b. Output voltage level low (V _{OL})			10% Vcc	V	
c. Output voltage level high (V _{OH})	90% Vcc			V	
d. Rise and fall time		5	8	ns	10% to 90% level
e. Duty cycle	45		55	%	50% level
f. Load		15		pF	

6.0 SSB Phase Noise and RMS Jitter (at 25°C)

Parameter	Typ.	Unit.	Test Condition / Description
a. 1Hz offset	-60	dBc/Hz	
b. 10Hz offset	-90	dBc/Hz	
c. 100Hz offset	-112	dBc/Hz	
d. 1kHz offset	-134	dBc/Hz	
e. 10kHz offset	-146	dBc/Hz	
f. 100kHz offset	-152	dBc/Hz	
g. 1MHz offset	-154	dBc/Hz	
h. RMS Jitter	0.35	ps	12kHz to 5MHz

7.0 Marking

Parameter	Description
a. Type	Laser marked
b. Line 1	[R X XX] R = Rakon, XXX = manufacturing identifier
c. Line 2	[Δ 8526 YW] Δ = pin 1 mark, 8526 = abbreviated part number, YW = device date code

8.0 Manufacturing Information

Parameter	Description
a. Reflow soldering	Reflow profile as per IPC/JEDEC J-STD-020E (see drawing)
b. Packaging description	Tape & Reel as per EIA-481-E (see drawing)
c. Application note	For optimum performance follow the instructions in Guidelines for use of Pluto/Pluto+™ Ultra-Stable TCXOs

9.0 Environmental Specification

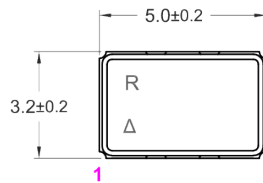
Parameter	Description
a. RoHS compliant	Parts are fully compliant with the European Union directives 2011/65/EU and 2015/863/EU (amending annex II to directive 2011/65/EU) on the restriction of the use of certain hazardous substances in electrical and electronic equipment
b. Solderability	JESD22-B102, M1, condition E (IPC/EIA J-STD-002A), 245°C for 5s, precondition for 16 hours at +150°C
c. High Temperature Operating Life (HTOL)	JESD22-A108, 1008 hours at +125°C
d. Temperature cycling	JESD22-A104, 500 cycles, -55°C to +125°C
e. Low temperature storage	IEC 60068-2-1 test Ab, 1000 hours at -55°C
f. High temperature storage	IEC 60068-2-2 test Bb, 1000 hours at +125°C
g. Moisture resistance	JESD22-A113, MSL = 3
h. Temperature / Humidity bias	JESD22-A101, 1008 hours at +85°C / 85%R.H., precondition: 3 Reflow cycles (peak temperature 260°C)
i. Mechanical vibration	JESD22-B103, 20g, 60-2000Hz, 4 hours in each of three axes (12 hours total)
j. Mechanical shock	JESD22-B104, 1500g _n , 0.5ms, 5 pulses in each of 6 directions
k. Aging	MIL-PRF-55310, 1008 hours at +85°C, precondition: 3 Reflow cycles (peak temperature 260°C)
l. Resistance to soldering heat	IPC/JEDEC J-STD-020, 3 reflow cycles (peak temperature 260°C)

10.0 Disclaimer

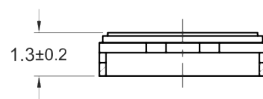
Parameter	Description
a. Disclaimer	"Samples supplied according to this specification are supplied from our development or pre-production programme and as such are not qualification approved products. No condition, warranty or representation regarding quality, suitability, performance, life or continuation of supply is given or implied and Guarantee in clause 6.1 of our standard Conditions of Sale is not applicable. The right is reserved to change the design or specification or cease supply without notice." RAKON Limited

11.0 Model Outline:

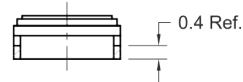
MODEL DRAWING



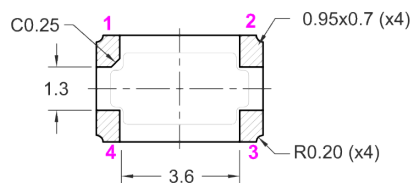
TOP VIEW



FRONT VIEW



SIDE VIEW

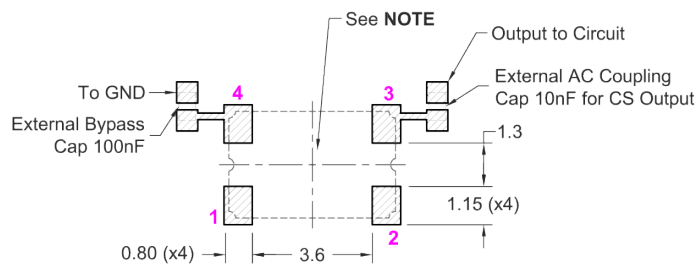


BOTTOM VIEW

Pin Connections

Pin	Connections
1	Do not connect (can be connected to GND)
2	GND
3	RF Output
4	Supply Voltage (Vcc)

RECOMMENDED PAD LAYOUT - TOP VIEW



TITLE: RPT5032 MODEL (4 Pad)

RELATED DRAWINGS:

FILENAME: CAT871

REVISION: C

DATE: 16-Mar-2021

SCALE: 5 : 1

Millimetres

TOLERANCES:

XX =

X.X = ±0.2

X.XX = ±0.13

X.XXX =

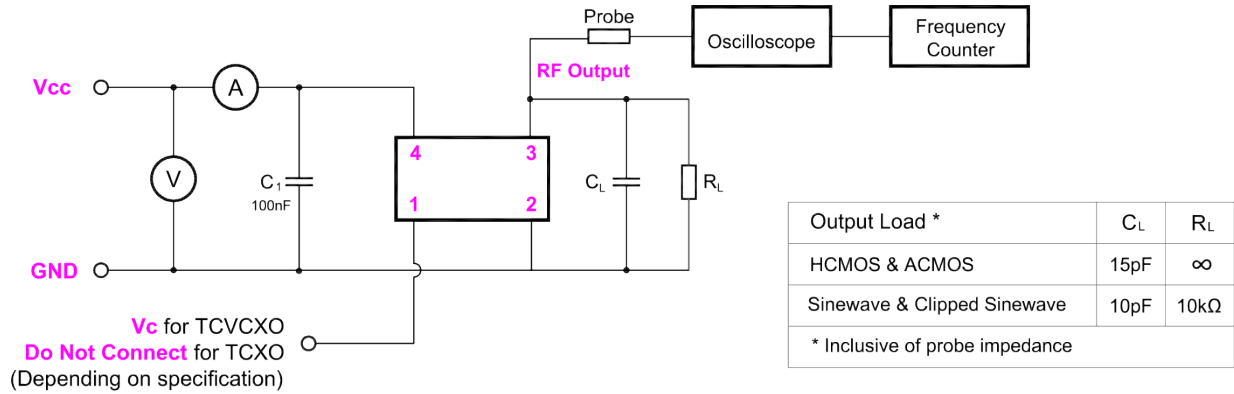
X° =

Hole =

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12.0 Test Circuit:



TITLE: Pluto+ TCXO/VCTCXO TEST CIRCUIT (4 Pad)

FILENAME: CAT874

RELATED DRAWINGS:

REVISION: A

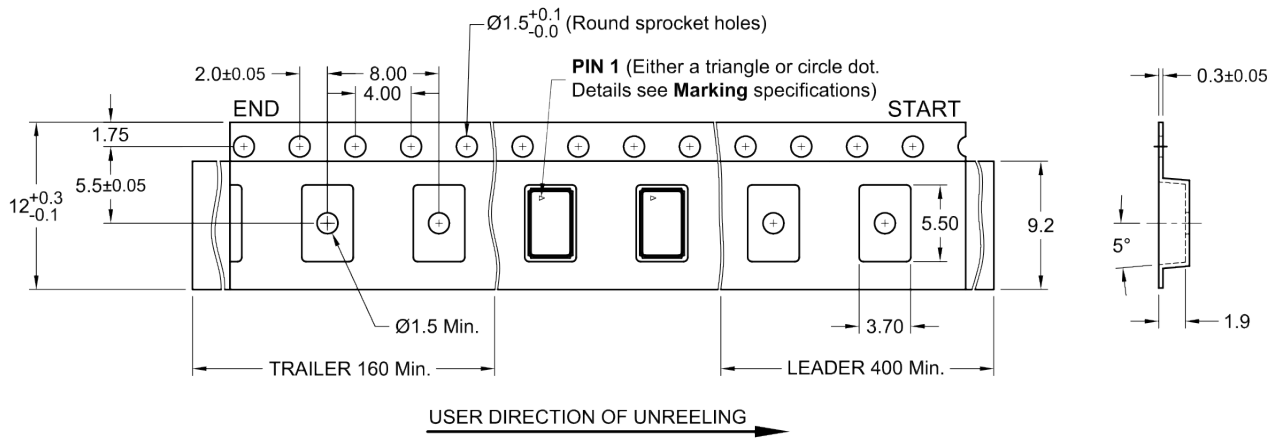
DATE: 06-Mar-14

SCALE: NTS

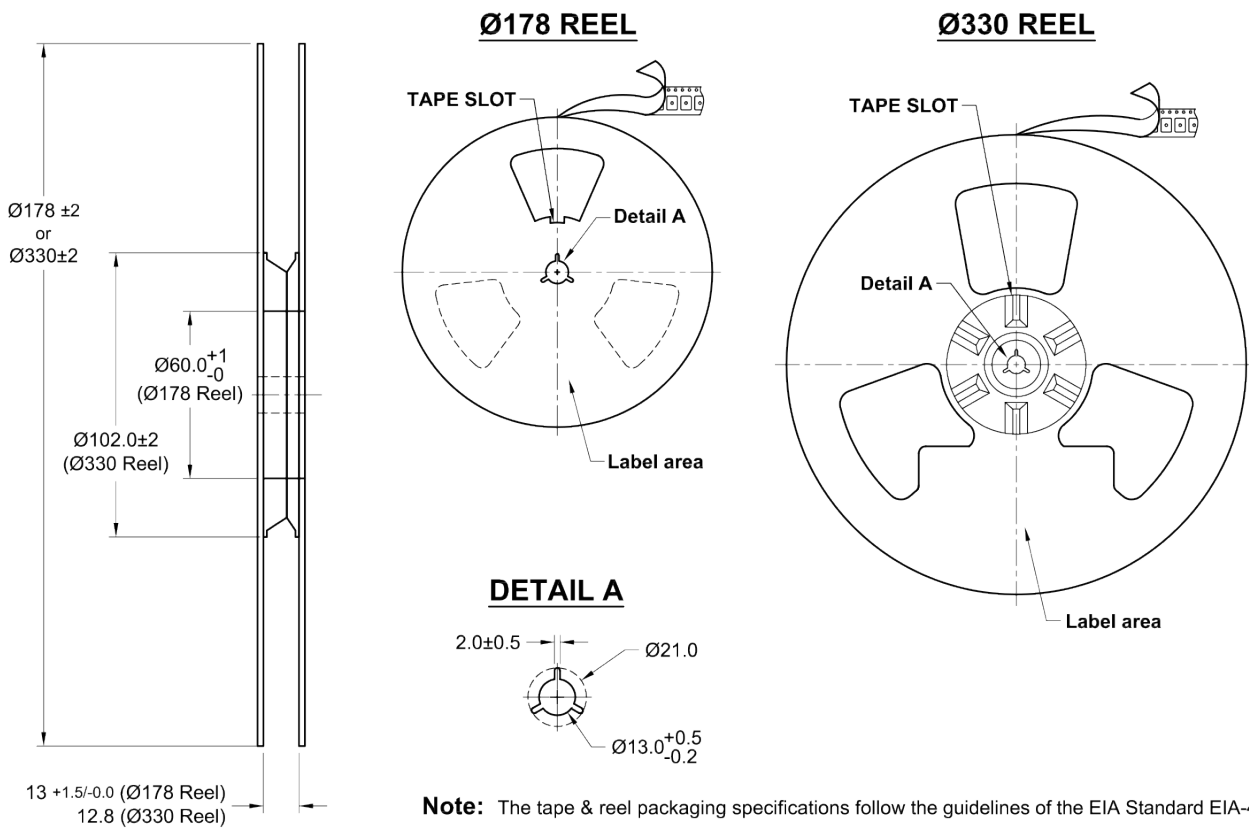
Millimetres

13.0 Tape and Reel (Ø178mm / Ø330mm):

TAPE DETAILS



REEL DETAILS



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

TITLE: PLUTO+ 5032 SERIES TAPE & REEL

FILENAME: CAT811

TOLERANCES:

RELATED DRAWINGS:

REVISION: C

XX = ± 1

X.X = ± 0.2

X.XX = ± 0.1

X.XXX = ± 0.05

X° = $\pm 0.1^\circ$

Hole = ± 0.1

DATE: 24-Jul-2020

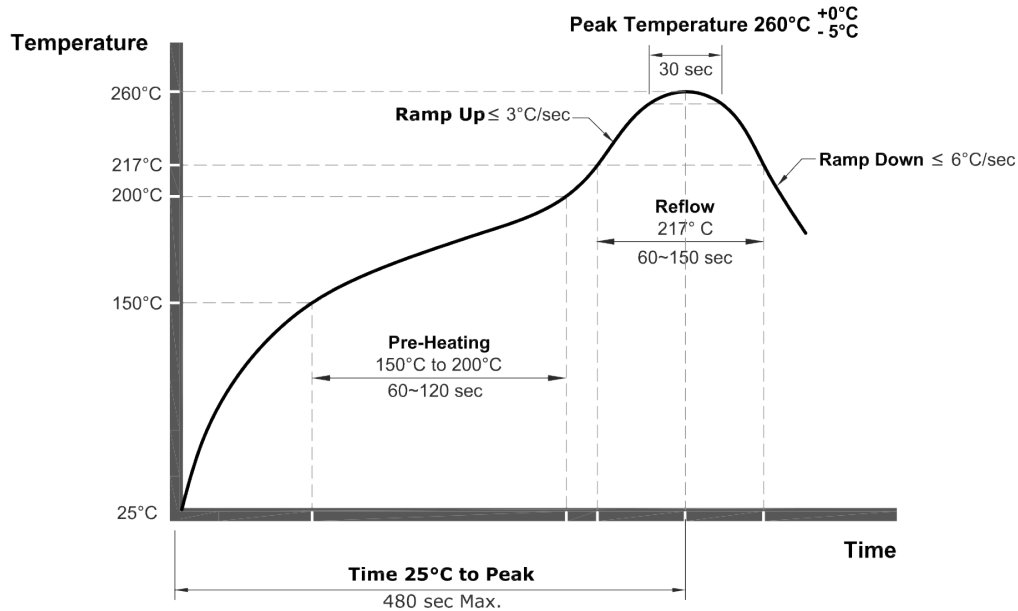
SCALE:

Millimetres

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14.0 Reflow:



Note:

- The Pb-free Reflow follows the guidelines of IPC/JEDC J-STD-020E.
-
- The product has been tested to withstand the Reflow Profile shown. The Reflow Profile used to solder Rakon products is determined by the solder paste Manufacturer's specification. It is recommended that the Reflow Profile used does not exceed the one shown above.

TITLE: Pb-Free Oscillator Reflow (Classification Temperature $T_c = 260^\circ\text{C}$)

FILENAME: CAT541

RELATED DRAWINGS:

REVISION: C

DATE: 15-May-2019

SCALE: NTS

Millimetres

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15.0 Specification History

Version	User	Changes	Approver	Date
A	JO	Initial issue	UK/BC	2021-04-22