

RXO5032AD

This 5 x 3.2 mm hermetically sealed SMD XO is specifically designed for Aeronautics and Defense applications where resistance to very demanding environment is required. It combines a low RMS jitter, a tight frequency stability, a short delivery time and can be screened according to different specifications.

Features

- Free from export restrictions
- Hermetically sealed package
- Frequency Range: 8 – 1500 MHz
- Low consumption: 30 mA
- Supply Voltage: +2.5 V or +3.3 V
- Absolute Frequency Drift over -55°C to +125°C: ±75 ppm
- MIL-PRF level B screening available
- High shock resistance: up to 1500g, 0.5 ms, 1/2 sine

Applications

- Aeronautics
- Defense

5.0 x 3.2 mm



1. Environmental Conditions

Parameter	Condition / Remarks	Min.	Typ.	Max.	Unit
Operating temperature – Option I	-40°C to 85°C	-40	25	85	°C
Operating temperature – Option M	-55°C to 125°C	-55	25	125	°C
Switch-on temperature	TS ₀	-55		125	°C
Non-operating temperature	TNO _p	-55		125	°C
Radom vibration	Level as per MIL-STD-202, Method 214, Condition I-F (20 Grms)				
Mechanical shock	1500g, 0.5ms, 1/2 sine				
Acceleration	Acceleration as per IL-STD-883, Method 2001, condition A (5000g, during 60s in Y1)				

2. Electrical Interface

Parameter	Condition / Remarks	Min.	Typ.	Max.	Unit
Supply voltage (V _{DD})	2.5 V 3.3 V	2.375 2.97	2.5 3.3	2.625 3.63	V
Stead state input current power	CMOS output LVDS output LVPECL output		20 23 54		mA

3. Frequency Characteristics

Parameter	Condition / Remarks	Min.	Typ.	Max.	Unit
AFD option ¹					
Temperature option I:	-40°C to 85°C			±50	ppm
Temperature option M:	-55°C to 125°C			±75	
Initial frequency accuracy (FvT)			±10	±15	ppm
Frequency-temperature stability (FvT)					
Temperature option I:	-40°C to 85°C			±30	ppm
Temperature option M:	-55°C to 125°C			±50	
Frequency variation vs. supply voltage (FvT)	Over operating temperature			±3	ppm
Frequency ageing (FvT)	Over 10 years			±15	ppm
Start-up time				10	ms

¹ AFD (Absolute Frequency Drift) includes initial accuracy + temperature range + supply variation + load variation + ageing over 10 years.

4. Output Characteristics – CMOS

Parameter	Condition / Remarks	Min.	Typ.	Max.	Unit
Nominal frequency	CMOS output	8		200	MHz
Output voltage (V _{OL})	15pf load			10% V _{DD}	V
Output voltage (V _{OH})	15pf load	90% V _{DD}			V
Duty cycle	@50% V _{DD}	48		52	%
Rise time / Fall time	90% to 10% V _{CC}			3	ns
RMS Phase Jitter	Integrated 12 kHz to 20 MHz		0.9	2.5	ps

5. Output Characteristics – LVPECL


Parameter	Condition / Remarks	Min.	Typ.	Max.	Unit
Nominal frequency	LVPECL output	8		1500	MHz
Output voltage (V _{OL})	50Ω nominal load			V _{DD} – 1.6V	V
Output voltage (V _{OH})	50Ω nominal load	V _{DD} – 1.03V			V
Duty cycle	@ V _{DD} – 1.03V (45 to 55% over 600 MHz)	48		52	%
Rise time / Fall time	80% to 20% V _{CC}			0.6	ns
RMS Phase Jitter	Integrated 12 kHz to 20 MHz		0.9	2.5	ps

6. Output Characteristics – LVDS

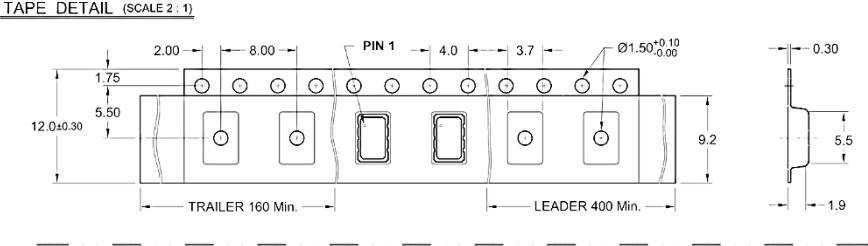
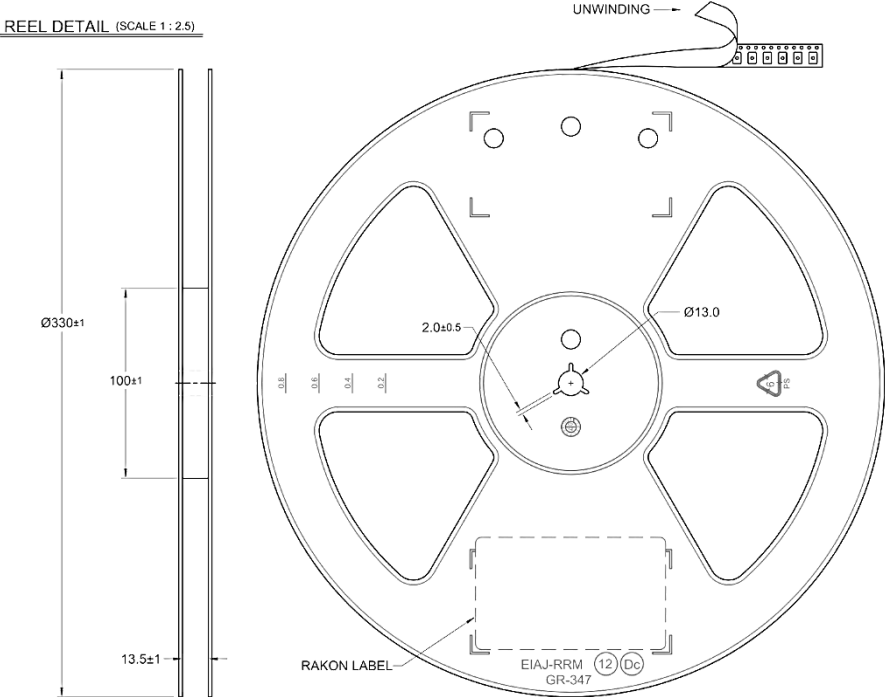
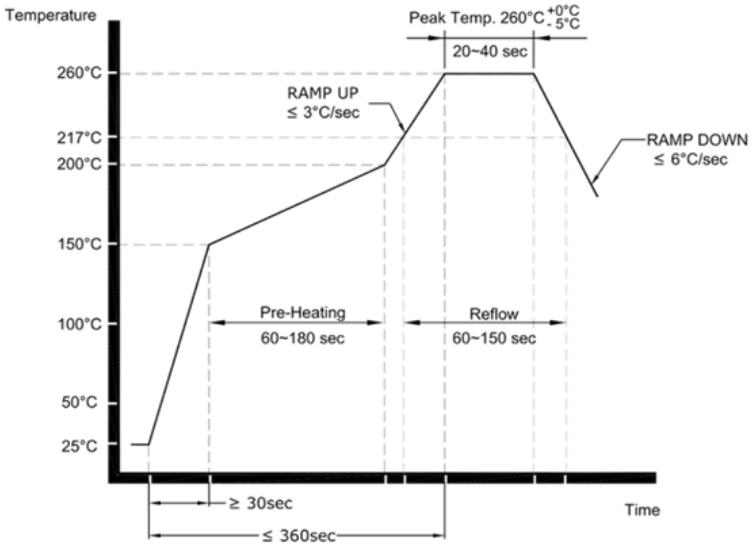
Parameter	Condition / Remarks	Min.	Typ.	Max.	Unit
Nominal frequency	LVDS output	8		1500	MHz
Output voltage	Voltage swing (V _{OD})		350		mV
Duty cycle	Measured @ 1.25 V (45 to 55% over 150 MHz)	48		52	%
Rise time / Fall time	RL = 100 Ω / CL = 10 pF			0.6	ns
RMS Phase Jitter	Integrated 12 kHz to 20 MHz		0.9	2.5	ps

7. Marking

Parameter	Description
Top line	[R #####] R and part identifier
Middle line	[#####] Part information
Bottom line	[o YWW] Pin 1, Year code* and Week code** Year code*: A = 2010, B = 2011, C = 2012, D = 2013, ... Z = 2035 Week code**: WW = 01 = Week of first Monday of the year



8. Manufacturing Information

Parameter	Description
Packaging	<300 pcs: Cut-tape >300 pcs: Tape and reel. Standard packing quantity is 2000 units per reel
Tape and reel	<p>TAPE DETAIL (SCALE 2 : 1)</p>  <p>REEL DETAIL (SCALE 1 : 2.5)</p> 
Pb-free reflow profile	 <p>Note:</p> <ul style="list-style-type: none"> The product has been tested to withstand the Reflow Profile shown on the left hand side. The Reflow Profile used to solder Rakon products is determined by the solder paste Manufacturer's specification. It is recommended that the Reflow Profile use does not exceed the one above.

9. Model Outline, Pin Connections and Recommended Pad Layout

TOP VIEW
Dimensions: 5.00±0.15 mm (width), 3.20±0.15 mm (height). Markings: R #####, #####, Y WW.

FRONT VIEW
Dimension: 1.20±0.15 mm (height).

BOTTOM VIEW
Dimensions: 0.10 mm (top-left), 2.54 mm (pin pitch), 0.90 mm (pin width), 0.64 mm (pin spacing), 0.45 mm (pin width), 2.10 mm (height), R0.32 (fillet radius).

RECOMMENDED PAD LAYOUT – Top View

Dimensions: 2.54 mm (pin pitch), 1.15 Typ. (pin width), 0.725 Typ. (pin spacing), 2.22 mm (total width).

PIN CONNECTIONS	
1, 2	Enable/Disable*, or Not connected (NC)
3	GND
4	RF Output
5	Complementary Output (LVPECL/LVDS) or NC
6	Supply voltage VDD
*	Enable: >70% of VDD on E/D, or E/D pin left open (Connected to internal pull-up resistor) Disable: <30% of VDD on E/D, or E/D pin to GND

NOTE: Outline unit is mm.

10. Ordering Part Example

RXO5032AD CMOS-M-2-AFD-B-100M

Product Family
RXO5032 = 5 x 3.2 mm XO
AD = for Aeronautics & Defense

Output Waveform
CMOS = CMOS
LVDS = LVDS
PECL = LVPECL

Temperature Range
I = Industry (-40°C to +85°C)
M = Military (-55°C to 125°C)

Supply Voltage
2 = 2.5 V 3 = 3.3 V

Output Frequency (Fout)
100M = 100 MHz

Screening Option
0 = No screening
1 = Standard (Thermal cycling & Storage)
B = According to MILPRF 55310 group B
S = Specific Screening

Frequency Stability Type
FVT = Frequency stability over temperature range
AFD = Absolute Frequency Drift