RXO5032AD

This 5 x 3.2 mm hermetically sealed SMD XO meets the demanding environmental requirements for Aeronautics and Defense applications, using a COTS design. It combines a low RMS phase 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 1500 *g*, 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
Random vibration	Level as per MIL-STD-202, Method 214, Condition I-F (20 Grms)				
Mechanical shock	1500*g*, 0.5ms, 1/2 sine				
Acceleration	Acceleration as per MIL-STD-883, Method 2001, condition A (5000*g*, 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	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: Temperature option M:	 -40°C to 85°C -55°C to 125°C			 ±50 ±75	ppm
Initial frequency accuracy (FvT)			±10	±15	ppm
Frequency-temperature stability (FvT) Temperature option I: Temperature option M:	 -40°C to 85°C -55°C to 125°C			 ±30 ±50	ppm
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% Vcc			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% Vcc			0.6	ns
RMS Phase Jitter	Integrated 12 kHz to 20 MHz		0.9	2.5	ps

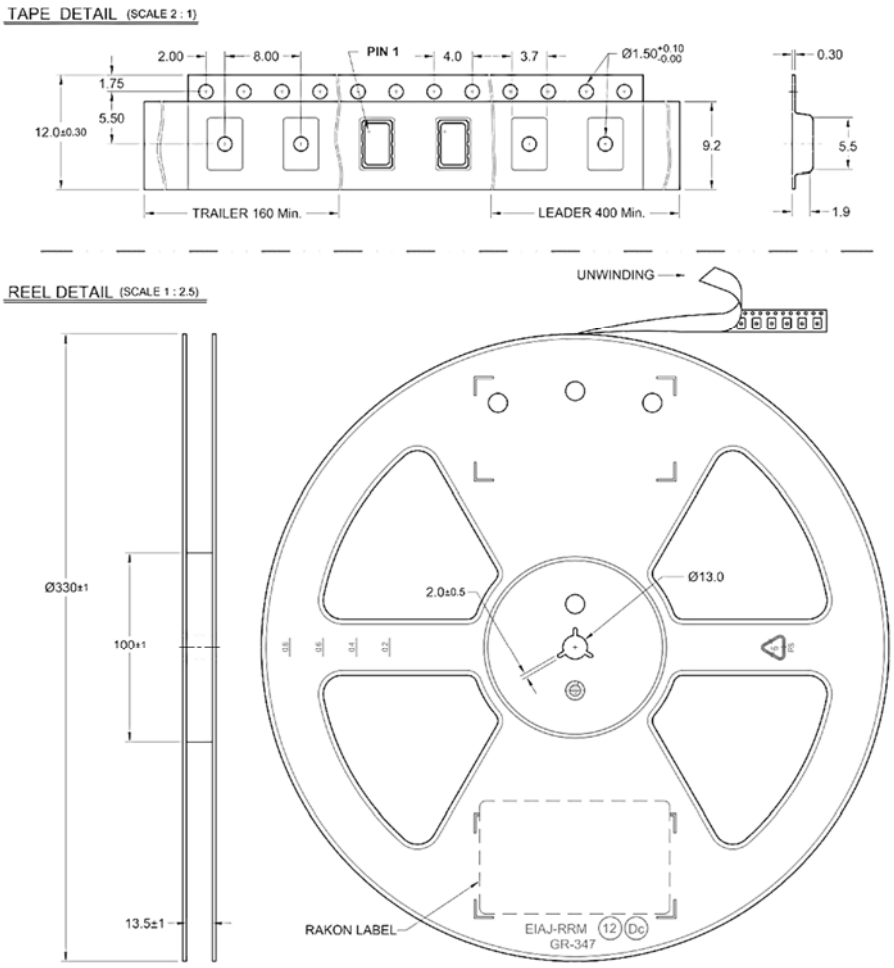
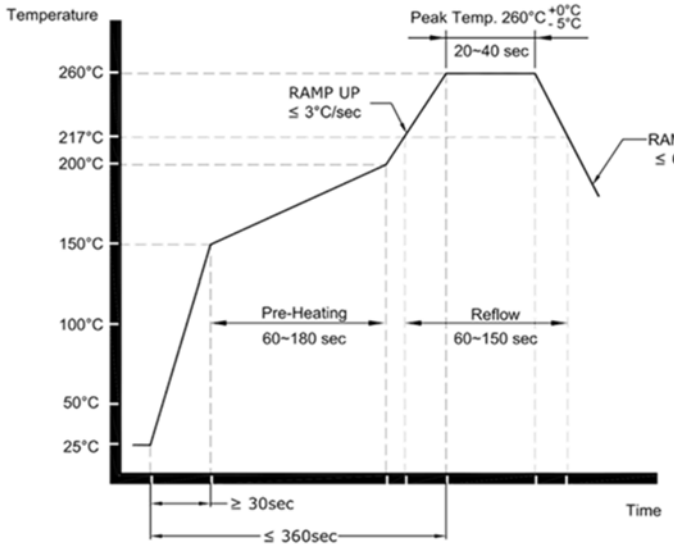
6. Output Characteristics – LVDS

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

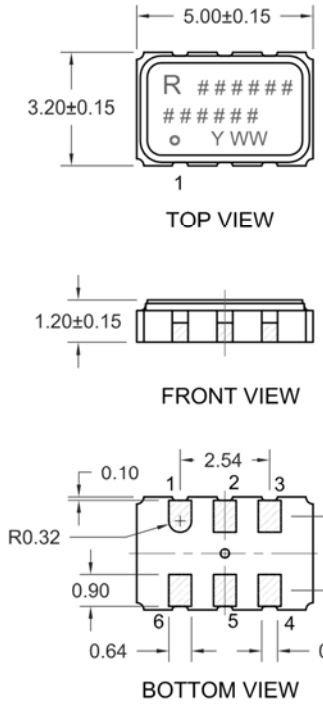
7. Marking

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

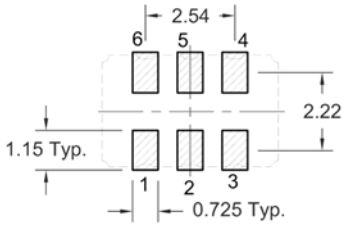
8. Manufacturing Information

Parameter	Description
Packaging	<300 pcs: Cut-tape >300 pcs: Tape and reel. Standard packing quantity is 2000 units per reel
Tape and reel	
Pb-free reflow profile	 **Note:** ▪ 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 manufacture's specification. It is recommended that the reflow profile use does not exceed the one on the left.

9. Model Outline, Pin Connections and Recommended Pad Layout



RECOMMENDED PAD LAYOUT – Top View



	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 V_{DD}
*	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

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

Screening Option
0 = No screening
1 = Standard (Thermal cycling & Storage)
B = Following the guidelines of MIL-PRF-55310 group B
S = Specific Screening

Output Frequency (Fout)
100M = 100 MHz