RVX1490U [Preliminary]

1.0 Specification References

Parameter		Description
a.	Rakon part number	V4184
b.	Description	100.0 MHz RVX1490U VCXO
c.	Package	L x W x H: 14.0 x 9.0 x 2.8 mm

2.0 Absolute Maximum Rating [1]

Parameter		Min.	Max.	Unit
a.	Power supply	-0.5	5.0	V
b.	Storage temperature	-55	125	°C

3.0 Frequency Characteristics

Parameter		Min.	Typ.	Max.	Unit	Test Condition / Description
a.	Nominal frequency		100.0		MHz	
b.	Temperature range	-40		95	°C	The operating temperature range over which the frequency stability is measured
c.	Frequency stability			±20	ppm	Including initial calibration, temperature range, supply variation, load variation and 10 years ageing (at 25°C).

4.0 Power Supply

Parameter		Min.	Typ.	Max.	Unit	Test Condition / Description
a.	Supply voltage (V_{DD})		3.3		V	With a tolerance of ±5%.
b.	Supply current			40	mA	

5.0 Control Voltage (V_C)

Parameter		Min.	Typ.	Max.	Unit	Test Condition / Description
a.	Control voltage (V_C)	0	1.65	3.3	V	Positive slope
b.	Absolute Pull range (APR)	±5			ppm	Reference to frequency at Vc = 1.65V
c.	Linearity			10	%	Over the control voltage range
d.	Modulation BW	10			kHz	Over the control voltage range
e.	Input impedance	1			MΩ	

6.0 Output Characteristics – CMOS

Parameter		Min.	Typ.	Max.	Unit	Test Condition / Description
a.	Output voltage (V_{OL})			10% V_{DD}	V	15pF load
b.	Output voltage (V_{OH})	90% V_{DD}			V	15pF load
c.	Duty cycle	45		55	%	At 50% V_{DD}
d.	Rise and fall time		1	2	ns	90% / 10%, 15pF load

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

7.0 SSB Phase Noise (100.0 MHz, at 25°C)

Parameter	Typ.	Max.	Unit	Test Condition / Description
a. 10Hz offset	-85		dBc/Hz	
b. 100Hz offset	-116		dBc/Hz	
c. 1kHz offset	-139		dBc/Hz	
d. 10kHz offset	-161		dBc/Hz	
e. 100kHz offset	-170		dBc/Hz	
f. 1MHz offset	-175		dBc/Hz	
g. RMS Phase Jitter	18		fs	Integrated from 12kHz to 20MHz

8.0 Marking and Package

Parameter	Test Condition / Description
a. Top line	[R XXXMXX] = R and Frequency (MHz) (e.g. 122.88MHz = R 122M88)
b. Bottom line	[• XXX XX] = Pin 1, Internal code, Date code (Y*M**)
c. Year code*	Last digit of the year (8 = 2018)
d. Month code**	Month (A = January, B = February)

9.0 Manufacturing Information

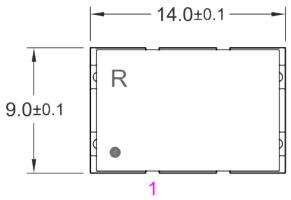
Parameter	Test Condition / Description
a. Reflow	Solder reflow process as per attached profile
b. Packaging description	Tape and reel. Standard packing quantity is 500 units per reel

10.0 Environmental Specification

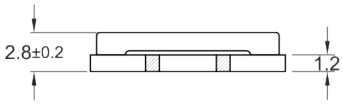
Parameter	Test Condition / Description
a. RoHS compliant	Yes
b. Mechanical shock	MIL-STD-883, Method 2002: Condition B
c. Thermal shock	MIL-STD-883, Method 1011: Condition B
d. Vibration	MIL-STD-883, Method 2007: Condition A
e. Humidity	After 48 hours at 85°C ±2°C 85% relative humidity non-condensing

11.0 Model Outline

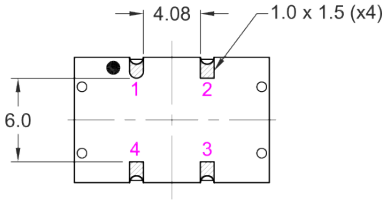
MODEL OUTLINE



TOP VIEW



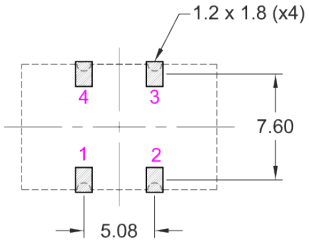
FRONT VIEW



BOTTOM VIEW

Pin	Connections
1	Control Voltage (V_C)
2	GND
3	Output
4	Supply Voltage (V_{DD})

RECOMMENDED PAD LAYOUT - Top View



TITLE: RXO/RVX 1490U MODEL	FILENAME: CAT1509	TOLERANCES: XX, X.X = ±0.2, X.XX = ±0.10, X.XXX, X°
RELATED DRAWINGS:	REVISION: C	Hole
	DATE: 16-Jun-2020	
	SCALE: 2 : 1	
	Millimetres	

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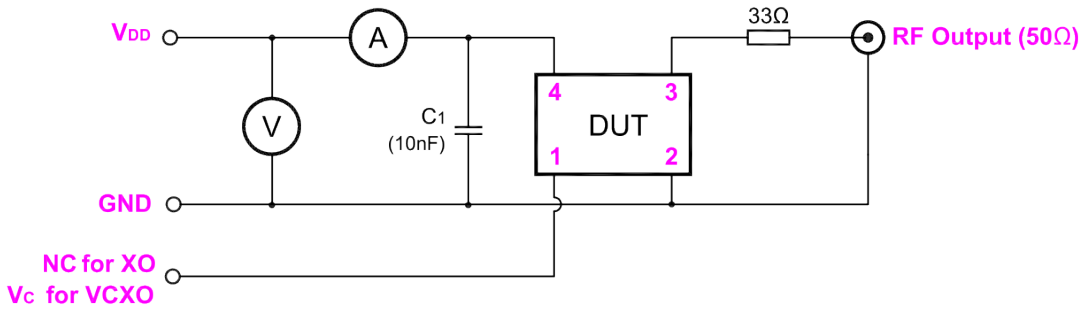
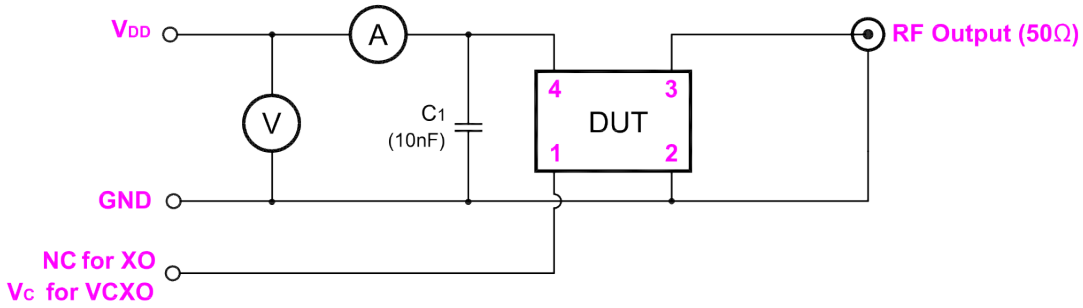
12.0 Test Circuit

LVCMOS:



SINE:



TITLE: RXO/RVX 1490U CMOS & SINE TEST CIRCUIT	FILENAME: CAT1510
RELATED DRAWINGS:	REVISION: A
	DATE: 09-Oct-2018
	SCALE: NTS
	Millimetres

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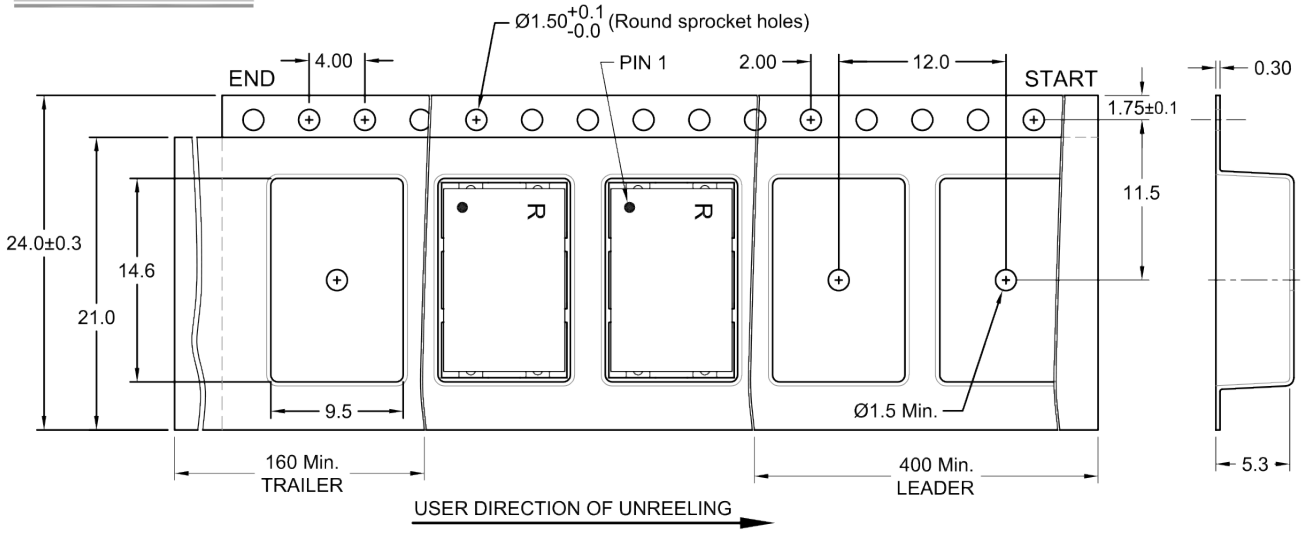
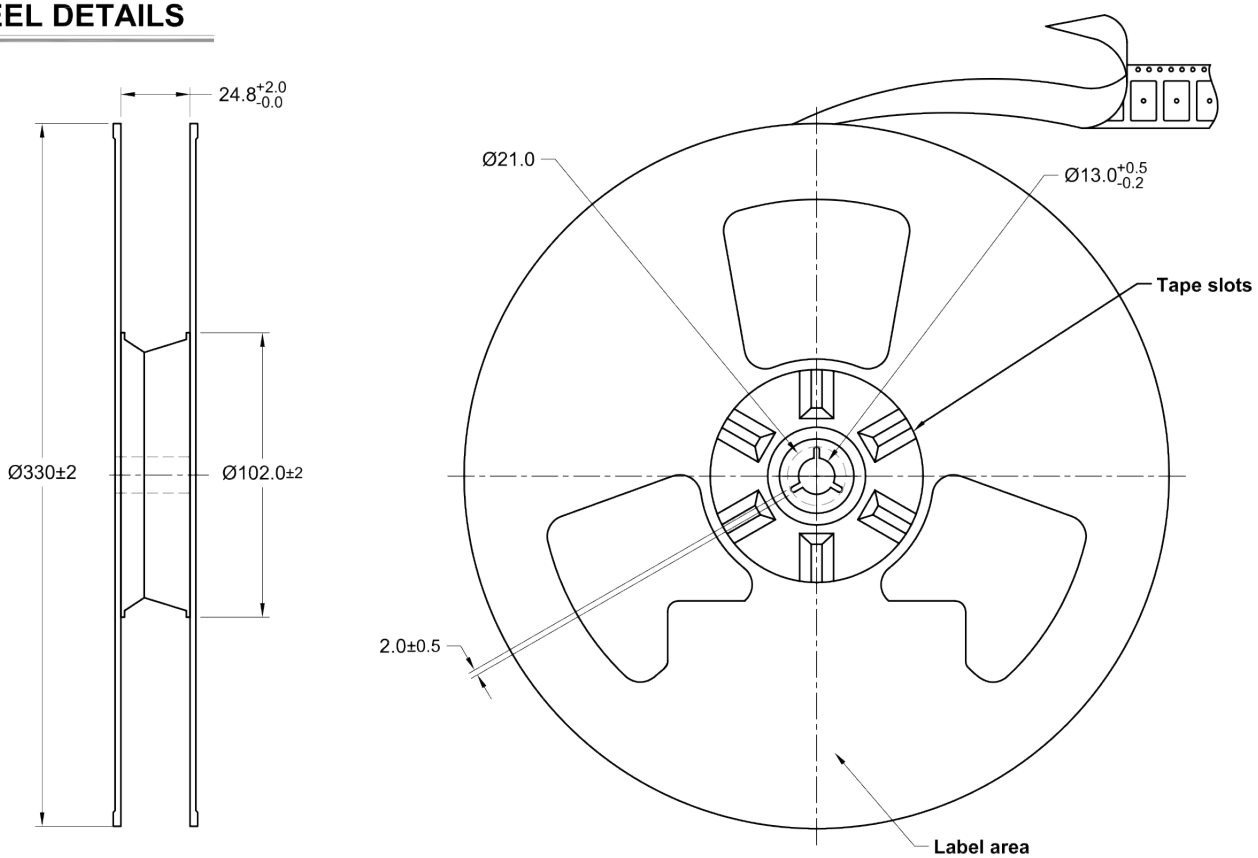
13.0 Tape and Reel

TAPE DETAILS



REEL DETAILS



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

TITLE: RXO/RVX 1490 SERIES TAPE & REEL	FILENAME: CAT1511	TOLERANCES:
RELATED DRAWINGS:	REVISION: A	XX = ±1
	DATE: 04-Oct-2019	X.X = ±0.2
	SCALE:	X.XX = ±0.10
	Millimetres	X.XXX =
		X° =
		Hole =

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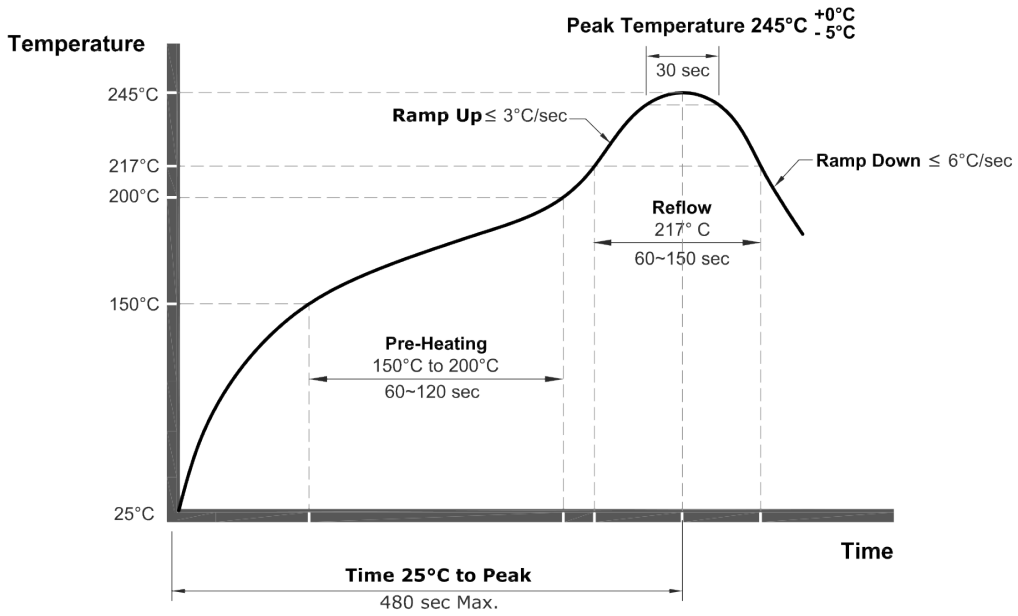
14.0 Reflow



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 Tc = 245°C)	FILENAME: CAT647
RELATED DRAWINGS:	REVISION: C
	DATE: 15-May-2019
	SCALE: NTS
	Millimetres

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15.0 Specification History

Revision	User	Changes	Approver(s)	Date
A	PK	Specification created, new topology version of V4103.	PK	2021-03-15
B	PK	Updated phase noise.	PK	2022-04-20