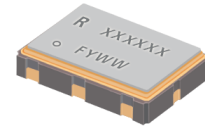


SMD Selectable Frequency Crystal Oscillator

High Performance XO in a 7 x 5 mm Surface Mount package with selectable output frequency



Product description

The RCX7050P selectable XO combines low RMS phase jitter and tight stability with the ability to select the output frequency from up to four factory-configured frequencies by controlling two Frequency Select (FS) pins (e.g. 125 or 156.25 MHz). This enables reductions in part count and built-in upgrade paths to increase design flexibility and reduce costs.

Applications

- Consumer
- Communications
- Base stations
- DSL/ADSL
- Ethernet
- Wi-Fi
- WiMAX/W-LAN

Features

- Selectable output frequencies (Up to 4)
- Low power differential outputs
- <1ps integrated RMS phase jitter (12 kHz to 20 MHz)
- Wide frequency range
- CMOS, LVPECL, LVDS, or HCSL output options
- Fast sample turnaround

Specifications

1.0 SPECIFICATION REFERENCES

Line	Parameter	Description
1.1	Model Description	RCX7050P XO
1.2	Reference Number	
1.3	Rakon Part Number	

2.0 FREQUENCY CHARACTERISTICS

Line	Parameter	Test Condition	Value	Unit
2.1	Frequency 1	FS1 = 0, FS2 = 0. See pin connections for details	8 to 1500	MHz
2.2	Frequency 2	FS1 = 1, FS2 = 0. See pin connections for details	8 to 1500	MHz
2.3	Frequency 3	FS1 = 0, FS2 = 1. See pin connections for details	8 to 1500	MHz
2.4	Frequency 4	FS1 = 1, FS2 = 1. See pin connections for details	8 to 1500	MHz
2.5	Output Switching Time		0.1 max	ms
2.6	Operating Temperature Range		-40 to 85	°C
2.7	Frequency Stability	Including Temperature range, Supply variation, Load variation and 10 years aging at 25°C	±20 to 50	ppm
2.8	Temperature Stability	Temperature range only	±10 to 20	ppm

3.0 POWER SUPPLY

Line	Parameter	Test Condition	Value	Unit
3.1	Supply Voltage (VDD)	With a tolerance of $\pm 10\%$	3.3	V
3.2	Supply Voltage (VDD)	With a tolerance of $\pm 5\%$	2.5	V
3.3	Supply Current	For LVCMOS	30 max	mA
3.4	Supply Current	For LVPECL	65 max	mA
3.5	Supply Current	For LVDS	40 max	mA

4.0 OUTPUT CHARACTERISTICS - LVCMOS (UP TO 200 MHz)

Line	Parameter	Test Condition	Value	Unit
4.1	Output Voltage (Vol)	15pF load	10 max	%VDD
4.2	Output Voltage (Voh)	15pF load	90 min	%VDD
4.3	Duty Cycle	@ 50% VDD	48 to 52	%
4.4	Rise Time / Fall Time	90%/10%	3 max	ns
4.5	RMS Phase Jitter	Integrated 12kHz to 20MHz	0.4 to 1	ps

5.0 OUTPUT CHARACTERISTICS - LVPECL ONLY

Line	Parameter	Test Condition	Value	Unit
5.1	Output Voltage (Vol)	50 Ω nominal load. (VDD - 1.6V) max.		
5.2	Output Voltage (Voh)	50 Ω nominal load. (VDD - 1.03V) min.		
5.3	Duty Cycle	@ VDD-1.3V (45 to 55% over 600MHz)	48 to 52	%
5.4	Rise Time / Fall Time	80%/20%	0.6 max	ns
5.5	RMS Phase Jitter	Integrated 12kHz to 20MHz	0.4 to 1	ps

6.0 OUTPUT CHARACTERISTICS - LVDS ONLY

Line	Parameter	Test Condition	Value	Unit
6.1	Differential Output: Voltage Swing (Vod)		350	mV
6.2	Duty Cycle	Measured at 1.25V (45 to 55% over 150MHz)	48 to 52	%
6.3	Rise Time / Fall Time	RL = 100 Ω / CL = 10 pF	0.6 max	ns
6.4	RMS Phase Jitter	Integrated 12kHz to 20MHz	0.4 to 1	ps

7.0 PIN CONNECTIONS

Line	Parameter	Description
7.1	Pin 1	FS1*, or E/D** or NC
7.2	Pin 2	FS2*, or E/D** or NC
7.3	Pin 3	GND
7.4	Pin 4	OUTPUT
7.5	Pin 5	COMPLIMENTARY OUTPUT (LVPECL/LVDS only), or E/D**, or NC
7.6	Pin 6	VDD
7.7	Pin 7 (Package Q)	FS1* or NC
7.8	Pin 8 (Package Q)	FS2* or NC
7.9	* FS1, FS2	0 = <30% of VDD or GND, 1 = >70% VDD
7.10	** Output Enabled	>70% of VDD on E/D pin, or E/D pin left open (Internal pull-up resistor)
7.11	** Output Disabled	<30% of VDD on E/D pin, or E/D pin to GND

8.0 PACKAGE DETAILS

Line	Parameter	Description
8.1	Package	Package B (6 pin) or Package Q (8 pin)
8.2	Top line	[R #####] Part identifier
8.3	Bottom line	[o FYWW] Pin 1, Manufacturing code, Year code* and Week code**
8.4	* Year code	A = 2010, B = 2011, C = 2012, D = 2013, ... Z = 2035
8.5	** Week Code	WW = 01 = Week of first Monday of the year

9.0 ENVIRONMENTAL SPECIFICATION

Line	Parameter	Description
9.1	Mechanical Shock	MIL-STD-883, Method 2002
9.2	Storage Temperature Range	-55 to 125 °C
9.3	Humidity	After 48 hours at 85 °C±2 °C 85 % relative humidity non-condensing
9.4	Thermal Shock	MIL-STD-883, Method 1011
9.5	Vibration	MIL-STD-883, Method 2007
9.6	Gross and Fine Leak	MIL-STD-883, Method 1014
9.7	RoHS Compliant	Yes

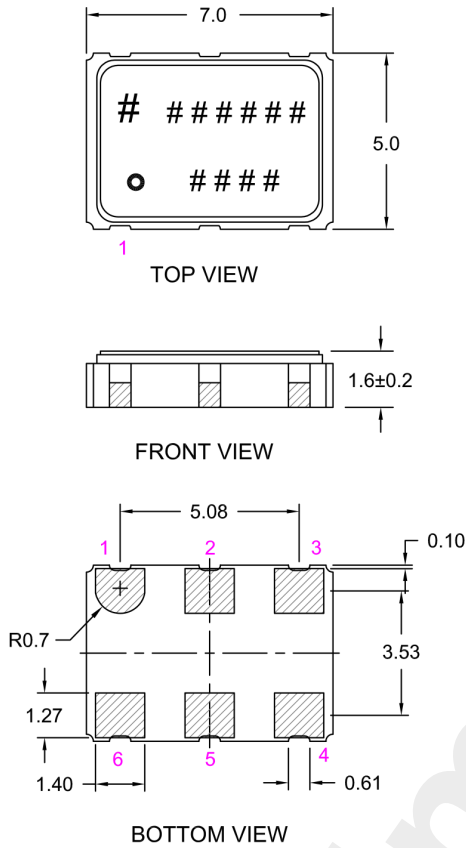
10.0 MANUFACTURING INFORMATION

Line	Parameter	Description
10.1	Packaging Description	Tape and Reel. Standard packing quantity is 2000 per reel
10.2	Reflow	Solder reflow process as per attached profile

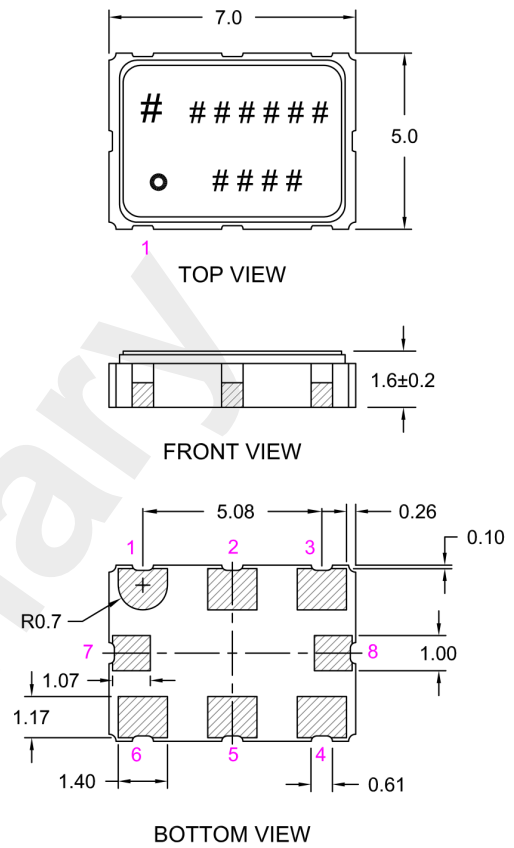
Preliminary

Drawing Name: XO/VCXO 7050 Selectable Frequency

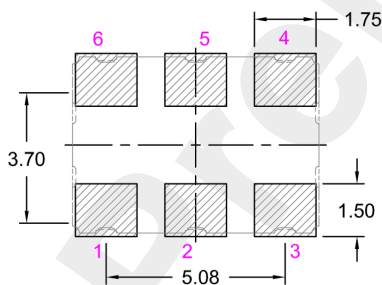
PACKAGE B



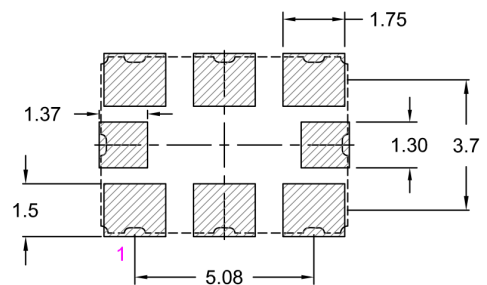
PACKAGE Q



RECOMMENDED PAD LAYOUT - TOP VIEW (6 Pin)



RECOMMENDED PAD LAYOUT - TOP VIEW (8 Pin)



NOTE:

1. PIN CONNECTIONS ARE DETAILED IN THE SPECIFICATION.
2. MARKING INFORMATION IS DETAILED IN THE SPECIFICATION.

TITLE: XO/VCXO 7050 Selectable Frequency Model

FILENAME: CAT641

TOLERANCES:

RELATED DRAWINGS:

REVISION: C

XX =

DATE: 12-Apr-13

X.X = ±0.15

SCALE: 5 : 1

X.XX = ±0.10

Millimetres

X.XXX =

X° =

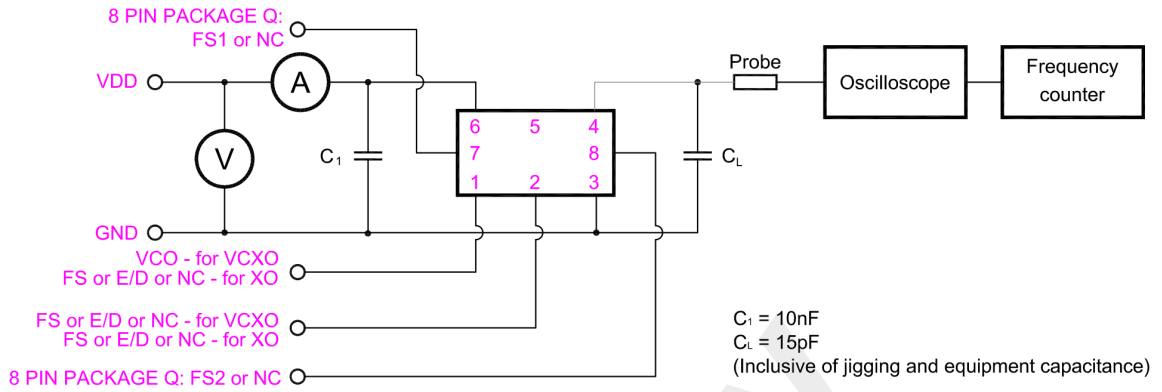
Hole =

rakon

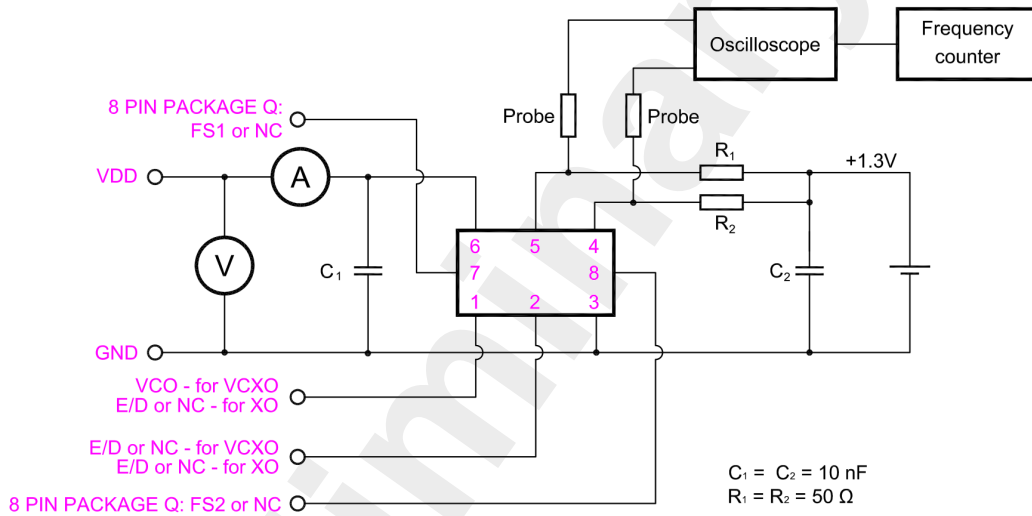
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Drawing Name: XO/VCXO 7050 Selectable Frequency Test Circuit

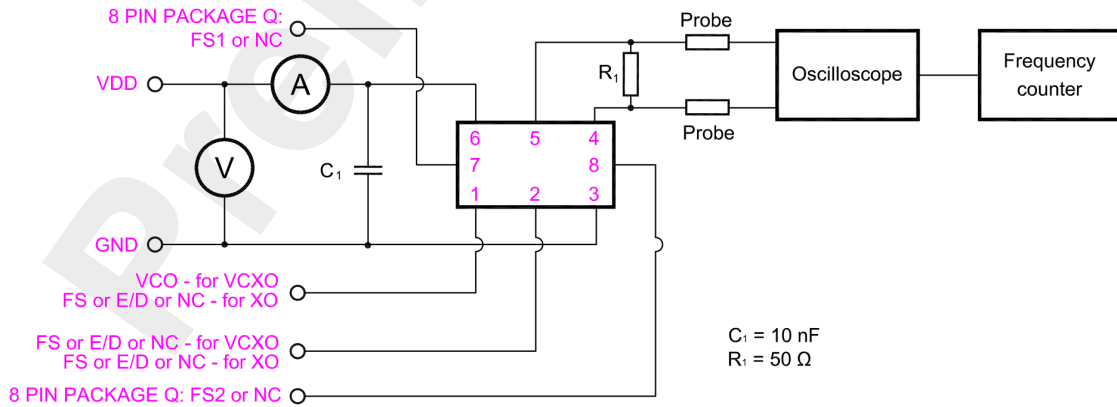
LVCMOS:



LVPECL:



LVDS:



TITLE: XO/VCXO 7050 Selectable Frequency Test Circuit

FILENAME: CAT643

RELATED DRAWINGS:

REVISION: B

DATE: 12-Apr-13

SCALE: NTS

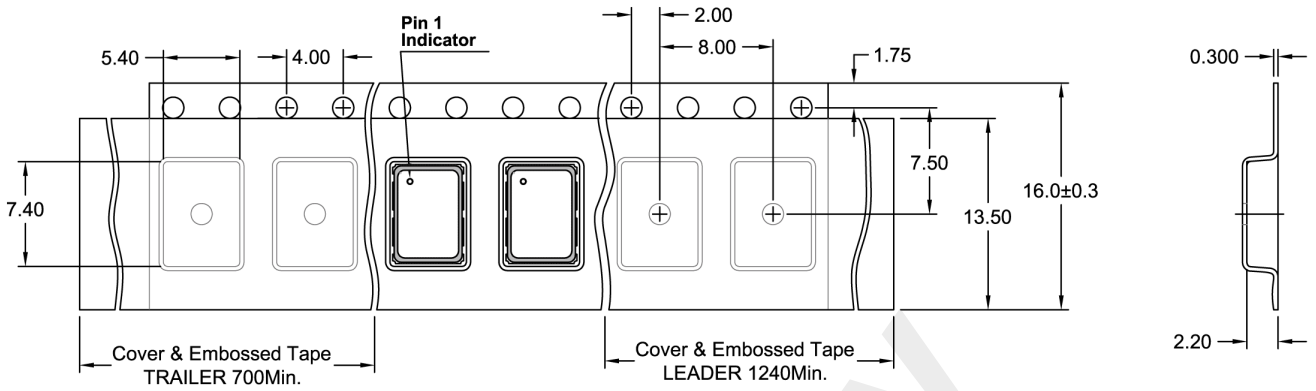
Millimetres

rakon

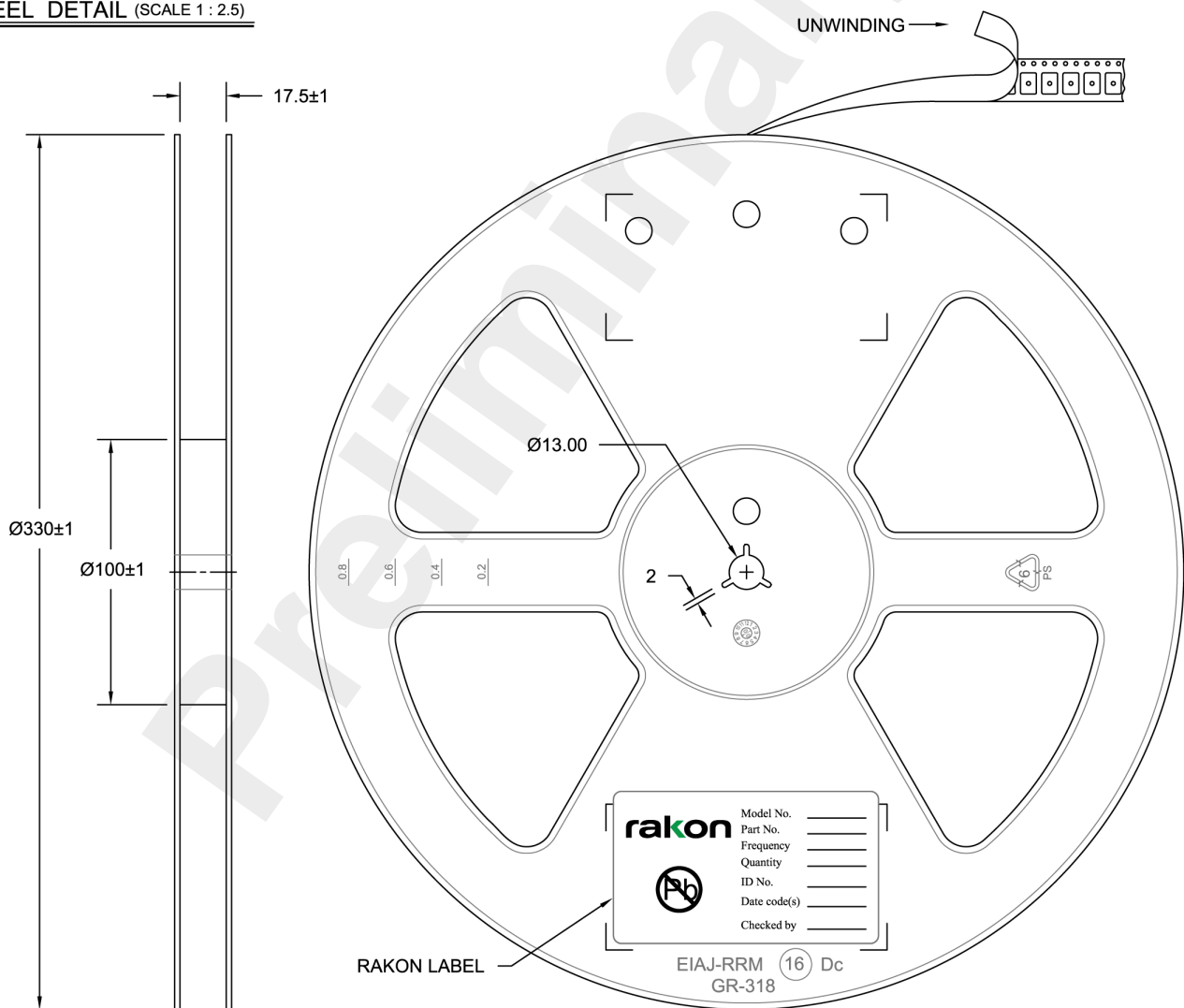
© 2013 Rakon Limited

Drawing Name: XO/VCXO 7050 Series Tape & Reel

TAPE DETAIL (SCALE 2 : 1)



REEL DETAIL (SCALE 1 : 2.5)



TITLE: XO/VCXO 7050 SERIES TAPE & REEL

RELATED DRAWINGS:

FILENAME: CAT032

REVISION: D

DATE: 05-Sep-11

SCALE: 2 : 1

Millimetres

TOLERANCES:

XX = ±0.5

X.X = ±0.2

X.XX = ±0.10

X.XXX = ±0.05

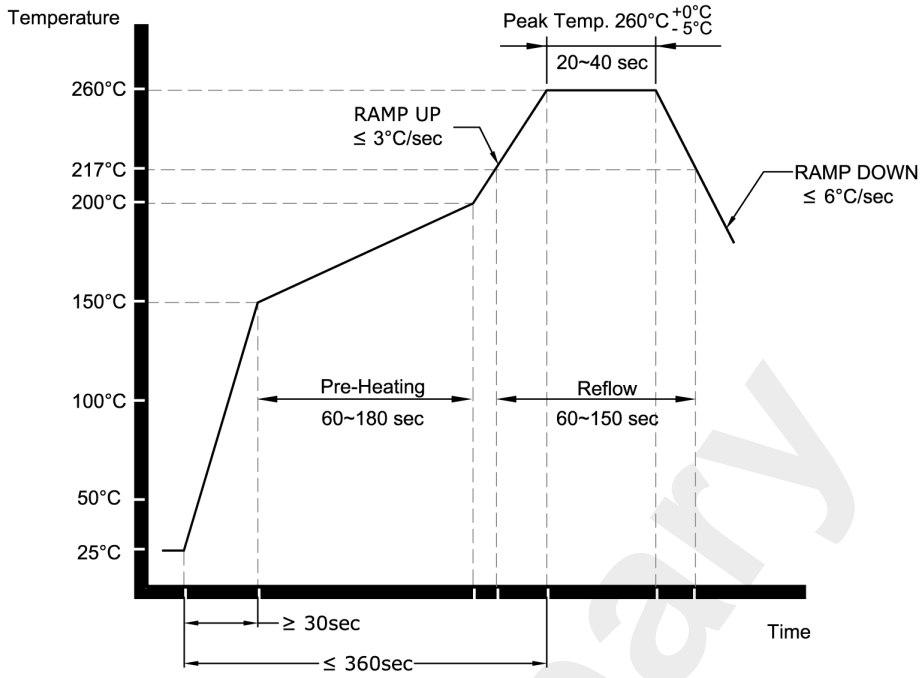
X° =

Hole =

rakon

© 2009 Rakon Limited

Drawing Name: Pb-Free Reflow



NOTE:

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 REFLOW

RELATED DRAWINGS:

FILENAME: CAT541

REVISION: B

DATE: 05-Sep-11

SCALE: NTS

Millimetres

rakon

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