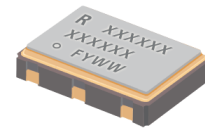


SMD Voltage Controlled Crystal Oscillator

Ultra Low Noise VCXO in 5.0 x 3.2 mm Surface Mount Package.



Product description

The RVX5032M is a very high performance VCXO delivering ultra low close-in phase noise for RF/Analog applications and ultra low RMS phase jitter optimised for high speed serial data and digital applications.

Applications

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

Features

- Excellent close-in phase noise performance
- Ultra Low Jitter 0.05 to 0.3 ps integrated 12 kHz to 20 MHz
- LVCMOS, LVPECL, or LVDS options
- Wide frequency range

Specifications

1.0 SPECIFICATION REFERENCES

Line	Parameter	Description
1.1	Model Description	RVX5032M VCXO
1.2	Reference Number	
1.3	Rakon Part Number	

2.0 FREQUENCY CHARACTERISTICS

Line	Parameter	Test Condition	Value	Unit
2.1	Frequency		1 to 800	MHz
2.2	Operating Temperature Range		-40 to 85	°C
2.3	Frequency Stability	Including Temperature range, Supply variation, Load variation and 15 years aging at 25°C	±35 to 50	ppm
2.4	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 ±5%	3.3	V
3.2	Supply Current	For LVCMOS	1 to 40	mA
3.3	Supply Current	For LVPECL	40 to 120	mA
3.4	Supply Current	For LVDS	30 to 80	mA

4.0 CONTROL VOLTAGE (VCO)

Line	Parameter	Test Condition	Value	Unit
4.1	Absolute Pull Range (APR)		±50 min	ppm
4.2	Total Pull Range	Frequency shift from minimum to maximum control voltage	100 to 250	ppm
4.3	Control Voltage	Nominal 1.65V	0 to 3.3	V
4.4	Linearity	Control voltage 0.3 to 3V	10 max	%
4.5	Slope	Positive only		
4.6	Modulation BW	Control voltage 0.3 to 3V	15 min	kHz
4.7	Input Impedance		0.1 to 10	MΩ

5.0 OUTPUT CHARACTERISTICS - CMOS (UP TO 200 MHz)

Line	Parameter	Test Condition	Value	Unit
5.1	Output Voltage (Vol)	15pF load	10 max	%VDD
5.2	Output Voltage (Voh)	15pF load	90 min	%VDD
5.3	Duty Cycle	@ 50% VDD	45 to 55	%
5.4	Rise Time/Fall Time	90%/10%	3 max	ns
5.5	RMS Phase Jitter	Typical integrated 12kHz to 20MHz	0.05 to 0.3	ps

6.0 OUTPUT CHARACTERISTICS - LVPECL ONLY

Line	Parameter	Test Condition	Value	Unit
6.1	Output Voltage (Vol)	50Ω nominal load. (VDD - 1.6V) max.		
6.2	Output Voltage (Voh)	50Ω nominal load. (VDD - 1.03V) min.		
6.3	Duty Cycle	@ VDD-1.3V	45 to 55	%
6.4	Rise Time/ Fall Time	80%/20%	0.6 max	ns
6.5	RMS Phase Jitter	Typical integrated 12kHz to 20MHz	0.05 to 0.3	ps

7.0 OUTPUT CHARACTERISTICS - LVDS ONLY

Line	Parameter	Test Condition	Value	Unit
7.1	Differential Output: Voltage Swing (Vod)		350	mV
7.2	Duty Cycle	Measured at 1.25 V	45 to 55	%
7.3	Rise Time/Fall Time	RL = 100 Ω / CL = 10 pF	0.6 max	ns
7.4	RMS Phase Jitter	Typical integrated 12kHz to 20MHz	0.05 to 0.3	ps

8.0 SSB PHASE NOISE

Line	Parameter	Test Condition	Value	Unit
8.1	SSB Phase Noise power density @ 10 Hz offset	Typical value for a 77.76 MHz VCXO @ 25 °C	-73	dBc/Hz
8.2	SSB Phase Noise power density @ 100 Hz offset	Typical value for a 77.76 MHz VCXO @ 25 °C	-100	dBc/Hz
8.3	SSB Phase Noise power density @ 1 kHz offset	Typical value for a 77.76 MHz VCXO @ 25 °C	-128	dBc/Hz
8.4	SSB Phase Noise power density @ 10 kHz offset	Typical value for a 77.76 MHz VCXO @ 25 °C	-137	dBc/Hz
8.5	SSB Phase Noise power density @ 100 kHz offset	Typical value for a 77.76 MHz VCXO @ 25 °C	-148	dBc/Hz

9.0 SSB PHASE NOISE

Line	Parameter	Test Condition	Value	Unit
9.1	SSB Phase Noise power density @ 10 Hz offset	Typical value for a 122.88 MHz VCXO @ 25 °C	-67	dBc/Hz
9.2	SSB Phase Noise power density @ 100 Hz offset	Typical value for a 122.88 MHz VCXO @ 25 °C	-98	dBc/Hz
9.3	SSB Phase Noise power density @ 1 kHz offset	Typical value for a 122.88 MHz VCXO @ 25 °C	-127	dBc/Hz
9.4	SSB Phase Noise power density @ 10 kHz offset	Typical value for a 122.88 MHz VCXO @ 25 °C	-147	dBc/Hz
9.5	SSB Phase Noise power density @ 100 kHz offset	Typical value for a 122.88 MHz VCXO @ 25 °C	-150	dBc/Hz

10.0 PIN CONNECTIONS

Line	Parameter	Description
10.1	Pin 1	VCO
10.2	Pin 2	E/D* or NC
10.3	Pin 3	GND
10.4	Pin 4	OUTPUT
10.5	Pin 5	COMPLIMENTARY OUTPUT (LVPECL/LVDS only) or NC
10.6	Pin 6	VDD
10.7	* Output Enabled	>70% of VDD on E/D pin, or E/D pin left open (connected to internal pull-up resistor)
10.8	* Output Disabled	<30% of VDD on E/D pin, or E/D pin to GND

11.0 PACKAGE DETAIL

Line	Parameter	Description
11.1	Package	F
11.2	Top Line	[R #####] Part identifier
11.3	Middle Line	[#####] Part information
11.4	Bottom Line	[o FYWW] Pin 1, Manufacturing code, Year code* and Week code**
11.5	* Year Code	A = 2010, B = 2011, C = 2012, D = 2013, ... Z = 2035
11.6	** Week Code	WW = 01 = Week of first Monday of the year

12.0 ENVIRONMENTAL SPECIFICATION

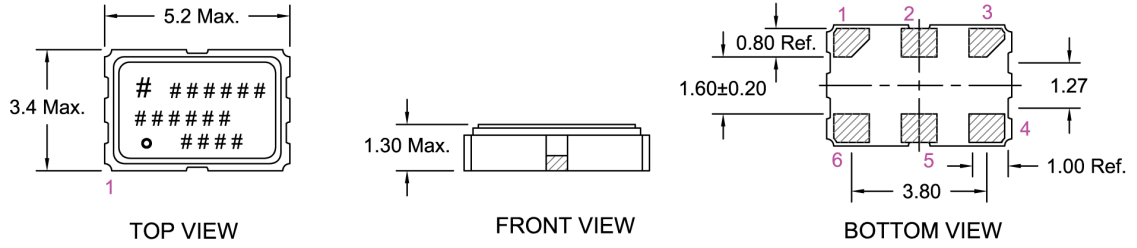
Line	Parameter	Description
12.1	Mechanical Shock	MIL-STD-883, Method 2002
12.2	Storage Temperature Range	-55 to 125°C
12.3	Humidity	After 48 hours at 85°C±2°C 85% humidity non-condensing
12.4	Thermal Shock	MIL-STD-883, Method 1011
12.5	Vibration	MIL-STD-883, Method 2007
12.6	Gross and Fine Leak	MIL-STD-883, Method 1014
12.7	RoHS Compliant	Yes

13.0 MANUFACTURING INFORMATION

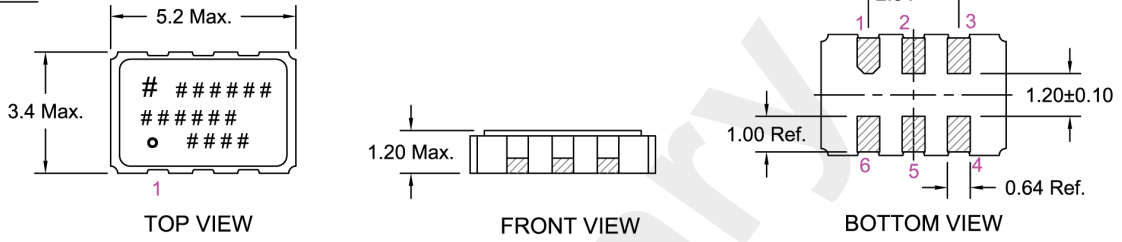
Line	Parameter	Description
13.1	Packaging Description	Tape and reel. Standard packing quantity is 4000 per reel
13.2	Reflow	Solder reflow process as per attached profile

Drawing Name: XO/VCXO 5032 6-Pin Model Drawing

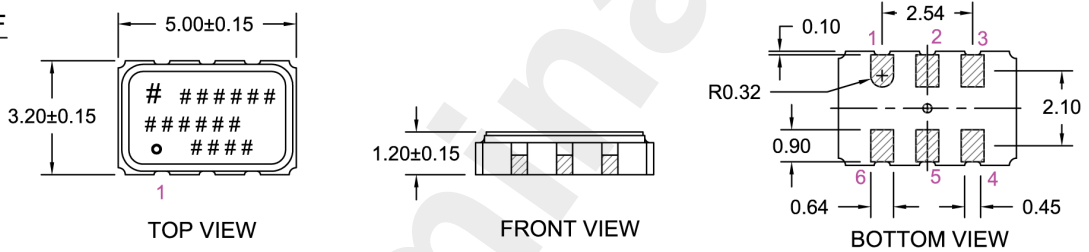
PACKAGE G65



PACKAGE GV5

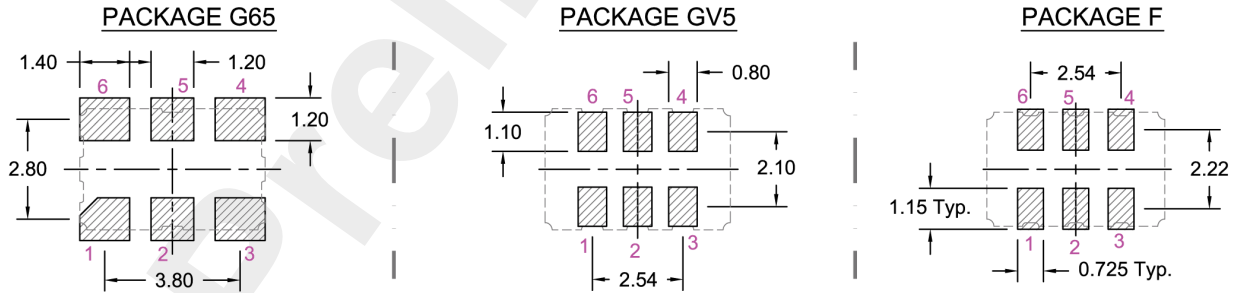


PACKAGE F



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

RECOMMENDED PAD LAYOUT - Top View



TITLE: XO/VCXO 5032 6-PIN MODEL

RELATED DRAWINGS:

FILENAME: CAT026

REVISION: C

DATE: 01-May-12

SCALE: 5 : 1

Millimetres

TOLERANCES:

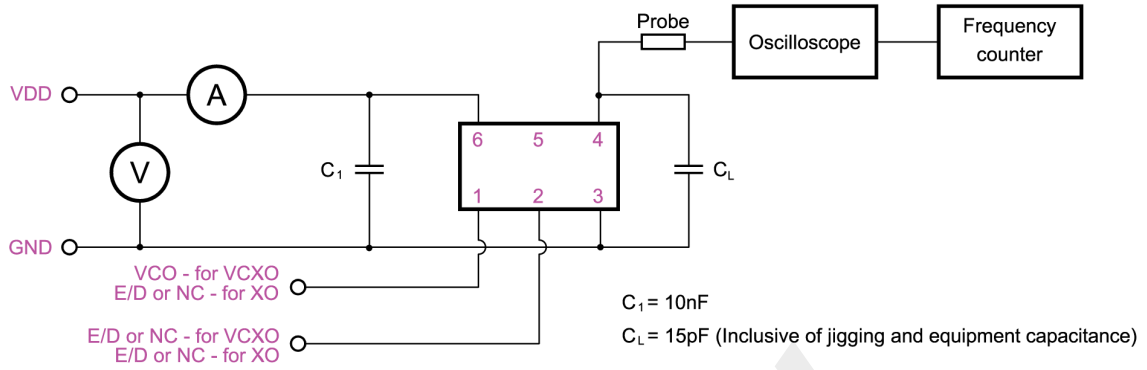
XX =
 X.X = ±0.15
 X.XX = ±0.10
 X.XXX =
 X° =
 Hole =

rakon

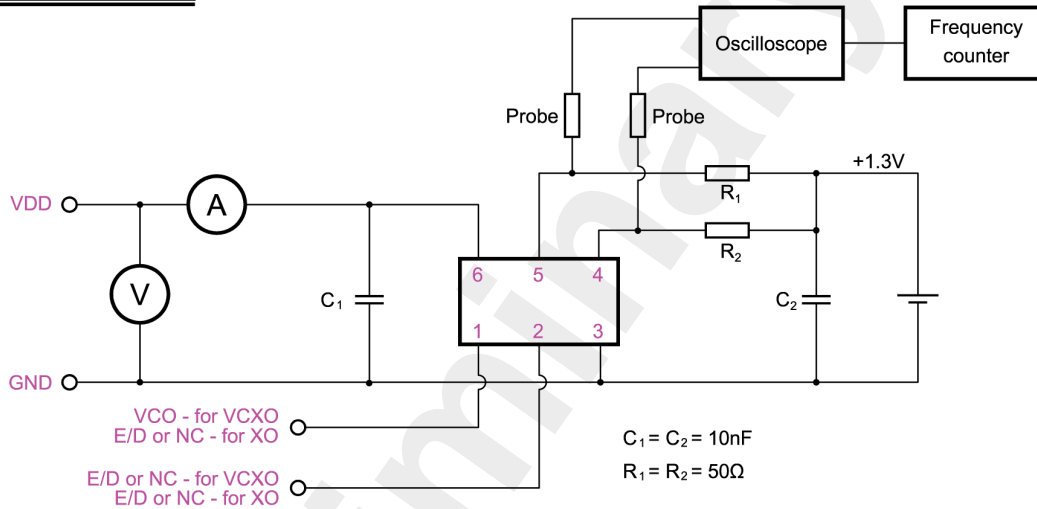
© 2009 Rakon Limited

Drawing Name: XO/VCXO 6 Pin Series Test Circuit

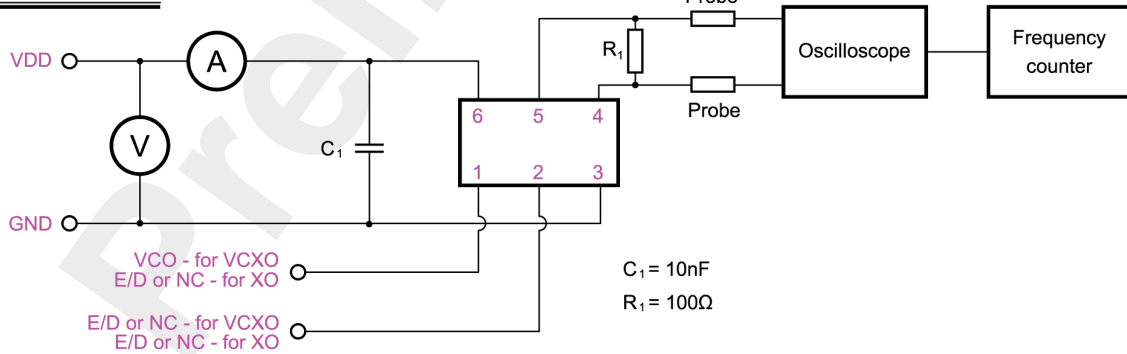
LVC MOS TEST CIRCUIT:



LVPECL TEST CIRCUIT:



LVDS TEST CIRCUIT:



TITLE: XO/VCXO 6 PIN SERIES TEST CIRCUIT

FILENAME: CAT088

RELATED DRAWINGS:

REVISION: F

DATE: 03-May-12

SCALE: 1 : 1

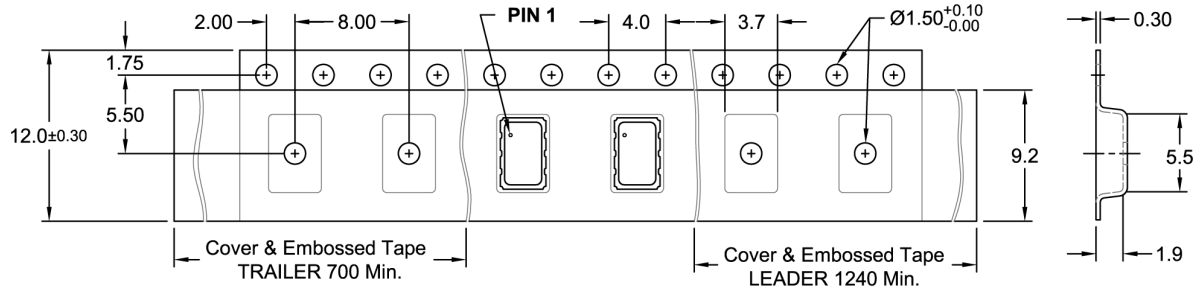
Millimetres

rakon

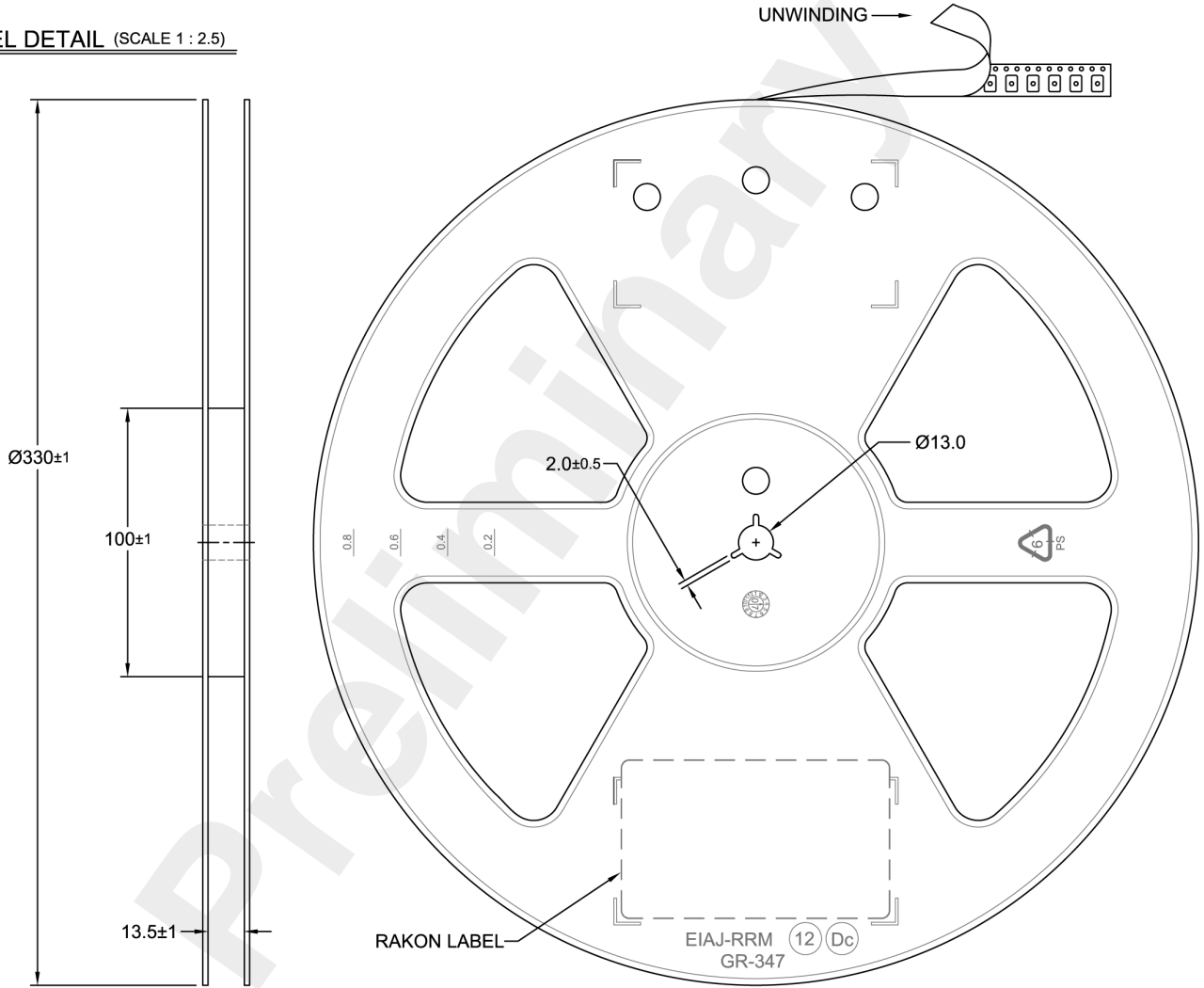
© 2009 Rakon Limited

Drawing Name: XO/VCX05032 F Series Tape & Reel

TAPE DETAIL (SCALE 2 : 1)



REEL DETAIL (SCALE 1 : 2.5)



TITLE: XO / VCXO 5032 F SERIES TAPE & REEL

FILENAME: CAT029

TOLERANCES:

RELATED DRAWINGS:

REVISION: B

XX =

X.X = ±0.1

X.XX = ±0.05

X.XXX =

X° =

Hole =

DATE: 14-Oct-11

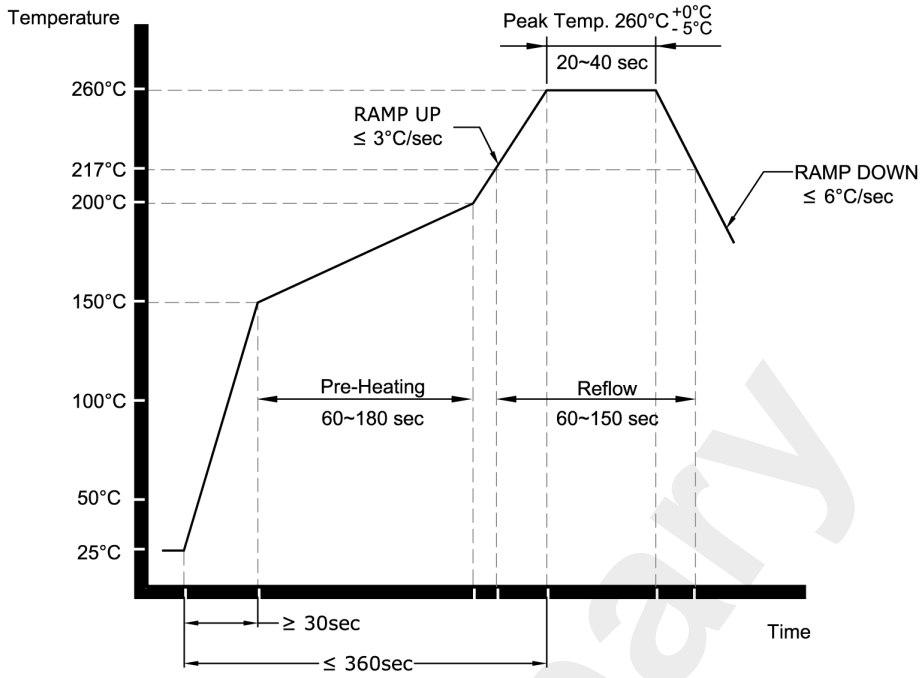
SCALE: 2 : 1

Millimetres

rakon

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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

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