

IT2200A



Specifications

1.0 SPECIFICATION REFERENCES

Line	Parameter	Description
1.1	Model Description	IT2205AE 16.369 MHz
1.2	RoHS compliant	Yes
1.3	Reference Number	IT2200A-20
1.4	Rakon Part Number	506537 (TX6092)
1.5	Current Version	1.01
1.6	Ordering Number	506537

2.0 FREQUENCY CHARACTERISTICS

Line	Parameter	Test Condition	Value	Unit
2.1	Frequency		16.369	MHz
2.2	Frequency calibration	Offset from nominal frequency measured at 25°C±2°C	±1 max	ppm
2.3	Reflow shift	Two consecutive reflows as per attached profile after 1 hour recovery	±1 max	ppm
2.4	Frequency stability over temperature	Referenced to the midpoint between minimum and maximum frequency value over the specified temperature range (Note 2)	±0.5 max	ppm
2.5	Temperature range	The operating temperature range over which the frequency stability is measured	-30 to 85	°C
2.6	Frequency slope	Minimum of 1 frequency reading every 2°C over the operating temperature range (Note 2)	0.1 max	ppm/°C
2.7	Static temperature hysteresis	Frequency change after reciprocal temperature ramped over the operating range. Frequency measured before and after at 25°C	0.6 max	ppm
2.8	Supply voltage stability	Supply voltage varied ±5% at 25°C	±0.1 max	ppm
2.9	Load sensitivity	±10% load change at 25°C	±0.2 max	ppm
2.10	Long term stability	Frequency drift over 1 year at 25°C	±1 max	ppm

3.0 POWER SUPPLY

Line	Parameter	Test Condition	Value	Unit
3.1	Supply voltage	Supply voltage based on nominal 1.8V	1.71 to 1.89	V
3.2	Current	At maximum supply voltage (Note 6)	1.5 max	mA

4.0 OSCILLATOR OUTPUT

Line	Parameter	Test Condition	Value	Unit
4.1	Output waveform	DC coupled clipped sine-wave (Note 8)		
4.2	Output voltage level	At minimum supply voltage (Note 6)	0.8 min	V
4.3	Output load resistance	Refer to test circuit. Typical load 10kOhm	9.5 to 10.5	kOhm
4.4	Output load capacitance	Refer to test circuit. Typical load 10pF	9.5 to 10.5	pF

5.0 SSB PHASE NOISE

Line	Parameter	Test Condition	Value	Unit
5.1	SSB phase noise power density at 1 Hz offset	Typical value for a 16.369 MHz oscillator at 25°C	-65	dBc/Hz
5.2	SSB phase noise power density at 10 Hz offset	Typical value for a 16.369 MHz oscillator at 25°C	-97	dBc/Hz
5.3	SSB phase noise power density at 100 Hz offset	Typical value for a 16.369 MHz oscillator at 25°C	-120	dBc/Hz
5.4	SSB phase noise power density at 1 KHz offset	Typical value for a 16.369 MHz oscillator at 25°C	-140	dBc/Hz
5.5	SSB phase noise power density at 10 KHz offset	Typical value for a 16.369 MHz oscillator at 25°C	-150	dBc/Hz
5.6	SSB phase noise power density at 100 KHz offset	Typical value for a 16.369 MHz oscillator at 25°C	-151	dBc/Hz

6.0 ENVIRONMENTAL

Line	Parameter	Description
6.1	Shock	Half sinewave acceleration of 100G peak amplitude for 6ms duration, 3 cycles each plain
6.2	Humidity	After 48 hours at 85°C±2°C 85% relative humidity non-condensing
6.3	Thermal shock test	Exposed at -40°C for 30 minutes then 85°C for 30 minutes for a period of 5 days.
6.4	Vibration	10G RMS from 30 Hz to 1500 Hz Random in each of the 3 axis for 4 hours, totally 12 hours
6.5	Storage temperature	-40 to 85°C

7.0 MARKING

Line	Parameter	Description
7.1	Type	Engraved
7.2	Line 1	R and Product code
7.3	Line 2	Pin 1 and Date code

8.0 MANUFACTURING INFORMATION

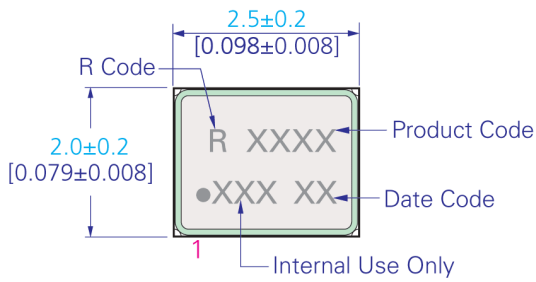
Line	Parameter	Description
8.1	Reflow	Solder reflow processes as per profile attached.
8.2	Packaging description	Refer packaging information

9.0 SPECIFICATION NOTES

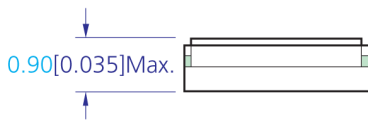
Line	Parameter	Description
9.1	Note 1	A maximum frequency stability over the temperature is required to be specified. Standard options are ±0.5ppm, ±1.0ppm and ±2.5ppm
9.2	Note 2	Parts should be shielded from drafts causing unexpected thermal gradients. Temperature changes due to ambient air currents on the oscillator can lead to short term frequency drift
9.3	Note 3	The operating temperature range needs to be specified. The extremes for this model are -40 to 85°C
9.4	Note 4	The maximum value is the specified. A minimum value, if present, indicates the best specification available
9.5	Note 5	The unit will operate on any voltage between the minimum and maximum values
9.6	Note 6	Specified for load stated in 4.3 and 4.4 at 25°C. Current consumption depends on crystal oscillation frequency. Higher frequency will result in higher current consumption and a drop in output voltage level
9.7	Note 7	The maximum frequency tuning range depends on the design frequency and the trimming sensitivity of the crystal. Linearity performance degrades if maximum frequency tuning setting is selected
9.8	Note 8	AC-Coupled outputs require an external capacitor, ≥ 1nF recommended

Drawing Name: I(V)T2200A Model Drawing

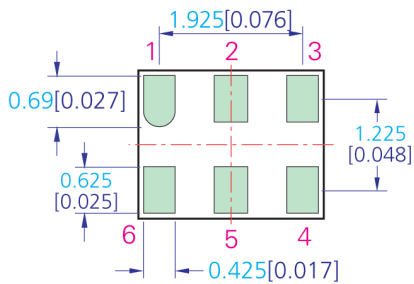
MODEL DRAWING



TOP VIEW



SIDE VIEW



BOTTOM VIEW

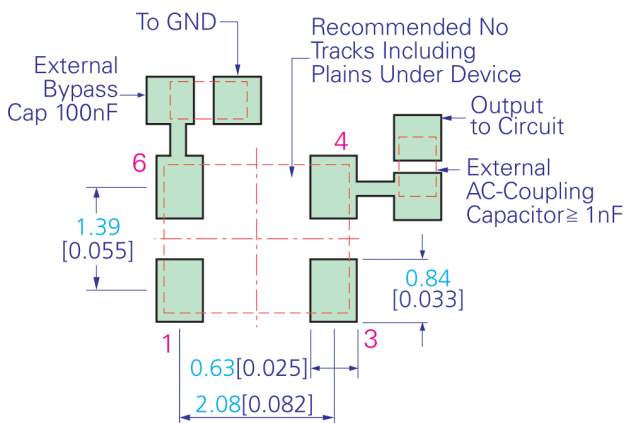
PIN CONNECTION OPTIONS

PIN	4 PAD			6 PAD
	IT22..A	IVT22..A	IT22..AP	IT22..AQ
1	NC	VCO	Enable/Disable*	NC
2	NC	NC	NC	Enable/Disable*
3	GND	GND	GND	GND
4	OUTPUT	OUTPUT	OUTPUT	OUTPUT
5	NC	NC	NC	NC
6	VCC	VCC	VCC	VCC

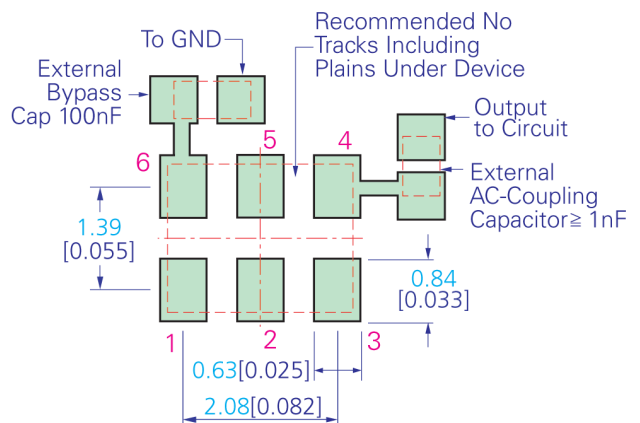
NOTE:

1. 6 PAD option is the recommended solution for Power Down.
2. * Connect to VCC or floating to enable TCXO.

RECOMMENDED 4 PAD LAYOUT - TOP VIEW



RECOMMENDED 6 PAD LAYOUT - TOP VIEW



TITLE: I(V)T2200A MODEL

RELATED DRAWINGS:

FILENAME: CAT413

REVISION: F

DATE: 30-May-11

SCALE: 10 : 1

Millimetres [inch]

Tolerance:

XX = ±0.5

X.X = ±0.2

X.XX = ±0.10

X.XXX = ±0.05

X° = ±1.0°

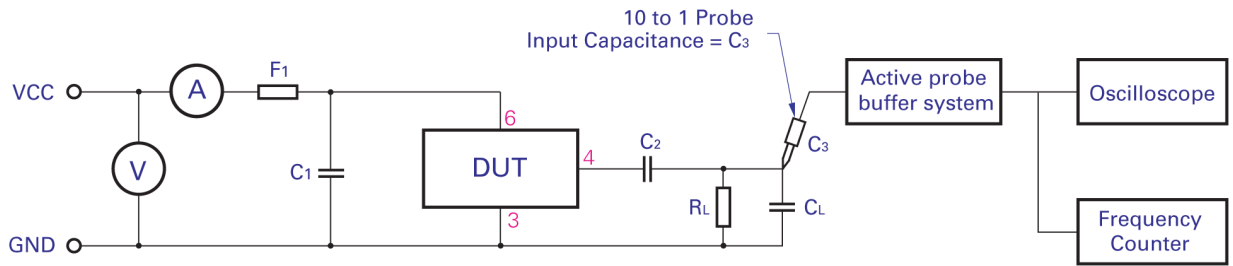
Hole = ±0.10



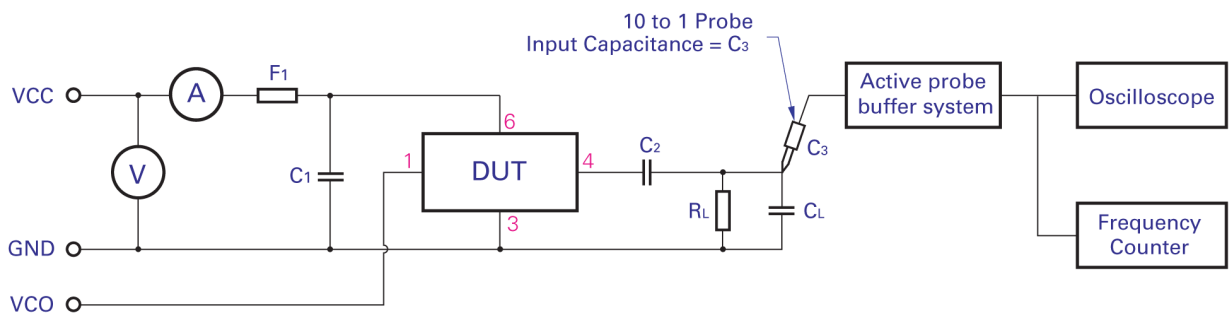
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Drawing Name: I(V)T2200 Series Test Circuit

IT TEST CIRCUIT :



IVT TEST CIRCUIT :



C1: 100nF

C2: $\geq 1\text{nF}$

RL: 10K

$C_T = C_L + C_3$ (C_3 - Oscilloscope probe capacitance)

C_T as stated in OSCILLATOR OUTPUT section

F1: A ferrite bead or a resistor between $22\Omega \sim 47\Omega$ recommended.

TITLE: I(V)T2200 SERIES TEST CIRCUIT

RELATED DRAWINGS:

FILENAME: CAT421

REVISION: D

DATE: 16-Apr-09

SCALE: NTS

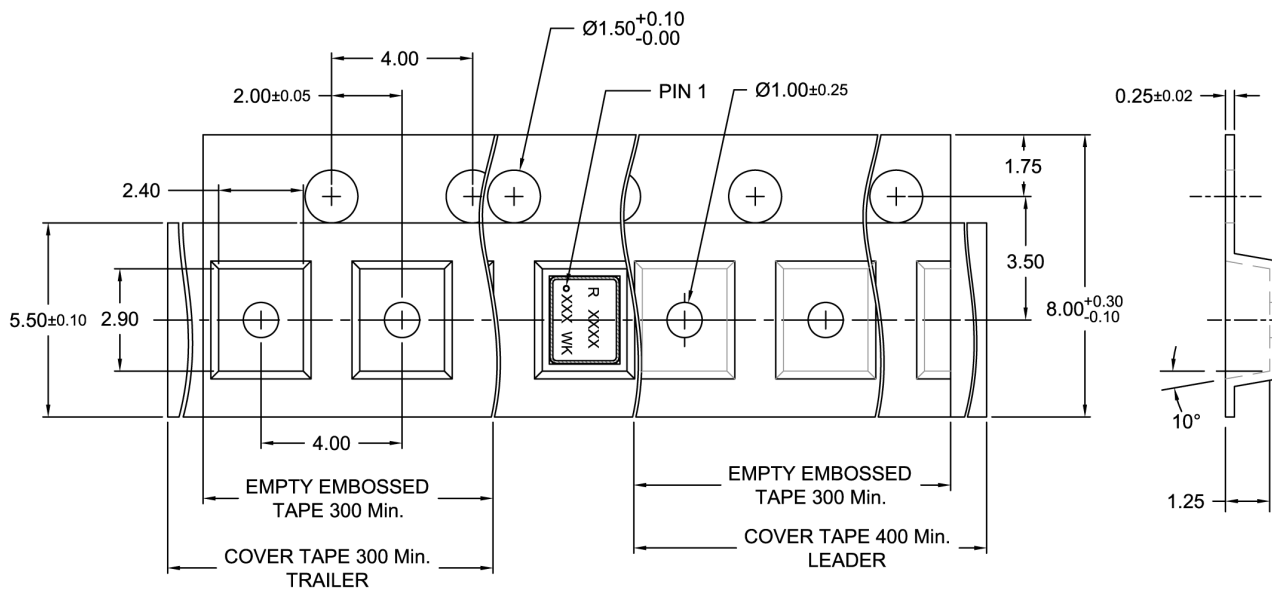
Millimetres [inch]

rakon

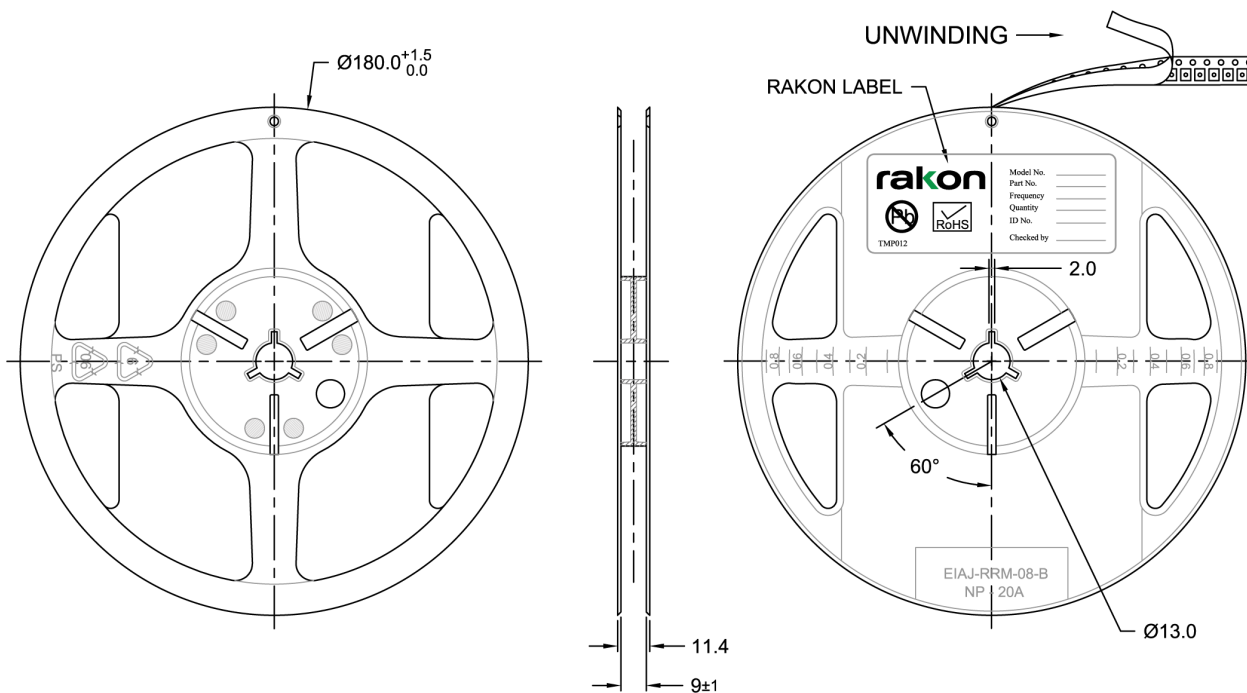
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Drawing Name: 2200 Series Tape & Reel

TAPE DETAIL (Scale 5 : 1)



REEL DETAIL (Scale 1 : 2.5)



TITLE: 2200 SERIES TAPE & REEL

RELATED DRAWINGS:

FILENAME: CAT422

REVISION: D

DATE: 22-Aug-11

SCALE: 5 : 1

Millimetres [inch]

TOLERANCES:

X.X = ±0.1

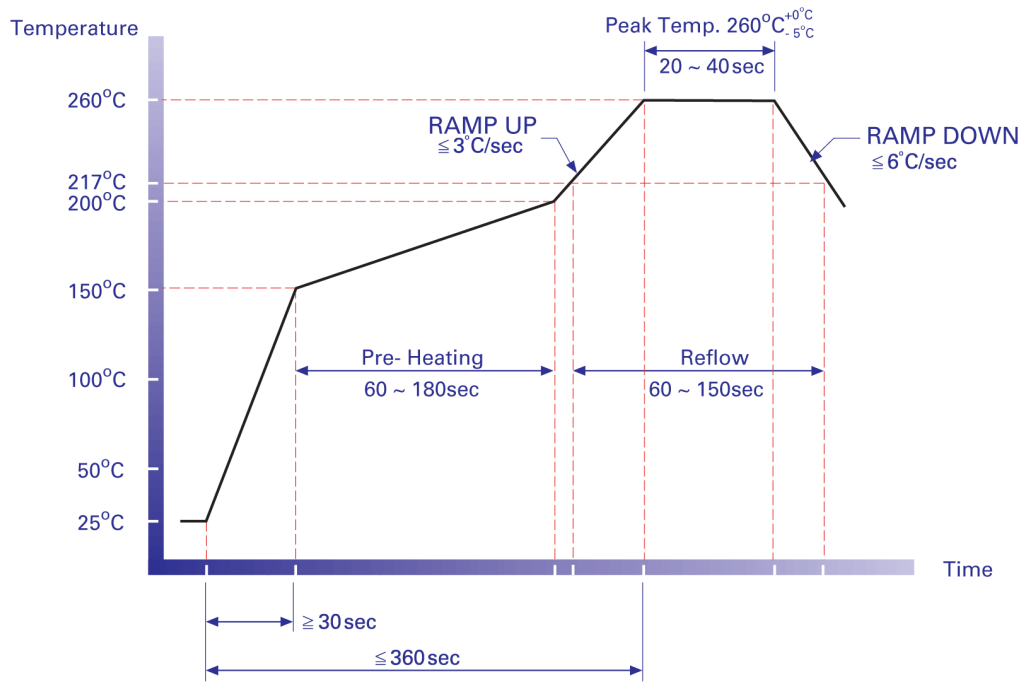
X.XX = ±0.05

UNLESS OTHERWISE SPECIFIED

rakon

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Drawing Name: RF-CAT423



NOTE:

The product has been tested to withstand the Reflow Profile shown. The Reflow Profile used to solder Rakon TCXO 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: 2200 SERIES Pb-FREE REFLOW

RELATED DRAWINGS:

FILENAME: CAT423

REVISION: A

DATE: 10-Oct-08

SCALE: NTS

Millimetres [inch]



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Specification History

Current Version : 1.01

Version	User	Change	Note	Date
1.0	System	Specification Created		2010-02-11 11:23
1.01	andrew.daken	• Added line '1.6' Ordering Number	Clarifying the part number to specify when ordering	2011-09-06 15:05