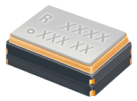
IT3200F

SMD Temperature Compensated Crystal Oscillators

Low cost SMD TCXO with voltage control option, using an analogue IC for compensation. Frequencies ranging from 10MHz to 40MHz.



Product description

The IT3200F with voltage control option, employs an analogue IC for the oscillator and temperature compensation. The RSX-8 crystal is surface mounted on top of the ceramic IC carrier. The segregation of the crystal from the oscillator further improves the reliability of the product.

Applications

- GPS
- Feature phone
- WiMAX/W-LAN
- Wi-Fi

Features

- Excellent phase noise performance
- Standard temperature stability choices are ±1ppm, ±1.5ppm and ±2.5ppm over wide temperature ranges
- Frequency slope and perturbation specifications can be customized to the application requirement
- Supply voltage down to 1.8 V

Specifications

1.0 SPECIFICATION REFERENCES

Line	Parameter	Description
1.1	Model description	IT3200F / IVT3200F
1.2	RoHS Compliant	Yes
1.3	Reference number	
1.4	Rakon part number	

2.0 FREQUENCY CHARACTERISTICS

Line	Parameter	Test Condition	Value	Unit
2.1	Frequency		10 to 40	MHz
2.2	Frequency calibration	Offset from nominal frequency measured at Frequency at 25°C ± 2°C	±1 max	ppm
2.3	Reflow shift	Two consecutive reflows at the attached reflow profile after 1 hour relaxation at 25°C	±1 max	ppm
2.4	Frequency stability over temperature	Referenced to the midpoint between minimum and maximum frequency value over the specified temperature range. Control voltage set to midpoint of control voltage (Note 1)	±1 to 5	ppm
2.5	Temperature range	The operating temperature over which the frequency stability is measured	-40 to 85	°C
2.6	Frequency slope	Minimum of 1 frequency reading every 2°C, over the operating temperature range	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	±0.2 max	ppm
2.9	Load sensitivity	±10% load change	±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	Nominal supply voltage range	1.8 to 3	V
3.2	Current	At maximum supply voltage (Note 2)	2 max	mA

4.0 CONTROL VOLTAGE (VCO) - OPTIONAL

Line	Parameter	Test Condition	Value	Unit
4.1	Control voltage range	The nominal control voltage vaule is midway between the minimum and maximum (Note 3)	0.3 to 1.5	V
4.2	Frequency tuning	Frequency shift from minimum to maximum control voltages	6 to 20	ppm
4.3	Port input impedance		500 min	kΩ
4.4	Linearity	Deviation from straight line curve fit	20 max	%

5.0 OSCILLATOR OUTPUT

Line	Parameter	Test Condition	Value	Unit
5.1	Output waveform	DC coupled clipped sine-wave (Note 4)		
5.2	Output voltage level	At minimum supply voltage (Note 2)	0.8 min	V
5.3	Output load resistance	Refer test circuit	9 to 11	kΩ
5.4	Output load capacitance	Refer test circuit	9 to 11	pF

6.0 SSB PHASE NOISE

Line	Parameter	Test Condition	Value	Unit
6.1	SSB phase noise power density at 1Hz offset	Typical value for a 26.0 MHz oscillator at 25°C	-63	dBc/Hz
6.2	SSB phase noise power density at 10Hz offset	Typical value for a 26.0 MHz oscillator at 25°C	-90	dBc/Hz
6.3	SSB phase noise power density at 100Hz offset	Typical value for a 26.0 MHz oscillator at 25°C	-114	dBc/Hz
6.4	SSB phase noise power density at 1kHz offset	Typical value for a 26.0 MHz oscillator at 25°C	-133	dBc/Hz
6.5	SSB phase noise power density at 10kHz offset	Typical value for a 26.0 MHz oscillator at 25°C	-144	dBc/Hz
6.6	SSB phase noise power density at 100kHz offset	Typical value for a 26.0 MHz oscillator at 25°C	-147	dBc/Hz

7.0 ENVIRONMENTAL

Line	Parameter	Description
7.1	Shock	Half sine-wave acceleration of 100g peak amplitude for 11ms duration, 3 cycles each plane
7.2	Humidity	After 48 hours at 85°C±2°C 85% relative humidity non-condensing
7.3	Thermal shcok	Exposed at -40°C for 30 minutes then to 85°C for 30 minutes constantly for a period of 5 days.
7.4	Vibration	10g RMS from 30Hz to 1500Hz random in each of the 3 axis of 4 hours. Totally 12 hours
7.5	Storage temperature	-40°C to 85°C

8.0 MARKING

Line	Parameter	Description
8.1	Type	Engraved
8.2	Line 1	R and the last four characters of the Internal Part Number
8.3	Line 2	Pin 1 mark and Date Code

9.0 MANUFACTURING INFORMATION

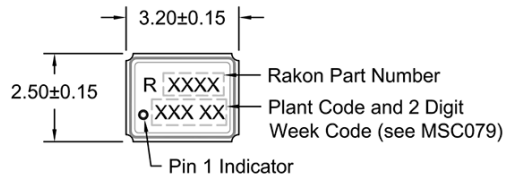
Line	Parameter	Description
9.1	Reflow	Solder reflow processes as per profile attached
9.2	Packaging description	Tape and reel. Standard packing quantity is 3000 units per reel

10.0 SPECIFICATION NOTES

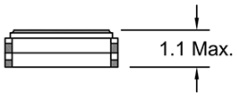
Line	Parameter	Description
10.1	Note 1	Parts should be shielded from drafts causing unexpected thermal gradients. Temperature changes due to ambient air currents can lead to short term frequency drift
10.2	Note 2	Specified for the load stated in oscillator output section at 25 °C
10.3	Note 3	Voltage control cannot exceed Vcc -0.2V or below GND +0.2V
10.4	Note 4	External AC-Coupling capacitor required. 1nF or greater recommended

Drawing Name: I(V)T3200F Model Drawing

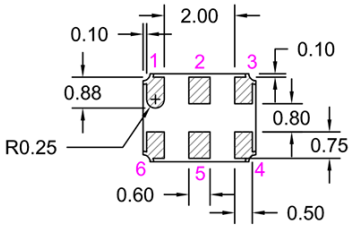
MODEL DRAWING



TOP VIEW



FRONT VIEW



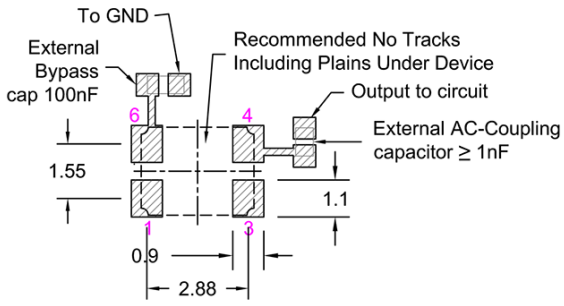
BOTTOM VIEW

PIN CONNECTIONS

Pin	IT	IVT
1	GND RECOMMENDED	VCO
2	NC	NC
3	GND	GND
4	OUTPUT	OUTPUT
5	NC	NC
6	V_{DD}	V_{DD}

RECOMMENDED LAYOUT

- TOP VIEW

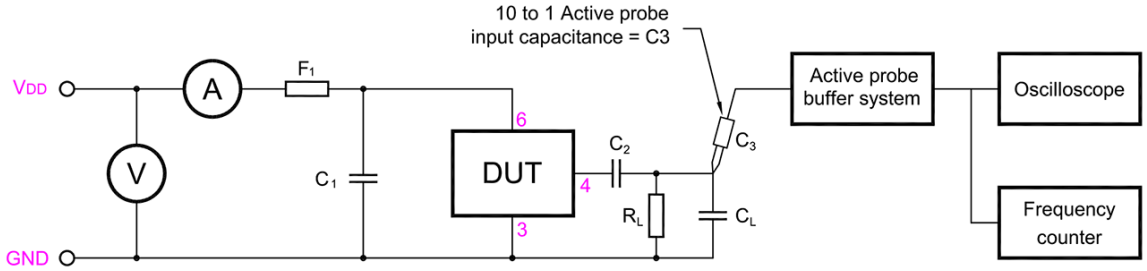


TITLE: I(V)T3200F MODEL	FILENAME: CAT436	TOLERANCES:	
RELATED DRAWINGS:	REVISION: E	XX	= ±0.5
	DATE: 30-Jul-13	X.X	= ±0.2
	SCALE: 5 : 1	X.XX	= ±0.10
	Millimetres	X.XXX	= ±0.05
		X°	= ±1.0°
		Hole	= ±0.10

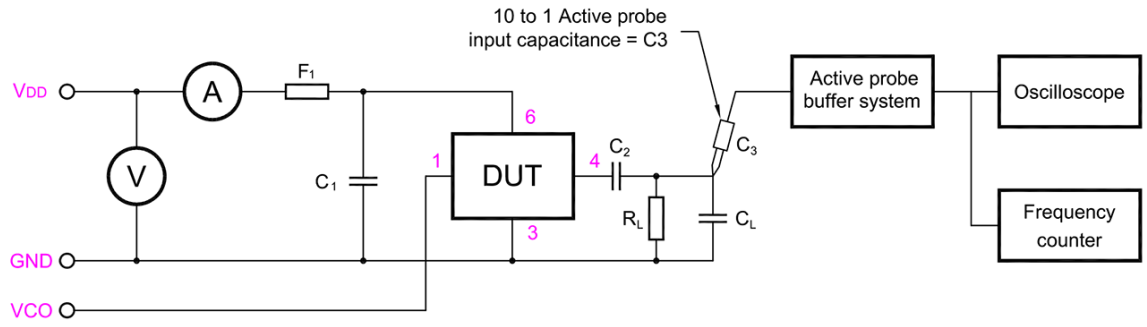
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Drawing Name: I(V)T3200 Series Test Circuit

IT TEST CIRCUIT:



IVT TEST CIRCUIT:



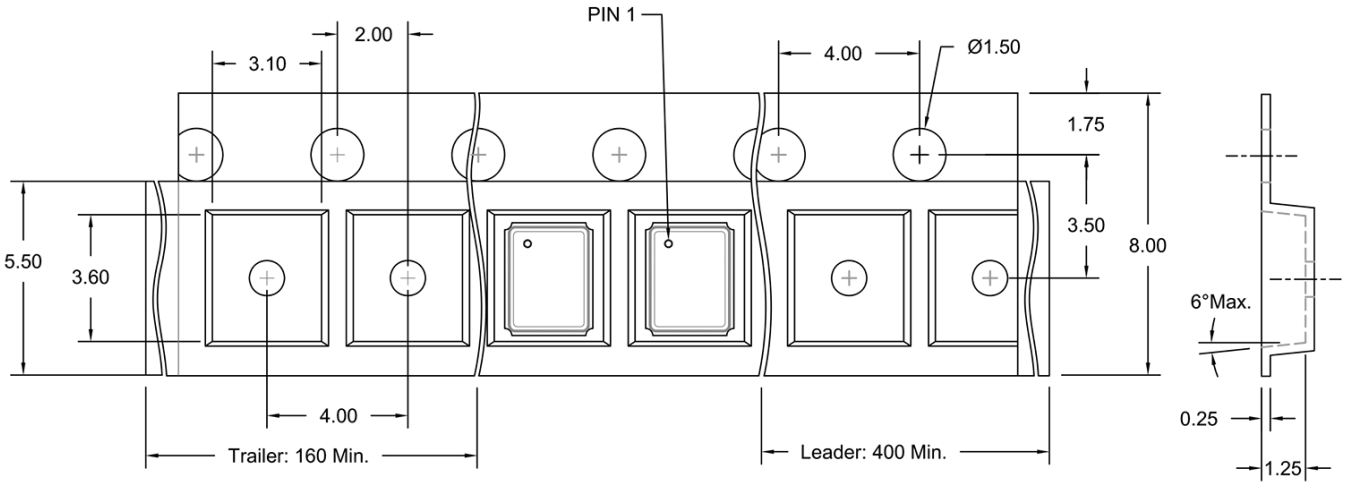
C_1: 100nF C_2: ≥1nF R_L: 10kΩ	C_T: = C_L + C_3 (C_3 - Oscillope probe capacitoance) C_T as stated in OSCILLATOR OUTPUT selection F_1: A ferrite bead or a resistor between 22Ω ~ 47Ω recommended.

TITLE: I(V)T3200 SERIES TEST CIRCUIT	FILENAME: CAT286
RELATED DRAWINGS:	REVISION: G
	DATE: 29-Jul-13
	SCALE: NTS
	Millimetres

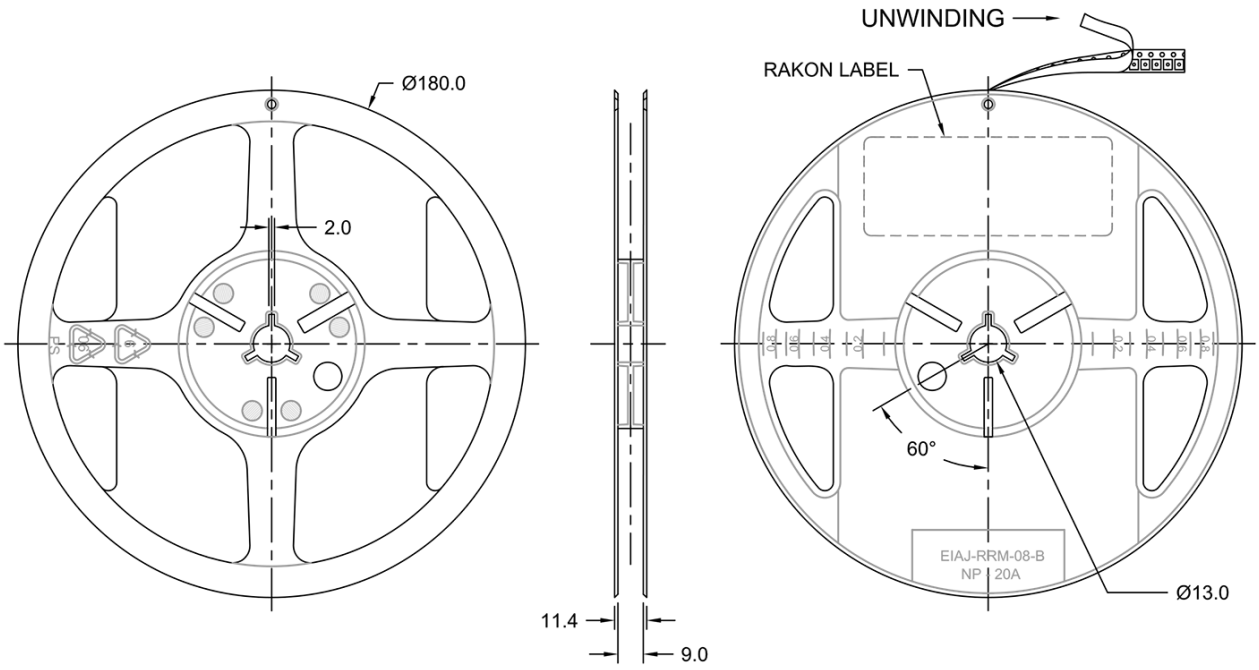
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Drawing Name: 3200 Series Tape & Reel

TAPE DETAIL (Scale 5 : 1)



REEL DETAIL (Scale 1 : 2.5)

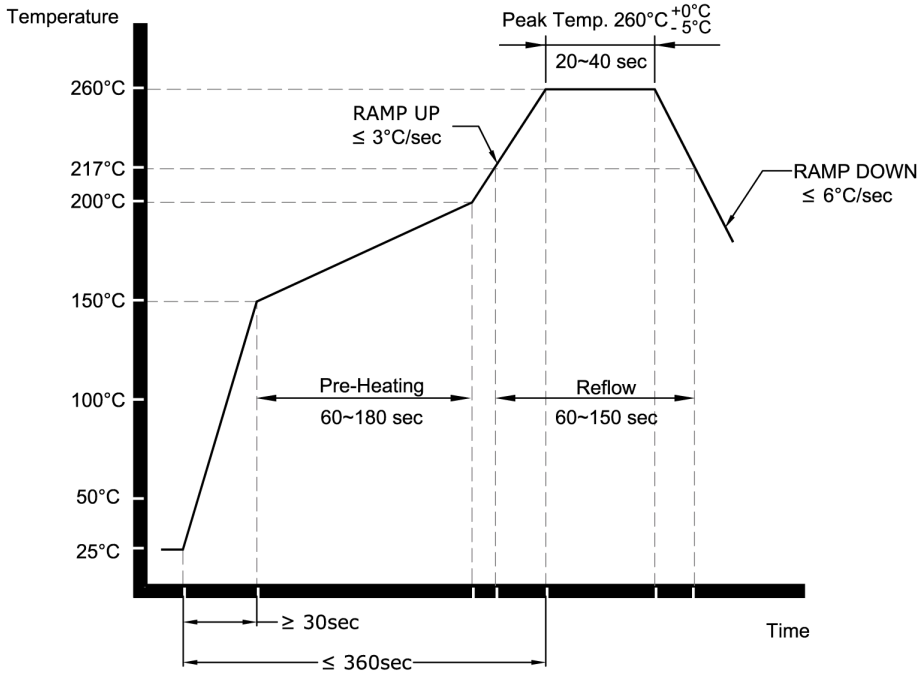


TITLE: 3200 SERIES TAPE & REEL	FILENAME: CAT300	TOLERANCES: XX =	
RELATED DRAWINGS:	REVISION: J	X.X = ±0.2	
	DATE: 29-Jul-13	X.XX = ±0.10	
	SCALE: See Above	X.XXX =	
	Millimetres	X° =	
		Hole =	

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	FILENAME: CAT541
RELATED DRAWINGS:	REVISION: B
	DATE: 05-Sep-11
	SCALE: NTS
	Millimetres

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