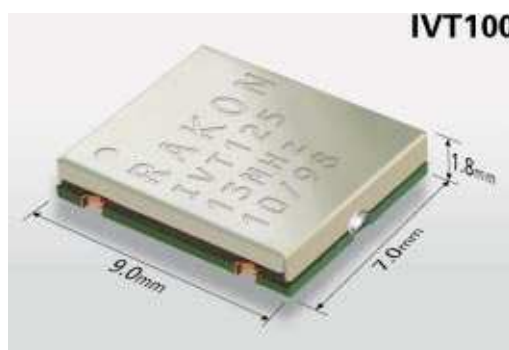


Product Description

The Rakon IVT100 Series VCTCXO has a footprint of 9mm x 7mm with a max. height of only 1.8mm. The IVT100 employs an analogue IC for the oscillator and temperature compensation. This model offers a voltage tuning terminal for frequency control. Supplied on tape and reel the product is reflow compatible and aqueous washing is allowable.

Applications Include

GSM/TDMA/APMS cellular phones, PCMCIA CDPD cards, two-pagers and many other wireless possibilities.



IVT100 SMD Voltage Controlled Temperature Compensated Crystal Oscillators

Features

- Temperature stability choices are +/-1ppm, +/-1.5ppm and +/-2.5ppm, over a wide temperature ranges.
- The product weight is only 0.1720 grams.
- Clipped sinewave frequency output from 10MHz to 26MHz.
- Frequency slope and perturbation specifications can be customized to the application requirement.
- Power supply alternatives are 2.7V to 5V, and the unit consumes only 1.2mA typically.
- Internal power regulation. Unit can operate on any voltage between 2.7 and 5.5 Volts.

FREQUENCY CHARACTERISTICS

Parameter	Test Condition	Min.	Max.	Unit
Frequency range	Nominal frequency referenced to 25 deg C.	10	26	MHz
Frequency calibration	Referenced to 25 deg C.	1		+/-ppm
Frequency stability over temperature	Referenced to frequency reading at 25 deg C. Temp. varied at max of 2 deg C per minute (Note 1)	1	5	+/-ppm
Temperature range	Operating specification (Note 2)	-40	85	Degree C
Frequency perturbations	Peak to peak amplitude of frequency perturbation within operating temperature range (Note 3.)	0.1	1	ppm
Frequency slope	Minimum of 1 frequency reading every 2 deg C, over the operating temperature range (Note 3.)	0.05	1	ppm/deg C
Static temperature hysteresis	Frequency change after reciprocal temperature ramp over the operating range. Frequency measured before and after at 25 deg C. (Note 4.)	0.6	0.8	+/-ppm
Supply voltage stability	Supply voltage varied +/-5% at 25 deg C.	0.1		+/-ppm
Load sensitivity	+/-10% load change	0.2		+/-ppm
Root Allan Variance	1 second Tau	1		ppb
Long term stability	Frequency drift over 1 year (Note 3)	0.5	1	+/-ppm
G sensitivity	Gamma vector of all three axis from 30Hz to 1500Hz	1		ppb/G

POWER SUPPLY

Supply voltage	The Min. and Max. values are specified as +/-5% of the nominal supply voltage value. (Note 5.)	2.7	5.5	V
Current	Operating specification	2		mA

OSCILLATOR OUTPUT

Output waveform	Clipped sinewave			
Output voltage level	Operating specification	0.8	1.8	V
Output load resistance	Operating specification	9	11	K Ohm
Output load capacitance	Operating specification	9	11	pF

CONTROL VOLTAGE

Control Range	Dependant on Supply Voltage (Note 6.)	0.25	2.75	V
Frequency tuning	Frequency shift from Min. to Max. control voltages (Note 7.)	6	40	ppm
Frequency tuning linearity	Deviation from straight line curve fit	5		%

SSB PHASE NOISE

Typical

Quiescent measurement at room temperature. Phase noise dependent on oscillator frequency.

SSB Phase noise density	1Hz offset	-55		dBc/Hz
SSB Phase noise density	10Hz offset	-85		dBc/Hz
SSB Phase noise density	100Hz offset	-110		dBc/Hz
SSB Phase noise density	1KHz offset	-125		dBc/Hz
SSB Phase noise density	10KHz offset	-140		dBc/Hz

ENVIRONMENTAL

The oscillator shall meet electrical characteristics and suffer no physical damage after being subject to the following conditions:

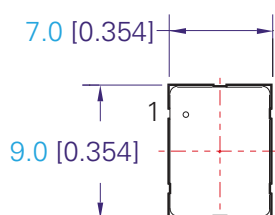
Shock	Half sinewave acceleration of 100G peak amplitude for 11ms duration, 3 cycles each plane.
Vibration	5G's RMS 30Hz to 1500Hz duration of 6 Hours
Humidity	After 48hours at 85 deg C +/-2% deg C 85% relative humidity non-condensing
Thermal shock test	Exposed at -40 deg C for 30 minutes then to 85 deg C for 30 minutes constantly for a period of 5 days.
Storage temperature	-40 to 85 deg C

MANUFACTURING INFORMATION

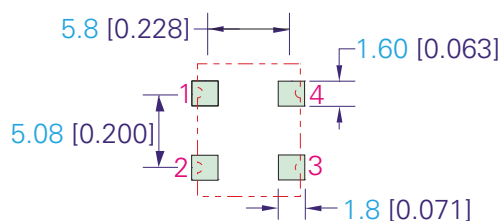
Washing	Able to withstand aqueous washing process.
Reflow	Able to withstand normal solder reflow process.
Packaging description	Tape and reel

SPECIFICATION NOTES

Note 1	Frequency stability over the temperature is required to be specified at a +/-ppm value between the Min. and Max. values given. Standard options are +/-1ppm, +/-1.5ppm, +/-2ppm and +/-2.5ppm. Stabilities available dependent on operating temperature range and frequency tuning ranges.
Note 2	The temperature range of operation is required to be specified. The Min. and Max. values given are the products limit.
Note 3	The Max. value is the standard specification. Values down to Min. are available.
Note 4	Dependent on frequency.
Note 5	The unit will operate on any voltage between min and max.
Note 6	Unless otherwise specified, the control range is 0.5V to 2.5V
Note 7	The tuning range value is required and can be specified between the Min. and Max. values.



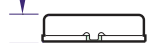
TOP VIEW



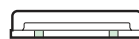
TOP VIEW

RECOMMENDED PAD LAYOUT
TRACKS NOT RECOMMENDED UNDER OSCILLATOR

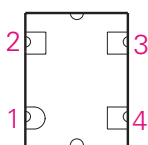
1.8 [0.071] MAX



SIDE VIEW



END VIEW



BOTTOM VIEW

PIN CONNECTIONS

1	CONTROL VOLTAGE
2	COMMON & CASE
3	OUTPUT
4	+ Vcc

TITLE: IVT100 MODEL

FILENAME: CAT084

REVISION: B

RELATED DRAWINGS: VXO & IT CLIPPED SINEWAVE

TEST CIRCUIT (CAT003)

100 SERIES TAPE & REEL (CAT002)

100 SERIES REFLOW (CAT014)

DATE: 5 Oct 98

SCALE: 2:1

Millimetres [inch]

Tolerances:

XX	= ±0.5
X.X	= ±0.10
X.XX	= ±0.05
X.XXX	= ±0.05
X°	= ±1.0 °
Hole	= ±0.10

RAKON
PRECISION QUARTZ PRODUCTS