

## HIGH-TEMPERATURE SENSING QUARTZ CRYSTAL RESONATORS **RKTV206 and RKOV206**

### APPLICATIONS

RKTV206 used to sense temperature changes. It is designed for applications in precision electronic thermometers and temperature controllers for the conversion of temperature to frequency. RKOV206 is a temperature-stable reference quartz crystal resonator.

### FEATURES

- High shock and vibration characteristics
- Miniature size
- Wide temperature range (-50...+180...+ 370 °C)
- Suitable for DTCXO and precision temperature equipment



### ELECTRICAL CHARACTERISTICS (at 37 °C) / OPERATING CONDITIONS

PARAMETERS	SPECIFICATIONS AND REMARKS				UNITS
Package Size	DS26 (DT26). Diameter 2 mm / length 6 mm				mm
<b>Electrical characteristics at 37 °C</b>					
Frequency Range, $f_0$	32.000...36.000				kHz
Frequency Tolerance typ./max., $\Delta f/f_0$	± 150				ppm
Resonance resistance typ./max., $R_r$	75/95				kΩ
Static Capacitance typ., $C_0$	1.3 ± 0.2				pF
Capacitance ratio $r$ , typ.	900				
Drive Level max., $D_L$	3.0				μW
Insulation Resistance min.	500				MΩ
<b>Thermal characteristics</b>					
<b>Frequency Vs. Temperature <math>f_T = f_0 + A_1 \cdot (T - T_0) + A_2 \cdot (T - T_0)^2</math>,</b> where: $f_T$ - crystal frequency at temperature $T$ (°C), $f_0$ - crystal frequency at reference temperature $T_0$ (°C), $T_0$ - reference value of temperature (°C). For higher accuracy a third order polynomial is recommended as follow: <b><math>f_T = f_0 + A_1 \cdot (T - T_0) + A_2 \cdot (T - T_0)^2 + A_3 \cdot (T - T_0)^3</math></b>					
Model	RKTV206A	RKTV206B	RKTV206C	RKOV206(A...C)	
1st order temperature coefficient $A_1^*$	-1.76 ± 0.1	-1.76 ± 0.1	-1.76 ± 0.1	-	K <sup>-1</sup>
2nd order temperature coefficient $A_2^*$	-0,00310 ± 0,0001	-0,00310 ± 0,0001	-0,00310 ± 0,0001	-0,00120 ± 0,0001	K <sup>-2</sup>
Reference temperature	0			25 ± 5	°C
For high-temperature sensing, the crystal RKTV206(A...C) is used in combination with the temperature-stable reference crystal resonator RKOV206(A...C). The frequency difference between both is used as temperature signal.					
Aging first year/10 years max.	± 5 / ± 10				ppm
Response time in liquid, typ., $\tau$	5				sec
<b>Operation conditions</b>					
Operating temperature, $T_{OPR}$ (typ./max)	-50...+180 / -269...+200	-50...+270 / -269...+300	-50...+370 / -269...+400	-50...+180...370 / -269...+200...+400	°C
Storage temperature, $T_{STR}$	-55...+85				°C
Shock resistance, $\Delta f/f_0$	Drop test 3 times on hard wooden board. height 100cm 5000g. 0.2 ms / ± 7 ppm max.				ppm
Vibration resistance, $\Delta f/f_0$	10g / 50-2000 Hz, 8 hours / ± 7 ppm max.				ppm

\* $A_1$ ,  $A_2$  and  $A_3$  coefficients can be changed on request.

### PACKAGE DIMENSIONS

UNITS: millimeters

