

## PIEZOELECTRIC TEMPERATURE SENSOR RKT206

### APPLICATIONS

**RKT206** is a piezoelectric temperature sensor used to sense temperature changes. The crystal is designed for precision electronic thermometers and temperature controllers for conversion of temperature to frequency.



### FEATURES

- High shock and vibration characteristics
- Miniature size
- Wide temperature range (-50...+100 °C)
- Low power consumption
- Suitable for DTCXO and temperature test equipment

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

PARAMETERS	SPECIFICATIONS AND REMARKS	UNITS
Package size	DS26 (DT26). Diameter 2 mm / length 6 mm	mm
<b>Electrical characteristics at temperature 37°C</b>		
Frequency Range, $f_0$	32.000...36.000	kHz
Frequency Tolerance typ./max., $\Delta f/f_0$	$\pm 150$	ppm
Resonance resistance typ./max., $R_r$	75 / 95	K $\Omega$
Static Capacitance typ., $C_0$	$1.3 \pm 0.2$	pF
Capacitance ratio r	870	
Drive Level max., $D_L$	1.0	$\mu$ W
Insulation Resistance min.	500	M $\Omega$
<b>Motional characteristics</b>		
<p><i>Frequency vs. Temperature <math>f_T = f_0 + A_1 \cdot (T - T_0) + A_2 \cdot (T - T_0)^2</math>,  <math>f_T</math> – crystal frequency at temperature T (°C),  <math>f_0</math> – crystal frequency at reference temperature <math>T_0</math> (°C),  <math>T_0</math> – reference temperature (°C).            For higher accuracy <math>f_T</math> can be represented by a third order polynomial as follow: <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></i></p>		
1st order temperature coefficient $A_1$ *	$-1.811 \pm 0.06$	K <sup>-1</sup>
2nd order temperature coefficient $A_2$ *	$-0.0028 \pm 0.0001$	K <sup>-2</sup>
3rd order temperature coefficient $A_3$ *	$7.6 \cdot 10^{-6}$	K <sup>-3</sup>
Aging first year / 10 years max.	$\pm 5 \dots \pm 10$	ppm
Thermal time constant in liquid $\tau$	5	sec
<b>Operational conditions</b>		
Operating Temperature, $T_{OPR}$ (typ/max)**	-50...+100 / -269...+125	°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 / $\pm 5$ ppm max.	ppm
Vibration Resistance, $\Delta f/f_0$	10g / 10-2000 Hz, 8 hours / $\pm 5$ PPM max.	ppm

\*A1, A2 and A3 coefficients can be changed on request.

