

# Tiny Clock Oscillator is Ideal for Handheld Electronic Devices

These tiny crystal oscillators enable the design of ever-smaller handheld and portable devices—wireless, PDA/computer and personal entertainment

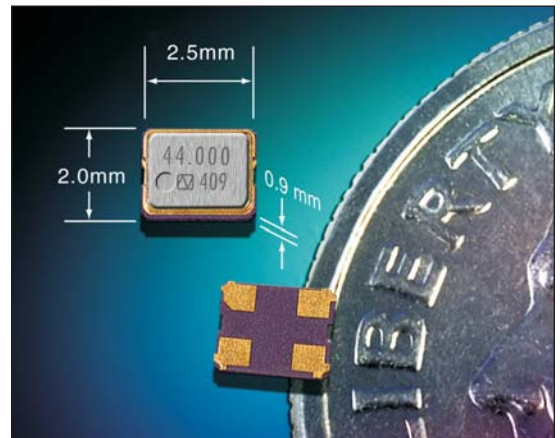
The NZ2520 series from NDK (Nihon Dempa Kogyo Co., Ltd.) is one of the smallest and thinnest available crystal clock oscillators (XO) in the world. The SMD package

measures only  $2.5 \times 2.0$  mm with a thickness of 0.9 mm. It is also ultra-lightweight, weighing just 0.02 grams.

The NZ2520 is available in the frequency range of 1.5 to 67.5 MHz and operates on a supply voltage of +2.5 or +3.0VDC while consuming as little as 3.5 mA. It also has a standby-function for minimizing power consumption. The NZ2520 series' output is CMOS drive level and can fanout to up to 15 IC gates. The operating temperature range is specified as

<b>Case size:</b>	2.5 × 2.0 × 0.9 mm
<b>Output level:</b>	CMOS compatible
<b>Frequency:</b>	1.5 to 67.5 MHz
<b>Stability:</b>	$\pm 100 \times 10^{-6}$ @ -20 to +70°C $\pm 50 \times 10^{-6}$ @ -10 to +70°C $\pm 30 \times 10^{-6}$ @ -20 to +60°C
<b>Power supply:</b>	+2.5 or +3.0 ±0.1 V
<b>Current (min.):</b>	3.5 mA (2.5 V, <10 MHz)
<b>Current (max.):</b>	13.5 mA (3.0 V, >60 MHz)
<b>Current (standby):</b>	10 µA max.
<b>Rise/fall times:</b>	5 ns (0.1 V <sub>DD</sub> - 0.9 V <sub>DD</sub> )
<b>Duty cycle:</b>	45-55% at 0.5 V <sub>DD</sub>
<b>Fanout:</b>	15 gates
<b>Standby mode:</b>	High impedance (tri-state) when V <sub>IL</sub> ≤ 0.3 V <sub>DD</sub>
<b>Soldering:</b>	Lead-free reflow

NZ2520 Key specifications.



The NZ2520 from NDK is an ultra-small clock oscillator, shown here compared to a dime.

-20 to +70°C, with frequency stability of ±30 ppm at -10 to +60°C. The device is lead-free and meets the requirements of reflow profiling using lead-free solder.

Of special note is the NZ2520's availability at very low frequencies, starting only 1.5 MHz. This is a significant engineering feat for an ultra-miniature crystal clock oscillator. The NZ2520 is ideal for small portable information devices such as laptop computers, PDAs, DVCs and DSCs.

Cost for the NZ2520 series is approximately \$1.40 each in 10,000 piece quantities. Engineering samples of popular frequencies are available now, and volume production is imminent.

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