

# Spectra Trading (Pty) Ltd

Reg No: 2025/525554/07

## Crystal Components – Types & Specifications

Crystal Type	Frequency Range	Tolerance	Package Type	Load Capacitance	Typical Applications
Quartz Crystal (HC-49/U)	1kHz – 100MHz	±10ppm – ±50ppm	Through-hole	12pF – 20pF	Microcontrollers, clocks, timing circuits
SMD Crystal (e.g., 3225, 5032)	1MHz – 50MHz	±10ppm – ±30ppm	Surface-mount (SMD)	8pF – 18pF	Compact devices, mobile electronics, embedded systems
TCXO (Temperature Compensated Crystal Oscillator)	1MHz – 52MHz	±0.5ppm – ±5ppm	SMD, DIP	Internal compensation	GPS, telecom, precision timing
VCXO (Voltage Controlled Crystal Oscillator)	1MHz – 100MHz	±10ppm – ±50ppm	SMD, DIP	External voltage tuning	Audio/video sync, PLL circuits
OCXO (Oven Controlled Crystal Oscillator)	10MHz – 100MHz	±0.01ppm – ±1ppm	Metal can, DIP	Internal oven control	High-stability timing, telecom base stations
Crystal Resonator	4MHz – 20MHz	±20ppm – ±50ppm	Through-hole, SMD	10pF – 20pF	General timing, low-cost applications
Clock Oscillator (XO)	1MHz – 200MHz	±25ppm – ±100ppm	DIP, SMD	Fixed output	Digital systems, processors, communication equipment