

December 1996

12-Bit Numerically Controlled Oscillator

Features

- 33MHz, 40MHz Versions
- 32-Bit Frequency Control
- BFSK, QPSK Modulation
- Serial Frequency Load
- 12-Bit Sine Output
- Offset Binary Output Format
- 0.009Hz Tuning Resolution at 40MHz
- Spurious Frequency Components <-69dBc
- Fully Static CMOS
- Low Cost

Applications

- Direct Digital Synthesis
- Modulation
- PSK Communications
- Related Products
 - HI5731 12-Bit, 100MHz D/A Converter

Ordering Information

PART NUMBER	TEMP. RANGE (°C)	PACKAGE	PKG. NO.
HSP45102PC-33	0 to 70	28 Ld PDIP	E28.6
HSP45102PC-40	0 to 70	28 Ld PDIP	E28.6
HSP45102PI-33	-40 to 85	28 Ld PDIP	E28.6
HSP45102PI-40	-40 to 85	28 Ld PDIP	E28.6
HSP45102SC-33	0 to 70	28 Ld SOIC	M28.3
HSP45102SC-40	0 to 70	28 Ld SOIC	M28.3
HSP45102SI-33	-40 to 85	28 Ld SOIC	M28.3
HSP45102SI-40	-40 to 85	28 Ld SOIC	M28.3

Description

The Harris HSP45102 is Numerically Controlled Oscillator (NCO12) with 32-bit frequency resolution and 12-bit output. With over 69dB of spurious free dynamic range and worst case frequency resolution of 0.009Hz, the NCO12 provides significant accuracy for frequency synthesis solutions at a competitive price.

The frequency to be generated is selected from two frequency control words. A single control pin selects which word is used to determine the output frequency. Switching from one frequency to another occurs in one clock cycle, with a 6 clock pipeline delay from the time that the new control word is loaded until the new frequency appears on the output.

Two pins, PO-1, are provided for phase modulation. They are encoded and added to the top two bits of the phase accumulator to offset the phase in 90° increments.

The 13-bit output of the Phase Offset Adder is mapped to the sine wave amplitude via the Sine ROM. The output data format is offset binary to simplify interfacing to D/A converters. Spurious frequency components in the output sinusoid are less than -69dBc.

The NCO12 has applications as a Direct Digital Synthesizer and modulator in low cost digital radios, satellite terminals, and function generators.

Block Diagram

