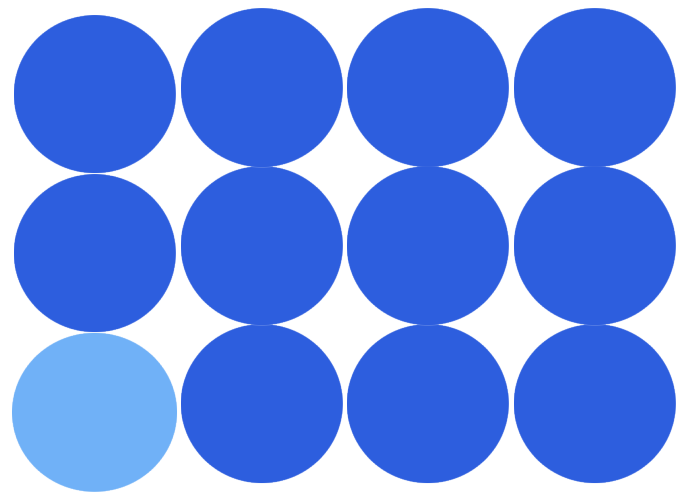


CORDIC Core Datasheet



Digital Design Corporation

Feature Summary

- Configurable bit depth to arbitrary precision
- Configurable speed cores from DC to 80+ MHz
- Configurable levels of pipelining
- Hardware efficient
- Full Matlab fixed point modeling
- Rotational and vectoring modes
- Configurable $\sin(\theta)$, $\cos(\theta)$, $\text{atan}(y/x)$, $\cosh(\theta)$, $\sinh(\theta)$, $\text{atanh}(y/x)$, K , K , $\ln w$

The CORDIC core performs transcendental function generation (e.g. \sin , \cos , atan , etc.), and other miscellaneous non-linear functions, such as K , etc. using both rotational and translational modes.

CORDIC Core

This unit has been field tested in countless applications, from FM detection to audio tone generation, to direct digital synthesis for a QPSK modulator.

Resource Utilization

Dependent on speed and precision. Some examples:

	A	B	C
LUTs	440	1088	350
FFs	510	769	280
Multipliers	0	0	0
BRAMs	1	0	0

- A. 24 bit $\sin(\theta)$, 192kHz, 12 channels
- B. 18 bit $\sin(\theta)$, 80 MHz, 1 channel
- C. 16 bit $\text{atan}(Q/I)$, 60 kHz, 2 channels

Applications

- DDS (Direct Digital Synthesis)
- NCO (Numerically Controlled Oscillator)
- Tone generation
- Modulation
- Demodulation
- Receive Signal Strength Indication

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