
Multimedia DCT-CODEC

Description

The DCT-Codec is an Application Specific Standard Product (ASSP) integrating 2-Dimensional Discrete Cosine Transform block (DCT), 12 kbits of RAM and 20 kGates. The DCT and RAM are implemented in Standard Cell blocks into the circuit. The rest of the circuit implements 20 kGates which are user configurable and they can be used for support functions : e.g. Huffmann Decoder, Quantization or user specific functions. The device is implemented in 160 pin PQFP Package with 148 user configurable I/Os.

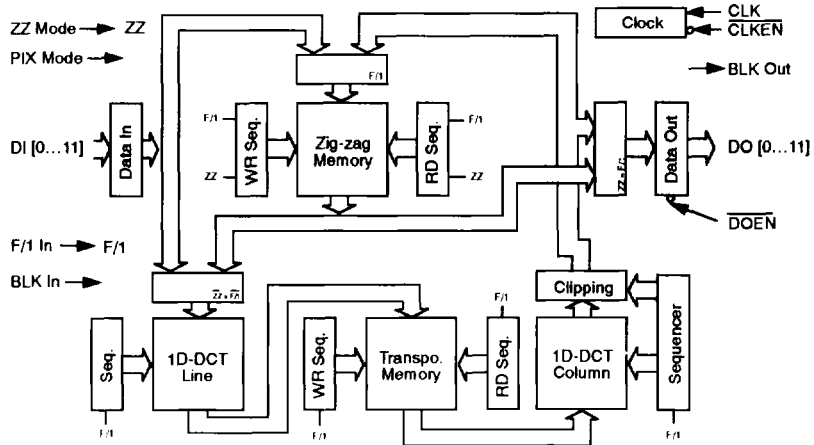
The DCT has a parallel architecture and it is based on modified CHEN algorithm. It processes 8×8 pixel or coefficient blocks. The blocks can be scanned line by line, column by column or in zig-zag mode. The format is 8, 9 or 12 bits.

The RAM is organised in several blocks to allow configuration changes (e.g. different word lengths) or different implementations for FIFOs, buffers, tables, etc. The RAM has 15 ns access time. In the Gate Area, different application or user specific functions can be implemented using standard commercially available CAE systems.

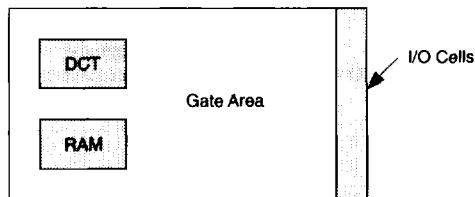
Features

- User configurable discrete-cosine-transform-CODEC (DCT)
- JPEG, MPEG and H261 compatible ASSP device
- Includes : DCT standard cell block, 12 Kbit RAM and 20 Kgates
- Max frequency 40 MHz
- PQFP 160 package, 148 user configurable I/Os
- Support functions : huffmann decoder, quantization, bus-interface
- DCT : forward and inverse operation, complies with H261 accuracy, 2 dimensional DCT
- RAM-block : organization 5×2 Kbit and 2×1 Kbit blocks, user configurable word length, 15 ns access time
- Low power submicron CMOS technology

Block Diagram : 2 Dimensional DCT-block with parallel architecture



29C800 Typical Layout



Applications

The DCT-Codec is targeted to applications which require fast pixel handling capability like today's Still- and Full Motion Picture Compression/Decompression

- Multimedia ADD-in boards
- Videophones and color faxes
- Image consultation systems
- Video compression
- Security systems
- Medical analysers
- Tele diagnostic
- Point-of-sales systems
- Color printers and scanners

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