

# JPEG & JPEG-LS IP Cores Family

Compact, Scalable-Throughput Encoders & Decoders for Image & Video Compression

| Still & Motion Image Compression | JPEG Encoders   |                              |                                    |                                      | JPEG Decoders                |                                    |                                      | JPEG-LS                  |                      |
|----------------------------------|---|------------------------------|------------------------------------|--------------------------------------|------------------------------|------------------------------------|--------------------------------------|--------------------------|----------------------|
|                                  | JPEG-E-T<br>Tiny Encoder  | JPEG-E-S<br>Baseline Encoder | JPEG-EX-S<br>Extended Encoder      | JPEG-EX-F<br>Ultra Fast Ext. Encoder | JPEG-D-S<br>Baseline Decoder | JPEG-DX-S<br>Extended Decoder      | JPEG-DX-F<br>Ultra Fast Ext. Decoder | JPEG-LS-E<br>Encoder     | JPEG-LS-D<br>Decoder |
| Compression Type                 | Lossy   |                              |                                    |                                      |                              |                                    |                                      | Lossless/Lossy           |                      |
| Compression Standard             | JPEG — ISO/IEC 10918-1  |                              |                                    |                                      |                              |                                    | JPEG-LS — ISO/IEC 14495-1            |                          |                      |
| Supported Standard Modes         | Baseline Sequential DCT   |                              | Baseline & Extended Sequential DCT |                                      | Baseline Seq. DCT            | Baseline & Extended Sequential DCT |                                      | Lossless & NEAR lossless |                      |
| Motion JPEG Payload              | ✓   | ✓                            | ✓                                  | ✓                                    | ✓                            | ✓                                  | ✓                                    | X                        | X                    |
| Sub-sampling Formats             | Any with up to four components including Single-color, 4:4:4, 4:2:2, 4:2:0  |                              |                                    |                                      |                              |                                    |                                      |                          |                      |
| Max. Image Resolution            | 64k x 64k   |                              |                                    |                                      |                              |                                    | > 64k x 64k                          |                          |                      |
| Max. Sample Depth                | 8   | 8                            | 12                                 | 12                                   | 8                            | 12                                 | 12                                   | 16                       |                      |
| Rate control                     | X   | ✓                            | ✓                                  | ✓                                    | N/A                          | N/A                                | N/A                                  | N/A                      |                      |
| Raster Conversion                | Included – Optionally Instantiated  |                              |                                    |                                      |                              |                                    |                                      | N/A                      |                      |
| Color Samples/Cycle              | 1   | 1                            | 1                                  | 1 to 32                              | 1                            | 1                                  | 1 to 32                              | 1 to 32                  | 1 to 32              |
| ASIC Area (eq. Gates)            | 40k   | 70k                          | 80k                                | 120k <sup>1</sup>                    | 65k                          | 75k                                | 110k <sup>1</sup>                    | 40k <sup>2</sup>         | 40k <sup>2</sup>     |
| Available in RTL Source Code     | X   | X                            | ✓                                  | ✓                                    | X                            | ✓                                  | ✓                                    | ✓                        | ✓                    |
| Available as targeted netlist    | ✓   | ✓                            | ✓                                  | ✓                                    | ✓                            | ✓                                  | ✓                                    | ✓                        | ✓                    |
| Notes:                           | 1) Silicon Resources for two samples/cycle configuration, and 12 bits per color sample<br>2) Silicon Resources for one sample/cycle configuration, and 8 bits per color sample. |                              |                                    |                                      |                              |                                    |                                      |                          |                      |