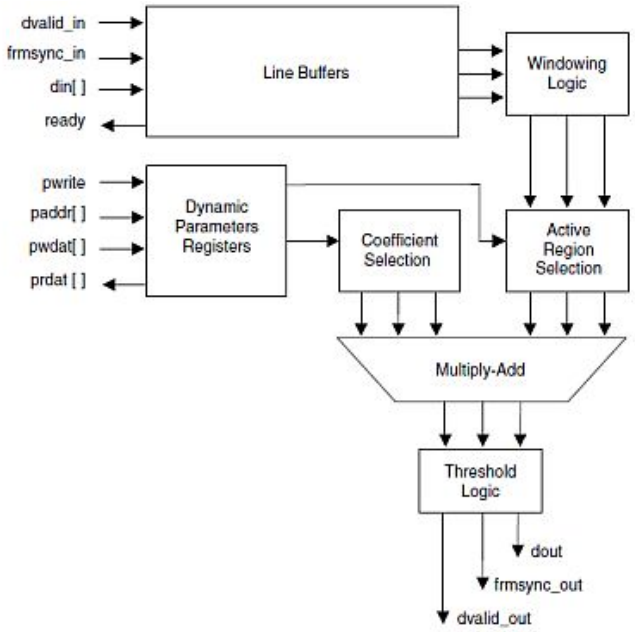
2D Edge Detector IP Core

Overview

Video edge detection is the process of calculating gradients (rates of change) in pixel values in an incoming frame.

The **2D Edge Detector IP core** detects edges in incoming video frames using the Sobel or Prewitt algorithms. Its flexible architecture supports a wide variety of video frame sizes on Lattice devices. A simple I/O handshake makes the core suitable for either streaming or bursty input video data. Coefficients may be set at compile time, or updated in-system via a simple memory interface. Dynamic zoom and pan functions are optionally provisioned at compile time.



Features

- Single color plane input
- Configurable input data width
- Dynamically variable input frame size
- Dynamic active region selection
- Dynamic selection between Sobel and Prewitt algorithms
- Dynamic detection threshold modification

Performance and Resource Utilization

LatticeECP3[1,2]

Frame Size	DWIDTH	DSP Adders	LUTs	Slices	Registers	EBRs	DSP Slices	f_{MAX}
320x240	8	No	540	368	397	1	0	226
640x480	8	Yes	399	295	203	1	60	168
720x480	8	No	528	351	403	1	0	204
1280x720	8	No	528	352	407	2	0	154

1. Performance and utilization data are generated targeting an LFE3-70EFPBGA672 device using Diamond 1.1 software. Performance may vary when using a different software version or targeting a different device density or speed grade within the LatticeECP3 family.
2. PAR settings: Placement Effort Level: 5, Routing Passes: 6, Placement Iterations: 3, Routing Delay Reduction Passes: 1, PLC Input Limit: Low

LatticeECP2M[1,2]

Frame Size	DWIDTH	DSP Adders	LUTs	Slices	Registers	EBRs	DSP Slices	f_{MAX}
320x240	8	No	559	386	398	1	0	190
640x480	8	Yes	408	296	203	1	40	173
720x480	8	No	530	353	402	1	0	209
1280x720	8	No	553	368	410	2	0	191

1. Performance and utilization data are generated targeting an LFE2M35E-6F672C device using Diamond 1.1 software. Performance may vary when using a different software version or targeting a different device density or speed grade within the LatticeECP2M family.
2. PAR settings: defaults.

LatticeXP2[1,2]

Frame Size	DWIDTH	DSP Adders	LUTs	Slices	Registers	EBRs	DSP Slices	f_{MAX}
320x240	8	No	559	386	398	1	0	155
640x480	8	Yes	408	296	203	1	40	153
720x480	8	No	530	353	402	1	0	161
1280x720	8	No	553	368	410	2	0	170

1. Performance and utilization data are generated targeting an LFXP2-40E-6F672Cdevice using Diamond 1.1 software. Performance may vary when using a different software version or targeting a different device density or speed grade within the LatticeXP2 family.
2. PAR settings: defaults.

Ordering Information

Family	Part Number
LatticeECP3	EDGE-DET-E3-U1
LatticeECP2M	EDGE-DET-PM-U1
LatticeXP2	EDGE-DET-X2-U1

IP Version: 1.0
Evaluate: To download a full evaluation version of this IP, go to the IPexpress tool and click the IP Server button in the toolbar. All LatticeCORE IP cores and modules available for download will be visible. For more information on viewing/downloading IP please read the **IP Express Quick Start Guide**.
Purchase: To find out how to purchase the IP Core, please contact your **local Lattice Sales Office**.