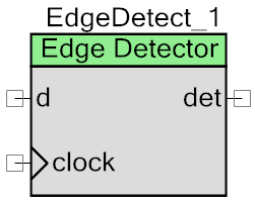
Edge Detector

1.0



Features

- Detects Rising Edge, Falling Edge, or Either Edge

General Description

The Edge Detector component samples the connected signal and produces a pulse when the selected edge occurs.

When to Use an Edge Detector

Use the Edge Detector when a circuit needs to respond to a state change on a signal.

Input/Output Connections

This section describes the various input and output connections for the Edge Detector.

d – Input

The signal connected to the d input is the signal that will be sampled for an edge.

clock – Input

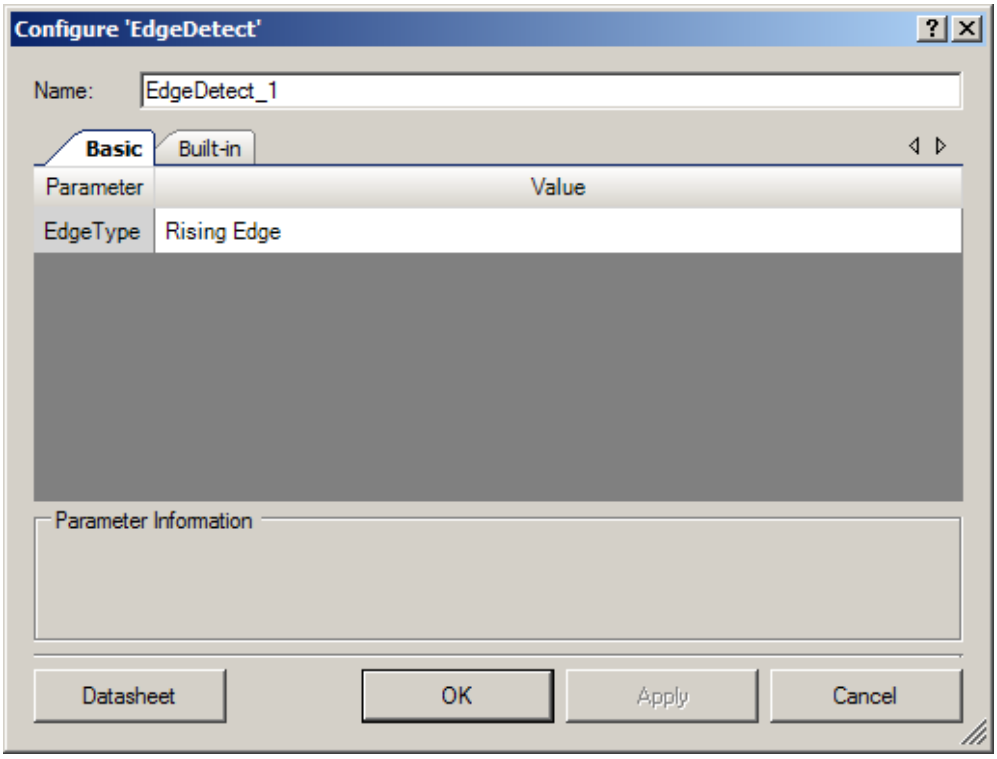
The clock input determines how often the **d** input will be sampled.

det – Output

The det output pulses high when an edge is detected on the **d** input.

Component Parameters

Drag an Edge Detector onto your design and double-click it to open the **Configure** dialog.



The Edge Detector provides the following parameters.

EdgeType

This parameter determines what type of edge to detect. The value must be **Rising Edge**, **Falling Edge**, or **Either Edge**. The default is **Rising Edge**.

Functional Description

The Edge Detector stores the state of the signal at the last rising clock edge, and compares it to the current value of the signal. If the state change matches the edge type selected in the customizer, the **det** terminal will go high until the next rising clock edge. This means that the resulting pulse from an edge may be shorter than one clock cycle, but it will never be longer.

Figure 1. Rising Edge Schematic

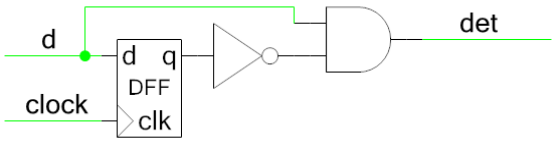
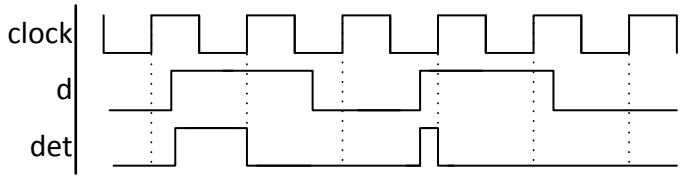


Figure 1 displays a logical representation of the implementation for the **Rising Edge** configuration**.** Figure 2 provides a sample waveform to illustrate the functionality.

Figure 2. Rising Edge Waveform



As seen in Figure 2, the **det** output will go high as soon as a **rising** edge is detected on the **d** input. The **det** output is cleared on the next rising clock edge.

Figure 3. Falling Edge Schematic

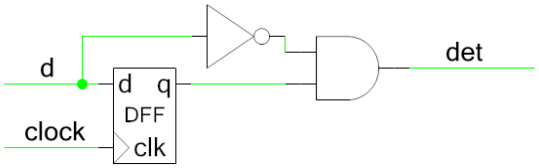
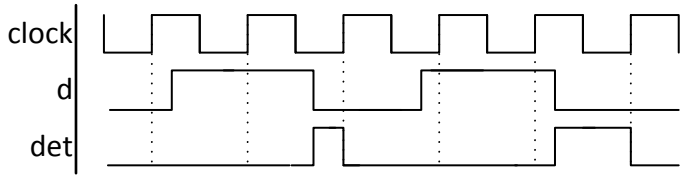


Figure 3 displays a logical representation of the implementation for the **Falling Edge** configuration**.** Figure 4 provides a sample waveform to illustrate the functionality.

Figure 4. Falling Edge Waveform



As seen in Figure 4, the **det** output will go high as soon as a **falling** edge is detected on the **d** input. The **det** output is cleared on the next rising clock edge.

Figure 5. Either Edge Schematic

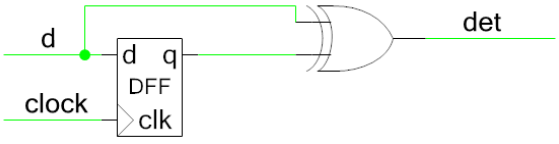
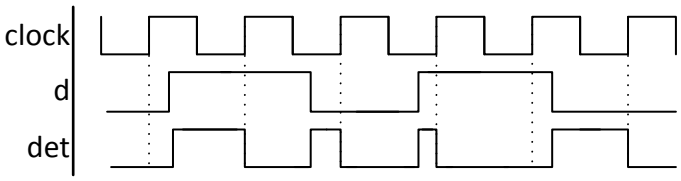


Figure 5 displays a logical representation of the implementation for the **Falling Edge** configuration**.** Figure 6 provides a sample waveform to illustrate the functionality.

Figure 6. Either Edge Waveform



As seen in Figure 6, the **det** output will go high as soon as **any** edge is detected on the **d** input. The **det** output is cleared on the next rising clock edge.

Resources

Configuration	Resource Type					
	Datapath Cells	Macrocells	Status Cells	Control Cells	DMA Channels	Interrupts
Edge Detector	–	1	–	–	–	–

MISRA Compliance

This section describes the MISRA-C:2004 compliance and deviations for the component. There are two types of deviations defined: project deviations – deviations that are applicable for all PSoC Creator components and specific deviations – deviations that are applicable only for this component. This section provides information on component specific deviations. The project deviations are described in the MISRA Compliance section of the *System Reference Guide* along with information on the MISRA compliance verification environment.

The Edge Detector component does not have any C source code APIs.

Component Changes

Version 1.0 is the first release of the Edge Detector Component.