

## Introduction

The Utility Reduced Logic core applies a logic reduction function over an input vector to generate a single bit result. The core is intended as glue logic between peripherals.

## Features

- Configurable size of the input vector
- Configurable reduced logic operation over the input vector

LogiCORE™ IP Facts		
Core Specifics		
Supported Device Family	Spartan®-3A/3A DSP, Spartan-3, Spartan-3E, Automotive Spartan 3/3E/3A/3A DSP, Spartan-6, Virtex®-4 /4Q/4QV, Virtex-5/5FX, Virtex-6/6CX	
Resources Used		
	Min	Max
Slices	1	6 <sup>(1)</sup>
LUTs	1	11 <sup>(1)</sup>
FFs	0	0
Block RAMs	0	0
Provided with Core		
Documentation	Product Specification	
Design File Formats	VHDL	
Design Tool Requirements		
Xilinx Implementation Tools	ISE® 11.4 or later	
Verification	ModelSim PE/SE 6.4b or later	
Simulation	ModelSim PE/SE 6.4b or later	
Synthesis	XST	
Support		
Provided by Xilinx, Inc.		

1. For C\_SIZE=32. The count increases with C\_SIZE.

## Functional Description

Figure 1 shows a Utility Reduced Logic in a system.

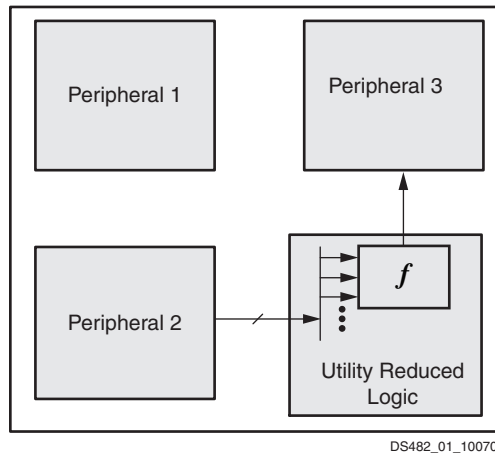


Figure 1: Utility Reduced Logic in a System

## Utility Reduced Logic Parameters

Table 1: Utility Reduced Logic Parameters

Parameter	Description	Type
C_SIZE	The vector size of input bus. Minimum value is 2.	Integer
C_OPERATION	The vector operation to perform. The supported functions ( $f$ ) are: "and", "or", "xor"	String

## Allowable Parameter Combinations

There are no restrictions on allowed parameter combinations for this core.

## Utility Reduced Logic I/O Signals

Table 2: Utility Reduced Logic I/O Signals

Signal	Interface	I/O	Description
Op1	None	I	Input bus [0 : C_SIZE-1]
Res	None	O	One bit output signal. Result from the reduced logic operation.

## Parameter-Port Dependencies

Table 3: Port and Parameter Dependencies

Name	Affects	Depends	Relationship Description
<b>Design Parameters</b>			
C_SIZE	Op1	0 to C_SIZE-1	Scale width of input bus
<b>Port Signals</b>			
Op1		C_SIZE	Scale width of input bus

## Utility Reduced Logic Register Descriptions

There are no registers in this core.

## Utility Reduced Logic Interrupt Descriptions

There are no interrupts associated with this core.

## Utility Reduced Logic Block Diagram

The Utility Reduced Logic block diagram is shown in [Figure 2](#).

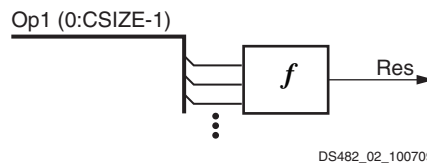


Figure 2: Utility Reduced Logic Block Diagram

## Design Implementation

### Design Tools

The Utility Reduced Logic design is handwritten.

Xilinx XST is the synthesis tool used for synthesizing the Reduced Logic device.

### Target Technology

The target technology is an FPGA listed in [Supported Device Family](#) field of the LogiCORE IP Facts Table.

## Device Utilization and Performance Benchmarks

Table 4: Utility Reduced Logic Resource Utilization

Parameters	Resources	
	Flip-Flops	4-input LUTs
C_SIZE = 2	0	1
C_SIZE = 8	0	3
C_SIZE = 16	0	9
C_SIZE = 32	0	11

There are no performance benchmarks available.

### Specification Exceptions

Not applicable

### Reference Documents

None

### Support

Xilinx provides technical support for this LogiCORE product when used as described in the product documentation. Xilinx cannot guarantee timing, functionality, or support of product if implemented in devices that are not defined in the documentation, if customized beyond that allowed in the product documentation, or if changes are made to any section of the design labeled *DO NOT MODIFY*.

### Revision History

Date	Version	Description of Revisions
3/28/03	1.0	Revision History added to document.
12/19/03	1.1	Added LogiCORE Facts table. Reformatted to current Xilinx template.
7/15/04	1.2	Minor corrections and updates.
8/17/04	1.3	Updated for EDK 6.3. Updated trademarks and supported family device listing.
9/22/04	1.4	Updated to use new data sheet template.
4/24/09	1.5	Replaced references to supported device families and tool names with hyperlink to PDF file.
12/2/09	1.6	Listed supported devices families in LogiCORE Table; added Spartan-6 and Virtex-6 support, converted to new DS template.

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