TSEK06
High-Level Design Report

Group 5

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Version P1B

Status

Reviewed	Johannes Klasson	2016-02-15
Approved	Martin Nielsen-Lönn	-

PROJECT IDENTITY

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Contents

Document history

Version	Date	Changes	Performed by
P1A	2016-02-15	First draft	Johan Isaksson

1 Introduction

2 Block Level Description

2.1 SPI/PSRBR

2.2 16-bit Kogge-Stone Adder

The Kogge-Stone adder consists of four simple blocks connected in a complex way.
Lägg till bild på hur blocken sitter ihop och förklaring om P och G signalerna.

2.2.1 Red

Table 1 – Logic table of red block.

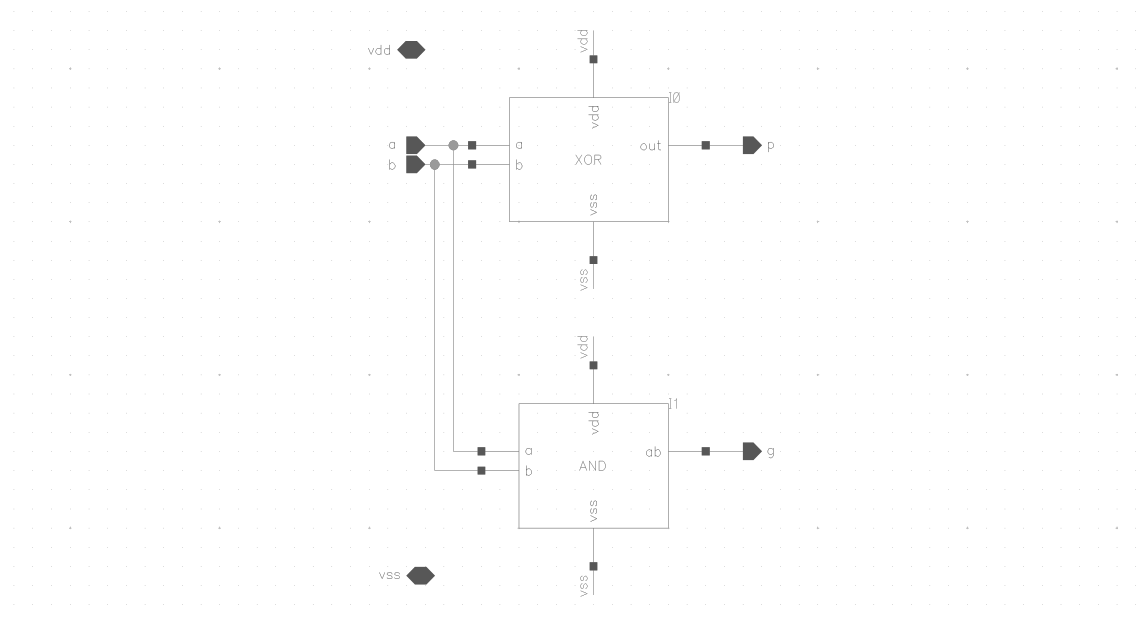| A_i	B_i	$P = A_i \oplus B_i$	$G = A_i \wedge B_i$
0	0	0	0
0	1	1	0
1	0	1	0
1	1	0	1

Figure 1 – Schematic view of the red block.

2.3   Comparator

2.3.1   Yellow

Table 2 – Logic table of yellow block.

G_i	$G_{i,prev}$	P_i	$P_{i,prev}$	$P = P_i \wedge P_{i,prev}$	$G = (P_i \wedge G_{i,prev}) \vee G_i$
0	0	0	0	0	0
0	0	0	1	0	0
0	0	1	0	0	0
0	0	1	1	1	0
0	1	0	0	0	0
0	1	0	1	0	0
0	1	1	0	0	1
0	1	1	1	1	1
1	0	0	0	0	1
1	0	0	1	0	1
1	0	1	0	0	1
1	0	1	1	1	1
1	1	0	0	0	1
1	1	0	1	0	1
1	1	1	0	0	1
1	1	1	1	1	1

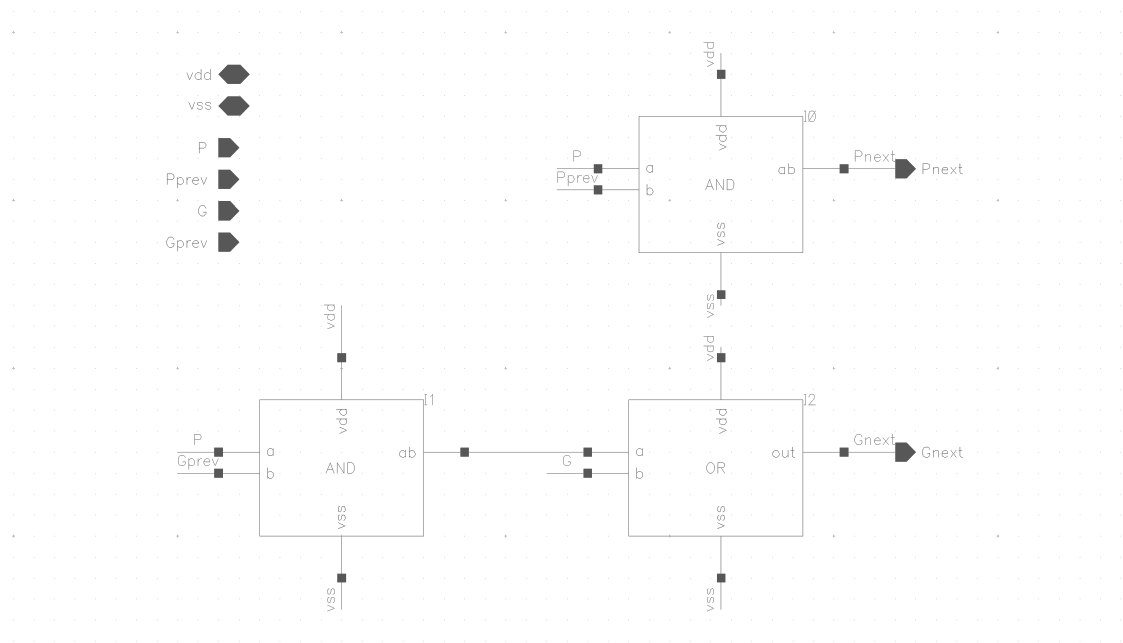**Figure 2** – Schematic view of the yellow block.

2.3.2 Yellow with carry

Table 3 – Logic table of yellow with carry block.

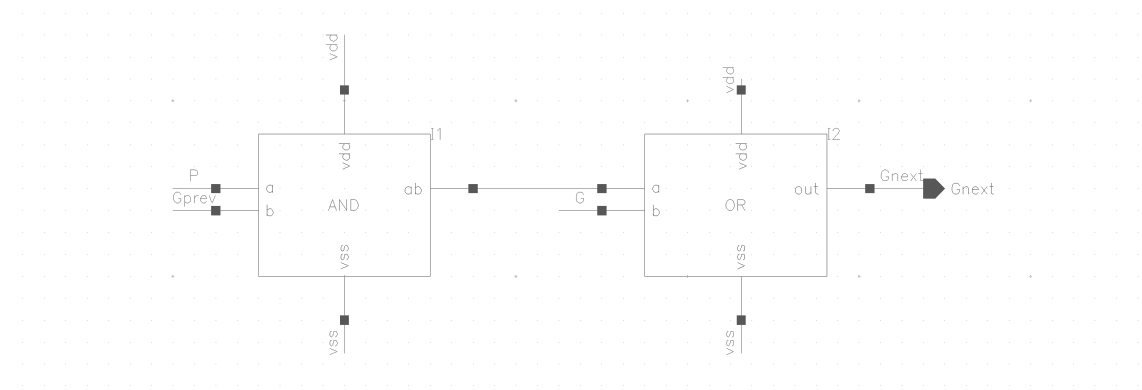| P_i	G_i	$G_{i,prev}$	Function2	Output
0	0	0	0	0
0	0	1	0	0
0	1	0	0	0
0	1	1	1	0
1	0	0	0	0
1	0	1	0	0
1	1	0	0	1
1	1	1	1	1

Figure 3 – Schematic view of the yellow carry block.

2.3.3 Sum

Table 4 – Logic table of sum block.

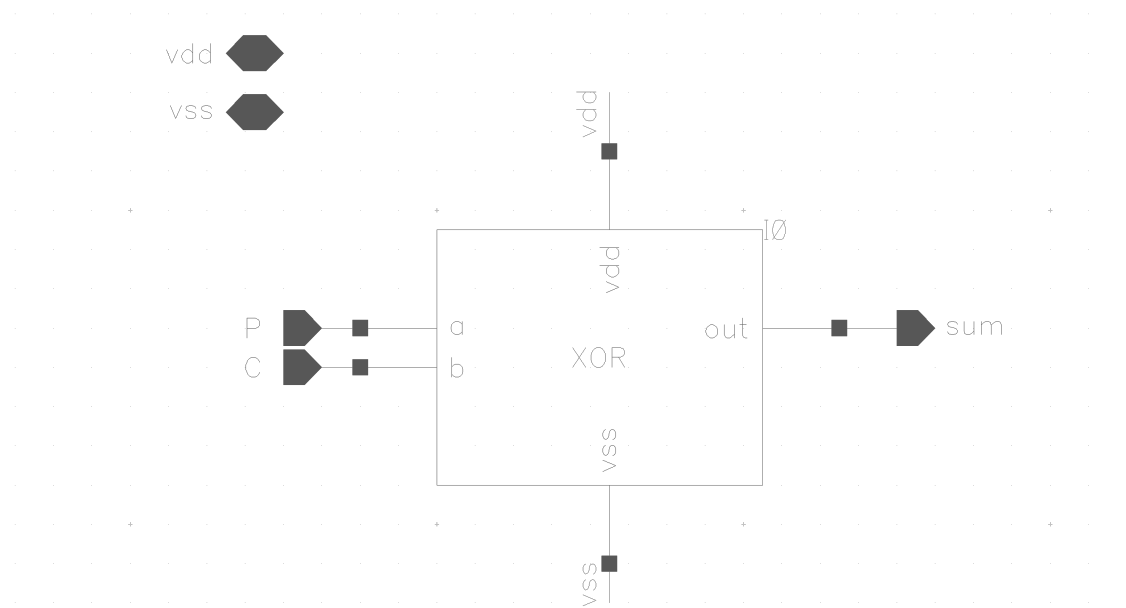| Input	Function1	Function2	Output
00	1	0	1
01	0	0	1
10	0	0	1
11	1	0	1

Figure 4 – Schematic view of the sum block.