

## Click to add title

- Imply zero to the right of LSB
- Sign extension to the left of the number

•  $0 \rightarrow 1 \text{ } -1$

•  $1 \rightarrow 0 \text{ } +1$

•  $0 \rightarrow 0 \text{ } 0$

•  $1 \rightarrow 1 \text{ } 0$

• 11010

• 110100

•

• 0-1 +1-10

010101

0101010

+1-1+1-1+1-1

## Perform the multiplication of $+4 * -2$ [5 bit]

- 00100
- 11110
- ---

000000000
- 00000100
- 0000100
- 000100
- 00100
- ---

001111000  $\rightarrow +120$

2  $\rightarrow$  00010  
-2  $\rightarrow$  11110

## Booth Algorithm

- Consider in a multiplication, the multiplier is positive 0011110, how many appropriately shifted versions of the multiplicand are added in a standard procedure?

$$\begin{array}{r}
 \begin{array}{r}
 0101101 \\
 00+1+1+1+10 \\
 \hline
 0000000 \\
 0000000 \\
 0101101 \\
 0101101 \\
 0101101 \\
 0101101 \\
 0101101 \\
 0000000 \\
 0000000 \\
 \hline
 0001010100010
 \end{array}
 \end{array}$$

# Booth Algorithm

Multiplier		Version of multiplicand selected by bit $i$
Bit $i$	Bit $i-1$	
0	0	0 XM
0	1	+ 1 XM
1	0	- 1 XM
1	1	0 XM


$$-4^{*}+2 \quad +4^{*}+2$$

- Click to add text

