CMP_BIST_CTRL

REVISION HISTORY

Revision Number	Date	Description of Change	Author
V0.0	11/2/2022	Draft version	Shaoqiang

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CMP_BIST_CTRL

Introduction

CMP_BIST_CTRL is mainly used for functional safety to check whether VAA_OVUV, VDD_OVUV_BIST, CP_OVUV, AGND_OW fault can be generated correctly.

Main features

The CMP_BIST_CTRL module has the following features:

•Supports output 400us BIST_REF_EN high pulse and 200us BIST_REF_EN_EARLY high pulse when BIST_GO is detected (HWSR2_CMP_BIST_CTRL)

•CMP_BIST_CTRL shall be reset when CLK_32M_OK is low (HWSR1_CMP_BIST_CTRL)

Supports output clr_BIST_GO after BIST_GO is detected (HWSR3_CMP_BIST_CTRL)

• Before BIST_REF_EN_EARLY turns low, CMP_BIST_CTRL shall check if VAA_OVUV, VDD_OVUV_BIST, CP_OVUV, AGND_OW are all 1 within 50us, if any is 0, output CMP_FLT (HWSR4_CMP_BIST_CTRL)

Functional Details

Block Diagram

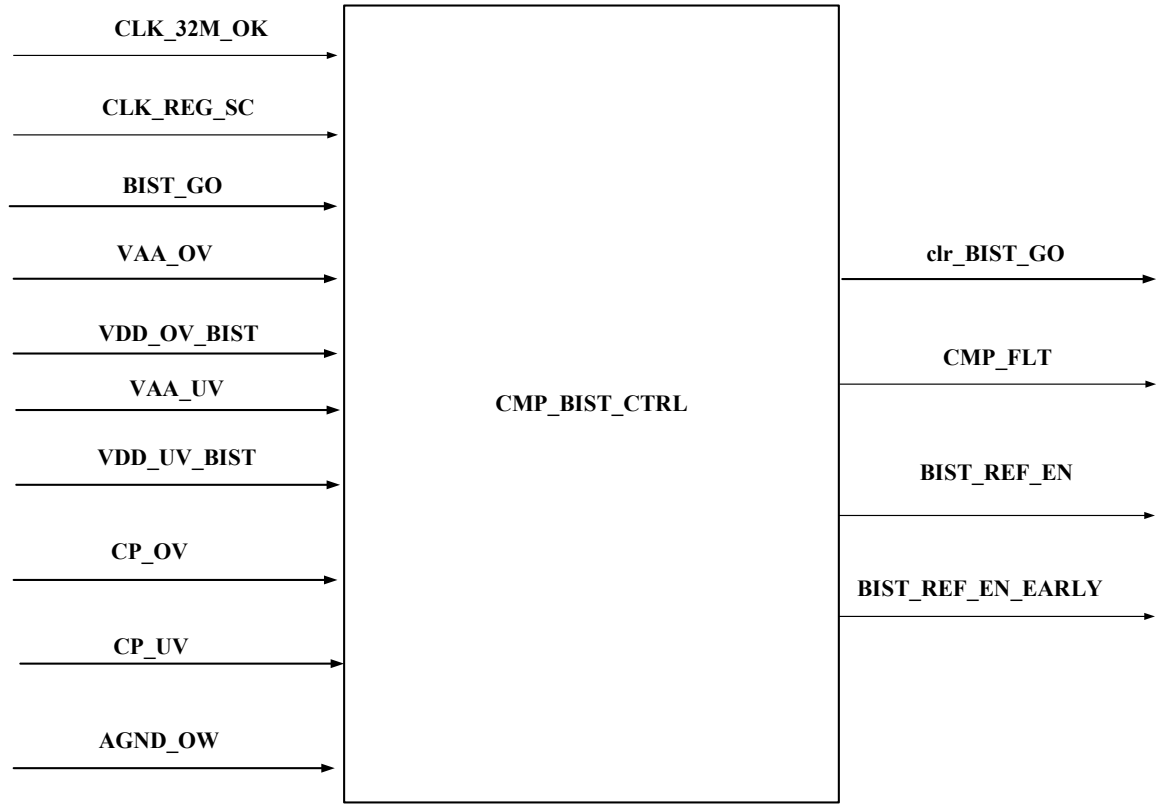

Fig 1 CMP_BIST_CTRL Block Diagram

I/O description

Table 1 CMP_BIST_CTRL I/O description

Pin Name	Direction	Duration	Width	Description
BIST_GO	I	N/A	1b’	To start CMP_BIST_CTRL
VAA_OV	I	N/A	1b’	VAA_OV fault
VAA_UV	I	N/A	1b’	VAA_UV fault
CP_OV	I	N/A	1b’	CP_OV fault
CP_UV	I	N/A	1b’	CP_UV fault
AGND_OW	I	N/A	1b’	AGND_OW fault
VDD_OV_BIST	I	N/A	1b’	VDD_OV_BIST fault
VDD_UV_BIST	I	N/A	1b’	VDD_UV_BIST fault
CLK_32M_OK	I	N/A	1b’	CMP_BIST_CTRL shall be reset when CLK_32M_OK is low
CLK_REG_SC	I	N/A	1b’	Clock for CMP_BIST_CTRL
resetb_SR_CLK_REG	I	N/A	1b’	Reset signal
clr_BIST_GO	O	1	1b’	To clear BIST_GO

		CLK_REG_SC		
CMP_FLT	O	1 CLK_REG_SC	1b’	Detect CMP_BIST fault
BIST_REF_EN	O	400 us	1b’	Output 400us BIST_REF_EN high pulse
BIST_REF_EN_EARLY	O	200us	1b’	Output 200us BIST_REF_EN_EARLY high pulse

Fault detect

(HWSR1_CMP_BIST_CTRL, HWSR2_CMP_BIST_CTRL, HWSR3_CMP_BIST_CTRL, HWSR4_CMP_BIST_CTRL)

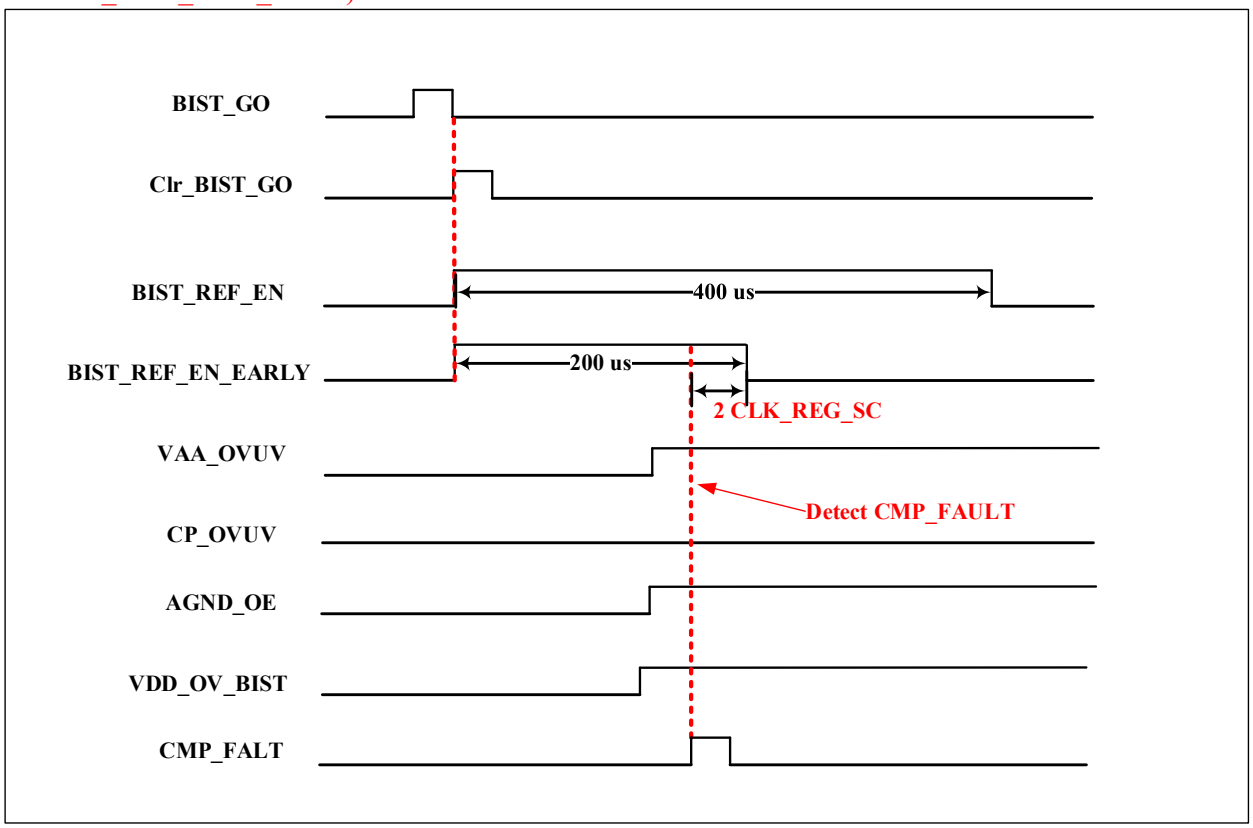

Fig 2 Waveform diagram of CMP_BIST_CTRL

When CB_GO arrives, CMP_BIST_CTRL outputs 400ns BIST_REF_EN and 200ns BIST_REF_EN_EARLY. At the two CLK_REG_SC cycles before BIST_REF_EN_EARLY disappears, CMP_BIST_CTRL will detect all faults. If any FAULT is 0, CMP_FALUT will be generated, indicating that FALULT cannot be generated correctly for the module.