

4-Output Low Jitter Any-Frequency Clock Generator

Overview

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Part: Si5340B Rev D
 Design ID: Si5340B
 Created By: ClockBuilder Pro v2.24 [2018-05-23]
 Timestamp: 2018-05-31 14:22:03 GMT+08:00

Design Rule Check

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Errors:

- No errors

Warnings:

- No warnings

Device Grade

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Maximum Output Frequency: 125 MHz
 Frequency Synthesis Mode: Integer
 Minimum Base OPN: Si5340D
 Actual Base OPN: Si5340B

Base OPN Grade	Output Clock Frequency Range	Supported Frequency Synthesis Modes (Typical Jitter)
Si5340A	100 Hz to 1.028 GHz	Integer (< 100 fs) and fractional (< 150 fs)
Si5340B	100 Hz to 350 MHz	"
Si5340C	100 Hz to 1.028 GHz	Integer only (< 100 fs)
Si5340D	100 Hz to 350 MHz	"

Design

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Host Interface:

I/O Power Supply: VDD (Core)
 SPI Mode: 4-Wire
 I2C Address Range: 116d to 119d / 0x74 to 0x77 (selected via A0/A1 pins)

Inputs:

XAXB: 48 MHz
 Crystal Mode
 IN0: Unused
 IN1: Unused
 IN2: Unused
 FB_IN: Unused

Outputs:

OUT0: 125 MHz
 Enabled, LVDS 3.3 V
 OUT1: 125 MHz
 Enabled, LVDS 3.3 V
 OUT2: Unused
 OUT3: Unused

Frequency Plan

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Priority: maximize the number of low jitter outputs

Fpfd = 48 MHz
 Fvco = 13.5 GHz [13 + 1/2 GHz]
 Fms0 = 250 MHz

P dividers:

P0 = Unused
P1 = Unused
P2 = Unused
P3 = Unused
Pxaxb = 1

M = 281.25 [281 + 1/4]

N dividers:

N0:
Value: 54
Skew: 0.000 s
OUT0: 125 MHz
OUT1: 125 MHz

N1:
Unused

N2:
Unused

N3:
Unused

R dividers:

R0 = 2
R1 = 2
R2 = Unused
R3 = Unused

Dividers listed above show effective values. These values are translated to register settings by ClockBuilder Pro. For the actual register values, see below. Refer to the Family Reference Manual for information on registers related to frequency plan.

Digitally Controlled Oscillator (DCO)

Mode: FINC/FDEC

N0: DCO Disabled

N1: DCO Disabled

N2: DCO Disabled

N3: DCO Disabled

Estimated Power & Junction Temperature

Assumptions:

Revision: D
VDD: 1.8 V
Ta: 70 °C
Airflow: None

Total Power: 634 mW, On Chip Power: 622 mW, Tj: 84 °C

	Frequency	Format	Voltage	Current	Power
VDD			1.8 V	79.2 mA	143 mW
VDDA			3.3 V	117.4 mA	387 mW
VDDO0	125 MHz	LVDS	3.3 V	15.7 mA	52 mW
VDDO1	125 MHz	LVDS	3.3 V	15.7 mA	52 mW
VDDO2	Unused				
VDDO3	Unused				

Total ----- -----
 228.0 mA 634 mW

Note:

-Total power includes on- and off-chip power. This is a typical value and estimate only.

-Use an EVB for a more exact power measurement

-On-chip power excludes power dissipated in external terminations.

-Tj is junction temperature. Tj must be less than 125 °C (on Si5340 Revision D) for device to comply with datasheet specifications.

Settings

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Location	Setting Name	Decimal value	Hex value
0x0004[7:0]	GRADE	1	0x01
0x0005[7:0]	DEVICE_REV	3	0x03
0x0006[23:0]	TOOL_VERSION	268288	0x041800
0x000B[6:0]	I2C_ADDR	116	0x74
0x0017[0]	SYSINCAL_INTR_MSK	0	0x0
0x0017[1]	LOSXAXB_INTR_MSK	0	0x0
0x0017[2]	LOSREF_INTR_MSK	0	0x0
0x0017[3]	LOL_INTR_MSK	0	0x0
0x0017[5]	SMB_TMOUT_INTR_MSK	0	0x0
0x0018[3:0]	LOSIN_INTR_MSK	15	0xF
0x0021[0]	IN_SEL_REGCTRL	1	0x1
0x0021[2:1]	IN_SEL	3	0x3
0x0022[1]	OE	0	0x0
0x002B[3]	SPI_3WIRE	0	0x0
0x002B[5]	AUTO_NDIV_UPDATE	0	0x0
0x002C[3:0]	LOS_EN	0	0x0
0x002C[4]	LOSXAXB_DIS	0	0x0
0x002D[1:0]	LOS0_VAL_TIME	0	0x0
0x002D[3:2]	LOS1_VAL_TIME	0	0x0
0x002D[5:4]	LOS2_VAL_TIME	0	0x0
0x002D[7:6]	LOS3_VAL_TIME	0	0x0
0x002E[15:0]	LOS0_TRG_THR	0	0x0000
0x0030[15:0]	LOS1_TRG_THR	0	0x0000
0x0032[15:0]	LOS2_TRG_THR	0	0x0000
0x0034[15:0]	LOS3_TRG_THR	0	0x0000
0x0036[15:0]	LOS0_CLR_THR	0	0x0000
0x0038[15:0]	LOS1_CLR_THR	0	0x0000
0x003A[15:0]	LOS2_CLR_THR	0	0x0000
0x003C[15:0]	LOS3_CLR_THR	0	0x0000
0x0041[4:0]	LOS0_DIV_SEL	0	0x00
0x0042[4:0]	LOS1_DIV_SEL	0	0x00
0x0043[4:0]	LOS2_DIV_SEL	0	0x00
0x0044[4:0]	LOS3_DIV_SEL	0	0x00
0x009E[7:4]	LOL_SET_THR	0	0x0
0x0102[0]	OUTALL_DISABLE_LOW	1	0x1
0x0112[0]	OUT0_PDN	0	0x0
0x0112[1]	OUT0_OE	1	0x1
0x0112[2]	OUT0_RDIV_FORCE2	1	0x1
0x0113[2:0]	OUT0_FORMAT	1	0x1
0x0113[3]	OUT0_SYNC_EN	1	0x1
0x0113[5:4]	OUT0_DIS_STATE	0	0x0
0x0113[7:6]	OUT0_CMOS_DRV	0	0x0
0x0114[3:0]	OUT0_CM	3	0x3
0x0114[6:4]	OUT0_AMPL	3	0x3
0x0115[2:0]	OUT0_MUX_SEL	0	0x0
0x0115[5:4]	OUT0_VDD_SEL	0	0x0
0x0115[3]	OUT0_VDD_SEL_EN	1	0x1

0x0115[7:6]	OUT0_INV	0	0x0
0x0117[0]	OUT1_PDN	0	0x0
0x0117[1]	OUT1_OE	1	0x1
0x0117[2]	OUT1_RDIV_FORCE2	1	0x1
0x0118[2:0]	OUT1_FORMAT	1	0x1
0x0118[3]	OUT1_SYNC_EN	1	0x1
0x0118[5:4]	OUT1_DIS_STATE	0	0x0
0x0118[7:6]	OUT1_CMOS_DRV	0	0x0
0x0119[3:0]	OUT1_CM	3	0x3
0x0119[6:4]	OUT1_AMPL	3	0x3
0x011A[2:0]	OUT1_MUX_SEL	0	0x0
0x011A[5:4]	OUT1_VDD_SEL	0	0x0
0x011A[3]	OUT1_VDD_SEL_EN	1	0x1
0x011A[7:6]	OUT1_INV	0	0x0
0x0126[0]	OUT2_PDN	1	0x1
0x0126[1]	OUT2_OE	0	0x0
0x0126[2]	OUT2_RDIV_FORCE2	0	0x0
0x0127[2:0]	OUT2_FORMAT	1	0x1
0x0127[3]	OUT2_SYNC_EN	1	0x1
0x0127[5:4]	OUT2_DIS_STATE	0	0x0
0x0127[7:6]	OUT2_CMOS_DRV	0	0x0
0x0128[3:0]	OUT2_CM	11	0xB
0x0128[6:4]	OUT2_AMPL	3	0x3
0x0129[2:0]	OUT2_MUX_SEL	0	0x0
0x0129[5:4]	OUT2_VDD_SEL	2	0x2
0x0129[3]	OUT2_VDD_SEL_EN	1	0x1
0x0129[7:6]	OUT2_INV	0	0x0
0x012B[0]	OUT3_PDN	1	0x1
0x012B[1]	OUT3_OE	0	0x0
0x012B[2]	OUT3_RDIV_FORCE2	0	0x0
0x012C[2:0]	OUT3_FORMAT	1	0x1
0x012C[3]	OUT3_SYNC_EN	1	0x1
0x012C[5:4]	OUT3_DIS_STATE	0	0x0
0x012C[7:6]	OUT3_CMOS_DRV	0	0x0
0x012D[3:0]	OUT3_CM	11	0xB
0x012D[6:4]	OUT3_AMPL	3	0x3
0x012E[2:0]	OUT3_MUX_SEL	0	0x0
0x012E[5:4]	OUT3_VDD_SEL	2	0x2
0x012E[3]	OUT3_VDD_SEL_EN	1	0x1
0x012E[7:6]	OUT3_INV	0	0x0
0x013F[11:0]	OUTX_ALWAYS_ON	0	0x000
0x0141[5]	OUT_DIS_LOL_MSK	0	0x0
0x0141[7]	OUT_DIS_MSK_LOS_PFD	0	0x0
0x0206[1:0]	PXAXB	0	0x0
0x0208[47:0]	P0	0	0x000000000000
0x020E[31:0]	P0_SET	0	0x00000000
0x0212[47:0]	P1	0	0x000000000000
0x0218[31:0]	P1_SET	0	0x00000000
0x021C[47:0]	P2	0	0x000000000000
0x0222[31:0]	P2_SET	0	0x00000000
0x0226[47:0]	P3	0	0x000000000000
0x022C[31:0]	P3_SET	0	0x00000000
0x0235[43:0]	M_NUM	603979776000	0x08CA0000000
0x023B[31:0]	M_DEN	2147483648	0x80000000
0x0250[23:0]	R0_REG	0	0x000000
0x0253[23:0]	R1_REG	0	0x000000
0x025C[23:0]	R2_REG	0	0x000000
0x025F[23:0]	R3_REG	0	0x000000
0x026B[7:0]	DESIGN_ID0	83	0x53
0x026C[7:0]	DESIGN_ID1	105	0x69
0x026D[7:0]	DESIGN_ID2	53	0x35
0x026E[7:0]	DESIGN_ID3	51	0x33
0x026F[7:0]	DESIGN_ID4	52	0x34
0x0270[7:0]	DESIGN_ID5	48	0x30

0x0271[7:0]	DESIGN_ID6	66	0x42
0x0272[7:0]	DESIGN_ID7	0	0x00
0x0278[7:0]	OPN_ID0	48	0x30
0x0279[7:0]	OPN_ID1	57	0x39
0x027A[7:0]	OPN_ID2	51	0x33
0x027B[7:0]	OPN_ID3	55	0x37
0x027C[7:0]	OPN_ID4	52	0x34
0x027D[7:0]	OPN_REVISION	0	0x00
0x0302[43:0]	N0_NUM	115964116992	0x01B00000000
0x0308[31:0]	N0_DEN	2147483648	0x80000000
0x030C[0]	N0_UPDATE	0	0x0
0x030D[43:0]	N1_NUM	0	0x00000000000
0x0313[31:0]	N1_DEN	0	0x00000000
0x0317[0]	N1_UPDATE	0	0x0
0x0318[43:0]	N2_NUM	0	0x00000000000
0x031E[31:0]	N2_DEN	0	0x00000000
0x0322[0]	N2_UPDATE	0	0x0
0x0323[43:0]	N3_NUM	0	0x00000000000
0x0329[31:0]	N3_DEN	0	0x00000000
0x032D[0]	N3_UPDATE	0	0x0
0x0338[1]	N_UPDATE	0	0x0
0x0339[4:0]	N_FSTEP_MSK	31	0x1F
0x033B[43:0]	N0_FSTEPW	0	0x00000000000
0x0341[43:0]	N1_FSTEPW	0	0x00000000000
0x0347[43:0]	N2_FSTEPW	0	0x00000000000
0x034D[43:0]	N3_FSTEPW	0	0x00000000000
0x0359[15:0]	N0_DELAY	0	0x0000
0x035B[15:0]	N1_DELAY	0	0x0000
0x035D[15:0]	N2_DELAY	0	0x0000
0x035F[15:0]	N3_DELAY	0	0x0000
0x0802[15:0]	FIXREGSA0	0	0x0000
0x0804[7:0]	FIXREGSD0	0	0x00
0x0805[15:0]	FIXREGSA1	0	0x0000
0x0807[7:0]	FIXREGSD1	0	0x00
0x0808[15:0]	FIXREGSA2	0	0x0000
0x080A[7:0]	FIXREGSD2	0	0x00
0x080B[15:0]	FIXREGSA3	0	0x0000
0x080D[7:0]	FIXREGSD3	0	0x00
0x080E[15:0]	FIXREGSA4	0	0x0000
0x0810[7:0]	FIXREGSD4	0	0x00
0x0811[15:0]	FIXREGSA5	0	0x0000
0x0813[7:0]	FIXREGSD5	0	0x00
0x0814[15:0]	FIXREGSA6	0	0x0000
0x0816[7:0]	FIXREGSD6	0	0x00
0x0817[15:0]	FIXREGSA7	0	0x0000
0x0819[7:0]	FIXREGSD7	0	0x00
0x081A[15:0]	FIXREGSA8	0	0x0000
0x081C[7:0]	FIXREGSD8	0	0x00
0x081D[15:0]	FIXREGSA9	0	0x0000
0x081F[7:0]	FIXREGSD9	0	0x00
0x0820[15:0]	FIXREGSA10	0	0x0000
0x0822[7:0]	FIXREGSD10	0	0x00
0x0823[15:0]	FIXREGSA11	0	0x0000
0x0825[7:0]	FIXREGSD11	0	0x00
0x0826[15:0]	FIXREGSA12	0	0x0000
0x0828[7:0]	FIXREGSD12	0	0x00
0x0829[15:0]	FIXREGSA13	0	0x0000
0x082B[7:0]	FIXREGSD13	0	0x00
0x082C[15:0]	FIXREGSA14	0	0x0000
0x082E[7:0]	FIXREGSD14	0	0x00
0x082F[15:0]	FIXREGSA15	0	0x0000
0x0831[7:0]	FIXREGSD15	0	0x00
0x0832[15:0]	FIXREGSA16	0	0x0000
0x0834[7:0]	FIXREGSD16	0	0x00

0x0835[15:0]	FIXREGSA17	0	0x0000
0x0837[7:0]	FIXREGSD17	0	0x00
0x0838[15:0]	FIXREGSA18	0	0x0000
0x083A[7:0]	FIXREGSD18	0	0x00
0x083B[15:0]	FIXREGSA19	0	0x0000
0x083D[7:0]	FIXREGSD19	0	0x00
0x083E[15:0]	FIXREGSA20	0	0x0000
0x0840[7:0]	FIXREGSD20	0	0x00
0x0841[15:0]	FIXREGSA21	0	0x0000
0x0843[7:0]	FIXREGSD21	0	0x00
0x0844[15:0]	FIXREGSA22	0	0x0000
0x0846[7:0]	FIXREGSD22	0	0x00
0x0847[15:0]	FIXREGSA23	0	0x0000
0x0849[7:0]	FIXREGSD23	0	0x00
0x084A[15:0]	FIXREGSA24	0	0x0000
0x084C[7:0]	FIXREGSD24	0	0x00
0x084D[15:0]	FIXREGSA25	0	0x0000
0x084F[7:0]	FIXREGSD25	0	0x00
0x0850[15:0]	FIXREGSA26	0	0x0000
0x0852[7:0]	FIXREGSD26	0	0x00
0x0853[15:0]	FIXREGSA27	0	0x0000
0x0855[7:0]	FIXREGSD27	0	0x00
0x0856[15:0]	FIXREGSA28	0	0x0000
0x0858[7:0]	FIXREGSD28	0	0x00
0x0859[15:0]	FIXREGSA29	0	0x0000
0x085B[7:0]	FIXREGSD29	0	0x00
0x085C[15:0]	FIXREGSA30	0	0x0000
0x085E[7:0]	FIXREGSD30	0	0x00
0x085F[15:0]	FIXREGSA31	0	0x0000
0x0861[7:0]	FIXREGSD31	0	0x00
0x090E[0]	XAXB_EXTCLK_EN	0	0x0
0x090E[1]	XAXB_PDNB	1	0x1
0x091C[2:0]	ZDM_EN	4	0x4
0x0943[0]	IO_VDD_SEL	0	0x0
0x0949[3:0]	IN_EN	0	0x0
0x0949[7:4]	IN_PULSED_CMOS_EN	0	0x0
0x094A[7:4]	INX_TO_PFD_EN	0	0x0
0x094E[11:0]	REFCLK_HYS_SEL	585	0x249
0x095E[0]	M_INTEGER	0	0x0
0x0A02[4:0]	N_ADD_OP5	0	0x00
0x0A03[4:0]	N_CLK_TO_OUTX_EN	1	0x01
0x0A04[4:0]	N_PIBYP	1	0x01
0x0A05[4:0]	N_PDNB	1	0x01
0x0A14[3]	N0_HIGH_FREQ	0	0x0
0x0A1A[3]	N1_HIGH_FREQ	0	0x0
0x0A20[3]	N2_HIGH_FREQ	0	0x0
0x0A26[3]	N3_HIGH_FREQ	0	0x0
0x0B44[3:0]	PDIV_ENB	15	0xF
0x0B4A[4:0]	N_CLK_DIS	14	0x0E
0x0B57[11:0]	VCO_RESET_CALCODE	270	0x10E

This datasheet addendum is provided as supplemental information to the Si5340B datasheet, located at www.silabs.com/timing. You can search for and download any datasheet addendum for ClockBuilder Pro generated custom part numbers. Go to <http://www.silabs.com/custom-timing> for more information.

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