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SLG46536

GreenPAK
Programmable Mixed-signal Matrix

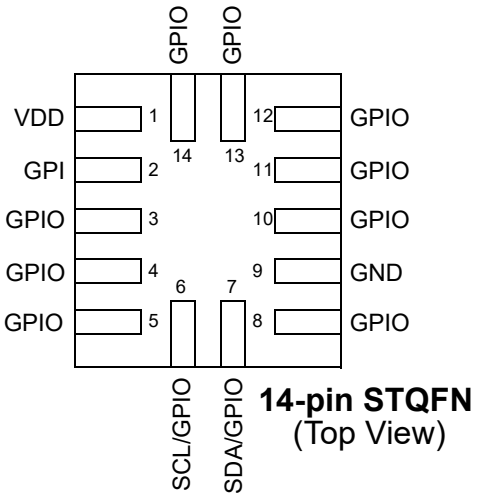
Features

- Logic & Mixed Signal Circuits
- Highly Versatile Macrocells
- Read Back Protection (Read Lock)
- 1.8 V (±5%) to 5 V (±10%) Supply
- Operating Temperature Range: -40°C to 85°C
- RoHS Compliant / Halogen-Free
- 14-pin STQFN: 2 x 2.2 x 0.55 mm, 0.4 mm pitch

Applications

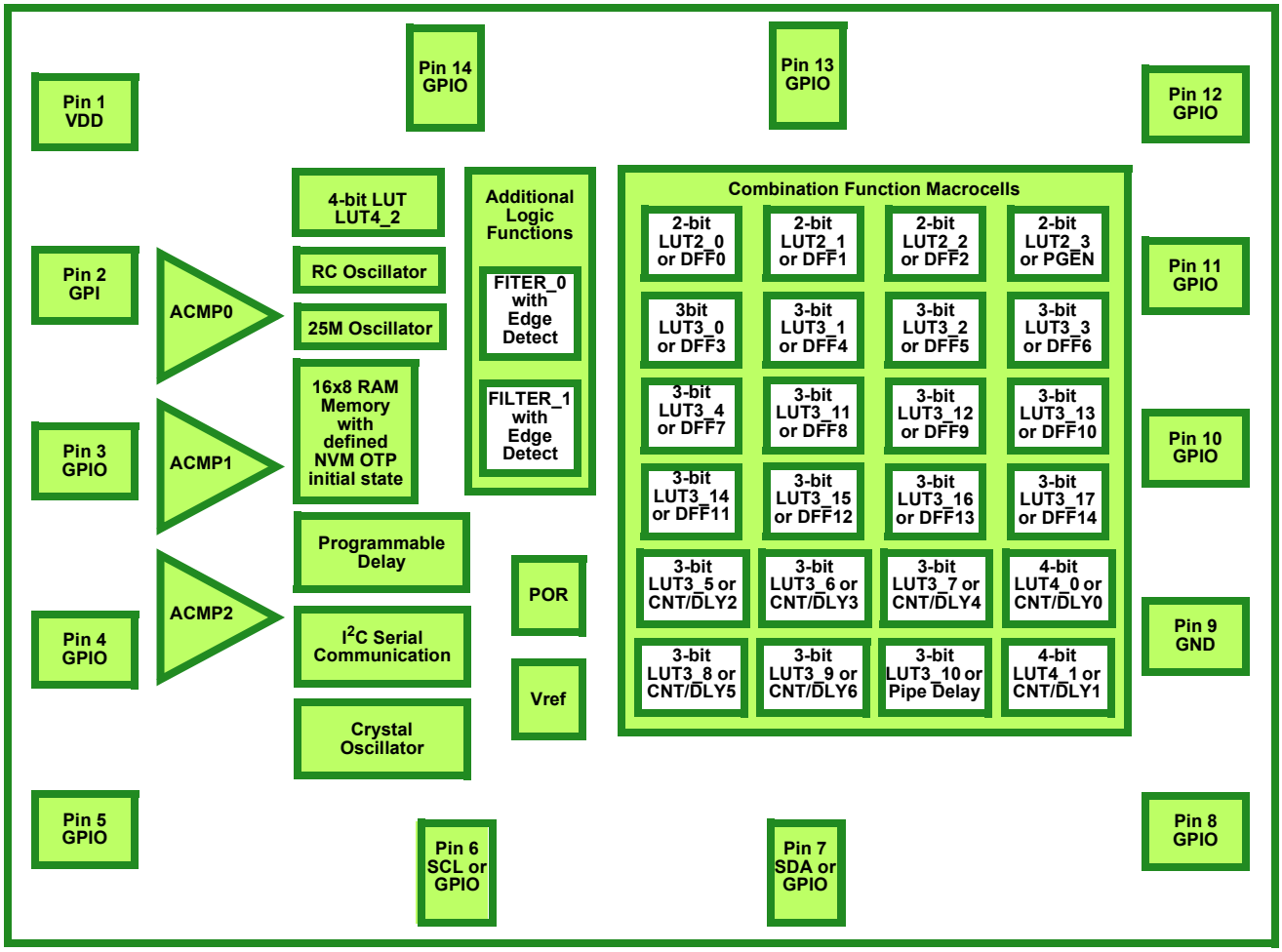
- Personal Computers and Servers
- PC Peripherals
- Consumer Electronics
- Data Communications Equipment
- Handheld and Portable Electronics

Pin Configuration



14-pin STQFN
(Top View)

Block Diagram



1.0 Overview

The SLG46536 provides a small, low power component for commonly used mixed-signal functions. The user creates their circuit design by programming the one time Non-Volatile Memory (NVM) to configure the interconnect logic, the I/O Pins and the macrocells of the SLG46536. This highly versatile device allows a wide variety of mixed-signal functions to be designed within a very small, low power single integrated circuit. The macrocells in the device include the following:

- Three Analog Comparators (ACMP)
- Twenty-six Combination Function Macrocells
  - Three Selectable DFF/Latch or 2-bit LUTs
  - One Selectable Continuous DFF/Latch or 3-bit LUT
  - Eleven Selectable DFF/Latch or 3-bit LUTs
  - One Selectable Pipe Delay or 3-bit LUT
  - One Selectable Programmable Pattern Generator or 2-bit LUT
  - Five 8-bit delays/counters or 3-bit LUTs
  - Two 16-bit delays/counters or 4-bit LUTs
  - Two Deglitch Filters with Edge Detectors
- Combinatorial Logic
  - One 4-bit LUT
- Serial Communications
  - I^2C Protocol compliant
- 16x8 RAM Memory with defined NVM OTP initial state
- Pipe Delay – 16 stage/3 output (Part of Combination Function Macrocell)
- Programmable Delay
- Two Oscillators (OSC)
  - Configurable 25 kHz/2 MHz
  - 25 MHz RC Oscillator
- Crystal Oscillator
- Power-On-Reset (POR)

2.0 Pin Description

2.1 Functional Pin Description

Pin #	Pin Name	Function
1	VDD	Power Supply
2	GPI	General Purpose Input
3	GPIO	General Purpose I/O
4	GPIO	General Purpose I/O or ACMP0 (+)
5	GPIO	General Purpose I/O with OE or External Vref (ACMP0 IN-)
6	SCL/GPIO	General Purpose I/O SCL or GPIOD (NMOS open drain only)
7	SDA/GPIO	General Purpose I/O SDA or GPIOD (NMOS open drain only)
8	GPIO	General Purpose I/O with OE or ACMP1 (+)
9	GND	Ground
10	GPIO	General Purpose I/O External Vref (ACMP1 IN-)
11	GPIO	General Purpose I/O with OE
12	GPIO	General Purpose I/O with OE
13	GPIO	General Purpose I/O
14	GPIO	General Purpose I/O or External Clock Input

3.0 User Programmability

Non-volatile memory (NVM) is used to configure the SLG46536's connection matrix routing and macrocells. The NVM is One-Time-Programmable (OTP). However, Silego's GreenPAK development tools can be used to configure the connection matrix and macrocells, without programming the NVM, to allow on-chip emulation. This configuration will remain active on the device as long as it remains powered and can be re-written as needed to facilitate rapid design changes.

When a design is ready for in-circuit testing, the same GreenPAK development tools can be used to program the NVM and create samples for small quantity builds. Once the NVM is programmed, the device will retain this configuration for the duration of its lifetime.

Once the design is finalized, the design file can be forwarded to Silego to integrate into the production process.

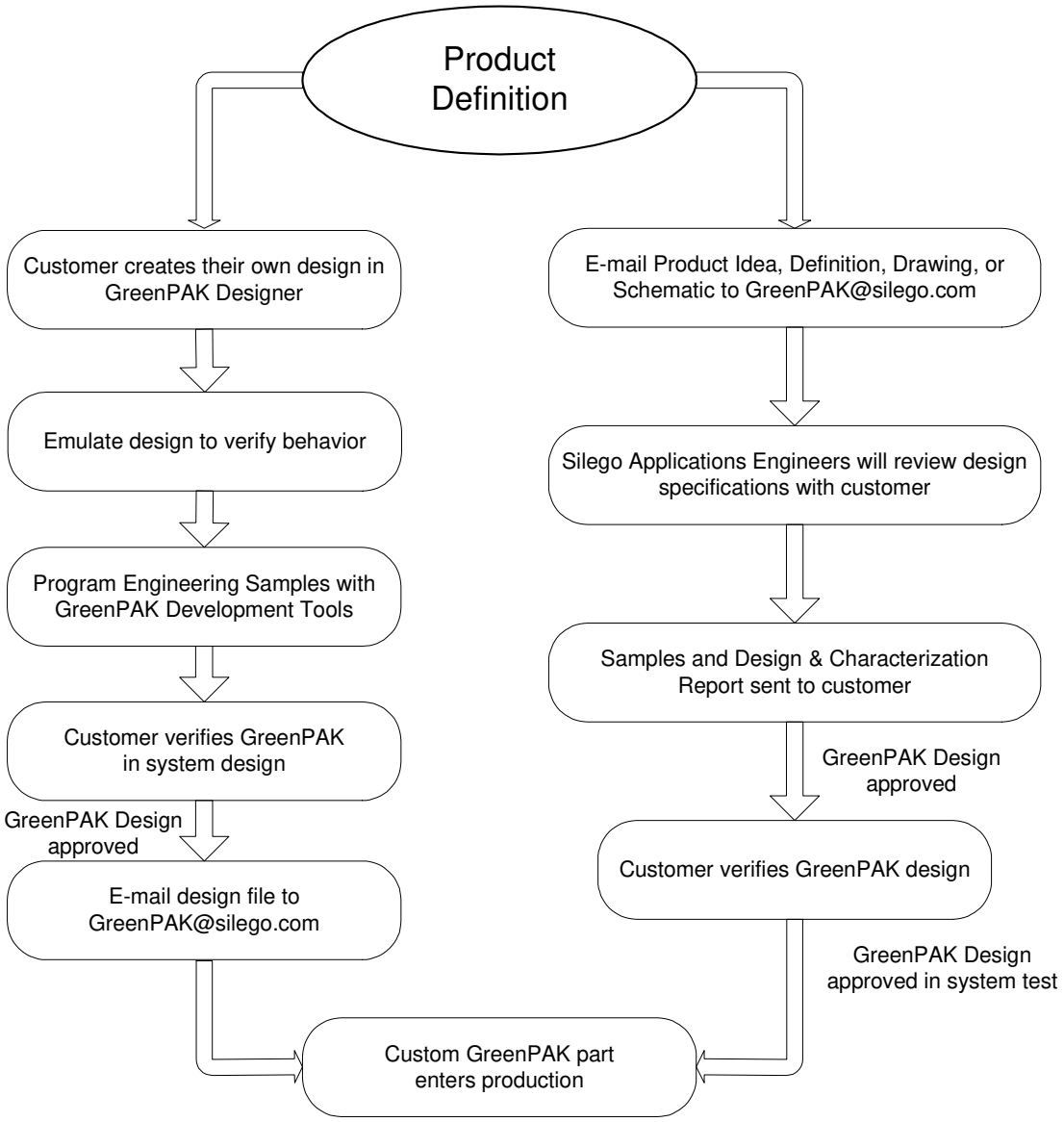


Figure 1. Steps to create a custom Silego GreenPAK device

4.0 Ordering Information

Part Number	Type
SLG46536V	14-pin STQFN
SLG46536VTR	14-pin STQFN - Tape and Reel (3k units)

5.0 Electrical Specifications

5.1 Absolute Maximum Conditions

Parameter		Min.	Max.	Unit
Supply voltage on VDD relative to GND		-0.5	7	V
DC Input voltage		GND - 0.5	VDD + 0.5	V
Maximum Average or DC Current (Through pin)	Push-Pull 1x	--	11	mA
	Push-Pull 2x	--	16	
	OD 1x	--	11	
	OD 2x	--	21	
	OD 4x	--	43	
Current at Input Pin		-1.0	1.0	mA
Storage Temperature Range		-65	150	°C
Junction Temperature		--	150	°C
ESD Protection (Human Body Model)		2000	--	V
ESD Protection (Charged Device Model)		1300	--	V
Moisture Sensitivity Level		1		

5.2 Electrical Characteristics (1.8 V ±5% V_{DD})

Symbol	Parameter	Condition/Note	Min.	Typ.	Max.	Unit
V_{DD}	Supply Voltage		1.71	1.80	1.89	V
T_A	Operating Temperature		-40	25	85	°C
V_{PP}	Programming Voltage		7.25	7.50	7.75	V
V_{ACMP}	ACMP Input Voltage Range	Positive Input	0	--	V_{DD}	V
		Negative Input	0	--	1.2	V
V_{IH}	HIGH-Level Input Voltage	Logic Input	1.06	--	V_{DD}	V
		Logic Input with Schmitt Trigger	1.28	--	V_{DD}	V
		Low-Level Logic Input	0.94	--	V_{DD}	V
V_{IL}	LOW-Level Input Voltage	Logic Input	0	--	0.76	V
		Logic Input with Schmitt Trigger	0	--	0.49	V
		Low-Level Logic Input	0	--	0.52	V
V_{HYS}	Schmitt Trigger Hysteresis Voltage	Logic Input with Schmitt Trigger	0.10	0.41	0.66	V
I_{LKG}	Input leakage (Absolute Value)		--	1	1000	nA
V_{OH}	HIGH-Level Output Voltage	Push-Pull, I_{OH} = 100 µA, 1X Drive	1.69	1.79	--	V
		PMOS OD, I_{OH} = 100 µA, 1X Drive	1.69	1.79	--	V
		Push-Pull, I_{OH} = 100 µA, 2X Drive	1.70	1.79	--	V
		PMOS OD, I_{OH} = 100 µA, 2X Drive	1.70	1.79	--	V

Symbol	Parameter	Condition/Note	Min.	Typ.	Max.	Unit
V_{OL}	LOW-Level Output Voltage	Push-Pull, I_{OL}= 100 µA, 1X Drive	--	0.009	0.013	V
		Push-Pull, I_{OL} = 100 µA, 2X Drive	--	0.004	0.006	V
		Open Drain, I_{OL} = 100 µA, 1X Drive	--	0.006	0.009	V
		Open Drain, I_{OL} = 100 µA, 2X Drive	--	0.003	0.004	V
		Open Drain NMOS 4X, I_{OL} = 100 µA	--	0.001	0.002	V
I_{OH}	HIGH-Level Output Pulse Current (see Note 1)	Push-Pull, V_{OH} = V_{DD} - 0.2, 1X Drive	1.07	1.70	--	mA
		PMOS OD, V_{OH} = V_{DD} - 0.2, 1X Drive	1.07	1.70	--	mA
		Push-Pull, V_{OH} = V_{DD} - 0.2, 2X Drive	2.22	3.41	--	mA
		PMOS OD, V_{OH} = V_{DD} - 0.2, 2X Drive	2.22	3.41	--	mA
I_{OL}	LOW-Level Output Pulse Current (see Note 1)	Push-Pull, V_{OL} = 0.15 V, 1X Drive	0.92	1.69	--	mA
		Push-Pull, V_{OL} = 0.15 V, 2X Drive	1.83	3.38	--	mA
		Open Drain, V_{OL} = 0.15 V, 1X Drive	1.38	2.53	--	mA
		Open Drain, V_{OL} = 0.15 V, 2X Drive	2.75	5.07	--	mA
		Open Drain NMOS 4X, V_{OL} = 0.15 V	7.21	9.00	--	mA
I_{VDD}	Maximum Average or DC Current Through VDD Pin (Per chip side, see Note 2)	T_J = 85°C	--	--	45	mA
		T_J = 110°C	--	--	22	mA
I_{GND}	Maximum Average or DC Current Through GND Pin (Per chip side, see Note 2)	T_J = 85°C	--	--	86	mA
		T_J = 110°C	--	--	41	mA
V_O	Maximal Voltage Applied to any PIN in High-Impedance State		--	--	V_{DD}	V
T_{SU}	Startup Time	From VDD rising past PON_{THR}	0.63	1.36	1.87	ms
PON_{THR}	Power On Threshold	V_{DD} Level Required to Start Up the Chip	1.41	1.54	1.66	V
$POFF_{THR}$	Power Off Threshold	V_{DD} Level Required to Switch Off the Chip	1.00	1.15	1.31	V
R_{PUP}	Pull Up Resistance	1 M Pull Up	859.8	1097.1	1358.9	kΩ
		100 k Pull Up	86.47	110.13	136.18	kΩ
		10 k Pull Up	10.82	12.86	15.36	kΩ
R_{PDWN}	Pull Down Resistance	1 M Pull Down	873.9	1097.0	1359.0	kΩ
		100 k Pull Down	88.89	110.53	136.55	kΩ
		10 k Pull Down	9.65	12.75	15.76	kΩ

Note 1: DC or average current through any pin should not exceed value given in Absolute Maximum Conditions.
Note 2: The GreenPAK's power rails are divided in two sides. Pins 2, 3, 4, 5, 6, 7 and 8 are connected to one side, pins 10, 11, 12, 13 and 14 to another.

5.3 Electrical Characteristics (3.3 V ±10% V_{DD})

Symbol	Parameter	Condition/Note	Min.	Typ.	Max.	Unit
V_{DD}	Supply Voltage		3.0	3.3	3.6	V
T_A	Operating Temperature		-40	25	85	°C
V_{PP}	Programming Voltage		7.25	7.50	7.75	V
V_{ACMP}	ACMP Input Voltage Range	Positive Input	0	--	V_{DD}	V
		Negative Input	0	--	1.2	V
V_{IH}	HIGH-Level Input Voltage	Logic Input	1.81	--	V_{DD}	V
		Logic Input with Schmitt Trigger	2.14	--	V_{DD}	V
		Low-Level Logic Input	1.06	--	V_{DD}	V
V_{IL}	LOW-Level Input Voltage	Logic Input	0	--	1.31	V
		Logic Input with Schmitt Trigger	0	--	0.97	V
		Low-Level Logic Input	0	--	0.67	V
V_{HYS}	Schmitt Trigger Hysteresis Voltage	Logic Input with Schmitt Trigger	0.29	0.62	0.94	V
I_{LGK}	Input leakage (Absolute Value)		--	1	1000	nA
V_{OH}	HIGH-Level Output Voltage	Push-Pull, I_{OH} = 3 mA, 1X Drive	2.70	3.12	--	V
		PMOS OD, I_{OH} = 3 mA, 1X Drive	2.70	3.12	--	V
		Push-Pull, I_{OH} = 3 mA, 2X Drive	2.85	3.21	--	V
		PMOS OD, I_{OH} = 3 mA, 2X Drive	2.86	3.21	--	V
V_{OL}	LOW-Level Output Voltage	Push-Pull, I_{OL}= 3 mA, 1X Drive	--	0.13	0.23	V
		Push-Pull, I_{OL} = 3 mA, 2X Drive	--	0.06	0.11	V
		Open Drain, I_{OL} = 3 mA, 1X Drive	--	0.08	0.15	V
		Open Drain, I_{OL} = 3 mA, 2X Drive	--	0.04	0.08	V
		Open Drain NMOS 4X, I_{OL} = 3 mA	--	0.02	0.04	V
I_{OH}	HIGH-Level Output Pulse Current (see Note 1)	Push-Pull, V_{OH} = 2.4 V, 1X Drive	6.05	12.08	--	mA
		PMOS OD, V_{OH} = 2.4 V, 1X Drive	6.05	12.08	--	mA
		Push-Pull, V_{OH} = 2.4 V, 2X Drive	11.54	24.16	--	mA
		PMOS OD, V_{OH} = 2.4 V, 2X Drive	11.52	24.16	--	mA
I_{OL}	LOW-Level Output Pulse Current (see Note 1)	Push-Pull, V_{OL} = 0.4 V, 1X Drive	4.88	8.24	--	mA
		Push-Pull, V_{OL} = 0.4 V, 2X Drive	9.75	16.49	--	mA
		Open Drain, V_{OL} = 0.4 V, 1X Drive	7.31	12.37	--	mA
		Open Drain, V_{OL} = 0.4 V, 2X Drive	14.54	24.74	--	mA
		Open Drain NMOS 4X, V_{OL} = 0.4 V	31.32	41.06	--	mA
I_{VDD}	Maximum Average or DC Current Through VDD Pin (Per chip side, see Note 2)	T_J = 85°C	--	--	45	mA
		T_J = 110°C	--	--	22	mA
I_{GND}	Maximum Average or DC Current Through GND Pin (Per chip side, see Note 2)	T_J = 85°C	--	--	86	mA
		T_J = 110°C	--	--	41	mA

Symbol	Parameter	Condition/Note	Min.	Typ.	Max.	Unit
V_O	Maximal Voltage Applied to any PIN in High-Impedance State		--	--	V_{DD}	V
T_{SU}	Startup Time	From VDD rising past PON_{THR}	0.61	1.24	1.65	ms
PON_{THR}	Power On Threshold	V_{DD} Level Required to Start Up the Chip	1.41	1.54	1.66	V
$POFF_{THR}$	Power Off Threshold	V_{DD} Level Required to Switch Off the Chip	1.00	1.15	1.31	V
R_{PUP}	Pull Up Resistance	1 M Pull Up	873.2	1094.7	1364.3	kΩ
		100 k Pull Up	85.17	109.30	135.52	kΩ
		10 k Pull Up	9.61	11.86	14.73	kΩ
R_{PDWN}	Pull Down Resistance	1 M Pull Down	862.5	1096.3	1357.4	kΩ
		100 k Pull Down	87.95	109.76	136.06	kΩ
		10 k Pull Down	8.66	11.81	15.05	kΩ

Note 1: DC or average current through any pin should not exceed value given in Absolute Maximum Conditions.
Note 2: The GreenPAK's power rails are divided in two sides. Pins 2, 3, 4, 5, 6, 7 and 8 are connected to one side, pins 10, 11, 12, 13 and 14 to another.

5.4 Electrical Characteristics (5 V ±10% V_{DD})

Symbol	Parameter	Condition/Note	Min.	Typ.	Max.	Unit
V_{DD}	Supply Voltage		4.5	5.0	5.5	V
T_A	Operating Temperature		-40	25	85	°C
V_{PP}	Programming Voltage		7.25	7.50	7.75	V
V_{ACMP}	ACMP Input Voltage Range	Positive Input	0	--	V_{DD}	V
		Negative Input	0	--	1.2	V
V_{IH}	HIGH-Level Input Voltage	Logic Input	2.68	--	V_{DD}	V
		Logic Input with Schmitt Trigger	3.34	--	V_{DD}	V
		Low-Level Logic Input	1.15	--	V_{DD}	V
V_{IL}	LOW-Level Input Voltage	Logic Input	0	--	1.96	V
		Logic Input with Schmitt Trigger	0	--	1.41	V
		Low-Level Logic Input	0	--	0.77	V
V_{HYS}	Schmitt Trigger Hysteresis Voltage	Logic Input with Schmitt Trigger	0.44	0.90	1.38	V
I_{LGK}	Input leakage (Absolute Value)		--	1	1000	nA
V_{OH}	HIGH-Level Output Voltage	Push-Pull, I_{OH} = 5 mA, 1X Drive	4.15	4.76	--	V
		PMOS OD, I_{OH} = 5 mA, 1X Drive	4.16	4.76	--	V
		Push-Pull, I_{OH} = 5 mA, 2X Drive	4.32	4.89	--	V
		PMOS OD, I_{OH} = 5 mA, 2X Drive	4.33	4.89	--	V
V_{OL}	LOW-Level Output Voltage	Push-Pull, I_{OL}= 5 mA, 1X Drive	--	0.19	0.24	V
		Push-Pull, I_{OL} =5 mA, 2X Drive	--	0.09	0.12	V
		Open Drain, I_{OL} = 5 mA, 1X Drive	--	0.12	0.16	V
		Open Drain, I_{OL} = 5 mA, 2X Drive	--	0.07	0.08	V
		Open Drain NMOS 4X, I_{OL} = 5 mA	--	0.03	0.05	V
I_{OH}	HIGH-Level Output Pulse Current (see Note 1)	Push-Pull, V_{OH} = 2.4 V, 1X Drive	22.08	34.04	--	mA
		PMOS OD, V_{OH} = 2.4 V, 1X Drive	22.08	34.04	--	mA
		Push-Pull, V_{OH} = 2.4 V, 2X Drive	41.76	68.08	--	mA
		PMOS OD, V_{OH} = 2.4 V, 2X Drive	41.69	68.08	--	mA
I_{OL}	LOW-Level Output Pulse Current (see Note 1)	Push-Pull, V_{OL} = 0.4 V, 1X Drive	7.22	11.58	--	mA
		Push-Pull, V_{OL} = 0.4 V, 2X Drive	13.83	23.16	--	mA
		Open Drain, V_{OL} = 0.4 V, 1X Drive	10.82	17.38	--	mA
		Open Drain, V_{OL} = 0.4 V, 2X Drive	17.34	34.76	--	mA
		Open Drain NMOS 4X, V_{OL} = 0.4 V	41.06	55.18	--	mA
I_{VDD}	Maximum Average or DC Current Through VDD Pin (Per chip side, see Note 2)	T_J = 85°C	--	--	45	mA
		T_J = 110°C	--	--	22	mA
I_{GND}	Maximum Average or DC Current Through GND Pin (Per chip side, see Note 2)	T_J = 85°C	--	--	86	mA
		T_J = 110°C	--	--	41	mA

Symbol	Parameter	Condition/Note	Min.	Typ.	Max.	Unit
V_O	Maximal Voltage Applied to any PIN in High-Impedance State		--	--	V_{DD}	V
T_{SU}	Startup Time	From VDD rising past PON_{THR}	0.60	1.23	1.61	ms
PON_{THR}	Power On Threshold	V_{DD} Level Required to Start Up the Chip	1.41	1.54	1.66	V
$POFF_{THR}$	Power Off Threshold	V_{DD} Level Required to Switch Off the Chip	1.00	1.15	1.31	V
R_{PUP}	Pull Up Resistance	1 M Pull Up	864.6	1093.4	1348.1	kΩ
		100 k Pull Up	84.32	108.97	135.24	kΩ
		10 k Pull Up	8.74	11.37	14.52	kΩ
R_{PDWN}	Pull Down Resistance	1 M Pull Down	873.3	1096.1	1370.5	kΩ
		100 k Pull Down	87.57	109.48	135.89	kΩ
		10 k Pull Down	7.95	11.33	14.78	kΩ

Note 1: DC or average current through any pin should not exceed value given in Absolute Maximum Conditions.
Note 2: The GreenPAK's power rails are divided in two sides. Pins 2, 3, 4, 5, 6, 7 and 8 are connected to one side, pins 10, 11, 12, 13 and 14 to another.

5.5 I^2C Specifications

Symbol	Parameter	Condition/Note	Min.	Typ.	Max.	Unit
F_{SCL}	Clock Frequency, SCL	V_{DD} = (1.71...5.5) V	--	--	400	kHz
t_{LOW}	Clock Pulse Width Low	V_{DD} = (1.71...5.5) V	1300			ns
t_{HIGH}	Clock Pulse Width High	V_{DD} = (1.71...5.5) V	600	--	--	ns
t_I	Input Filter Spike Suppression (SCL, SDA)	V_{DD} = 1.8 V ± 5 %	--	--	95	ns
		V_{DD} = 3.3 V ± 10%			95	
		V_{DD} = 5.0 V ± 10 %			111	
t_{AA}	Clock Low to Data Out Valid	V_{DD} = (1.71...5.5) V	--	--	900	ns
t_{BUF}	Bus Free Time between Stop and Start	V_{DD} = (1.71...5.5) V	1300	--	--	ns
t_{HD_STA}	Start Hold Time	V_{DD} = (1.71...5.5) V	600	--	--	ns
t_{SU_STA}	Start Set-up Time	V_{DD} = (1.71...5.5) V	600	--	--	ns
t_{HD_DAT}	Data Hold Time	V_{DD} = (1.71...5.5) V	0	--	--	ns
t_{SU_DAT}	Data Set-up Time	V_{DD} = (1.71...5.5) V	100	--	--	ns
t_R	Inputs Rise Time	V_{DD} = (1.71...5.5) V	--	--	300	ns
t_F	Inputs Fall Time	V_{DD} = (1.71...5.5) V	--	--	300	ns
t_{SU_STO}	Stop Set-up Time	V_{DD} = (1.71...5.5) V	600	--	--	ns
t_{DH}	Data Out Hold Time	V_{DD} = (1.71...5.5) V	50	--	--	ns

5.6 IDD Estimator

Table 1. Typical Current Estimated for Each Macrocell at T=25°C

Symbol	Parameter	Note	V_{DD} = 1.8 V	V_{DD} = 3.3V	V_{DD} = 5.0V	Unit
I	Current	Chip Quiescent	0.45	0.75	1.12	µA
		OSC 2 MHz, predivide = 1	41.48	64.00	94.89	µA
		OSC 2 MHz, predivide = 8	25.68	32.41	43.22	µA
		OSC 25 kHz, predivide = 1	7.16	7.94	9.25	µA
		OSC 25 kHz, predivide = 8	6.97	7.60	8.68	µA
		OSC 25 MHz, predivide = 1	87.25	238.27	428.66	µA
		OSC 25 MHz, predivide = 8	78.01	212.45	390.17	µA
		ACMP (each)	54.96	52.64	60.81	µA
		ACMP with buffer (each)	75.06	72.74	81.25	µA
		Vref (each)	49.70	47.32	55.60	µA
		Vref with Buffer (each)	71.93	71.27	79.62	µA

5.7 Timing Estimator

Table 2. Typical Delay Estimated for Each Macrocell at T=25°C

Symbol	Parameter	Note	V_{DD} = 1.8 V		V_{DD} = 3.3V		V_{DD} = 5.0V		Unit
			rising	falling	rising	falling	rising	falling	
tpd	Delay	Digital Input to PP 1X	45	50	19	21	14	15	ns
tpd	Delay	Digital Input with Schmitt Trigger to PP 1X	44	49	19	21	14	15	ns
tpd	Delay	Low Voltage Digital input to PP 1X	46	447	19	195	14	134	ns
tpd	Delay	Digital input to PMOS output	44	-	19	-	14	-	ns
tpd	Delay	Digital input to NMOS output	-	81	-	30	-	20	ns
tpd	Delay	Output enable from pin, OE Hi-Z to 1	48	-	20	-	15	-	ns
tpd	Delay	Output enable from pin, OE Hi-Z to 0	-	46	-	20	-	24	ns
tpd	Delay	LUT2bit (LATCH)	34	33	14	13	10	9	ns
tpd	Delay	LATCH (LUT2bit)	30	34	14	13	10	9	ns
tpd	Delay	LUT3bit (LATCH)	38	37	18	15	13	10	ns
tpd	Delay	LATCH+nRESET (LUT3bit)	45	42	21	17	15	12	ns
tpd	Delay	LATCH	33	5	14	14			ns
tpd	Delay	LUT4bit	28	33	14	13	10	9	ns
tpd	Delay	LUT2bit	31	31	14	13	10	9	ns
tpd	Delay	LUT3bit	35	33	15	13	11	10	ns
tpd	Delay	CNT/DLY Logic	62	68	27	29	19	20	ns
tpd	Delay	DFF	32	28	14	12	11	9	ns
tpd	Delay	P_DLY1C	62	68	27	29	19	20	ns
tpd	Delay	P_DLY2C	667	656	303	297	225	221	ns
tpd	Delay	P_DLY3C	968	956	440	434	327	322	ns
tpd	Delay	P_DLY4C	1265	1252	576	570	428	423	ns
tpd	Delay	Filter	213	210	84	83	55	55	ns
tpd	Delay	ACMP (5 mV overdrive, IN- = 600 mV)	1600	1900	1500	1800	1600	1800	ns
tw	width	I/O with 1X push pull (min transmitted)	20	20	20	20	20	20	ns
tw	width	filter (min transmitted)	150	150	55	55	35	35	ns

5.8 Typical Counter/Delay Offset Measurements

Table 3. Typical Counter/Delay Offset Measurements

Parameter	RC OSC Freq	RC OSC Power	V_{DD} = 1.8 V	V_{DD} = 3.3V	V_{DD} = 5.0V	Unit
Offset (Power On Delay)	25 kHz	auto	1.6	1.6	1.6	µs
Offset (Power On Delay), fast start	25 kHz	auto	2.1	2.1	2.1	µs
Offset (Power On Delay)	2 MHz	auto	0.4	0.2	0.2	µs
Offset (Power On Delay), fast start	2 MHz	auto	0.7	0.5	0.4	µs
Offset (Power On Delay)	25 MHz	auto	0.01	0.05	0.04	µs
Frequency settling time	25 kHz	auto	19	14	12	µs
Frequency settling time	2 MHz	auto	14	14	14	µs
Variable (CLK period)	25 kHz	forced	0-40	0-40	0-40	µs
Variable (CLK period)	2 MHz	forced	0-0.5	0-0.5	0-0.5	µs
Variable (CLK period)	25 MHz		0-0.04	0-0.04	0-0.04	µs

Table 3. Typical Counter/Delay Offset Measurements

Parameter	RC OSC Freq	RC OSC Power	V_{DD} = 1.8 V	V_{DD} = 3.3V	V_{DD} = 5.0V	Unit
Tpd (non-delayed edge)	25 kHz/ 2 MHz	either	35	14	10	ns

5.9 Expected Delays and Widths

Table 4. Expected Delays and Widths (typical)

Symbol	Parameter	Note	V_{DD} = 1.8 V	V_{DD} = 3.3V	V_{DD} = 5.0V	Unit
Width	Width, 1 cell	mode:(any)edge detect, edge detect output	296	135	101	ns
Width	Width, 2 cell	mode:(any)edge detect, edge detect output	597	272	203	ns
Width	Width, 3 cell	mode:(any)edge detect, edge detect output	898	410	305	ns
Width	Width, 4 cell	mode:(any)edge detect, edge detect output	1195	546	407	ns
time1	Delay, 1 cell	mode:(any)edge detect, edge detect output	55	24	18	ns
time1	Delay, 2 cell	mode:(any)edge detect, edge detect output	55	24	18	ns
time1	Delay, 3 cell	mode:(any)edge detect, edge detect output	55	24	18	ns
time1	Delay, 4 cell	mode:(any)edge detect, edge detect output	55	24	18	ns
time2	Delay, 1 cell	mode: both edge delay, edge detect output	367	165	106	ns
time2	Delay, 2 cell	mode: both edge delay, edge detect output	667	300	193	ns
time2	Delay, 3 cell	mode: both edge delay, edge detect output	968	440	279	ns
time2	Delay, 4 cell	mode: both edge delay, edge detect output	1265	575	365	ns

5.10 Typical Pulse Width Performance

Table 5. Typical Pulse Width Performance at T=25°C

Parameter	V_{DD} = 1.8 V	V_{DD} = 3.3V	V_{DD} = 5.0V	Unit
Filtered Pulse Width for Filter 0	< 114	< 47	< 30	ns
Filtered Pulse Width for Filter 1	<75	<30	<19	ns

5.11 OSC Specifications

Table 6. 25 kHz RC OSC0 frequency limits

Power Supply Range (VDD) V	Temperature Range					
	+25 °C		0 °C ... +85 °C		-40 °C ... +85 °C	
	Minimum Value, kHz	Maximum Value, kHz	Minimum Value, kHz	Maximum Value, kHz	Minimum Value, kHz	Maximum Value, kHz
1.8 V ±5%	23.792	26.288	23.275	27.089	21.728	29.173
3.3 V ±10%	24.473	25.526	23.357	26.028	23.357	27.002
5 V ±10%	24.316	25.939	23.309	26.177	23.309	27.181
2.5 V ... 4.5 V	24.438	25.559	23.336	26.051	23.336	27.038
1.71 V… 5.5 V	23.354	26.670	22.828	27.483	21.301	29.545

Table 7. 25 kHz RC OSC0 frequency error (error calculated relative to nominal value)

Power Supply Range (VDD) V	Temperature Range					
	+25 °C		0 °C ... +85 °C		-40 °C ... +85 °C	
	Error (% at Minimum)	Error (% at Maximum)	Error (% at Minimum)	Error (% at Maximum)	Error (% at Minimum)	Error (% at Maximum)
1.8 V ±5%	-4.83%	5.15%	-6.90%	8.36%	-13.09%	16.69%
3.3 V ±10%	-2.11%	2.10%	-6.57%	4.11%	-6.57%	8.01%
5 V ±10%	-2.73%	3.76%	-6.76%	4.71%	-6.76%	8.72%
2.5 V ... 4.5 V	-2.25%	2.24%	-6.66%	4.21%	-6.66%	8.15%
1.71 V… 5.5 V	-6.58%	6.68%	-8.69%	9.93%	-14.80%	18.18%

5.11.1 2 MHz RC Oscillator

Table 8. 2 MHz RC OSC0 frequency limits

Power Supply Range (VDD) V	Temperature Range					
	+25 °C		0 °C ... +85 °C		-40 °C ... +85 °C	
	Minimum Value, MHz	Maximum Value, MHz	Minimum Value, MHz	Maximum Value, MHz	Minimum Value, MHz	Maximum Value, MHz
1.8 V ±5%	1.915	2.062	1.832	2.103	1.810	2.144
3.3 V ±10%	1.937	2.070	1.858	2.132	1.813	2.145
5 V ±10%	1.894	2.233	1.853	2.270	1.767	2.270
2.5 V ... 4.5 V	1.907	2.124	1.836	2.171	1.784	2.171
1.71 V… 5.5 V	1.760	2.274	1.706	2.305	1.629	2.305

Table 9. 2 MHz RC OSC0 frequency error (error calculated relative to nominal value)

Power Supply Range (VDD) V	Temperature Range					
	+25 °C		0 °C ... +85 °C		-40 °C ... +85 °C	
	Error (% at Minimum)	Error (% at Maximum)	Error (% at Minimum)	Error (% at Maximum)	Error (% at Minimum)	Error (% at Maximum)
1.8 V ±5%	-4.26%	3.12%	-8.38%	5.17%	-9.50%	7.20%
3.3 V ±10%	-3.14%	3.49%	-7.10%	6.58%	-9.33%	7.24%
5 V ±10%	-5.31%	11.66%	-7.37%	13.50%	-11.67%	13.50%
2.5 V ... 4.5 V	-4.65%	6.18%	-8.22%	8.57%	-10.81%	8.57%
1.71 V… 5.5 V	-12.01%	13.72%	-14.69%	15.23%	-18.57%	15.23%

5.11.2 25 MHz RC Oscillator

Table 10. 25 MHz RC OSC1 frequency limits

Power Supply Range (VDD) V	Temperature Range					
	+25 °C		0 °C ... +85 °C		-40 °C ... +85 °C	
	Minimum Value, MHz	Maximum Value, MHz	Minimum Value, MHz	Maximum Value, MHz	Minimum Value, MHz	Maximum Value, MHz
2.5 V ±10%	22.316	27.220	21.771	27.572	21.771	27.912
3.3 V ±10%	23.430	26.220	22.389	26.679	22.389	27.014
5 V ±10%	23.289	26.651	22.500	27.305	22.500	27.486
2.5 V ... 4.5 V	23.383	26.220	20.725	26.679	20.725	27.014
1.71 V… 5.5 V	12.643	26.220	12.203	26.679	11.317	27.014

Table 11. 25 MHz RC OSC1 frequency error (error calculated relative to nominal value)

Power Supply Range (VDD) V	Temperature Range					
	+25 °C		0 °C ... +85 °C		-40 °C ... +85 °C	
	Error (% at Minimum)	Error (% at Maximum)	Error (% at Minimum)	Error (% at Maximum)	Error (% at Minimum)	Error (% at Maximum)
2.5 V ±10%	-10.73%	8.88%	-12.92%	10.29%	-12.92%	11.65%
3.3 V ±10%	-6.28%	4.88%	-10.44%	6.72%	-10.44%	8.06%
5 V ±10%	-6.84%	6.61%	-10.00%	9.22%	-10.00%	9.95%
2.5 V ... 4.5 V	-14.47%	4.88%	-17.10%	6.72%	-17.10%	8.06%
1.71 V… 5.5 V	-49.43%	4.88%	-51.19%	6.72%	-54.73%	8.06%

Note: 25 MHz RC OSC1 performance is not guaranteed at VDD < 2.5 V.

5.11.3 OSC Power On delay

Table 12. Oscillators Power On delay at room temperature, DLY/CNT Counter data = 100; RC OSC power setting: "Auto Power On", RC osc clock to matrix input: "Enable"

Power Supply Range (VDD) V	RC OSC0 2 MHz		RC OSC0 25 kHz		RC OSC1	
	Typical Value, ns	Maximum Value, ns	Typical Value, µs	Maximum Value, µs	Typical Value, ns	Maximum Value, ns
1.71	372.7	407.3	0.40	0.57	71.2	87.3
1.80	349.2	379.5	0.38	0.41	65.0	78.7
1.89	330.3	358.0	0.35	0.41	59.7	71.3
2.30	277.2	298.1	0.29	0.31	43.0	54.0
2.50	262.0	281.9	0.28	0.30	39.6	48.1
2.70	250.2	269.8	0.26	0.30	36.7	43.5
3.00	236.6	256.7	0.25	0.44	33.2	39.8
3.30	226.7	247.4	0.23	0.47	30.4	36.8
3.60	219.0	239.9	0.22	0.46	28.2	34.3
4.20	207.4	229.2	0.37	0.50	25.8	30.6
4.50	202.8	224.5	1.63	1.92	25.0	29.2
5.00	196.3	218.7	1.67	2.05	24.3	27.5
5.50	190.8	213.3	1.69	1.99	23.7	26.8

Table 13. Oscillators Power On delay at room temperature, DLY/CNT Counter data = 100; RC OSC power setting: "Auto Power On", RC osc clock to matrix input: "Enable", Fast Start-up Time Mode

Power Supply Range (VDD) V	RC OSC0 2 MHz		RC OSC1 25 kHz	
	Typical Value, ns	Maximum Value, ns	Typical Value, µs	Maximum Value, µs
1.71	327.9	360.0	0.68	0.76
1.80	309.9	338.3	0.64	0.64
1.89	295.5	323.1	0.61	0.70
2.30	254.9	278.1	0.53	21.93
2.50	243.1	266.1	3.23	21.88
2.70	234.1	257.1	16.68	21.94
3.00	223.7	246.8	19.25	21.90
3.30	215.7	239.1	19.22	21.77
3.60	209.4	232.9	19.21	21.74
4.20	199.5	223.4	19.17	21.78
4.50	195.5	219.8	19.15	21.69
5.00	189.8	214.6	19.12	21.71
5.50	184.9	209.8	19.05	21.75

5.12 ACMP Specifications

Table 14. ACMP Specifications

Symbol	Parameter	Description/Note	Conditions	Min.	Typ.	Max.	Unit
V_{ACMP}	ACMP Input Voltage Range	Positive Input	VDD = 1.8 V ± 5 %	0	--	V_{DD}	V
		Negative Input		0	--	1.2	V
		Positive Input	VDD = 3.3 V ± 10 %	0	--	V_{DD}	V
		Negative Input		0	--	1.2	V
		Positive Input	VDD = 5.0 V ± 10 %	0	--	V_{DD}	V
		Negative Input		0	--	1.2	V
V_{offset}	ACMP Input Offset Voltage	Low Bandwidth - Enable, Vhys = 0 mV, Gain = 1, Vref = (50..1200) mV, VDD = (1.71..5.5) V	T = 25°C	-9.1	--	8.4	mV
			T = (-40..85)°C	-10.9	--	10.9	mV
		Low Bandwidth - Disable, Vhys = 0 mV, Gain =1, Vref = (50..1200) mV, VDD = (1.71..5.5) V	T = 25°C	-7.5	--	7.2	mV
			T = (-40..85)°C	-10.7	--	10.5	mV
t_{start}	ACMP Start Time	ACMP Power On delay, Minimal required wake time for the "Wake and Sleep function", Regulator and Charge Pump set to automatic ON/OFF	BG = 550 µs, T = 25°C VDD = (1.71..5.5) V	--	609.7	862.2	µS
			BG = 550 µs, T = (-40..85)°C VDD = (1.71..5.5) V	--	675.0	1028.8	µS
			BG = 100 µs, T = 25°C VDD = 2.7..5.5 V	--	132.4	176.2	µS
			BG = 100 µs, T = (-40..85)°C VDD = 2.7..5.5 V	--	149.4	213.5	µS
		ACMP Power On delay, Minimal required wake time for the "Wake and Sleep function", Regulator and Charge Pump always OFF	BG = 550 µs, T = 25°C VDD = (3..5.5) V	--	609.5	862.0	µS
			BG = 550 µs, T = (-40..85)°C VDD = (3..5.5) V	--	674.6	1027.5	µS
			BG = 100 µs, T = 25°C VDD = 3..5.5 V	--	131.6	176.0	µS
			BG = 100 µs, T = (-40..85)°C VDD = 3..5.5 V	--	149.2	213.3	µS

Symbol	Parameter	Description/Note	Conditions	Min.	Typ.	Max.	Unit
V_{HYS}	Built-in Hysteresis	V_{HYS} = 25 mV V_{IL} = Vin - V_{HYS}/2 V_{IH} = Vin + V_{HYS}/2	LB - Enabled, T = 25°C	7.32	--	35.5	mV
			LB - Disabled, T = 25°C	10.0	--	38.5	mV
		V_{HYS} = 50 mV V_{IL} = Vin - V_{HYS} V_{IH} = V_{HYS}	LB - Enabled, T = 25°C	42.9	--	57.8	mV
			LB - Disabled, T = 25°C	44.2	--	54.3	mV
		V_{HYS} = 200 mV V_{IL} = Vin - V_{HYS} V_{IH} = V_{HYS}	LB - Enabled, T = 25°C	192.7	--	208.7	mV
			LB - Disabled, T = 25°C	193.3	--	204.8	mV
		V_{HYS} = 25 mV V_{IL} = Vin - V_{HYS}/2 V_{IH} = Vin + V_{HYS}/2	LB - Enabled, T = (-40…+85)°C	0.0	--	58.0	mV
			LB - Disabled, T = (-40…+85)°C	0.0	--	52.9	mV
		V_{HYS} = 50 mV V_{IL} = Vin - V_{HYS} V_{IH} = V_{HYS}	LB - Enabled, T = (-40…+85)°C	22.5	--	86.9	mV
			LB - Disabled, T = (-40…+85)°C	29.2	--	76.5	mV
		V_{HYS} = 200 mV V_{IL} = Vin - V_{HYS} V_{IH} = V_{HYS}	LB - Enabled, T = (-40…+85)°C	157.1	--	251.6	mV
			LB - Disabled, T = (-40…+85)°C	160.2	--	245.3	mV
R_{sin}	Series Input Resistance	Gain = 1x		--	100.0	--	MΩ
		Gain = 0.5x		--	1.0	--	MΩ
		Gain = 0.33x		--	0.8	--	MΩ
		Gain = 0.25x		--	1.0	--	MΩ
PROP	Propagation Delay, Response Time	Low Bandwidth - Enable, Gain = 1, VDD=(1.71..3.3)V, Overdrive=5 mV	Low to High, T = (-40…+85)°C	--	103.93	1853.68	µS
			High to Low, T = (-40…+85)°C	--	101.06	1656.70	µS
		Low Bandwidth - Disable, Gain = 1, VDD=(1.71..3.3)V, Overdrive=5 mV	Low to High, T = (-40…+85)°C	--	68.29	1753.33	µS
			High to Low, T = (-40…+85)°C	--	63.06	1568.55	µS
		Low Bandwidth - Enable, Gain = 1, VDD=(3.3..5.5)V, Overdrive=5 mV	Low to High, T = (-40…+85)°C	--	30.62	167.56	µS
			High to Low, T = (-40…+85)°C	--	33.54	181.40	µS
		Low Bandwidth - Disable, Gain = 1, VDD=(3.3..5.5)V, Overdrive=5 mV	Low to High, T = (-40…+85)°C	--	5.00	32.61	µS
			High to Low, T = (-40…+85)°C	--	5.24	33.88	µS

Symbol	Parameter	Description/Note	Conditions	Min.	Typ.	Max.	Unit
G	Gain error (including threshold and internal Vref error), T = (-40…+85)°C	G = 1, VDD = 1.71 V	Vref = 50…1200 mV	--	1	--	
		G = 1, VDD = 3.3 V		--	1	--	
		G = 1, VDD = 5.5 V		--	1	--	
		G = 0.5, VDD = 1.71 V		-1.00%	--	0.93%	
		G = 0.5, VDD = 3.3 V		-0.96%	--	0.82%	
		G = 0.5, VDD = 5.5 V		-1.04%	--	0.90%	
		G = 0.33, VDD = 1.71V		-1.75%	--	2.10%	
		G = 0.33, VDD = 3.3 V		-1.95%	--	1.69%	
		G = 0.33, VDD = 5.5 V		-2.03%	--	1.77%	
		G = 0.25, VDD = 1.71V		-1.91%	--	2.13%	
		G = 0.25, VDD = 3.3 V		-1.98%	--	1.80%	
		G = 0.25, VDD = 5.5 V		-2.12%	--	1.90%	
Vref	Internal Vref error, Vref = 1200 mV	VDD = 1.8 V ± 5 %	T = 25°C	-0.58%	--	0.56%	
			T = (-40…+85)°C	-1.01%	--	0.70%	
		VDD = 3.3 V ± 10 %	T = 25°C	-0.59%	--	0.58%	
			T = (-40…+85)°C	-1.06%	--	0.72%	
		VDD = 5.0 V ± 10 %	T = 25°C	-0.64%	--	0.60%	
			T = (-40…+85)°C	-1.16%	--	0.74%	
	Internal Vref error, Vref = 1000 mV	VDD = 1.8 V ± 5 %	T = 25°C	-0.57%	--	0.58%	
			T = (-40…+85)°C	-1.14%	--	0.76%	
		VDD = 3.3 V ± 10 %	T = 25°C	-0.59%	--	0.58%	
			T = (-40…+85)°C	-1.04%	--	0.73%	
		VDD = 5.0 V ± 10 %	T = 25°C	-0.67%	--	0.64%	
			T = (-40…+85)°C	-1.15%	--	0.73%	
	Internal Vref error, Vref = 500 mV	VDD = 1.8 V ± 5 %	T = 25°C	-0.64%	--	0.64%	
			T = (-40…+85)°C	-1.11%	--	0.75%	
		VDD = 3.3 V ± 10 %	T = 25°C	-0.63%	--	0.63%	
			T = (-40…+85)°C	-1.10%	--	0.78%	
		VDD = 5.0 V ± 10 %	T = 25°C	-0.72%	--	0.70%	
			T = (-40…+85)°C	-1.15%	--	0.80%	

6.0 Summary of Macrocell Function

6.1 I/O Pins

- Digital Input (low voltage or normal voltage, with or without Schmitt Trigger)
- Open Drain Outputs
- Push Pull Outputs
- Analog I/O
- 10 kΩ/100 kΩ/1 MΩ pull-up/pull-down resistors
- 40 mA Open Drain 4X Drive output

6.2 Connection Matrix

- Digital matrix for circuit connections based on user design

6.3 Analog Comparators (3 total)

- Selectable hysteresis 0 mV / 25 mV / 50 mV / 200 mV
- Wake and Sleep Control (Part of Combination Function Macrocell)

6.4 Voltage Reference

- Used for references on Analog Comparators

6.5 Combination Function Macrocells (26 total)

- Three Selectable DFF/Latch or 2-bit LUTs
- One Selectable Continuous DFF/Latch or 3-bit LUT
- Eleven Selectable DFF/Latch or 3-bit LUTs
- One Selectable Pipe Delay or 3-bit LUT
- One Selectable Programmable Pattern Generator or 2-bit LUt
- Five Selectable 8-bit CNT/DLY or 3-bit LUT
- Two Selectable 16-bit CNT/DLY or 4-bit LUT
- Two Deglitch Filters with Edge Detectors

6.6 Combinatinatorial Logic Macrocell

- One 4-bit LUT

6.7 Serial Communications

- I^2C Protocol compliant

6.8 16x8 RAM Memory with defined NVM OTP initial state

6.9 Pipe Delay (Part of Combination Function Macrocell)

- 16 stage / 3 output
- One 1 stage fixed output
- Two 1-16 stage selectable outputs.

6.10 Programmable Delay

- 125 ns/250 ns/375 ns/500 ns @ 3.3 V
- Includes Edge Detection function

6.11 RC Oscillator

- 25 kHz and 2 MHz selectable frequency
- 25 MHz RC Oscillator
- First stage divider (4): OSC/1, OSC/2, OSC/4, and OSC/8
- Second stage divider for 25 kHz and 2 MHz (5): Output to Matrix: OSC/1, OSC/2, OSC/3, OSC/4, OSC/8, OSC/12, OSC/24, OSC/64

6.12 Crystal Oscillator

7.0 I/O Pins

The SLG46536 has a total of 12 multi-function I/O pins which can function as either a user defined Input or Output, as well as serving as a special function, or serving as a signal for programming of the on-chip Non Volatile Memory (NVM).

Refer to Section 2.0 Pin Description for normal and programming modepin definitions.

Normal Mode pin definitions are as follows:

- Pin 1: V_{DD} power supply
- Pin 2: general purpose input
- Pin 3: general purpose input or output
- Pin 4: general purpose input or output or analog comparator 0(+)
- Pin 5: general purpose input or output with OE or analog comparator 0(-)
- Pin 6: general purpose input or OD output SCL
- Pin 7: general purpose input or OD output SDA
- Pin 8: general purpose input or output with OE or analog comparator 1(+)
- Pin 9: ground
- Pin 10: general purpose input or output or analog comparator 0/1/2(-)
- Pin 11: general purpose input or output with OE
- Pin 12: general purpose input or output with OE
- Pin 13: general purpose input or output or external clock input for OSC0 25 kHz/2 MHz
- Pin 14: general purpose input or output or external clock input for OSC1 25 MHz

Programming Mode pin definitions are as follows:

- Pin 1: V_{DD} power supply
- Pin 2: V_{PP} programming voltage
- Pin 6: Programming SCL
- Pin 7: Programming SDA
- Pin 9: ground
- Pin 12: programming mode control

Of the 12 user defined I/O pins on the SLG46536, all but one of the pins (Pin 2) can serve as both digital input and digital output. Pin 2 can only serve as a digital input pin.

7.1 Input Modes

Each I/O pin can be configured as a digital input pin with/without buffered Schmitt Trigger, or can also be configured as a low voltage digital input. Pins 4, 5, 8 and10 can also be configured to serve as analog inputs to the on-chip comparators.

7.2 Output Modes

Pins 3, 4, 5, 6, 7, 8, 10, 11, 12, 13 and 14 can all be configured as digital output pins.

7.3 Pull Up/Down Resistors

All I/O pins have the option for user selectable resistors connected to the input structure. The selectable values on these resistors are 10 kΩ, 100 kΩ and 1 MΩ. In the case of Pin 2, the resistors are fixed to a pull-down configuration. In the case of all other I/O pins, the internal resistors can be configured as either pull-up or pull-downs.

7.4 I/O Register Settings

7.4.1 PIN 2 Register Settings PIN 4 Register Settings PIN 6 Register Settings

Table 15. PIN 2 Register Settings

Signal Function	Register Bit Address	Register Definition
PIN 2 Pull Down Resistor Value Selection	<1029:1028>	00: Floating 01: 10 kΩ Resistor 10: 100 kΩ Resistor 11: 1 MΩ Resistor
PIN 2 Mode Control	<1031:1030>	00: Digital Input without Schmitt Trigger 01: Digital Input with Schmitt Trigger 10: Low Voltage Digital Input 11: Reserved

Table 16. PIN 3 Register Settings

Signal Function	Register Bit Address	Register Definition
PIN 3 Driver Strength Selection	<1041>	0: 1X 1: 2X
PIN 3 Pull Up/Down Resistor Selection	<1042>	0: Pull Down Resistor 1: Pull Up Resistor
PIN 3 Pull Up/Down Resistor Value Selection	<1044:1043>	00: Floating 01: 10 kΩ Resistor 10: 100 kΩ Resistor 11: 1 MΩ Resistor
PIN 3 Mode Control	<1047:1045>	000: Digital Input without Schmitt Trigger 001: Digital Input with Schmitt Trigger 010: Low Voltage Digital Input 011: Reserved 100: Push Pull 101: Open Drain NMOS 110: Open Drain PMOS 111: Reserved

Table 17. PIN 4 Register Settings

Signal Function	Register Bit Address	Register Definition
PIN 4 Driver Strength Selection	<1057>	0: 1X 1: 2X
PIN 4 Pull Up/Down Resistor Selection	<1058>	0: Pull Down Resistor 1: Pull Up Resistor
PIN 4 Pull Up/Down Resistor Value Selection	<1060:1059>	00: Floating 01: 10 kΩ Resistor 10: 100 kΩ Resistor 11: 1 MΩ Resistor
PIN 4 Mode Control	<1063:1061>	000: Digital Input without Schmitt Trigger 001: Digital Input with Schmitt Trigger 010: Low Voltage Digital Input 011: Analog Input/Output 100: Push Pull 101: Open Drain NMOS 110: Open Drain PMOS 111: Analog Input & Open Drain