NEXCOMM asia

GOWIN PROGRAMMING FOR FUTURE

LittleBee

LittleBee®family based on 55nm LP technology, offers instant-on, non-volatile, low power, intensive I/O and small footprint FPGA (smallest as 2.4x2.3mm). The family is ideal for high-performance bridging application and the first FPGA supports MIPI I3C and MIPI D-PHY standard in the industry. The LittleBee® family is also the first non-volatile FPGA with an embedded pSRAM in the industry, which further reduces the board space.

GW1N Family Table

Device	GW1N-1	GW1N-2	GW1N-4	GW1N-6	GW1N-9
LUT4	1,152	2,304	4,606	6,912	8,640
Flip-Flop (FF)	864	1,728	3,456	5,184	6,480
S-SRAM(bits)	0	0	0	13,824	17,280
B-SRAM(bits)	72K	180K	180K	468K	468K
Number of B-SRAM	4	10	10	26	26
User Flash (bits)	96K	256K	256K	608K	608K
18 x 18 Multiplier	0	16	16	20	20
PLLs+DLLs	1+0	2+2	2+2	2+4	2+4
I/O Bank Number	4	4	4	4	4
Max. User I/O	119	207	207	273	273
Core Voltage (LV)	1.2V	1.2V	1.2V	1.2V	1.2V
Core Voltage (UV)	-	2.5V/3.3V	2.5V/3.3V	2.5V/3.3V	2.5V/3.3V

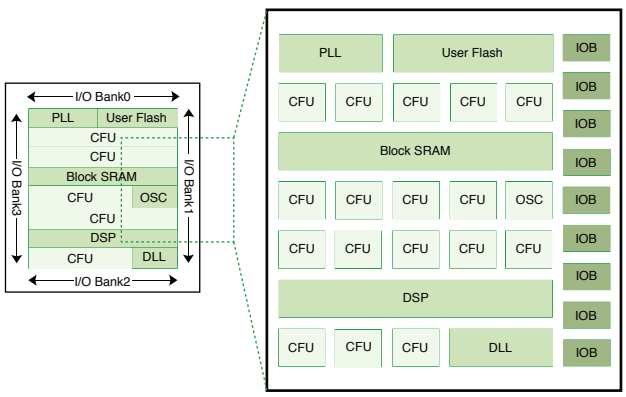
Package Options and Max I/O (* Refer latest datasheet for details)

Package	Pitch (mm)	Size (mm2)	GW1N-1	GW1N-2	GW1N-4	GW1N-6	GW1N-9
CS30	0.4	2.4 x 2.3	24	-	-	-	-
CM64	0.5	4.1 x 4.1	-	-	-	55(16)	55(16)
CS72	0.4	3.6 x 3.3	-	57(19)	57(19)	-	-
QN32	0.5	5 x 5	26	24(3)	24(3)	-	-
QN48	0.4	6 x 6	41	40(9)	40(9)	40(12)	40(12)
QN88	0.4	10 x 10	-	70(11)	70(11)	70(19)	70(19)
LQ100	0.5	16 x 16	79	79(13)	79(13)	79(20)	79(20)
LQ144	0.5	22 x 22	116	119(22)	119(22)	120(28)	120(28)
LQ176	0.4	22 x 22				147(37)	147(37)
MG160	0.5	8 x 8	-	131(25)	131(25)	131(38)	131(38)
PG256	1.0	17 x 17	-	207(32)	207(32)	207(36)	207(36)
PG256M	1.0	17 x 17	-	207(32)	207(32)	-	-
UG256	0.8	14 x 14				207(36)	207(36)
UG332	0.8	17 x 17	-	-	-	273(43)	273(43)

MIPI D-PHY Support

mipi®

Architecture



GW1NS SoC FPGA

STARTER KITS AND DEVELOPMENT BOARDS

IP AND REFERENCE DESIGN

GW1NZ FAMILY ULTRA LOW POWER

The GW1NZ series of FPGA products offer ultra-low power consumption, instant on, extreme low cost, non-volatile, high security, various packages, and flexible usage. They can be widely used in communication, industry control, consumer (especially mobile and wearable), etc.

GW1NZ Family Table

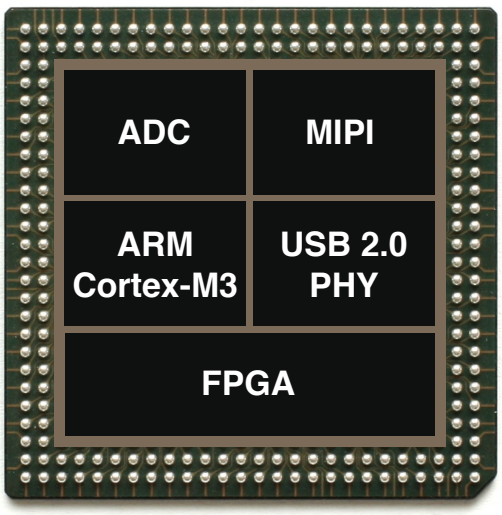
Device	GW1NZ-1
LUT4	1,152
Flip-Flop (FF)	864
Shadow SRAM S-SRAM (bits)	4K
Block SRAM B-SRAM (bits)	72K
PLLs + DLLs	1 + 0
User Flash (bits)	64K
VCC	1.2V(LV) / 0.9V(ZV)

Package Information and Max. User I/O

Package	Pitch (mm)	Size (mm)	GW1NZ-1
QN32	0.4	4 x 4	25
CS16	0.4	1.8 x 1.8	11

GW1NS FAMILY WITH EMBEDDED ARM CORE

GW1NS-2C is embedded with an ARM Cortex-M3 hard core processor, while there is no ARM Cortex-M3 hard core processor in the GW1NS-2 device. This series of FPGA products are also embedded with USB2.0 PHY, user flash, and ADC.



GW1NS Family Table

Parameter	GW1NS-2	GW1NS-2C
Hard Core Processor	-	Cortex-M3
LUT4	1,728	1,728
FF	1,296	1,296
B-SRAM bits	72K	72K
B-SRAM quantity	4	4
S-SRAM bits Embedded Memory	4,608	4,608
pSRAM (Mb)		32
User Flash bits	1M	1M
PLLs + DLLs	1 + 2	1 + 2
OSC (accuracy)	1, +/- 5%	1, +/- 5%
USB PHY	USB2.0 PHY	USB2.0 PHY
ADC Channels	1	1
I/O Banks	4	4
Max. User I/O	95	95
Core Voltage	1.2V	1.2V

Package Options with Max I/O

Package	Pitch(mm)	Size(mm)	GW1NS-2C	GW1NS-2
CS36	0.4	2.5 x 2.5	30(6)	30(6)
QN32	0.5	5 x 5	25(4)	25(4)
QN32U	0.5	5 x 5	16(2)	16(2)
QN48	0.4	6 x 6	38(7)	38(7)
LQ144	0.5	22 x 22	95(12)	95(12)

*Refer to the latest datasheet available

GW1NR FAMILY WITH EMBEDDED MEMORY

The GW1NR embedded pSRAM memory productsallow for more efficiency with on onboard memory and high-speed data rates. It has been optimized with Low Power, Small Size, and Thinnest Package in mind.

GW1NR Family Table

Device	GW1NR-4	GW1NR-9
LUT4	4,608	8,640
Flip-Flop (FF)	3,456	6,480
ShadowSRAM S-SRAM(bits)	0	17,280
Block SRAM B-SRAM(bits)	180K	468K
Number of B-SRAM	10	26
User Flash (bits)	256K	608K
SDR SDRAM(bits)	64M	64M
Embedded pSRAM(bits)	64M	64M
18 x 18 Multiplier	16	20
PLLs+DLLs	2+2	2+4
I/O Bank Number	4	4
Max. User I/O	70	120
Core Voltage (LV)	1.2V	1.2V
Core Voltage (UV)	2.5V/3.3V	2.5V/3.3V

Package Options with Max I/O

Package	Pitch (mm)	Size (mm)	GW1NR-4	GW1NR-9
QN88	0.4	10 x 10	70(11)	70(17)
LQ144	0.5	22 x 22	-	120(20)
MG81	0.5	4.5x4.5	68(10)	

Package	Device	Memory
QN88	GW1NR-4/4B	SDR SDRAM
QN88	GW1NR-9	SDR SDRAM, PSRAM
MG81	GW1NR-4/4B	PSRAM
LQ144	GW1NR-9	PSRAM

*Refer to the latest datasheet available

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