Certus-NX-17K/40K Migration to 196caBGA Package

Technical Note

FPGA-TN-02376-1.0

July 2024

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1. Introduction

This document describes the partial pin-migration capability from Certus™-NX-17 to Certus-NX-40 in the 196caBGA package. Customers can plan their device pin utilization to migrate up or down between available SLC densities.

2. Summary

The packages have migration capability. 108 of the 196 balls have functional overlap and are therefore migratable.

Table 2.1. Migration Summary

	Certus-NX 17K	Certus-NX 40K	Migration capable
WRIO	23	92	23
HPIO	48	58	42
DQS	48 (16/16/16)	58 (32/16/10)	32 (16/16/0)
ADC	6	6	6
SERDES	-	-	-
NC	82	-	-
Power/GND	36	39	36
JTAGEN	1	1	1
Total pins	**196**	**196**	**108**

3. Details

More than half of the balls in the 196 packages are pin-to-pin compatible. All power, ground, WRIO, and JTAG pins align.

To maintain migration ability between densities, designers should do the following:

- Limit the WRIO use to the available 23 balls in banks 1 and 2 in the 17K density package.
- Limit the HPIO use to the available 32 HPIO in banks 3 and 4 in the 17K density package and the available 10 HPIO in bank 5 in the 40K density package.
- Limit DQS use to the available DQS in banks 3 and 4 in the 17K density package.
- Avoid assignment to the 88 non-migratable NC, GPIO, and VCCIO balls listed below in Table 2.

Of the 88 non-migratable balls:

- 6 balls are bank 5 HPIO in the 17K device and bank 6 WRIO in the 40K device.
- 82 balls are NC in the 17K device. In the 40K device, these 82 pins consist of additional GPIO in banks 1, 2, 3, 6, and 7, including 3 VCCIOn balls.

Table 3.1. Pin-to-Pin Migration Exceptions

Ball	-40K Pad	-40K Bank	-40K DQS	-17K Pad	-17K Bank	-17K DQS
J2	PL42B	6	-	PB22B	5	BDQSN22
K2	PL47A	6	-	PB22A	5	BDQS22
J3	PL44A	6	-	PB24A	5	BDQ22
J4	PL44B	6	-	PB24B	5	BDQ22
J5	PL46A	6	-	PB28A	5	BDQ22
J6	PL46B	6	-	PB28B	5	BDQ22
C10	PR10A	1	-	NC	-	-
A10	PR17A	1	-	NC	-	-
B12	PR19A	1	-	NC	-	-
C8	PR3B	1	-	NC	-	-
D8	PR6A	1	-	NC	-	-
C9	PR8A	1	-	NC	-	-
D14	PR24A	2	-	NC	-	-
C14	PR24B	2	-	NC	-	-
C11	PR26A	2	-	NC	-	-
B10	PR26B	2	-	NC	-	-
D12	PR27A	2	-	NC	-	-
E12	PR27B	2	-	NC	-	-
E9	PR30A	2	-	NC	-	-
E10	PR30B	2	-	NC	-	-
D11	PR32A	2	-	NC	-	-
E11	PR32B	2	-	NC	-	-
F13	PR34A	2	-	NC	-	-
F14	PR34B	2	-	NC	-	-
E13	PR36A	2	-	NC	-	-
E14	PR36B	2	-	NC	-	-
G14	PR38A	2	-	NC	-	-
G13	PR38B	2	-	NC	-	-
G10	PR40A	2	-	NC	-	-
F10	PR40B	2	-	NC	-	-
F11	PR42A	2	-	NC	-	-
G12	PR42B	2	-	NC	-	-
G11	VCCIO2	2	-	NC	-	-

Ball	-40K Pad	-40K Bank	-40K DQS	-17K Pad	-17K Bank	-17K DQS
K11	PB70A	3	BDQ76	NC	-	-
K12	PB70B	3	BDQ76	NC	-	-
P11	PB72A	3	BDQ76	NC	-	-
N11	PB72B	3	BDQ76	NC	-	-
P12	PB74A	3	BDQ76	NC	-	-
P13	PB74B	3	BDQ76	NC	-	-
N13	PB76A	3	BDQS76	NC	-	-
N14	PB76B	3	BDQSN76	NC	-	-
M14	PB78A	3	BDQ76	NC	-	-
M13	PB78B	3	BDQ76	NC	-	-
L13	PB80A	3	BDQ76	NC	-	-
L14	PB80B	3	BDQ76	NC	-	-
K13	PB82A	3	BDQ76	NC	-	-
K14	PB82B	3	BDQ76	NC	-	-
J14	PB84A	3	BDQ76	NC	-	-
J13	PB84B	3	BDQ76	NC	-	-
E2	PL24A	6	-	NC	-	-
E1	PL24B	6	-	NC	-	-
F3	PL26A	6	-	NC	-	-
F4	PL26B	6	-	NC	-	-
F5	PL27A	6	-	NC	-	-
F6	PL27B	6	-	NC	-	-
F2	PL30A	6	-	NC	-	-
F1	PL30B	6	-	NC	-	-
G1	PL32A	6	-	NC	-	-
G2	PL32B	6	-	NC	-	-
G5	PL34A	6	-	NC	-	-
G6	PL34B	6	-	NC	-	-
H1	PL36A	6	-	NC	-	-
H2	PL36B	6	-	NC	-	-
H3	PL38A	6	-	NC	-	-
H4	PL38B	6	-	NC	-	-
H5	PL40A	6	-	NC	-	-
H6	PL40B	6	-	NC	-	-
J1	PL42A	6	-	NC	-	-
G4	VCCIO6	6	-	NC	-	-
D7	PL10A	7	-	NC	-	-
D6	PL10B	7	-	NC	-	-
D2	PL11A	7	-	NC	-	-
D1	PL11B	7	-	NC	-	-
D3	PL17A	7	-	NC	-	-
E3	PL17B	7	-	NC	-	-
D5	PL19A	7	-	NC	-	-
E5	PL19B	7	-	NC	-	-
E7	PL20A	7	-	NC	-	-
E6	PL20B	7	-	NC	-	-
B1	PL3A	7	-	NC	-	-
C1	PL3B	7	-	NC	-	-

Ball	-40K Pad	-40K Bank	-40K DQS	-17K Pad	-17K Bank	-17K DQS
C5	PL4A	7	-	NC	-	-
C4	PL4B	7	-	NC	-	-
B5	PL6A	7	-	NC	-	-
C6	PL6B	7	-	NC	-	-
C3	PL8A	7	-	NC	-	-
C2	PL8B	7	-	NC	-	-
E4	VCCIO7	7	-	NC	-	-

Technical Support Assistance

Submit a technical support case through www.latticesemi.com/techsupport.

For frequently asked questions, please refer to the Lattice Answer Database at www.latticesemi.com/Support/AnswerDatabase.

Revision History

Revision 1.0, July 2024

Section	Change Summary
All	Initial release.

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