

XC4000XLT Features

Note: This data sheet describes the XC4000XLT Family devices. This information does not necessarily apply to the other Xilinx families: XC4000, XC4000A, XC4000D, XC4000H, XC4000L, XC4000E, XC4000EX, XC4000XL or XC4000XV. For information on these devices, or for the most current information regarding the XC4000XLT family, see the Xilinx WEBLINX at <http://www.xilinx.com>.

- System featured Field-Programmable Gate Arrays
 - Select-RAM™ memory: on-chip ultra-fast RAM with
 - synchronous write option
 - dual-port RAM option
 - Abundant flip-flops
 - Flexible function generators
 - Dedicated high-speed carry logic
 - Hierarchy of interconnect lines
 - Internal 3-state bus capability
 - 8 global low-skew clock or signal distribution networks
- System performance beyond 80 MHz
- Low power segmented routing architecture
- Systems-oriented features
 - IEEE 1149.1-compatible boundary scan logic support
 - Individually programmable output slew rate
 - Programmable input pull-up or pull-down resistors
- Configured by loading binary file
 - Unlimited reprogrammability
- Readback capability
 - Program verification
 - Internal node observability

XC4000XLT Family FPGAs

- **3.3V PCI Compliant**
XC4000XLT devices provide PCI compliant I/O. They differ from XC4000XL devices only in that they enable the positive input signal clamping function required by PCI specifications.
- **New Packages enable Positive Signal Clamping**
The XC4000XLT family of FPGAs is a new packaging option for the XC4000XL FPGAs. For XLT devices, Vtt, the positive clamping supply is made available to device pins. These Vtt pins replace 8 normal I/O pins. By connecting the Vtt pins to a positive power supply, the positive clamping diodes present in the IOBs are enabled.

XC4000XLT Electrical Features

- Low-Voltage Device Functions at Vcc=3.0 - 3.6 Volts
- Vtt supply allows positive signal clamping to Vtt +0.6 V
- Fully 3.3 V PCI compliant I/O (Vtt connected to 3.3V)
- 5.0 V PCI compatible I/O for embedded systems with 8 loads or less (Vtt connected to 5.0 V)
- 5.0 V TTL compatible I/O (Vtt connected to 5.0V)
- 3.3 V LVTTTL, LVCMOS compatible I/O

Additional XC4000XLT Family Features

- **Highest Performance** — XC4000XL architecture
- **Highest Capacity** — Over 130,000 system gates
- **Low Power** — 3.3 V technology
- **Software Compatibility** — Bitstream compatible with XC4000XL devices
- **Package Compatibility** — Footprint compatible with XC4000XL devices (except for Vtt power pins)
- **Advanced Technology** — 0.35 micron CMOS process
- Buffered interconnect for maximum speed
- New latch capability in configurable logic blocks
- Improved VersaRing™ I/O interconnect for better fixed pinout flexibility
- Flexible high-speed clock network
 - 8 additional Early Buffers for shorter clock delays
 - Virtually unlimited number of clock signals
- Optional Multiplexer or 2-input function generator on device outputs
- 26 Address bits in master parallel configuration mode

PCI Compatible Features

- LogiCORE PCI Interface 2.0 available
 - 33 MHz 32-Bit PCI interface
 - Master or Target mode
 - Implemented entirely in programmable logic
 - Up to 100,000 gates available for user logic
- Fully compliant 3.3 V PCI I/O
 - < 7 nsec input setup time
 - 0 nsec input hold time
 - < 11 nsec clock to output
 - Positive and negative input signal clamping
 - Meets 5.0 V PCI timing for up to 8 loads
 - 80 mA sink current at minimum AC drive point (2.2V)

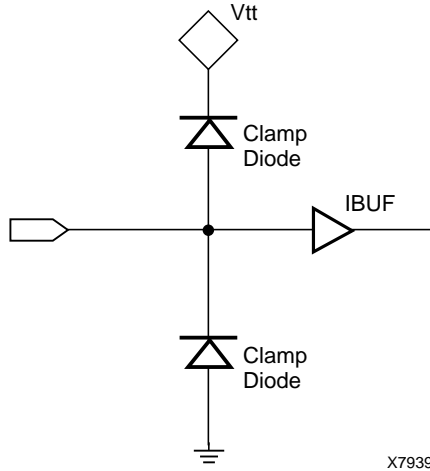


Figure 1: Clamp Diodes Present in the XL, XLT IOBs

PCI Requirements for Clamp Diodes

Clamp diodes are electrical protection devices placed in the I/O buffer of a chip. Both 5 V PCI and 3.3 V PCI signaling environments require clamp diodes to ground, which all Xilinx 4K family devices have. The 3.3 V PCI specification also requires clamp diodes to 3.3 V. The clamp diode serves two purposes. It offers device protection and it controls the bus waveforms as signals are transitioning on the bus. The latter function is vital to the signal integrity of the bus and is why clamp diodes are mandatory in a 3.3 V PCI system.

5.0 V PCI Requirement for Maximum AC Ratings and Device Protection

The upper clamp diode is optional in 5 V systems. For 5 V signaling, the PCI specification simply requires the devices be able to withstand a maximum overshoot voltage of 11 V for a minimum of 11 nsec through a 55 ohm resistor. See the PCI Specification v2.1, p126 for more details on this particular test. XC4000XL/XLT devices have a maximum input voltage requirement of 7.0 V (for < 10 nsec). In order

to meet the PCI test requirements and provide device protection, it is necessary to connect the Vtt pins to the 5.0 V power supply.

Difference between the XC4000XLT and XC4000XL FPGAs

The only difference between XLT and XL devices is that in XLT devices, the Vtt supply is connected to package pins. By connecting the Vtt supply pins to a positive voltage, positive input signal clamping is enabled. The Vtt pins assigned to the Vtt supply are named in the pinout guide for the XC4013XLT, XC4028XLT, and XC4062XLT FPGAs. There are 8 Vtt pins in all package options.

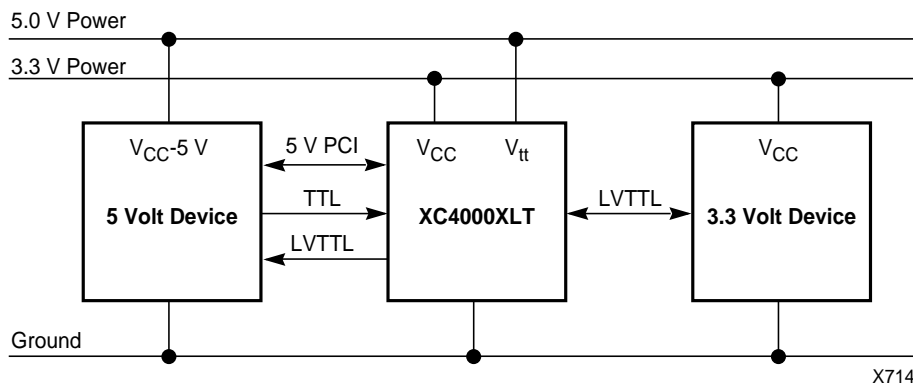
I/O signaling compliance

The I/O signaling compliance is a function of how the Vtt pins are connected. Connecting Vtt to a power supply programs the compliance for all the IOBs on the device. All 8 of the Vtt pins must be connected to the same voltage source.

- Vtt floating**
 When Vtt is left floating, the I/O characteristics of the XLT devices will be identical to XL devices. I/O will be LVTTTL and LVCMOS compatible.
- Vtt connected to 5.0V power.**
 If Vtt is connected to the 5.0 V power supply, the XLT device will be TTL, LVTTTL, LVCMOS and 5V-PCI compatible for up to 8 PCI loads.
- Vtt connected to 3.3V power**
 If Vtt is connected to 3.3V power, the I/O will be LVTTTL, LVCMOS, and 3.3V-PCI compliant. Note that 5V TTL and 5V CMOS is not allowed.

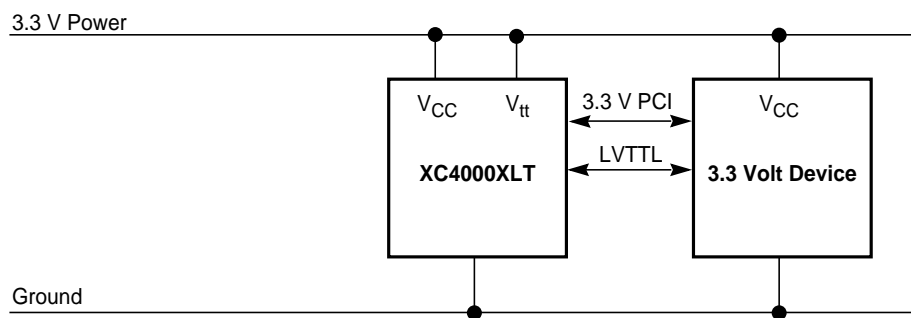
Table 1: XC4000XLT Family Field Programmable Gate Arrays

Device	Logic Cells	Max Logic Gates (No RAM)	Max. RAM Bits (No Logic)	Typical Gate Range (Logic and RAM)*	CLB Matrix	Total CLBs	Number of Flip-Flops	Max. User I/O
XC4013XLT	1368	13,000	18,432	10,000 - 30,000	24 x 24	576	1,536	184
XC4028XLT	2432	28,000	32,768	18,000 - 50,000	32 x 32	1,024	2,560	185
XC4062XLT	5472	62,000	73,728	40,000 - 130,000	48 x 48	2,304	5,376	352



X7145

Figure 2: XLT Power supply and signaling environment with Vtt connected to 5.0 V power supply



X7146

Figure 3: XLT Power supply and signaling environment with Vtt connected to 3.3V power supply

Pin Locations for XC4013XLT Devices

XC4013XLT Pad Name	PQ208	PQ240
VCC	P183	P212
I/O (A8)	P184	P213
I/O (A9)	P185	P214
I/O (A19)	P186	P215
I/O (A18)	P187	P216
I/O	P188	P217
I/O	P189	P218
I/O (A10)	P190	P220
I/O (A11)	P191	P221
VCC	-	P222
VTT	192	P223
I/O	-	P224
I/O	-	P225
I/O	P193	P226
GND	P194	P227
I/O	P195	P228
I/O	P196	P229
I/O	P197	P230
I/O	P198	P231
I/O (A12)	P199	P232
I/O (A13)	P200	P233
I/O	-	P234
I/O	-	P235
I/O	P201	P236
I/O	P202	P237
I/O (A14)	P203	P238
I/O, GCK8 (A15)	P204	P239
VCC	P205	P240
GND	P2	P1
I/O, GCK1 (A16)	P4	P2
I/O (A17)	P5	P3
I/O	P6	P4
I/O	P7	P5
I/O, TDI	P8	P6
I/O, TCK	P9	P7
I/O	P10	P8
I/O	P11	P9
I/O	P12	P10
I/O	P13	P11
I/O	-	P12
I/O	-	P13
GND	P14	P14
I/O	P15	P15
I/O	P16	P16
I/O, TMS	P17	P17
VTT	P18	P18
VCC	-	P19
I/O	-	P20
I/O	-	P21
I/O	P19	P23
I/O	P20	P24
I/O	P21	P25
I/O	P22	P26
I/O	P23	P27
I/O	P24	P28
GND	P25	P29
VCC	P26	P30
I/O	P27	P31
I/O	P28	P32
I/O	P29	P33
I/O	P30	P34
I/O	P31	P35
I/O	P32	P36
I/O	-	P38
I/O	-	P39
VCC	-	P40
VTT	P33	P41
I/O	P34	P42
I/O	P35	P43
I/O	P36	P44
GND	P37	P45
I/O	-	P46

XC4013XLT Pad Name	PQ208	PQ240
I/O	-	P47
I/O	P38	P48
I/O	P39	P49
I/O	P40	P50
I/O	P41	P51
I/O	P42	P52
I/O	P43	P53
I/O	P44	P54
I/O	P45	P55
I/O	P46	P56
I/O, GCK2	P47	P57
O (M1)	P48	P58
GND	P49	P59
I (M0)	P50	P60
VCC	P55	P61
I (M2)	P56	P62
I/O, GCK3	P57	P63
I/O (HDC)	P58	P64
I/O	P59	P65
I/O	P60	P66
I/O	P61	P67
I/O (LDC)	P62	P68
I/O	P63	P69
I/O	P64	P70
I/O	P65	P71
I/O	P66	P72
I/O	-	P73
I/O	-	P74
GND	P67	P75
I/O	P68	P76
I/O	P69	P77
I/O	P70	P78
VTT	P71	P79
VCC	-	P80
I/O	P72	P81
I/O	P73	P82
I/O	-	P84
I/O	-	P85
I/O	P74	P86
I/O	P75	P87
I/O	P76	P88
I/O (INIT)	P77	P89
VCC	P78	P90
GND	P79	P91
I/O	P80	P92
I/O	P81	P93
I/O	P82	P94
I/O	P83	P95
I/O	P84	P96
I/O	P85	P97
I/O	-	P99
I/O	-	P100
VCC	-	P101
VTT	P86	P102
I/O	P87	P103
I/O	P88	P104
I/O	P89	P105
GND	P90	P106
I/O	-	P107
I/O	-	P108
I/O	P91	P109
I/O	P92	P110
I/O	P93	P111
I/O	P94	P112
I/O	P95	P113
I/O	P96	P114
I/O	P97	P115
I/O	P98	P116
I/O	P99	P117
I/O, GCK4	P100	P118
GND	P101	P119
DONE	P103	P120

XC4013XLT Pad Name	PQ208	PQ240
VCC	P106	P121
PROGRAM	P108	P122
I/O (D7)	P109	P123
I/O, GCK5	P110	P124
I/O	P111	P125
I/O	P112	P126
I/O	-	P127
I/O	-	P128
I/O (D6)	P113	P129
I/O	P114	P130
I/O	P115	P131
I/O	P116	P132
I/O	P117	P133
I/O	P118	P134
GND	P119	P135
I/O	-	P136
I/O	-	P137
I/O	P120	P138
VTT	P121	P139
VCC	-	P140
I/O (D5)	P122	P141
I/O (CS0)	P123	P142
I/O	P124	P144
I/O	P125	P145
I/O	P126	P146
I/O	P127	P147
I/O (D4)	P128	P148
I/O	P129	P149
VCC	P130	P150
GND	P131	P151
I/O (D3)	P132	P152
I/O (RS)	P133	P153
I/O	P134	P154
I/O	P135	P155
I/O	P136	P156
I/O	P137	P157
I/O (D2)	P138	P159
I/O	P139	P160
VCC	-	P161
VTT	P140	P162
I/O	P141	P163
I/O	-	P164
I/O	-	P165
GND	P142	P166
I/O	-	P167
I/O	-	P168
I/O	P143	P169
I/O	P144	P170
I/O	P145	P171
I/O	P146	P172
I/O (D1)	P147	P173
I/O (RCLK, RDY/BUSY)	P148	P174
I/O	P149	P175
I/O	P150	P176
I/O (D0, DIN)	P151	P177
I/O, SGCK4 †, GCK6 †† (DOUT)	P152	P178
CCLK	P153	P179
VCC	P154	P180
O, TDO	P159	P181
GND	P160	P182
I/O (A0, WS)	P161	P183
I/O, GCK7 (A1)	P162	P184
I/O	P163	P185
I/O	P164	P186

XC4013XLT Pad Name	PQ208	PQ240
I/O (CS1, A2)	P165	P187
I/O (A3)	P166	P188
I/O	-	P189
I/O	-	P190
I/O	P167	P191
I/O	P168	P192
I/O	P169	P193
I/O	P170	P194
GND	P171	P196
I/O	P172	P197
I/O	-	P198
I/O	-	P199
VTT	173	P200
VCC	-	P201
I/O (A4)	P174	P202
I/O (A5)	P175	P203
I/O	P176	P205
I/O	P177	P206
I/O (A21)	P178	P207
I/O (A20)	P179	P208
I/O (A6)	P180	P209
I/O (A7)	P181	P210
GND	P182	P211

8/21/1997

* Pads labelled GND* or VCC* are internally bonded to Ground or VCC planes within the package. They have no direct connection to any specific package pin.

Additional XC4013XLT Package Pins

PQ208

N.C. Pins					
P1	P3	P51	P52	P53	P54
P102	P104	P105	P107	P155	P156
P157	P158	P206	P207	P208	-

5/5/97

PQ240

GND Pins					
P22‡	P37‡	P83‡	P98‡	P143‡	P158‡
P204‡	P219‡	-	-	-	-
N.C. Pins					
P195	-	-	-	-	-

6/9/97

‡ Pins marked with this symbol are used for Ground connections on some revisions of the device. These pins may not physically connect to anything on the current device revision. However, they should be externally connected to Ground, if possible.

Pin Locations for XC4028XLT Devices

XC4028XLT Pad Name	HQ 240
VCC	P212
I/O (A8)	P213
I/O (A9)	P214
I/O (A19)	P215
I/O (A18)	P216
I/O	P217
I/O	P218
I/O (A10)	P220
I/O (A11)	P221
GND	-
I/O	-
I/O	-
I/O	-
I/O	-
VCC	P222
VTT	P223
I/O	P224
I/O	P225
I/O	P226
GND	P227
I/O	-
I/O	-
I/O	P228
I/O	P229
I/O	P230
I/O	P231
I/O (A12)	P232
I/O (A13)	P233
GND	-
VCC	-
I/O	-
I/O	-
I/O	P234
I/O	P235
I/O	P236
I/O	P237
I/O (A14)	P238
I/O, GCK8, (A15)	P239
VCC	P240
GND	P1
I/O, GCK1, (A16)	P2
I/O (A17)	P3
I/O	P4
I/O	P5
I/O, TDI	P6
I/O, TCK	P7
I/O	-
I/O	-
VCC	-
GND	-
I/O	P8
I/O	P9
I/O	P10
I/O	P11
I/O	P12
I/O	P13
I/O	-
I/O	-
GND	P14
I/O	P15
I/O	P16
I/O, TMS	P17
VTT	P18
VCC	P19
I/O	P20
I/O	P21

XC4028XLT Pad Name	HQ 240
I/O	-
I/O	-
GND	P22
I/O	-
I/O	-
I/O	P23
I/O	P24
I/O	P25
I/O	P26
I/O	P27
I/O	P28
GND	P29
VCC	P30
I/O	P31
I/O	P32
I/O	P33
I/O	P34
I/O	P35
I/O	P36
I/O	-
I/O	-
GND	P37
I/O	-
I/O	-
I/O	P38
I/O	P39
VCC	P40
VTT	P41
I/O	P42
I/O	P43
I/O	P44
GND	P45
I/O	-
I/O	-
I/O	P46
I/O	P47
I/O	P48
I/O	P49
I/O	P50
I/O	P51
GND	-
VCC	-
I/O	-
I/O	-
I/O	P52
I/O	P53
I/O	P54
I/O	P55
I/O	P56
I/O, GCK2	P57
O (M1)	P58
GND	P59
I (M0)	P60
VCC	P61
I (M2)	P62
I/O, GCK3	P63
I/O (HDC)	P64
I/O	P65
I/O	P66
I/O	P67
I/O (LDC)	P68
I/O	-
I/O	-
VCC	-
GND	-
I/O	P69

XC4028XLT Pad Name	HQ 240
I/O	P70
I/O	P71
I/O	P72
I/O	P73
I/O	P74
I/O	-
I/O	-
GND	P75
I/O	P76
I/O	P77
I/O	P78
VTT	P79
VCC	P80
I/O	P81
I/O	P82
I/O	-
I/O	-
GND	P83
I/O	-
I/O	-
I/O	P84
I/O	P85
I/O	P86
I/O	P87
I/O	P88
I/O (INIT)	P89
VCC	P90
GND	P91
I/O	P92
I/O	P93
I/O	P94
I/O	P95
I/O	P96
I/O	P97
I/O	-
I/O	-
GND	P98
I/O	-
I/O	-
I/O	P99
I/O	P100
VCC	P101
VTT	P102
I/O	P103
I/O	P104
I/O	P105
GND	P106
I/O	-
I/O	-
I/O	P107
I/O	P108
I/O	P109
I/O	P110
I/O	P111
I/O	P112
GND	-
VCC	-
I/O	-
I/O	-
I/O	P113
I/O	P114
I/O	P115
I/O	P116
I/O	P117
I/O, GCK4	P118
GND	P119
DONE	P120
VCC	P121
PRO- GRAM	P122

XC4028XLT Pad Name	HQ 240
I/O (D7)	P123
I/O, GCK5	P124
I/O	P125
I/O	P126
I/O	P127
I/O	P128
I/O	-
I/O	-
VCC	-
GND	-
I/O (D6)	P129
I/O	P130
I/O	P131
I/O	P132
I/O	P133
I/O	P134
I/O	-
I/O	-
GND	P135
I/O	P136
I/O	P137
I/O	P138
VTT	P139
VCC	P140
I/O (D5)	P141
I/O (CS0)	P142
I/O	-
I/O	-
GND	P143
I/O	-
I/O	-
I/O	P144
I/O	P145
I/O	P146
I/O	P147
I/O (D4)	P148
I/O	P149
VCC	P150
GND	P151
I/O (D3)	P152
I/O (RS)	P153
I/O	P154
I/O	P155
I/O	P156
I/O	P157
I/O	-
I/O	-
GND	P158
I/O	-
I/O	-
I/O (D2)	P159
I/O	P160
VCC	P161
VTT	P162
I/O	P163
I/O	P164
I/O	P165
GND	P166
I/O	-
I/O	-
I/O	P167
I/O	P168
I/O	P169
I/O	P170
I/O	P171
I/O	P172
GND	-
VCC	-
I/O (D1)	P173
I/O (RCLK,RDY/BUSY)	P174

XC4028XLT Pad Name	HQ 240
I/O	-
I/O	-
I/O	P175
I/O	P176
I/O (D0, DIN)	P177
I/O, GCK6 (DOOUT)	P178
CCLK	P179
VCC	P180
O, TDO	P181
GND	P182
I/O (A0, WS)	P183
I/O, GCK7 (A1)	P184
I/O	P185
I/O	P186
I/O (CS1, A2)	P187
I/O (A3)	P188
I/O	-
I/O	-
VCC	-
GND	-
I/O	P189
I/O	P190
I/O	P191
I/O	P192
I/O	P193
I/O	P194
I/O	P195
I/O	-
GND	P196
I/O	P197

XC4028XLT Pad Name	HQ 240
I/O	P198
I/O	P199
VTT	P200
VCC	P201
I/O	-
I/O	-
I/O	-
I/O	-
GND	-
I/O (A4)	P202
I/O (A5)	P203
I/O	P205
I/O	P206
I/O (A21)	P207
I/O (A20)	P208
I/O (A6)	P209
I/O (A7)	P210
GND	P211

8/21/1997

Additional XC4028XLT Package Pins

HQ240

GND Pins					
P204	P219	-	-	-	-

10/7/97

Note: These pins may be N.C. for this device revision, however for compatibility with other devices in this package, these pins should be tied to GND.

Pin Locations for XC4062XLT Devices

XC4062XLT Pad Name	HQ240	BG432
VCC	P212	VCC*
I/O (A8)	P213	D17
I/O (A9)	P214	A17
I/O	-	C17
I/O	-	B17
I/O	-	-
I/O	-	-
GND	-	GND*
I/O (A19)	P215	C18
I/O (A18)	P216	D18
I/O	P217	B18
I/O	P218	A19
I/O (A10)	P220	B19
I/O (A11)	P221	C19
VCC	-	VCC*
GND	-	GND*
I/O	-	D19
I/O	-	A20
I/O	-	B20
I/O	-	C20
I/O	-	B21
I/O	-	D20
GND	-	GND*
I/O	-	C21
I/O	-	A22
VCC	P222	VCC*
VTT	P223	B22
I/O	P224	C22
I/O	P225	B23
I/O	P226	A24
GND	P227	GND*
I/O	-	D22
I/O	-	C23
I/O	P228	B24
I/O	P229	C24
I/O	-	-
I/O	-	-
GND	-	GND*
I/O	-	D23
I/O	-	B25
I/O	P230	A26
I/O	P231	C25
I/O (A12)	P232	D24
I/O (A13)	P233	B26
GND	-	GND*
VCC	-	VCC*
I/O	-	A27
I/O	-	D25
I/O	-	C26
I/O	-	B27
I/O	-	A28
I/O	-	D26
GND	-	GND*
I/O	P234	C27
I/O	P235	B28
I/O	P236	D27
I/O	P237	B29
I/O (A14)	P238	C28
I/O, GCK8 (A15)	P239	D28
VCC	P240	VCC*
GND	P1	GND*
I/O, GCK1 (A16)	P2	D29
I/O (A17)	P3	C30
I/O	P4	E28
I/O	P5	E29
I/O, TDI	P6	D30

XC4062XLT Pad Name	HQ240	BG432
I/O, TCK	P7	D31
GND	-	GND*
I/O	-	F28
I/O	-	F29
I/O	-	E30
I/O	-	E31
I/O	-	G28
I/O	-	G29
VCC	-	VCC*
GND	-	GND*
I/O	-	F30
I/O	-	F31
I/O	P8	H28
I/O	P9	H29
I/O	P10	G30
I/O	P11	H30
GND	-	GND*
I/O	-	-
I/O	-	-
I/O	P12	J28
I/O	P13	J29
I/O	-	H31
I/O	-	J30
GND	P14	GND*
I/O	P15	K28
I/O	P16	K29
I/O, TMS	P17	K30
VTT	P18	K31
VCC	P19	VCC*
I/O	P20	L29
I/O	P21	L30
GND	-	GND*
I/O	-	M30
I/O	-	M28
I/O	-	M29
I/O	-	M31
I/O	-	N31
I/O	-	N28
GND	P22	GND*
VCC	-	VCC*
I/O	-	N29
I/O	-	N30
I/O	-	P30
I/O	-	P28
I/O	P23	P29
I/O	P24	R31
GND	-	GND*
I/O	P25	R30
I/O	P26	R28
I/O	-	-
I/O	-	-
I/O	P27	R29
I/O	P28	T31
GND	P29	GND*
VCC	P30	VCC*
I/O	P31	T30
I/O	P32	T29
I/O	-	-
I/O	-	-
I/O	P33	U31
I/O	P34	U30
GND	-	-
I/O	P35	U28
I/O	P36	U29
I/O	-	V30
I/O	-	V29

XC4000XLT Family Field Programmable Gate Arrays

XC4062XLT Pad Name	HQ240	BG432
I/O	-	V28
I/O	-	W31
VCC	-	VCC*
GND	P37	GND*
I/O	-	W30
I/O	-	W29
I/O	-	W28
I/O	-	Y31
I/O	-	Y30
I/O	-	Y29
GND	-	GND*
I/O	P38	Y28
I/O	P39	AA30
VCC	P40	VCC*
VTT	P41	AA29
I/O	P42	AB31
I/O	P43	AB30
I/O	P44	AB29
GND	P45	GND*
I/O	-	AB28
I/O	-	AC30
I/O	P46	AC29
I/O	P47	AC28
I/O	-	-
I/O	-	-
GND	-	GND*
I/O	-	AD31
I/O	-	AD30
I/O	P48	AD29
I/O	P49	AD28
I/O	P50	AE30
I/O	P51	AE29
GND	-	GND*
VCC	-	VCC*
I/O	-	AF31
I/O	-	AE28
I/O	-	AF30
I/O	-	AF29
I/O	P52	AG31
I/O	P53	AF28
GND	-	GND*
I/O	-	AG30
I/O	-	AG29
I/O	P54	AH31
I/O	P55	AG28
I/O	P56	AH30
I/O, GCK2	P57	AJ30
O (M1)	P58	AH29
GND	P59	GND*
I (M0)	P60	AH28
VCC	P61	VCC*
I (M2)	P62	AJ28
I/O, GCK3	P63	AK29
I/O (HDC)	P64	AH27
I/O	P65	AK28
I/O	P66	AJ27
I/O	P67	AL28
I/O (LDC)	P68	AH26
GND	-	GND*
I/O	-	AK27
I/O	-	AJ26
I/O	-	AL27
I/O	-	AH25
I/O	-	AK26
I/O	-	AL26
VCC	-	VCC*
GND	-	GND*
I/O	P69	AH24
I/O	P70	AJ25
I/O	P71	AK25

XC4062XLT Pad Name	HQ240	BG432
I/O	P72	AJ24
I/O	-	AH23
I/O	-	AK24
GND	-	GND*
I/O	-	-
I/O	-	-
I/O	P73	AL24
I/O	P74	AH22
I/O	-	AJ23
I/O	-	AK23
GND	P75	GND*
I/O	P76	AJ22
I/O	P77	AK22
I/O	P78	AL22
VTT	P79	AJ21
VCC	P80	VCC*
I/O	P81	AH20
I/O	P82	AK21
GND	-	GND*
I/O	-	AJ20
I/O	-	AH19
I/O	-	AK20
I/O	-	AJ19
I/O	-	AL20
I/O	-	AH18
GND	P83	GND*
VCC	-	VCC*
I/O	-	AK19
I/O	-	AJ18
I/O	P84	AL19
I/O	P85	AK18
I/O	P86	AH17
I/O	P87	AJ17
GND	-	GND*
I/O	-	-
I/O	-	-
I/O	-	AK17
I/O	-	AL17
I/O	P88	AJ16
I/O (INIT)	P89	AK16
VCC	P90	VCC*
GND	P91	GND*
I/O	P92	AL16
I/O	P93	AH15
I/O	-	AL15
I/O	-	AJ15
I/O	-	-
I/O	-	-
GND	-	GND*
I/O	P94	AK15
I/O	P95	AJ14
I/O	P96	AH14
I/O	P97	AK14
I/O	-	AL13
I/O	-	AK13
VCC	-	VCC*
GND	P98	GND*
I/O	-	AJ13
I/O	-	AH13
I/O	-	AL12
I/O	-	AK12
I/O	-	AJ12
I/O	-	AK11
GND	-	GND*
I/O	P99	AH12
I/O	P100	AJ11
VCC	P101	VCC*
VTT	P102	AL10
I/O	P103	AK10
I/O	P104	AJ10

XC4062XLT Pad Name	HQ240	BG432
I/O	P105	AK9
GND	P106	GND*
I/O	-	AL8
I/O	-	AH10
I/O	P107	AJ9
I/O	P108	AK8
I/O	-	-
I/O	-	-
GND	-	GND*
I/O	-	AJ8
I/O	-	AH9
I/O	P109	AK7
I/O	P110	AL6
I/O	P111	AJ7
I/O	P112	AH8
GND	-	GND*
VCC	-	VCC*
I/O	-	AK6
I/O	-	AL5
I/O	P113	AH7
I/O	P114	AJ6
I/O	-	AK5
I/O	-	AL4
GND	-	GND*
I/O	-	AH6
I/O	-	AJ5
I/O	P115	AK4
I/O	P116	AH5
I/O	P117	AK3
I/O, GCK4	P118	AJ4
GND	P119	GND*
DONE	P120	AH4
VCC	P121	VCC*
PROGRAM	P122	AH3
I/O (D7)	P123	AJ2
I/O, GCK5	P124	AG4
I/O	P125	AG3
I/O	P126	AH2
I/O	-	AH1
I/O	-	AF4
GND	-	GND*
I/O	P127	AF3
I/O	P128	AG2
I/O	-	AG1
I/O	-	AE4
I/O	-	AE3
I/O	-	AF2
VCC	-	VCC*
GND	-	GND*
I/O (D6)	P129	AF1
I/O	P130	AD4
I/O	P131	AD3
I/O	P132	AE2
I/O	-	AD2
I/O	-	AC4
GND	-	GND*
I/O	-	-
I/O	-	-
I/O	P133	AC3
I/O	P134	AD1
I/O	-	AC2
I/O	-	AB4
GND	P135	GND*
I/O	P136	AB3
I/O	P137	AB2
I/O	P138	AB1
VTT	P139	AA3
VCC	P140	VCC*
I/O (D5)	P141	AA2
I/O (CS0)	P142	Y2

XC4062XLT Pad Name	HQ240	BG432
GND	P143	GND*
I/O	-	Y4
I/O	-	Y3
I/O	-	Y1
I/O	-	W1
I/O	-	W4
I/O	-	W3
GND	-	GND*
VCC	-	VCC*
I/O	-	W2
I/O	-	V2
I/O	-	V4
I/O	-	V3
I/O	P144	U1
I/O	P145	U2
GND	-	GND*
I/O	P146	U4
I/O	P147	U3
I/O	-	-
I/O	-	-
I/O (D4)	P148	T1
I/O	P149	T2
VCC	P150	VCC*
GND	P151	GND*
I/O (D3)	P152	T3
I/O (RS)	P153	R1
I/O	-	-
I/O	-	-
I/O	P154	R2
I/O	P155	R4
GND	-	GND*
I/O	P156	R3
I/O	P157	P2
I/O	-	P3
I/O	-	P4
I/O	-	N1
I/O	-	N2
VCC	-	VCC*
GND	P158	GND*
I/O	-	N3
I/O	-	N4
I/O	-	M1
I/O	-	M2
I/O	-	M3
I/O	-	M4
GND	-	GND*
I/O (D2)	P159	L2
I/O	P160	L3
VCC	P161	VCC*
VTT	P162	K1
I/O	P163	K2
I/O	P164	K3
I/O	P165	K4
GND	P166	GND*
I/O	-	J2
I/O	-	J3
I/O	P167	J4
I/O	P168	H1
I/O	-	-
I/O	-	-
GND	-	GND*
I/O	P169	H2
I/O	P170	H3
I/O	P171	H4
I/O	P172	G2
I/O	-	G3
I/O	-	F1
GND	-	GND*
VCC	-	VCC*
I/O (D1)	P173	G4

XC4062XLT Pad Name	HQ240	BG432
I/O (RCLK, RDY/BUSY)	P174	F2
I/O	-	F3
I/O	-	E1
I/O	-	F4
I/O	-	E2
GND	-	GND*
I/O	-	E3
I/O	-	D1
I/O	P175	E4
I/O	P176	D2
I/O (D0, DIN)	P177	C2
I/O, GCK6 (DOUT)	P178	D3
CCLK	P179	D4
VCC	P180	VCC*
O, TDO	P181	C4
GND	P182	GND*
I/O (A0, WS)	P183	B3
I/O, GCK7 (A1)	P184	D5
I/O	P185	B4
I/O	P186	C5
I/O	-	A4
I/O	-	D6
GND	-	GND*
I/O	-	B5
I/O	-	C6
I/O (CS1, A2)	P187	A5
I/O (A3)	P188	D7
I/O	-	B6
I/O	-	A6
VCC	-	VCC*
GND	-	GND*
I/O	P189	D8
I/O	P190	C7
I/O	P191	B7
I/O	P192	D9
I/O	-	B8
I/O	-	A8
GND	-	GND*
I/O	-	-
I/O	-	-
I/O	P193	D10
I/O	P194	C9
I/O	P195	B9
I/O	-	C10
GND	P196	GND*
I/O	P197	B10
I/O	P198	A10
I/O	P199	C11
VTT	P200	D12
VCC	P201	VCC*
I/O	-	B11
I/O	-	C12
GND	-	GND*
I/O	-	D13
I/O	-	B12

XC4062XLT Pad Name	HQ240	BG432
I/O	-	C13
I/O	-	A12
I/O	-	D14
I/O	-	B13
GND	-	GND*
VCC	-	VCC*
I/O (A4)	P202	C14
I/O (A5)	P203	A13
I/O	P205	B14
I/O	P206	D15
I/O (A21)	P207	C15
I/O (A20)	P208	B15
GND	-	GND*
I/O	-	-
I/O	-	-
I/O	-	A15
I/O	-	C16
I/O (A6)	P209	B16
I/O (A7)	P210	A16
GND	P211	GND*

8/21/1997

* Pads labelled GND* or VCC* are internally bonded to Ground or VCC planes within the package. They have no direct connection to any specific package pin.

Additional XC4062XLT Package Pins

HQ240

GND Pins					
P204	P219	-	-	-	-

5/5/97

Note: These pins may be N.C. for this device revision, however for compatibility with other devices in this package, these pins should be tied to GND.

BG432

VCC Pins						
A1	A11	A21	A31	C3	C29	D11
D21	L1	L4	L28	L31	AA1	AA4
AA28	AA31	AH11	AH21	AJ3	AJ29	AL1
AL11	AL21	AL31	-	-	-	-
GND Pins						
A2	A3	A7	A9	A14	A18	A23
A25	A29	A30	B1	B2	B30	B31
C1	C31	D16	G1	G31	J1	J31
P1	P31	T4	T28	V1	V31	AC1
AC31	AE1	AE31	AH16	AJ1	AJ31	AK1
AK2	AK30	AK31	AL2	AL3	AL7	AL9
AL14	AL18	AL23	AL25	AL29	AL30	-
N.C. Pins						
C8	-	-	-	-	-	-

5/5/97