# GRIVA basic - FPGA S3E evaluation board 1.2

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|---|---|---|
| Size: A2 | Number: GB/01 | Revision: C |
| Date: 2009-11-25 | | Sheet of: 1/1 |
| File: E:\HW\...\griva_basic_board_1_2_fixed.SchDoc | | Drawn By: |

U1B
BANK 1
IO_L01P_1/A16
IO_L01N_1/A15
IO_L02P_1/A14
IO_L02N_1/A13
IO_L03P_1
IO_L03N_1/VREF_1
IO_L04P_1
IO_L04N_1
IO_L05P_1/A12
IO_L05N_1/A11
IO_L06P_1
IO_L06N_1/VREF_1
IO_L07P_1/A10/RHCLK0
IO_L07N_1/A9/RHCLK1
IO_L08P_1/A8/RHCLK2
IO_L08N_1/A7/RHCLK3/TRDY1
IO_L09P_1/A6/RHCLK4/IRDY1
IO_L09N_1/A5/RHCLK5
IO_L10P_1/A4/RHCLK6
IO_L10N_1/A3/RHCLK7
IO_L11P_1/A2
IO_L11N_1/A1
IO_L12P_1
IO_L12N_1/A0
IO_L13P_1
IO_L13N_1
IO_L14P_1
IO_L14N_1
IO_L15P_1/HDC
IO_L15N_1/LDC0
IO_L16P_1/LDC1
IO_L16N_1/LDC2
106 107 108 109 112 113 115 116 119 120 122 123 126 127 128 129 132 133 134 135 137 138 140 144 145 146 147 150 151 152 153
US-RXF US-WR US-RD US-PWREN US-TXF US-D6 US-D5 US-D7 US-D1 US-D2 US-D4 US-D0 EXT_A_1 EXT_A_2 EXT_A_3 EXT_A_4 EXT_A_5 EXT_A_6 EXT_A_7 EXT_A_8 EXT_A_9 EXT_A_10 EXT_A_11 EXT_A_12 EXT_A_13 EXT_A_14 EXT_A_15 EXT_A_16 EXT_A_17 EXT_A_18 EXT_A_19 EXT_A_20
XC3S250E-4PQ208C
EXT_A
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
Header 20X2
+5_USB
+3V3
EXT_CLK1
EXT_CLK3
GND

U12
LM1117DT
VIN GND/ADJ VOUT
3 1 2
C13 Cap Pol 10uF
R19 Res 121
C19 Res Typo! Instead C19 should be R19 0R
L3 FERRITE_BEAD
FERRITE_BEAD
C20 Cap Pol 20uF
+3V3
1V2_FB
GND

U20
USB B Connector
SHIELD SHIELD USB VCC DP DM GND
6 1 3 4 5
L1 FERRITE_BEAD
R5 Res 0R
R2 Res 4k7
SHIELD
GND
+3V3
+5_USB

U13
FT245R
VCCIO VCC USBDM USBDP NC NC RESET OSCI OSCO 3V3OUT PWREN# WR RD# TXE# RXF# D7 D6 D5 D4 D3 D2 D1 D0
4 20 15 16 24 8 19 28 5 17 14 13 12 11 23 9 10 1 2 3 25 26 27 6 22
US-D0 US-D1 US-D2 US-D3 US-D4 US-D5 US-D6 US-D7 US-RXF US-TXF US-RD US-WR US-PWREN
nRESET_USB
C86 Ceramic 100nF
FT245R
AGND GND GND TEST
R1 Res 1K
C120 Ceramic 100nF
DU LED
C88 Ceramic 100nF
C89 Ceramic 100nF
C87 Cap Pol 4.7uF
GND

P_SPI
Header 7X2A
SI_FLASH SCK_FLASH nRST_FLASH nCS_FLASH
U3
AT45DB041D
SI SCK RESET CS SO GND VCC WP
SO_FLASH nWP_FLASH
R6 Res 4k7
C2 Ceramic 100nF
P_WP
Header 2

U1D
BANK 3
IO_L01P_3
IO_L01N_3
IO_L02P_3
IO_L02N_3/VREF_3
IO_L03P_3
IO_L03N_3
IO_L04P_3
IO_L04N_3
IO_L05P_3
IO_L05N_3
IO_L06P_3
IO_L06N_3
IO_L07P_3/HCLK0
IO_L07N_3/HCLK1
IO_L08P_3/HCLK2
IO_L08N_3/HCLK3/IRDY2
IO_L09P_3/HCLK4/TRDY2
IO_L09N_3/HCLK5
IO_L10P_3/HCLK6
IO_L10N_3/HCLK7
IO_L11P_3
IO_L11N_3
IO_L12P_3
IO_L12N_3
IO_L13P_3
IO_L13N_3
IO_L14P_3
IO_L14N_3
IO/VREF_3
IO_L15P_3
IO_L15N_3
IO_L16P_3
IO_L16N_3
SW_PROG
EXT_B_1 EXT_B_2 EXT_B_3 EXT_B_4 EXT_B_5 EXT_B_6 EXT_B_7 EXT_B_8 EXT_B_9 EXT_B_10 EXT_B_11 EXT_B_12 EXT_B_13 EXT_B_14 EXT_B_15 EXT_B_16 EXT_B_17 EXT_B_18 EXT_B_19 EXT_B_20
nRST_FLASH
R48 Res 4k7
XC3S250E-4PQ208C
EXT_B
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
Header 20X2
+12V +3V3 2V5_FB
EXT_CLK2
EXT_CLK4
GND
+3V3

U25
VIN GND/ADJ VOUT
3 1 2
L6 FERRITE_BEAD
R32 Res 560
R35 Res 560
C5 Cap Pol 10uF
C3 Cap Pol 10uF
LM1117DT
VCC
2V5_FB
GND

U1E
IP IP IP/VREF_3 IP IP IP IP IP IP_L02P_2 IP_L02N_2 IP_L07P_2 IP_L07N_2/VREF_2 IP_L10P_2/RDWR_B/GCLK0 IP_L10N_2/M2/GCLK1 IP IP IP IP IP IP IP IP/VREF_1 IP IP IP IP IP IP_L06P_0 IP_L06N_0 IP_L09P_0/GCLK8 IP_L09N_0/GCLK9 IP
6 14 20 26 32 43 51 54 57 58 71 72 80 81 101 110 118 124 130 136 148 154 142 204 159 169 174 175 183 184 194
M2 BUTTON0 BUTTON1
EXT_CLK4
XC3S250E-4PQ208C

U1C
BANK 2
IO_L01P_2/CSO_B
IO_L01N_2/INIT_B
IO_L03P_2/D0UT/BUSY
IO_L03N_2/MOSI/CSI_B
IO_L04P_2
IO_L04N_2
IO_L05P_2
IO_L05N_2
IO_L06P_2
IO_L06N_2
IO_L08P_2/D7/GCLK12
IO_L08N_2/D6/GCLK13
IO/D5
IO_L09P_2/D4/GCLK14
IO_L09N_2/D3/GCLK15
IO_L11P_2/D2/GCLK2
IO_L11N_2/D1/GCLK3
IO/M1
IO_L12P_2/M0
IO_L12N_2/DIN/D0
IO_L13P_2
IO_L13N_2
IO_L14P_2/A23
IO_L14N_2/A22
IO_L15P_2/A21
IO_L15N_2/A20
IO/VREF_2
IO_L16P_2/VS2/A19
IO_L16N_2/VS1/A18
IO_L17P_2/VS0/A17
IO_L17N_2/CCLK
55 56 60 61 62 63 64 67 68 71 72 75 76 77 78 82 83 84 86 87 88 89 90 93 94 97 100 102 103
nCS_FLASH INIT_B SI_FLASH EXT_CLK2 M1 M0 SO_FLASH nRESET_USB VS2 VS1 VS0 SCK_FLASH
XC3S250E-4PQ208C
+3V3 3V3_FB2
R7 Res 4k7
R8 Res 4k7

LED0 LED1 LED2 LED3
R9 R10 R15 R16 Res 330
LED LED LED LED
GND

SW0 SW1 SW2 SW3
SW_DIP
SW-DIP4
R11 R12 R13 R14 Res 4k7
GND

U1A
BANK 0
IO_L01P_0
IO_L01N_0
IO_L02P_0
IO_L02N_0/VREF_0
IO_L03P_0
IO_L03N_0
IO_L04P_0
IO_L04N_0/VREF_0
IO_L05P_0
IO_L05N_0
IO_L07P_0/GCLK4
IO_L07N_0/GCLK5
IO/VREF_0
IO_L08P_0/GCLK6
IO_L08N_0/GCLK7
IO_L10P_0/GCLK10
IO_L10N_0/GCLK11
IO
IO_L11P_0
IO_L11N_0
IO_L12P_0
IO_L12N_0/VREF_0
IO_L13P_0
IO_L13N_0
IO_L14P_0
IO_L14N_0/VREF_0
IO_L15P_0
IO_L15N_0
IO_L16P_0
IO_L16N_0/HSWAP
160 161 162 163 164 165 172 173 178 179 180 181 185 186 187 189 190 192 193 196 197 199 200 202 203 205 206
SW3 SW2 SW1 SW0 EXT_CLK1 EXT_CLK3 MAIN_CLK1 SEG7_G SEG7_SEL2 SEG7_SEL1 SEG7_B SEG7_C SEG7_E LED0 LED1 LED2 LED3
XC3S250E-4PQ208C

These wires are internally Pull-Up because of HSWAP_EN=GND
Set is for SPI flash - AT45DB041 (D and B series)
VS0 VS2 VS1
R31 Resistor 0R
GND

These wires are internally Pull-Up because of HSWAP=GND.
M_SEL
3 2 1
Header 3
R20 Resistor 560
R37 Res 560
M0 M1 M2
2 - 3 - JTAG [1:0:1]
2 - 1 - SPI [0:0:1]

TSM2301CX
Q2
D1 LED
R21 Res 560
GND
+3V3
Header 3
PWR_SEL
+5_USB
+12V
VCC
D4 Diode 1N4001
J1
POWER_JACK
D3 Transil
C10 Cap Pol 100uF/16V
U4
MAX1626
OUT GND SHDN CS REF V+ EXT
C9 Ceramic 100nF
C1 Ceramic 100nF
R33 R33 Res Res 0R2 0R2
L9 Inductor Iron Dot 56uH
D2 MBRS130LT3G
C18 Cap Pol 100uF/6V
GND

L2 FERRITE_BEAD
L7 FERRITE_BEAD
+3V3
3V3_FB2
C4 C8 C93 C97 C14 C94 C98 C76 C95 C99 C7 C77 C96 C100 Cap Pol / Ceramic 10uF / 100nF
C110 Ceramic 100nF
GND

U1G
VCCO_0 VCCO_0 VCCO_0 VCCO_1 VCCO_1 VCCO_1 VCCO_3 VCCO_3 VCCO_3 VCCO_2 VCCO_2 VCCO_2
201 176 191 114 125 143 38 46 21 59 73 88
VCCAUX VCCINT
7 149 111 92 195 66 166 44 170 117 13 67
XC3S250E-4PQ208C
2V5_FB
C101 C102 C106 C108 C112 C114 C115 Ceramic 100nF
C116 Cap Pol 10uF
1V2_FB
C103 C105 C109 C111 Ceramic 100nF
C113 Cap Pol 10uF

U1H
GND GND GND GND GND GND GND GND GND GND GND GND GND GND GND GND GND GND GND GND GND GND GND GND
105 85 208 79 188 70 173 53 141 52 121 37 95 27 182 17 131 10 198 156
XC3S250E-4PQ208C
GND

U1F
TMS TCK TDO TDI PROG_B DONE
155 158 157 207 1 104
TMS_FPGA TCK_FPGA TDO_FPGA TDI_FPGA FPGA_PROG FPGA_DONE
R34 R38 Res 100 R45 Res 100
JTAG_TMS JTAG_TCK JTAG_TDO JTAG_TDI
P_JTAG
Header 7X2A
+3V3
GND

R17 R18 Res 100k
R22 Res 100k
R23 R24 R25 R26 R27 R28 R29 R30 Res 330
Q1 VP0610T
Q2 VP0610T
SEG7_SEL2 SEG7_SEL1 SEG7_A SEG7_B SEG7_C SEG7_D SEG7_E SEG7_F SEG7_G SEG7_DP
U_7SEG
Double 7 Segment LED display
GND

3V3_FB2
L4 FERRITE_BEAD
C15 Ceramic 100nF
U5
Oscillator
EN VCC GND OUT
No connection to pad 1 enables oscillator output
MAIN_CLK1
GND

2V5_FB
R39 Res 120R
D7 LED
R42 Res 470
FPGA_DONE
Q3 2N7002
GND

2V5_FB
R41 Res 4k7
FPGA_PROG
SW_PROG
SW-DPST
C21 Ceramic 100nF
P_PROG
Header 3
SW_PROG
R3 Res 820
GND

BUTTON0
BUTTON1
SW0
SW1
SW-DPST
R46 R47 Res 4k7
C23 C24 Ceramic 100nF
GND