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|-----------------------------------------------|------------------------------------------------------------------------|------------------------------------------------------|----------------------------------------------------------------------------------------|
| U8B 10M16DCF256I7G_mk3pinstest                | U8E                                                                    |                                                      | U8H                                                                                    |
| I UOD '                                       | 10M16DCF256I7G_mk3pinstest                                             | UBI                                                  | 10M16DCF256I7G_mk3pinstest                                                             |
| IOBank_8                                      | IOBank_6                                                               | 10M <u>16DCF256I7G_mk</u> 3pinstest                  | OBank_1B                                                                               |
|                                               | IOBalik_0                                                              | IOBank_2                                             | OCC. MEN DAN CE 4                                                                      |
| ALTERA_nSTATUS F7 ALTERA_nSTATUS              | exp_PORTG_nOE B16 exp_PORTG_nOE                                        |                                                      | MEM_RAM_nCE_0_1 G6 MEM_RAM_nCE_0_1 MEM_nOE_0 DMEM_nOE                                  |
| ALTERA_nCONFIG E8 ALTERA_nCONFIG              | SYS_nNMI_i B15 SYS_nNMI_                                               |                                                      | MEM_A_o_9 H6 MEM_A_o_9 MEM_nWE_o DMEM_nWE                                              |
| ALTERA_CONF_DONE E7 ALTERA_CONF_DONE          | SYS_nIRQ_i                                                             |                                                      | MEM_A_0_3 J1 MEM_A_0_3                                                                 |
| ALTERA_CONFIG_SEL F8 ALTERA_CONFIG_SEL        | SYS_nDBE_i D16 SYS_nDBE_                                               | exp_PORTD_io_5                                       | MEM_A_o_2 J2 MEM_A_o_2 MEM_FL_nCE_o MEM_FL_nCE                                         |
| A exp_PORTF_nOE B3 exp_PORTF_nOE              | SYS_RDY_i C15 SYS_RDY_                                                 | exp_PORTD_io_4 M1 exp_PORTD_io_4                     | MEM_A_o_17  MEM_A_o_17  MEM_A_o_17  MEM_A_o_17  MEM_RAM_nCE_o_[30]  MEM_RAM_nCE_o_[30] |
| exp_PORTE_nOE A3 exp_PORTE_nOE                | SYS_PHIO_i D15 SYS_PHIO_                                               | exp_PORTD_io_3                                       | MEM_A_o_14 J5 MEM_A_o_14                                                               |
| exp_PORTEFG_io_9  B8 exp_PORTEFG_io_9         | SYS_D_io_7 E15 SYS_D_io_7                                              | exp_PORTD_io_11 P1 exp_PORTD_io_11 N4 exp_PORTD_io_1 |                                                                                        |
| exp_PORTEFG_io_8  A8 exp_PORTEFG_io_8         | SYS_D_io_6 F16 SYS_D_io_6                                              | exp_rokib_io_1                                       | SYS A 0 [150] DCYC 4[450]                                                              |
| exp_PORTEFG_io_7  B7 exp_PORTEFG_io_7         | SYS_D_io_5 G15 SYS_D_io_5                                              | exp_FORIC_IO_II                                      | 5YS P 1 17 01 DS15_A[150]                                                              |
| exp_PORTEFG_io_6  A7 exp_PORTEFG_io_6         | SYS_D_io_4 G16 SYS_D_io_4                                              | MEM_nWE_0  MEM_nWE_0  L6  MEM_nWE_0  L6  MEM_nWE_0   | SD_CS_0                                                                                |
| exp_PORTEFG_io_5  B6 exp_PORTEFG_io_5         | SYS_D_io_3 H11 SYS_D_io_3                                              | MEM A - 6                                            | SD_MOSI_0 SD_MOSI                                                                      |
| exp_PORTEFG_io_4  A6 exp_PORTEFG_io_4         | SYS_D_io_2                                                             | MEM_A_O_O                                            | SD_CLK_0 SYS_RIW                                                                       |
| exp_PORTEFG_io_3  B5 exp_PORTEFG_io_3         | SYS_D_io_1 H12 SYS_D_io_1                                              | MEM_A_O_S                                            | SD_MISO_i                                                                              |
| exp_PORTEFG_io_2  A5 exp_PORTEFG_io_2         | SYS_BUF_D_nOE_o                                                        | MEN A 40                                             |                                                                                        |
| exp_PORTEFG_io_11  B9 exp_PORTEFG_io_11       | SYS_BUF_D_DIR_o                                                        | MEM_A_0_18 K5 MEM_A_0_18                             | STS BUT D DIK O D CVC DUED DID                                                         |
| exp_PORTEFG_io_10  A9 exp_PORTEFG_io_10       | SYS_A_0_9 H16 SYS_A_0_9                                                | MEM_A_0_16 MEM_A_0_10                                | SYS_BUF_D_nOE_O_DSYS_BUFD_nOE                                                          |
| exp_PORTEFG_io_1  B4 exp_PORTEFG_io_1         | SYS_A_0_8 H15 SYS_A_0_8                                                |                                                      | STS_RDY SYS_RDY                                                                        |
| exp_PORTEFG_io_0 A4 exp_PORTEFG_io_0          | SYS A 0. 7 J15 SYS_A_o_7                                               | <u>'</u>                                             | SYS_NNMLi                                                                              |
| exp_PORTA_nOE_o  c5 exp_PORTA_nOE_o           | SYS_A_0_6 K15 SYS_A_0_6                                                | <u>s</u> U8J                                         | CVC DING :                                                                             |
| exp_PORTA_io_7  B12 exp_PORTA_io_7            | SYS_A_o_15 J12 SYS_A_o_15                                              | 10M16DCF256I7G_mk3pinstest                           | SYS_PHIO_i SYS_PHIO  SYS_PHIO                                                          |
| exp_PORTA_io_6  D9 exp_PORTA_io_6             | SYS_A_0_11 J16 SYS_A_0_11                                              |                                                      | SYS_nDBE_i                                                                             |
| exp_PORTA_io_5  exp_PORTA_io_5                | SYS A 0 10 J14 SYS_A_0_10                                              |                                                      | SYS_DBE                                                                                |
| exp_PORTA_io_3 C10 exp_PORTA_io_3             | IED o 3 G12 LED_o_3                                                    | SYS_SYNC_o N14 SYS_SYNC_o                            | 12C_SCL_0                                                                              |
| exp_PORTA_io_2  exp_PORTA_io_2                | LED_o_2 E14 LED_o_2                                                    | SYS_RnW_o                                            | 150 [7.0]                                                                              |
| exp_PORTA_io_1 E9 exp_PORTA_io_1              | LED o 1 G11 LED_o_1                                                    | SYS PHI2 a RIJ 313_FHI2_0                            | POPTA in [7 0]                                                                         |
| exp_PORTA_io_0  C6 exp_PORTA_io_0             | LED_0_0 D14 LED_0_0                                                    | CAC DHIT O NIO 312 LHIT O                            | SUP_RRESELI JSUP_RRES                                                                  |
| SYS AUX io 6 A10 SYS_AUX_io_6                 | CLK 48M i J11 CLK_48M_                                                 | i SYS_A_o_5 L16 SYS_A_o_5                            | exp_PORTA_DIR                                                                          |
| SYS AUX in 5 B10 SYS_AUX_io_5                 | BTNUSER_i_0 C14 BTNUSER_i_C                                            | SYS A 0 4 L15 STS_A_0_4                              | CLK_48M_I CLK_48M POPTR o [7 0]                                                        |
| SYS AUX in 4 A11 SYS_AUX_io_4                 |                                                                        | CVC A 2 3 NI4 313_A_U_J                              | BTNUSER_i_[10] Obtnuser[10] PORTC io [11.0]                                            |
| SYS AllX in 2 B11 SYS_AUX_io_2                | U8K                                                                    | SYS A 0.2 L12 SYS_A_0_2                              | PORTO IO [11 0]                                                                        |
| SYS AUX io 0 A12 SYS_AUX_io_0                 | 10M16DCF256I7G_mk3pinstest                                             | CVC A 0 14 KII 313_A_U_I4                            | exp_PORTEG_io_[110] $\Rightarrow$ exp_PORTEG[110]                                      |
| MEM_A_o_10 A2 MEM_A_o_10                      | IOBank_3                                                               | CVC A 0 13 NIZ 313_A_U_IJ                            | ALTERA_nSTATUS  ALTERA_nSTATUS  exp_PORTE_nOE_o  exp_PORTE_nOE_o  exp_PORTE_nOE_o      |
|                                               |                                                                        | CVC A = 12   LII                                     | ALTERA DONEIG                                                                          |
| U8C                                           | exp_PORTD_io_9 R1 exp_PORTD_io_9                                       | CVC A 0 1 MID 313 A 0 I                              | ALTERA CONE DONE                                                                       |
| 10M16DCF256I7G_mk3pinstest                    | exp_PORTD_io_6 T2 exp_PORTD_io_6                                       | CAC Y 2 U INT 2127CO O                               | ALTERA_CONF_DONE                                                                       |
| IOBank_7                                      | exp_PORTD_io_2 R2 exp_PORTD_io_2                                       | SYS AUX o 3                                          |                                                                                        |
|                                               | exp_PORTD_io_10 P2 exp_PORTD_io_10                                     | SYS AUX 0 2 110 313_A0X_0_2                          | HDMI_D2_0 DHDMI_D2P                                                                    |
| exp_PORTB_o_7                                 | exp_PORTD_io_0 N5 exp_PORTD_io_0                                       | SYS_AUX_o_1 P14 SYS_AUX_o_1                          | HDMI_D1_o(n) DHDMI_D1N                                                                 |
| I DODED & IALA EXPLORIDO                      | exp_PORTC_io_9 P5 exp_PORTC_io_9                                       | SYS_AUX_o_0 R16 SYS_AUX_o_0 R14 HDMLSDA io           | HDMI_D1_0 DHDMI_D1P                                                                    |
| exp_PORTB_o_5                                 | exp_PORTC_io_8 P6 exp_PORTC_io_8                                       | HDMI_SDA_io NII HDMI_SDA_io                          | HDML_DO_o(n) DHDML_DON                                                                 |
| eve POPTR o 4 AIS CAP ON ID-0-1               | exp_PORTC_io_7                                                         | HDMI_SCL_0                                           | HDMI_DO_O DHDMI_DOP                                                                    |
| exp_PORTB_o_3 exp_PORTB_o_3 C13 exp_PORTB_o_2 | exp_PORTC_io_6  exp_PORTC_io_6  T6  exp_PORTC_io_5  R3  exp_PORTC_io_6 |                                                      | HDMLCK O(n) DHDMLCKN                                                                   |
| exp_PORTB_0_2                                 | EXP_I OKIC_IO_J                                                        |                                                      | HDML_CK_ODHDML_CKP<br>HDML_SCL_ODNDML_SCL                                              |
|                                               | EXP_FORTC_10_4                                                         |                                                      | HDMI CDA :-                                                                            |
| exp_PORTB_o_0  exp_PORTA_io_4  exp_PORTA_io_4 | exp_rukic_io_3                                                         |                                                      | HDMI HDD :                                                                             |
| exp_PORTA_io_4                                | EXP_I OKIC_IO_Z                                                        |                                                      |                                                                                        |
| SYS_AUX_io_3                                  | EXPLICATE TE PODTO :-                                                  |                                                      | SND_L_oJSND_L                                                                          |
| 515_A0X_10_1                                  | EXP_I OKIC_IO_I                                                        | PXD PORTA DIR 0 C4 EXP_PURIA_DIR_0                   | SND_R_O                                                                                |
| BTNUSER_i_1 F12 BINUSER_i_1                   | EXP_FORTC_IO_O                                                         | MEM nOE o C3 MEM_nOE_o                               |                                                                                        |
|                                               | 313_0_10_0                                                             | MEM RAM DCF o 0 F5 MEM_RAM_DCE_O_0                   |                                                                                        |
| U8L                                           | SUP_IIRESEI_I TO CND D                                                 | MEM FL nCE o B2 MEM_FL_nCE_o                         |                                                                                        |
| 10M16DCF256I7G_mk3pinstest                    | SILD I S                                                               | MEM D to 7 B1 MEM_D_io_7                             |                                                                                        |
| IOBank_4                                      | JNU_L_U CD MOCL                                                        | MFM D in 6 C2 MEM_D_io_6                             |                                                                                        |
| _                                             | 30_11031_0                                                             | MEM D io 5 C1 MEM_D_io_5                             |                                                                                        |
| SD_MISO_i R11 SD_MISO_i                       | SD_CLK_0 P9 SD_CLK_0                                                   | MEM D io 4 DI MEM_D_10_4                             |                                                                                        |
| SD_DET_i T12 SD_DET_i                         | SD_CLK_o<br>NOTCONN M7                                                 | F   MEM_D:0_7   E3 MEM_D_io_3                        |                                                                                        |
| NOTCONN R12 X                                 | MEM DAM ACE A 3 MO MEM_RAM_IICE_O_                                     | MEM D to 2 L1 MEM_D_io_2                             |                                                                                        |
| NOTCONN TIS                                   | MEM_RAM_nCE_0_2  M6 MEM_RAM_nCE_0_2                                    |                                                      |                                                                                        |
| HDMI_D2_o(n) HDMI_D2_o(n)                     | MEM_A_o_20  R7  MEM_A_o_20                                             | MEM D to 0 11 MEM D 10 0                             |                                                                                        |
| HDMI_D2_0                                     | MEM_A_0_10 T7 MEM_A_0_19                                               | MEM A DO I II J INLIN_A_U_U                          | fixed: clk/sysd0, jtag, u22 footprint                                                  |
| HDMI_D1_o(n) HDMI_D1_o(n)                     | MEM_A_0_15  L8 MEM_A_0_15                                              | MEM A 6 11 GO MEM_A_O_II                             | Dossytronics                                                                           |
| HDMI_D1_0 L9 HDMI_D1_0                        | MEM_A_0_15<br>MEM_A_0_12                                               |                                                      | Sheet: /fpga_top/                                                                      |
| HDMI_DO_o(n) P13                              | I2C_SDA_io R9 I2C_SDA_io                                               | MEM_A_O_O F4 MEM_A_O_O                               |                                                                                        |
| HDMI_D0_o<br>HDMI_CK_o(n) P10 HDMI_CK_o(n)    | 12C_SCL_0 T8 12C_SCL_0                                                 | <u> </u>                                             | File: fpga_top.sch                                                                     |
| 110111_CK_0(11)                               | 120_301_0                                                              |                                                      | Title: Mk.3 Blitter FPGA development board                                             |
| HDMI_CK_0 P11 HDMI_CK_0                       |                                                                        |                                                      | Size: A4 Date: 2021-08-14 Rev: 3.03                                                    |
|                                               |                                                                        |                                                      | KiCad E.D.A. kicad (5.1.6)-1                                                           |
|                                               |                                                                        |                                                      |                                                                                        |
| 1                                             | 3                                                                      | 3                                                    | 4 5                                                                                    |