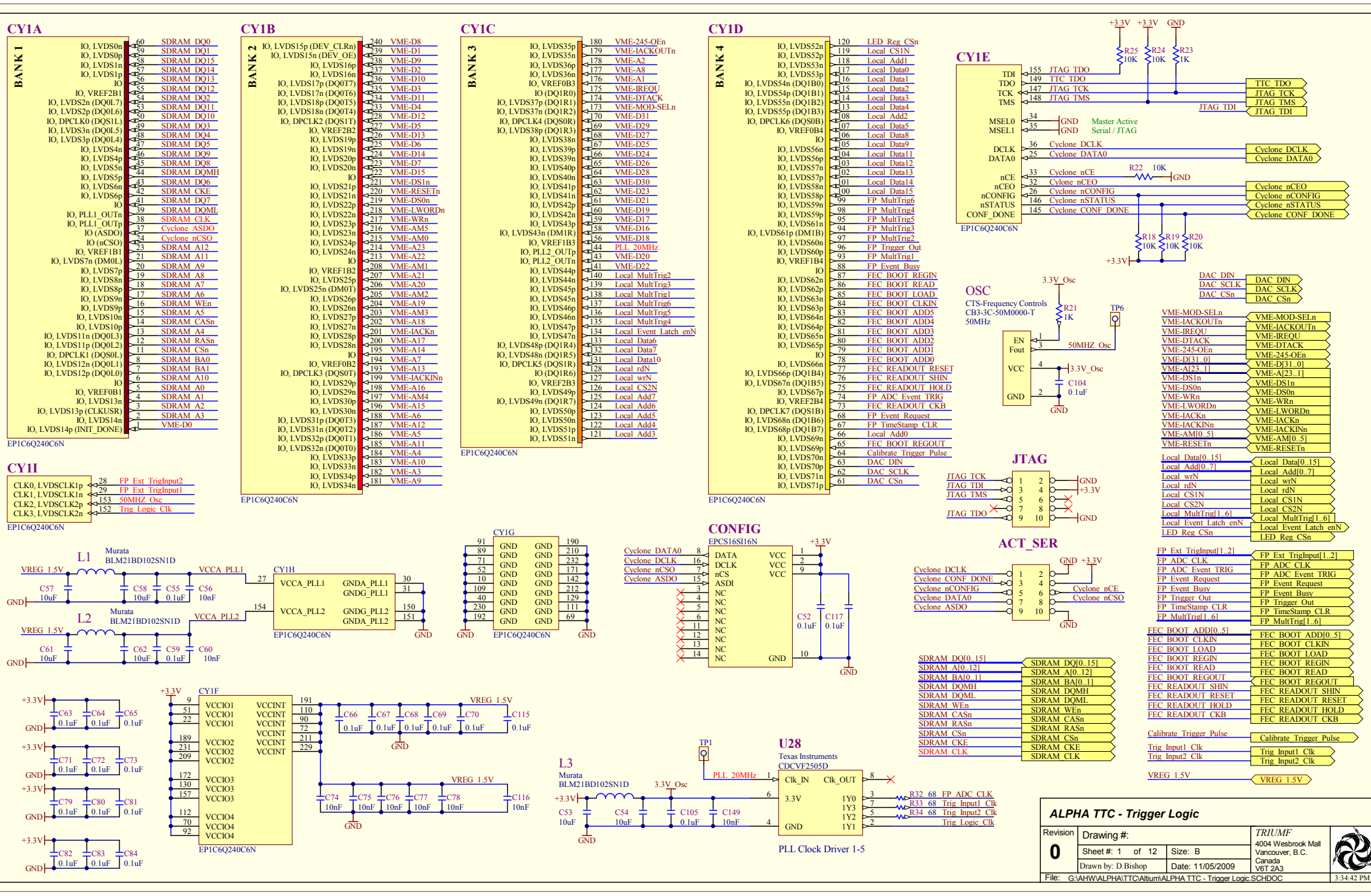
CY1A
BANK 1
IO, LVDS0n
IO, LVDS0p
IO, LVDS1n
IO, LVDS1p
IO
IO, VREF2B1
IO, LVDS2n (DQ0L7)
IO, LVDS2p (DQ0L6)
IO, DPCLK0 (DQS1L)
IO, LVDS3n (DQ0L5)
IO, LVDS3p (DQ0L4)
IO, LVDS4n
IO, LVDS4p
IO, LVDS5n
IO, LVDS5p
IO, LVDS6n
IO, LVDS6p
IO
IO, PLL1_OUTn
IO, PLL1_OUTp
IO (ASDO)
IO (nCSO)
IO, VREF1B1
IO, LVDS7n (DM0L)
IO, LVDS7p
IO, LVDS8n
IO, LVDS8p
IO, LVDS9n
IO, LVDS9p
IO, LVDS10n
IO, LVDS10p
IO, LVDS11n (DQ0L3)
IO, LVDS11p (DQ0L2)
IO, DPCLK1 (DQS0L)
IO, LVDS12n (DQ0L1)
IO, LVDS12p (DQ0L0)
IO
IO, VREF0B1
IO, LVDS13n
IO, LVDS13p (CLKUSR)
IO, LVDS14n
IO, LVDS14p (INIT_DONE)
60 SDRAM_DQ0
59 SDRAM_DQ1
58 SDRAM_DQ15
57 SDRAM_DQ14
56 SDRAM_DQ13
55 SDRAM_DQ12
54 SDRAM_DQ2
53 SDRAM_DQ11
50 SDRAM_DQ10
49 SDRAM_DQ3
48 SDRAM_DQ4
47 SDRAM_DQ5
46 SDRAM_DQ9
45 SDRAM_DQ8
44 SDRAM_DQMH
43 SDRAM_DQ6
42 SDRAM_CKE
41 SDRAM_DQ7
39 SDRAM_DQML
38 SDRAM_CLK
37 Cyclone_ASDO
24 Cyclone_nCSO
23 SDRAM_A12
21 SDRAM_A11
20 SDRAM_A9
19 SDRAM_A8
18 SDRAM_A7
17 SDRAM_A6
16 SDRAM_WEn
15 SDRAM_A5
14 SDRAM_CASn
13 SDRAM_A4
12 SDRAM_RASn
11 SDRAM_CSn
8 SDRAM_BA0
7 SDRAM_BA1
6 SDRAM_A10
5 SDRAM_A0
4 SDRAM_A1
3 SDRAM_A2
2 SDRAM_A3
1 VME-D0
EP1C6Q240C6N
CY1B
BANK 2
IO, LVDS15p (DEV_CLRn)
IO, LVDS15n (DEV_OE)
IO, LVDS16p
IO, LVDS16n
IO, LVDS17p (DQ0T7)
IO, LVDS17n (DQ0T6)
IO, LVDS18p (DQ0T5)
IO, LVDS18n (DQ0T4)
IO, DPCLK2 (DQS1T)
IO, VREF2B2
IO, LVDS19p
IO, LVDS19n
IO, LVDS20p
IO, LVDS20n
IO
IO, LVDS21p
IO, LVDS21n
IO, LVDS22p
IO, LVDS22n
IO, LVDS23p
IO, LVDS23n
IO, LVDS24p
IO, LVDS24n
IO
IO, VREF1B2
IO, LVDS25p
IO, LVDS25n (DM0T)
IO, LVDS26p
IO, LVDS26n
IO, LVDS27p
IO, LVDS27n
IO, LVDS28p
IO, LVDS28n
IO
IO, VREF0B2
IO, DPCLK3 (DQS0T)
IO, LVDS29p
IO, LVDS29n
IO, LVDS30p
IO, LVDS30n
IO, LVDS31p (DQ0T3)
IO, LVDS31n (DQ0T2)
IO, LVDS32p (DQ0T1)
IO, LVDS32n (DQ0T0)
IO, LVDS33p
IO, LVDS33n
IO, LVDS34p
IO, LVDS34n
240 VME-D8
239 VME-D1
238 VME-D9
237 VME-D2
236 VME-D10
235 VME-D3
234 VME-D11
233 VME-D4
228 VME-D12
227 VME-D5
226 VME-D13
225 VME-D6
224 VME-D14
223 VME-D7
222 VME-D15
221 VME-DS1n
220 VME-RESETn
219 VME-DS0n
218 VME-LWORDn
217 VME-WRn
216 VME-AM5
215 VME-AM0
214 VME-A23
213 VME-A22
208 VME-AM1
207 VME-A21
206 VME-A20
205 VME-AM2
204 VME-A19
203 VME-AM3
202 VME-A18
201 VME-IACKn
200 VME-A17
195 VME-A14
194 VME-A7
193 VME-A13
199 VME-IACKINn
198 VME-A16
197 VME-AM4
196 VME-A15
188 VME-A6
187 VME-A12
186 VME-A5
185 VME-A11
184 VME-A4
183 VME-A10
182 VME-A3
181 VME-A9
EP1C6Q240C6N
CY1C
BANK 3
IO, LVDS35p
IO, LVDS35n
IO, LVDS36p
IO, LVDS36n
IO, VREF0B3
IO (DQ1R0)
IO, LVDS37p (DQ1R1)
IO, LVDS37n (DQ1R2)
IO, DPCLK4 (DQS0R)
IO, LVDS38p (DQ1R3)
IO, LVDS38n
IO, LVDS39p
IO, LVDS39n
IO, LVDS40p
IO, LVDS40n
IO, LVDS41p
IO, LVDS41n
IO, LVDS42p
IO, LVDS42n
IO, LVDS43p
IO, LVDS43n (DM1R)
IO, VREF1B3
IO, PLL2_OUTp
IO, PLL2_OUTn
IO, LVDS44p
IO, LVDS44n
IO, LVDS45p
IO, LVDS45n
IO, LVDS46p
IO, LVDS46n
IO, LVDS47p
IO, LVDS47n
IO, LVDS48p (DQ1R4)
IO, LVDS48n (DQ1R5)
IO, DPCLK5 (DQS1R)
IO (DQ1R6)
IO, VREF2B3
IO, LVDS49p
IO, LVDS49n (DQ1R7)
IO, LVDS50p
IO, LVDS50n
IO, LVDS51p
IO, LVDS51n
180 VME-245-OEn
179 VME-IACKOUTn
178 VME-A2
177 VME-A8
176 VME-A1
175 VME-IREQU
174 VME-DTACK
173 VME-MOD-SELn
170 VME-D31
169 VME-D29
168 VME-D27
167 VME-D25
166 VME-D24
165 VME-D26
164 VME-D28
163 VME-D30
162 VME-D23
161 VME-D21
160 VME-D19
159 VME-D17
158 VME-D16
156 VME-D18
144 PLL_20MHz
143 VME-D20
141 VME-D22
140 Local_MultTrig2
139 Local_MultTrig3
138 Local_MultTrig1
137 Local_MultTrig6
136 Local_MultTrig5
135 Local_MultTrig4
134 Local_Event_Latch_enN
133 Local_Data6
132 Local_Data7
131 Local_Data10
128 Local_rdN
127 Local_wrN
126 Local_CS2N
125 Local_Add7
124 Local_Add6
123 Local_Add5
122 Local_Add4
121 Local_Add3
EP1C6Q240C6N
CY1D
BANK 4
IO, LVDS52n
IO, LVDS52p
IO, LVDS53n
IO, LVDS53p
IO, LVDS54n (DQ1B0)
IO, LVDS54p (DQ1B1)
IO, LVDS55n (DQ1B2)
IO, LVDS55p (DQ1B3)
IO, DPCLK6 (DQS0B)
IO, VREF0B4
IO
IO, LVDS56n
IO, LVDS56p
IO, LVDS57n
IO, LVDS57p
IO, LVDS58n
IO, LVDS58p
IO, LVDS59n
IO, LVDS59p
IO, LVDS61n
IO, LVDS61p (DM1B)
IO, LVDS60n
IO, LVDS60p
IO, VREF1B4
IO
IO, LVDS62n
IO, LVDS62p
IO, LVDS63n
IO, LVDS63p
IO, LVDS64n
IO, LVDS64p
IO, LVDS65n
IO, LVDS65p
IO
IO, LVDS66n
IO, LVDS66p (DQ1B4)
IO, LVDS67n (DQ1B5)
IO, LVDS67p
IO, VREF2B4
IO, DPCLK7 (DQS1B)
IO, LVDS68n (DQ1B6)
IO, LVDS68p (DQ1B7)
IO, LVDS69n
IO, LVDS69p
IO, LVDS70n
IO, LVDS70p
IO, LVDS71n
IO, LVDS71p
120 LED_Reg_CSn
119 Local_CS1N
118 Local_Add1
117 Local_Data0
116 Local_Data1
115 Local_Data2
114 Local_Data3
113 Local_Data4
108 Local_Add2
107 Local_Data5
106 Local_Data8
105 Local_Data9
104 Local_Data11
103 Local_Data12
102 Local_Data13
101 Local_Data14
100 Local_Data15
99 FP_MultTrig6
98 FP_MultTrig4
95 FP_MultTrig5
94 FP_MultTrig3
97 FP_MultTrig2
96 FP_Trigger_Out
93 FP_MultTrig1
88 FP_Event_Busy
87 FEC_BOOT_REGIN
86 FEC_BOOT_READ
85 FEC_BOOT_LOAD
84 FEC_BOOT_CLKIN
83 FEC_BOOT_ADD5
82 FEC_BOOT_ADD4
81 FEC_BOOT_ADD3
80 FEC_BOOT_ADD2
79 FEC_BOOT_ADD1
78 FEC_BOOT_ADD0
77 FEC_READOUT_RESET
76 FEC_READOUT_SHIN
75 FEC_READOUT_HOLD
74 FP_ADC_Event_TRIG
73 FEC_READOUT_CKB
68 FP_Event_Request
67 FP_TimeStamp_CLR
66 Local_Add0
65 FEC_BOOT_REGOUT
64 Calibrate_Trigger_Pulse
63 DAC_DIN
62 DAC_SCLK
61 DAC_CSn
EP1C6Q240C6N
CY1E
TDI
TDO
TCK
TMS
MSEL0
MSEL1
DCLK
DATA0
nCE
nCEO
nCONFIG
nSTATUS
CONF_DONE
155 JTAG_TDO
149 TTC_TDO
147 JTAG_TCK
148 JTAG_TMS
JTAG_TDI
34 GND Master Active
35 GND Serial / JTAG
36 Cyclone_DCLK
25 Cyclone_DATA0
33 Cyclone_nCE
32 Cylone_nCEO
26 Cyclone_nCONFIG
146 Cyclone_nSTATUS
145 Cyclone_CONF_DONE
EP1C6Q240C6N
+3.3V +3.3V GND
R25 10K
R24 10K
R23 1K
R22 10K
GND
R18 10K
R19 10K
R20 10K
+3.3V
TTC_TDO
JTAG_TCK
JTAG_TMS
JTAG_TDI
Cyclone_DCLK
Cyclone_DATA0
Cyclone_nCEO
Cyclone_nCONFIG
Cyclone_nSTATUS
Cyclone_CONF_DONE
OSC
CTS-Frequency Controls
CB3-3C-50M0000-T
50MHz
3.3V_Osc
R21 1K
TP6
EN
Fout
VCC
GND
50MHZ_Osc
3.3V_Osc
C104 0.1uF
GND
DAC_DIN
DAC_SCLK
DAC_CSn
JTAG
JTAG_TCK
JTAG_TDI
JTAG_TMS
JTAG_TDO
GND
+3.3V
ACT_SER
GND +3.3V
Cyclone_DCLK
Cyclone_CONF_DONE
Cyclone_nCONFIG
Cyclone_DATA0
Cyclone_ASDO
Cyclone_nCE
Cyclone_nCSO
GND
VME-MOD-SELn
VME-IACKOUTn
VME-IREQU
VME-DTACK
VME-245-OEn
VME-D[31..0]
VME-A[23..1]
VME-DS1n
VME-DS0n
VME-WRn
VME-LWORDn
VME-IACKn
VME-IACKINn
VME-AM[0..5]
VME-RESETn
Local_Data[0..15]
Local_Add[0..7]
Local_wrN
Local_rdN
Local_CS1N
Local_CS2N
Local_MultTrig[1..6]
Local_Event_Latch_enN
LED_Reg_CSn
FP_Ext_TrigInput[1..2]
FP_ADC_CLK
FP_ADC_Event_TRIG
FP_Event_Request
FP_Event_Busy
FP_Trigger_Out
FP_TimeStamp_CLR
FP_MultTrig[1..6]
FEC_BOOT_ADD[0..5]
FEC_BOOT_CLKIN
FEC_BOOT_LOAD
FEC_BOOT_REGIN
FEC_BOOT_READ
FEC_BOOT_REGOUT
FEC_READOUT_SHIN
FEC_READOUT_RESET
FEC_READOUT_HOLD
FEC_READOUT_CKB
Calibrate_Trigger_Pulse
Trig_Input1_Clk
Trig_Input2_Clk
VREG_1.5V
CY1I
CLK0, LVDSCLK1p
CLK1, LVDSCLK1n
CLK2, LVDSCLK2p
CLK3, LVDSCLK2n
28 FP_Ext_TrigInput2
29 FP_Ext_TrigInput1
153 50MHZ_Osc
152 Trig_Logic_Clk
EP1C6Q240C6N
L1
Murata
BLM21BD102SN1D
VREG_1.5V
VCCA_PLL1
C57 10uF
C58 10uF
C55 0.1uF
C56 10nF
GND
L2
Murata
BLM21BD102SN1D
VREG_1.5V
VCCA_PLL2
C61 10uF
C62 10uF
C59 0.1uF
C60 10nF
GND
CY1H
VCCA_PLL1
VCCA_PLL2
GNDA_PLL1
GNDG_PLL1
GNDG_PLL2
GNDA_PLL2
27
154
30
31
150
151
GND
EP1C6Q240C6N
CY1G
GND
190
210
232
171
142
212
129
111
69
91
89
71
52
10
109
40
230
192
EP1C6Q240C6N
CONFIG
EPCS16SI16N
DATA
DCLK
nCS
ASDI
NC
VCC
GND
Cyclone_DATA0
Cyclone_DCLK
Cyclone_nCSO
Cyclone_ASDO
C52 0.1uF
C117 0.1uF
GND
SDRAM_DQ[0..15]
SDRAM_A[0..12]
SDRAM_BA[0..1]
SDRAM_DQMH
SDRAM_DQML
SDRAM_WEn
SDRAM_CASn
SDRAM_RASn
SDRAM_CSn
SDRAM_CKE
SDRAM_CLK
C63 0.1uF
C64 0.1uF
C65 0.1uF
C71 0.1uF
C72 0.1uF
C73 0.1uF
C79 0.1uF
C80 0.1uF
C81 0.1uF
C82 0.1uF
C83 0.1uF
C84 0.1uF
GND
+3.3V
CY1F
VCCIO1
VCCIO2
VCCIO3
VCCIO4
VCCINT
9
51
22
189
231
209
172
130
157
112
70
92
191
110
90
72
211
229
EP1C6Q240C6N
C66 0.1uF
C67 0.1uF
C68 0.1uF
C69 0.1uF
C70 0.1uF
C115 0.1uF
VREG_1.5V
C74 10nF
C75 10nF
C76 10nF
C77 10nF
C78 10nF
C116 10nF
VREG_1.5V
GND
L3
Murata
BLM21BD102SN1D
+3.3V
C53 10uF
C54 10uF
3.3V_Osc
C105 0.1uF
C149 10nF
GND
TP1
PLL_20MHz
U28
Texas Instruments
CDCVF2505D
Clk_IN
Clk_OUT
3.3V
1Y0
1Y3
1Y2
1Y1
GND
R32 68 FP_ADC_CLK
R33 68 Trig_Input1_Clk
R34 68 Trig_Input2_Clk
Trig_Logic_Clk
PLL Clock Driver 1-5
ALPHA TTC - Trigger Logic
Revision
0
Drawing #:
Sheet #: 1 of 12
Size: B
Drawn by: D.Bishop
Date: 11/05/2009
TRIUMF
4004 Wesbrook Mall
Vancouver, B.C.
Canada
V6T 2A3
File: G:\AHW\ALPHA\TTC\Altium\ALPHA TTC - Trigger Logic.SCHDOC
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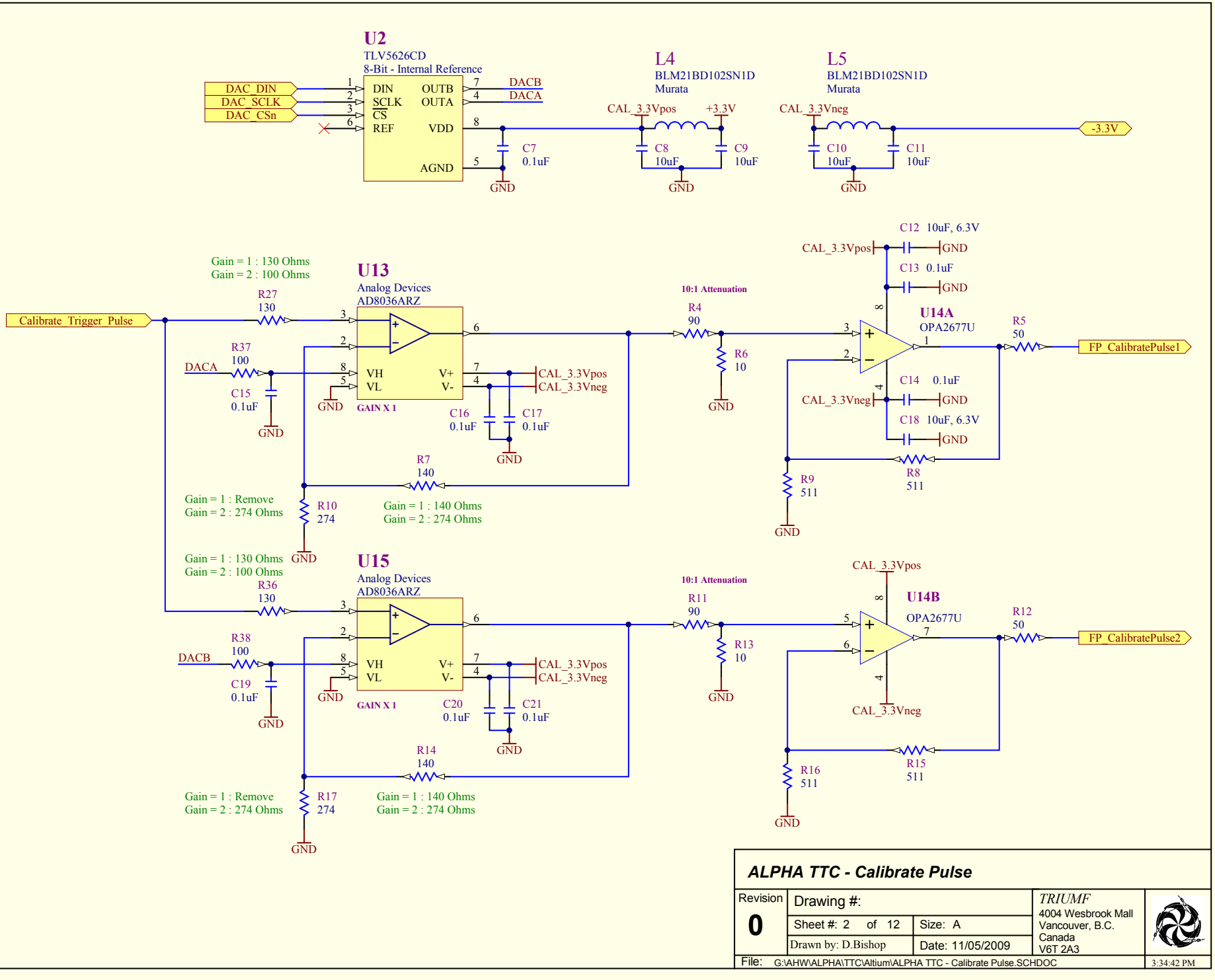
U2
TLV5626CD
8-Bit - Internal Reference
DAC_DIN
DAC_SCLK
DAC_CSn
DIN
SCLK
CS
REF
OUTB
OUTA
VDD
AGND
DACB
DACA
C7
0.1uF
GND
L4
BLM21BD102SN1D
Murata
CAL_3.3Vpos
+3.3V
C8
10uF
C9
10uF
L5
BLM21BD102SN1D
Murata
CAL_3.3Vneg
-3.3V
C10
10uF
C11
10uF
U13
Analog Devices
AD8036ARZ
Gain = 1 : 130 Ohms
Gain = 2 : 100 Ohms
Calibrate_Trigger_Pulse
R27
130
R37
100
DACA
C15
0.1uF
VH
VL
V+
V-
GAIN X 1
C16
0.1uF
C17
0.1uF
CAL_3.3Vpos
CAL_3.3Vneg
R7
140
Gain = 1 : Remove
Gain = 2 : 274 Ohms
R10
274
Gain = 1 : 140 Ohms
Gain = 2 : 274 Ohms
10:1 Attenuation
R4
90
R6
10
U14A
OPA2677U
R5
50
FP_CalibratePulse1
C12 10uF, 6.3V
C13 0.1uF
C14 0.1uF
C18 10uF, 6.3V
R8
511
R9
511
U15
Analog Devices
AD8036ARZ
Gain = 1 : 130 Ohms
Gain = 2 : 100 Ohms
R36
130
R38
100
DACB
C19
0.1uF
C20
0.1uF
C21
0.1uF
R14
140
R17
274
R11
90
R13
10
U14B
OPA2677U
R12
50
FP_CalibratePulse2
R15
511
R16
511
ALPHA TTC - Calibrate Pulse
Revision
0
Drawing #:
Sheet #: 2 of 12
Size: A
Drawn by: D.Bishop
Date: 11/05/2009
TRIUMF
4004 Wesbrook Mall
Vancouver, B.C.
Canada
V6T 2A3
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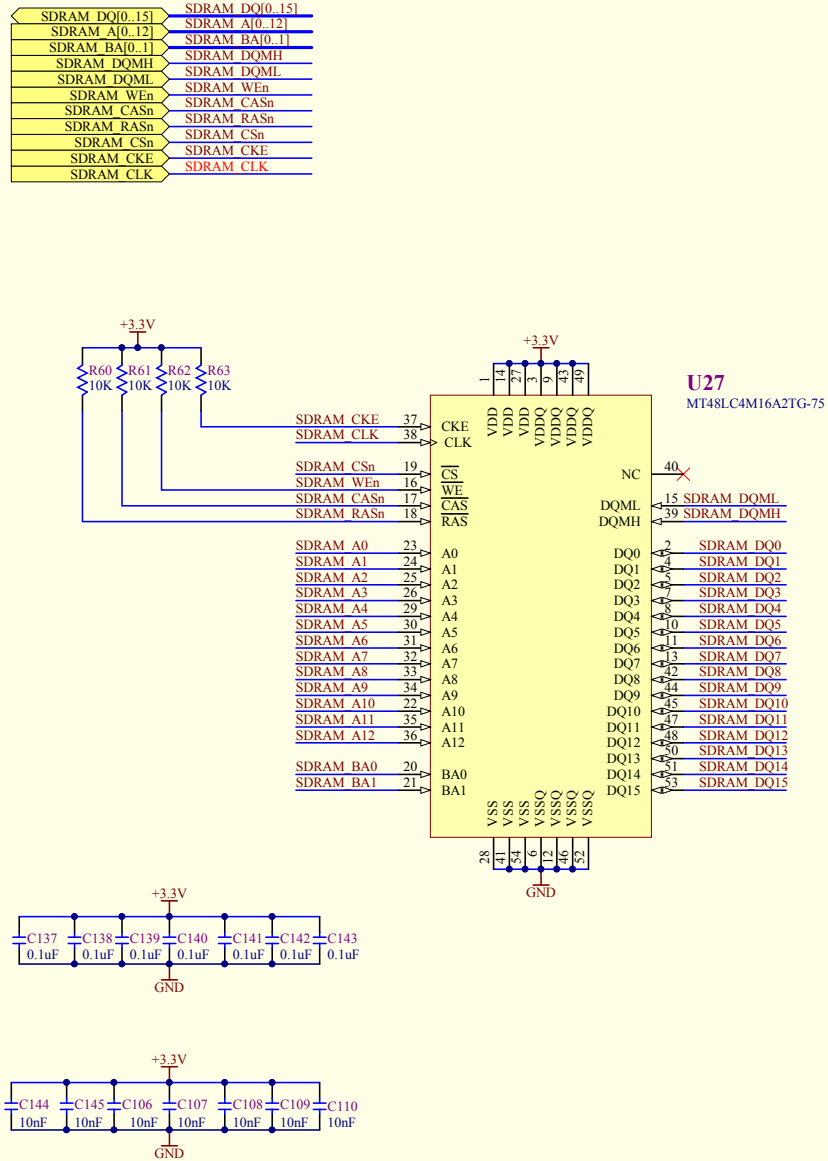

ALPHA TTC - SDRAM

Revision 0	Drawing #:		TRIUMF 4004 Wesbrook Mall Vancouver, B.C. Canada V6T 2A3
	Sheet #: 3 of 12	Size: A	
	Drawn by: D.Bishop	Date: 11/05/2009	
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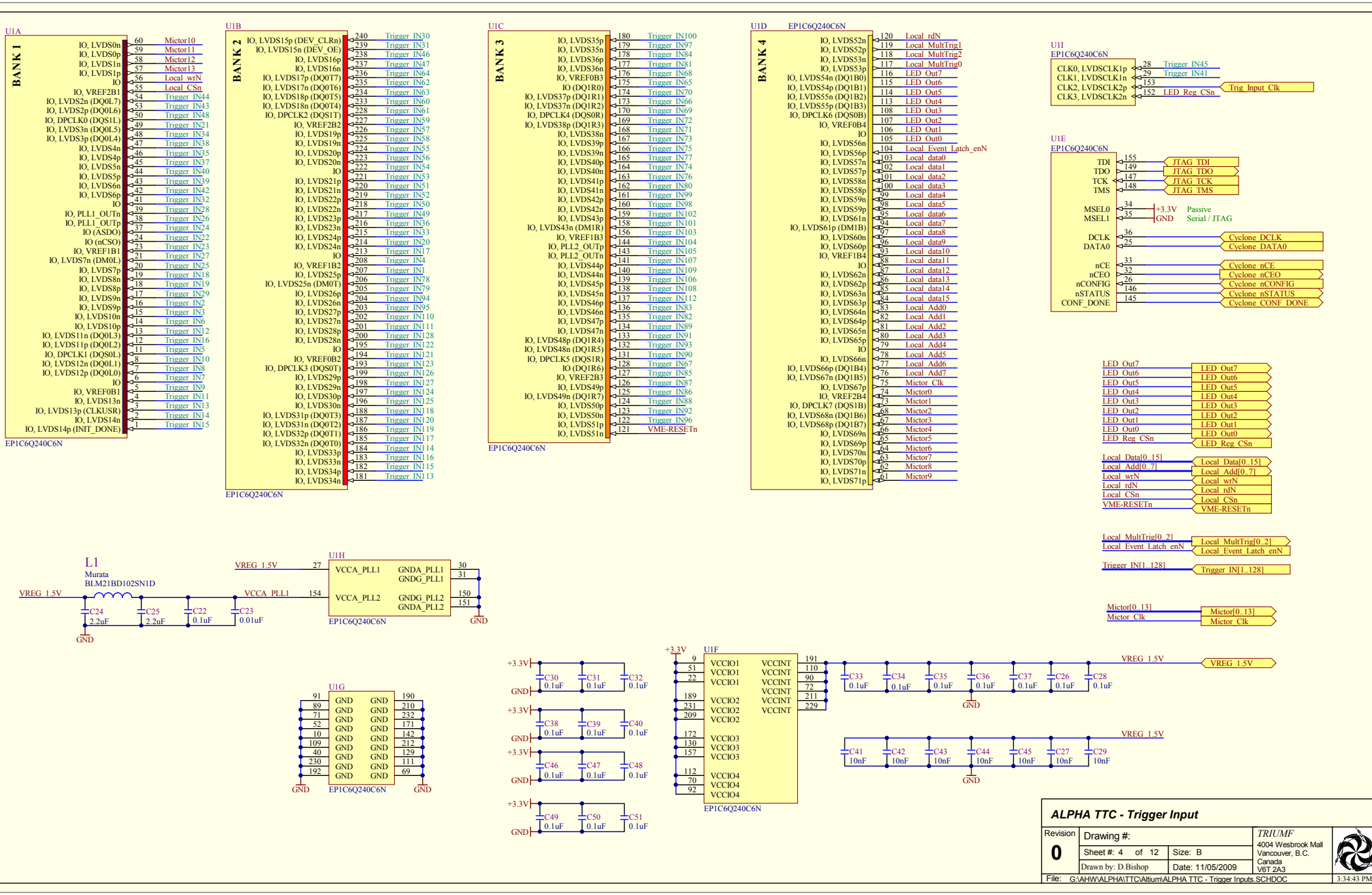
U1A
BANK 1
IO, LVDS0n
IO, LVDS0p
IO, LVDS1n
IO, LVDS1p
IO
IO, VREF2B1
IO, LVDS2n (DQ0L7)
IO, LVDS2p (DQ0L6)
IO, DPCLK0 (DQS1L)
IO, LVDS3n (DQ0L5)
IO, LVDS3p (DQ0L4)
IO, LVDS4n
IO, LVDS4p
IO, LVDS5n
IO, LVDS5p
IO, LVDS6n
IO, LVDS6p
IO
IO, PLL1_OUTn
IO, PLL1_OUTp
IO (ASDO)
IO (nCSO)
IO, VREF1B1
IO, LVDS7n (DM0L)
IO, LVDS7p
IO, LVDS8n
IO, LVDS8p
IO, LVDS9n
IO, LVDS9p
IO, LVDS10n
IO, LVDS10p
IO, LVDS11n (DQ0L3)
IO, LVDS11p (DQ0L2)
IO, DPCLK1 (DQS0L)
IO, LVDS12n (DQ0L1)
IO, LVDS12p (DQ0L0)
IO
IO, VREF0B1
IO, LVDS13n
IO, LVDS13p (CLKUSR)
IO, LVDS14n
IO, LVDS14p (INIT_DONE)
60 Mictor10
59 Mictor11
58 Mictor12
57 Mictor13
56 Local_wrN
55 Local_CSn
54 Trigger_IN44
53 Trigger_IN43
50 Trigger_IN48
49 Trigger_IN21
48 Trigger_IN34
47 Trigger_IN38
46 Trigger_IN35
45 Trigger_IN37
44 Trigger_IN40
43 Trigger_IN39
42 Trigger_IN42
41 Trigger_IN32
39 Trigger_IN28
38 Trigger_IN26
37 Trigger_IN24
24 Trigger_IN22
23 Trigger_IN23
21 Trigger_IN27
20 Trigger_IN25
19 Trigger_IN18
18 Trigger_IN19
17 Trigger_IN29
16 Trigger_IN2
15 Trigger_IN3
14 Trigger_IN6
13 Trigger_IN12
12 Trigger_IN16
11 Trigger_IN5
8 Trigger_IN10
7 Trigger_IN8
6 Trigger_IN7
5 Trigger_IN9
4 Trigger_IN11
3 Trigger_IN13
2 Trigger_IN14
1 Trigger_IN15
EP1C6Q240C6N
U1B
BANK 2
IO, LVDS15p (DEV_CLRn)
IO, LVDS15n (DEV_OE)
IO, LVDS16p
IO, LVDS16n
IO, LVDS17p (DQ0T7)
IO, LVDS17n (DQ0T6)
IO, LVDS18p (DQ0T5)
IO, LVDS18n (DQ0T4)
IO, DPCLK2 (DQS1T)
IO, VREF2B2
IO, LVDS19p
IO, LVDS19n
IO, LVDS20p
IO, LVDS20n
IO
IO, LVDS21p
IO, LVDS21n
IO, LVDS22p
IO, LVDS22n
IO, LVDS23p
IO, LVDS23n
IO, LVDS24p
IO, LVDS24n
IO
IO, VREF1B2
IO, LVDS25p
IO, LVDS25n (DM0T)
IO, LVDS26p
IO, LVDS26n
IO, LVDS27p
IO, LVDS27n
IO, LVDS28p
IO, LVDS28n
IO
IO, VREF0B2
IO, DPCLK3 (DQS0T)
IO, LVDS29p
IO, LVDS29n
IO, LVDS30p
IO, LVDS30n
IO, LVDS31p (DQ0T3)
IO, LVDS31n (DQ0T2)
IO, LVDS32p (DQ0T1)
IO, LVDS32n (DQ0T0)
IO, LVDS33p
IO, LVDS33n
IO, LVDS34p
IO, LVDS34n
240 Trigger_IN30
239 Trigger_IN31
238 Trigger_IN46
237 Trigger_IN47
236 Trigger_IN64
235 Trigger_IN62
234 Trigger_IN63
233 Trigger_IN60
228 Trigger_IN61
227 Trigger_IN59
226 Trigger_IN57
225 Trigger_IN58
224 Trigger_IN55
223 Trigger_IN56
222 Trigger_IN54
221 Trigger_IN53
220 Trigger_IN51
219 Trigger_IN52
218 Trigger_IN50
217 Trigger_IN49
216 Trigger_IN36
215 Trigger_IN33
214 Trigger_IN20
213 Trigger_IN17
208 Trigger_IN4
207 Trigger_IN1
206 Trigger_IN78
205 Trigger_IN79
204 Trigger_IN94
203 Trigger_IN95
202 Trigger_IN110
201 Trigger_IN111
200 Trigger_IN128
195 Trigger_IN122
194 Trigger_IN121
193 Trigger_IN123
199 Trigger_IN126
198 Trigger_IN127
197 Trigger_IN124
196 Trigger_IN125
188 Trigger_IN118
187 Trigger_IN120
186 Trigger_IN119
185 Trigger_IN117
184 Trigger_IN114
183 Trigger_IN116
182 Trigger_IN115
181 Trigger_IN113
EP1C6Q240C6N
U1C
BANK 3
IO, LVDS35p
IO, LVDS35n
IO, LVDS36p
IO, LVDS36n
IO, VREF0B3
IO (DQ1R0)
IO, LVDS37p (DQ1R1)
IO, LVDS37n (DQ1R2)
IO, DPCLK4 (DQS0R)
IO, LVDS38p (DQ1R3)
IO, LVDS38n
IO, LVDS39p
IO, LVDS39n
IO, LVDS40p
IO, LVDS40n
IO, LVDS41p
IO, LVDS41n
IO, LVDS42p
IO, LVDS42n
IO, LVDS43p
IO, LVDS43n (DM1R)
IO, VREF1B3
IO, PLL2_OUTp
IO, PLL2_OUTn
IO, LVDS44p
IO, LVDS44n
IO, LVDS45p
IO, LVDS45n
IO, LVDS46p
IO, LVDS46n
IO, LVDS47p
IO, LVDS47n
IO, LVDS48p (DQ1R4)
IO, LVDS48n (DQ1R5)
IO, DPCLK5 (DQS1R)
IO (DQ1R6)
IO, VREF2B3
IO, LVDS49p
IO, LVDS49n (DQ1R7)
IO, LVDS50p
IO, LVDS50n
IO, LVDS51p
IO, LVDS51n
180 Trigger_IN100
179 Trigger_IN97
178 Trigger_IN84
177 Trigger_IN81
176 Trigger_IN68
175 Trigger_IN65
174 Trigger_IN70
173 Trigger_IN66
170 Trigger_IN69
169 Trigger_IN72
168 Trigger_IN71
167 Trigger_IN73
166 Trigger_IN75
165 Trigger_IN77
164 Trigger_IN74
163 Trigger_IN76
162 Trigger_IN80
161 Trigger_IN99
160 Trigger_IN98
159 Trigger_IN102
158 Trigger_IN101
156 Trigger_IN103
144 Trigger_IN104
143 Trigger_IN105
141 Trigger_IN107
140 Trigger_IN109
139 Trigger_IN106
138 Trigger_IN108
137 Trigger_IN112
136 Trigger_IN83
135 Trigger_IN82
134 Trigger_IN89
133 Trigger_IN91
132 Trigger_IN93
131 Trigger_IN90
128 Trigger_IN67
127 Trigger_IN85
126 Trigger_IN87
125 Trigger_IN86
124 Trigger_IN88
123 Trigger_IN92
122 Trigger_IN96
121 VME-RESETn
EP1C6Q240C6N
U1D
EP1C6Q240C6N
BANK 4
IO, LVDS52n
IO, LVDS52p
IO, LVDS53n
IO, LVDS53p
IO, LVDS54n (DQ1B0)
IO, LVDS54p (DQ1B1)
IO, LVDS55n (DQ1B2)
IO, LVDS55p (DQ1B3)
IO, DPCLK6 (DQS0B)
IO, VREF0B4
IO
IO, LVDS56n
IO, LVDS56p
IO, LVDS57n
IO, LVDS57p
IO, LVDS58n
IO, LVDS58p
IO, LVDS59n
IO, LVDS59p
IO, LVDS61n
IO, LVDS61p (DM1B)
IO, LVDS60n
IO, LVDS60p
IO, VREF1B4
IO
IO, LVDS62n
IO, LVDS62p
IO, LVDS63n
IO, LVDS63p
IO, LVDS64n
IO, LVDS64p
IO, LVDS65n
IO, LVDS65p
IO
IO, LVDS66n
IO, LVDS66p (DQ1B4)
IO, LVDS67n (DQ1B5)
IO, LVDS67p
IO, VREF2B4
IO, DPCLK7 (DQS1B)
IO, LVDS68n (DQ1B6)
IO, LVDS68p (DQ1B7)
IO, LVDS69n
IO, LVDS69p
IO, LVDS70n
IO, LVDS70p
IO, LVDS71n
IO, LVDS71p
120 Local_rdN
119 Local_MultTrig1
118 Local_MultTrig2
117 Local_MultTrig0
116 LED_Out7
115 LED_Out6
114 LED_Out5
113 LED_Out4
108 LED_Out3
107 LED_Out2
106 LED_Out1
105 LED_Out0
104 Local_Event_Latch_enN
103 Local_data0
102 Local_data1
101 Local_data2
100 Local_data3
99 Local_data4
98 Local_data5
95 Local_data6
94 Local_data7
97 Local_data8
96 Local_data9
93 Local_data10
88 Local_data11
87 Local_data12
86 Local_data13
85 Local_data14
84 Local_data15
83 Local_Add0
82 Local_Add1
81 Local_Add2
80 Local_Add3
79 Local_Add4
78 Local_Add5
77 Local_Add6
76 Local_Add7
75 Mictor_Clk
74 Mictor0
73 Mictor1
68 Mictor2
67 Mictor3
66 Mictor4
65 Mictor5
64 Mictor6
63 Mictor7
62 Mictor8
61 Mictor9
U1I
EP1C6Q240C6N
CLK0, LVDSCLK1p
CLK1, LVDSCLK1n
CLK2, LVDSCLK2p
CLK3, LVDSCLK2n
28 Trigger_IN45
29 Trigger_IN41
153
152 LED_Reg_CSn
Trig_Input_Clk
U1E
EP1C6Q240C6N
TDI
TDO
TCK
TMS
MSEL0
MSEL1
DCLK
DATA0
nCE
nCEO
nCONFIG
nSTATUS
CONF_DONE
155 JTAG_TDI
149 JTAG_TDO
147 JTAG_TCK
148 JTAG_TMS
34 +3.3V Passive
35 GND Serial / JTAG
36 Cyclone_DCLK
25 Cyclone_DATA0
33 Cyclone_nCE
32 Cyclone_nCEO
26 Cyclone_nCONFIG
146 Cyclone_nSTATUS
145 Cyclone_CONF_DONE
LED_Out7 LED_Out7
LED_Out6 LED_Out6
LED_Out5 LED_Out5
LED_Out4 LED_Out4
LED_Out3 LED_Out3
LED_Out2 LED_Out2
LED_Out1 LED_Out1
LED_Out0 LED_Out0
LED_Reg_CSn LED_Reg_CSn
Local_Data[0..15] Local_Data[0..15]
Local_Add[0..7] Local_Add[0..7]
Local_wrN Local_wrN
Local_rdN Local_rdN
Local_CSn Local_CSn
VME-RESETn VME-RESETn
Local_MultTrig[0..2] Local_MultTrig[0..2]
Local_Event_Latch_enN Local_Event_Latch_enN
Trigger_IN[1..128] Trigger_IN[1..128]
Mictor[0..13] Mictor[0..13]
Mictor_Clk Mictor_Clk
L1
Murata
BLM21BD102SN1D
VREG_1.5V
C24 2.2uF
C25 2.2uF
C22 0.1uF
C23 0.01uF
GND
U1H
VCCA_PLL1
VCCA_PLL2
GNDA_PLL1
GNDG_PLL1
GNDG_PLL2
GNDA_PLL2
27 VREG_1.5V
154 VCCA_PLL1
30
31
150
151
EP1C6Q240C6N
U1G
GND
EP1C6Q240C6N
91 89 71 52 10 109 40 230 192
190 210 232 171 142 212 129 111 69
+3.3V
C30 C31 C32 0.1uF
C38 C39 C40 0.1uF
C46 C47 C48 0.1uF
C49 C50 C51 0.1uF
U1F
VCCIO1
VCCIO2
VCCIO3
VCCINT
VCCIO4
9 51 22 189 231 209 172 130 157 112 70 92
191 110 90 72 211 229
C33 C34 C35 C36 C37 C26 C28 0.1uF
C41 C42 C43 C44 C45 C27 C29 10nF
VREG_1.5V
ALPHA TTC - Trigger Input
Revision 0
Drawing #:
Sheet #: 4 of 12
Size: B
Drawn by: D.Bishop
Date: 11/05/2009
TRIUMF
4004 Wesbrook Mall
Vancouver, B.C.
Canada
V6T 2A3
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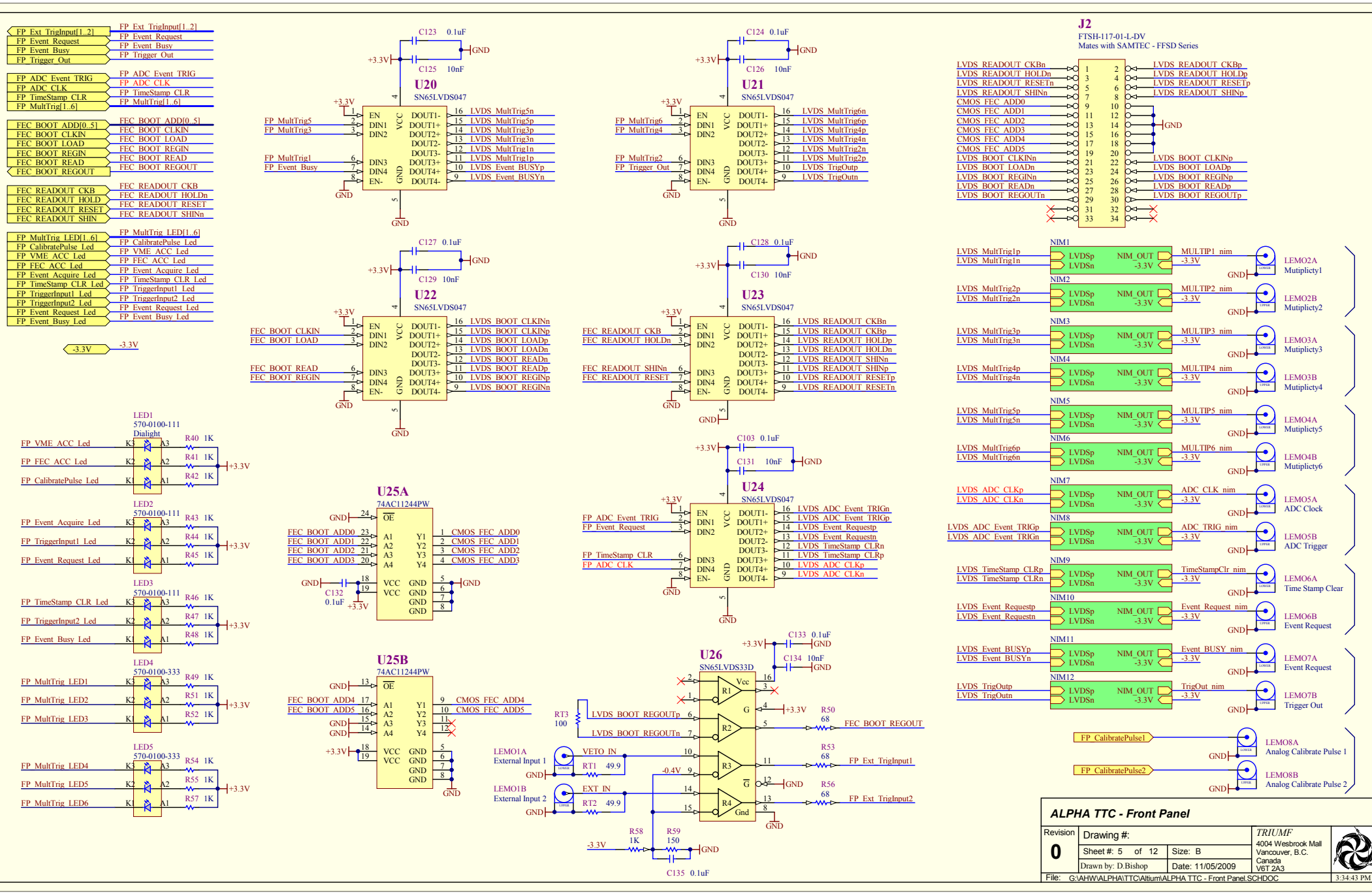
FP_Ext_TrigInput[1..2]
FP_Event_Request
FP_Event_Busy
FP_Trigger_Out
FP_ADC_Event_TRIG
FP_ADC_CLK
FP_TimeStamp_CLR
FP_MultTrig[1..6]
FEC_BOOT_ADD[0..5]
FEC_BOOT_CLKIN
FEC_BOOT_LOAD
FEC_BOOT_REGIN
FEC_BOOT_READ
FEC_BOOT_REGOUT
FEC_READOUT_CKB
FEC_READOUT_HOLD
FEC_READOUT_RESET
FEC_READOUT_SHIN
FP_MultTrig_LED[1..6]
FP_CalibratePulse_Led
FP_VME_ACC_Led
FP_FEC_ACC_Led
FP_Event_Acquire_Led
FP_TimeStamp_CLR_Led
FP_TriggerInput1_Led
FP_TriggerInput2_Led
FP_Event_Request_Led
FP_Event_Busy_Led
-3.3V
U20
SN65LVDS047
U21
SN65LVDS047
U22
SN65LVDS047
U23
SN65LVDS047
U24
SN65LVDS047
U25A
74AC11244PW
U25B
74AC11244PW
U26
SN65LVDS33D
J2
FTSH-117-01-L-DV
Mates with SAMTEC - FFSD Series
LED1
LED2
LED3
LED4
LED5
570-0100-111
570-0100-333
Dialight
LEMO1A
External Input 1
LEMO1B
External Input 2
NIM1
NIM2
NIM3
NIM4
NIM5
NIM6
NIM7
NIM8
NIM9
NIM10
NIM11
NIM12
LEMO2A
Mutiplicty1
LEMO2B
Mutiplicty2
LEMO3A
Mutiplicty3
LEMO3B
Mutiplicty4
LEMO4A
Mutiplicty5
LEMO4B
Mutiplicty6
LEMO5A
ADC Clock
LEMO5B
ADC Trigger
LEMO6A
Time Stamp Clear
LEMO6B
Event Request
LEMO7A
Event Request
LEMO7B
Trigger Out
LEMO8A
Analog Calibrate Pulse 1
LEMO8B
Analog Calibrate Pulse 2
ALPHA TTC - Front Panel
Revision
0
Drawing #:
Sheet #: 5 of 12
Size: B
Drawn by: D.Bishop
Date: 11/05/2009
TRIUMF
4004 Wesbrook Mall
Vancouver, B.C.
Canada
V6T 2A3
File: G:\AHW\ALPHA\TTC\Altium\ALPHA TTC - Front Panel.SCHDOC
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PNP 5 GHz wideband transistor — BFT92

CHARACTERISTICS

T_j = 25 °C unless otherwise specified.

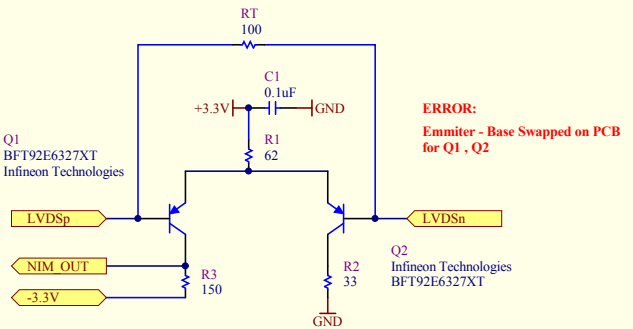
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector cut-off current	I_E = 0; V_{CB} = −10 V;	–	–	−50	nA
h_{FE}	DC current gain	I_C = −14 mA; V_{CE} = −10 V	20	50	–	
f_T	transition frequency	I_C = −14 mA; V_{CE} = −10 V; f = 500 MHz	–	5	–	GHz
C_c	collector capacitance	I_E = i_e = 0; V_{CB} = −10 V; f = 1 MHz	–	0.75	–	pF
C_e	emitter capacitance	I_C = i_c = 0; V_{EB} = −0.5 V; f = 1 MHz	–	0.8	–	pF
C_{re}	feedback capacitance	I_C = −2 mA; V_{CE} = −10 V; f = 1 MHz	–	0.7	–	pF
G_{UM}	maximum unilateral power gain (note 1)	I_C = −14 mA; V_{CE} = −10 V; f = 500 MHz; T_{amb} = 25 °C	–	18	–	dB
F	noise figure	I_C = −5 mA; V_{CE} = −10 V; f = 500 MHz; T_{amb} = 25 °C	–	2.5	–	dB
V_o	output voltage	note 2	–	150	–	mV

PNP RF Transistor (continued)

MPSH81 / MMBTH81

Electrical Characteristics T_A = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Max	Units
OFF CHARACTERISTICS					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage*	I_C = 1.0 mA, I_B = 0	20		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	I_C = 10 µA, I_E = 0	20		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	I_E = 10 µA, I_C = 0	3.0		V
I_{CBO}	Collector Cutoff Current	V_{CB} = 10 V, I_E = 0		100	nA
I_{EBO}	Emitter Cutoff Current	V_{EB} = 2.0 V, I_C = 0		100	nA
ON CHARACTERISTICS					
h_{FE}	DC Current Gain	I_C = 5.0 mA, V_{CE} = 10 V	60		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C = 5.0 mA, I_B = 0.5 mA		0.5	V
$V_{BE(on)}$	Base-Emitter On Voltage	I_C = 5.0 mA, V_{CE} = 10 V		0.9	V
SMALL SIGNAL CHARACTERISTICS					
f_T	Current Gain - Bandwidth Product	I_C = 5.0 mA, V_{CE} = 10 V, f = 100 MHz	600		MHz
C_{cb}	Collector-Base Capacitance	V_{CB} = 10 V, I_E = 0, f = 1.0 MHz		0.85	pF
C_{eb}	Collector Emitter Capacitance	V_{EB} = 10 V, I_B = 0, f = 1.0 MHz		0.65	pF



Alternate - BFT92 - 5GHz - Ce 0.8pF
Alternate - MMBTH81 - 600 Mhz - Ccb 0.85pF
Alternate - MMBT3906 - 250 Mhz - Ce 10pF

PNP General Purpose Amplifier (continued)

2N3906 / MMBT3906 / PZT3906

Electrical Characteristics T_A = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Max	Units
OFF CHARACTERISTICS					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage*	I_C = 1.0 mA, I_B = 0	40		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	I_C = 10 µA, I_E = 0	40		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	I_E = 10 µA, I_C = 0	5.0		V
I_{BL}	Base Cutoff Current	V_{CE} = 30 V, V_{EB} = 3.0 V		50	nA
I_{CEX}	Collector Cutoff Current	V_{CE} = 30 V, V_{EB} = 3.0 V		50	nA
ON CHARACTERISTICS					
h_{FE}	DC Current Gain *	I_C = 0.1 mA, V_{CE} = 1.0 V I_C = 1.0 mA, V_{CE} = 1.0 V I_C = 10 mA, V_{CE} = 1.0 V I_C = 50 mA, V_{CE} = 1.0 V I_C = 100 mA, V_{CE} = 1.0 V	60 80 100 60 30	300	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C = 10 mA, I_B = 1.0 mA I_C = 50 mA, I_B = 5.0 mA		0.25 0.4	V V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	I_C = 10 mA, I_B = 1.0 mA I_C = 50 mA, I_B = 5.0 mA	0.65	0.85 0.95	V V
SMALL SIGNAL CHARACTERISTICS					
f_T	Current Gain - Bandwidth Product	I_C = 10 mA, V_{CE} = 20 V, f = 100 MHz	250		MHz
C_{obo}	Output Capacitance	V_{CB} = 5.0 V, I_E = 0, f = 100 kHz		4.5	pF
C_{ibo}	Input Capacitance	V_{EB} = 0.5 V, I_C = 0, f = 100 kHz		10.0	pF
NF	Noise Figure	I_C = 100 µA, V_{CE} = 5.0 V, R_S = 1.0kΩ, f=10 Hz to 15.7 kHz		4.0	dB

Cyclone - LVDS

Output Offset Voltage

Vos Max - 1.375
Vos Typ - 1.25
Vos Min - 1.125

Diff Output Voltage

Vod Min - 250mv
Vod Max - 600mv

ALPHA TTC - LVDS to NIM Converter

Revision	Drawing #: *		TRIUMF
0	Sheet #: 6 of 12	Size: A	4004 Wesbrook Mall Vancouver, B.C. Canada V6T 2A3
	Drawn by: D.Bishop	Date: 11/05/2009	
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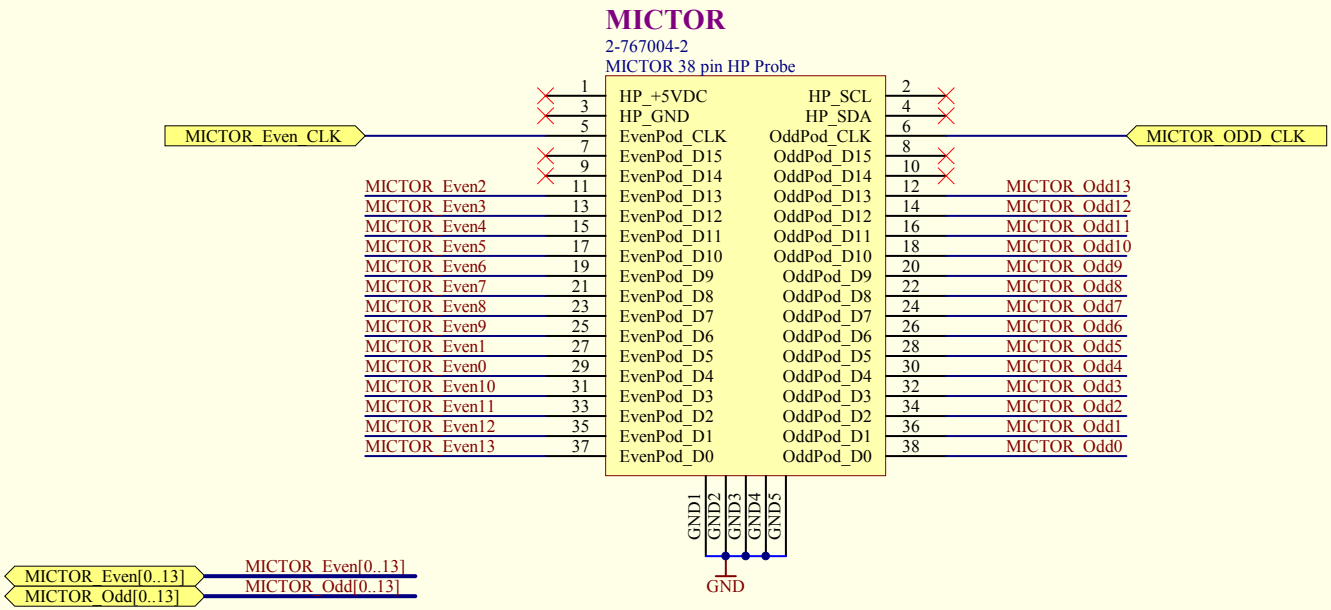

ALPHA TTC - MICTOR Connector

Revision 0	Drawing #:		TRIUMF 4004 Wesbrook Mall Vancouver, B.C. Canada V6T 2A3
	Sheet #: 7 of 12	Size: A	
	Drawn by: D.Bishop	Date: 11/05/2009	
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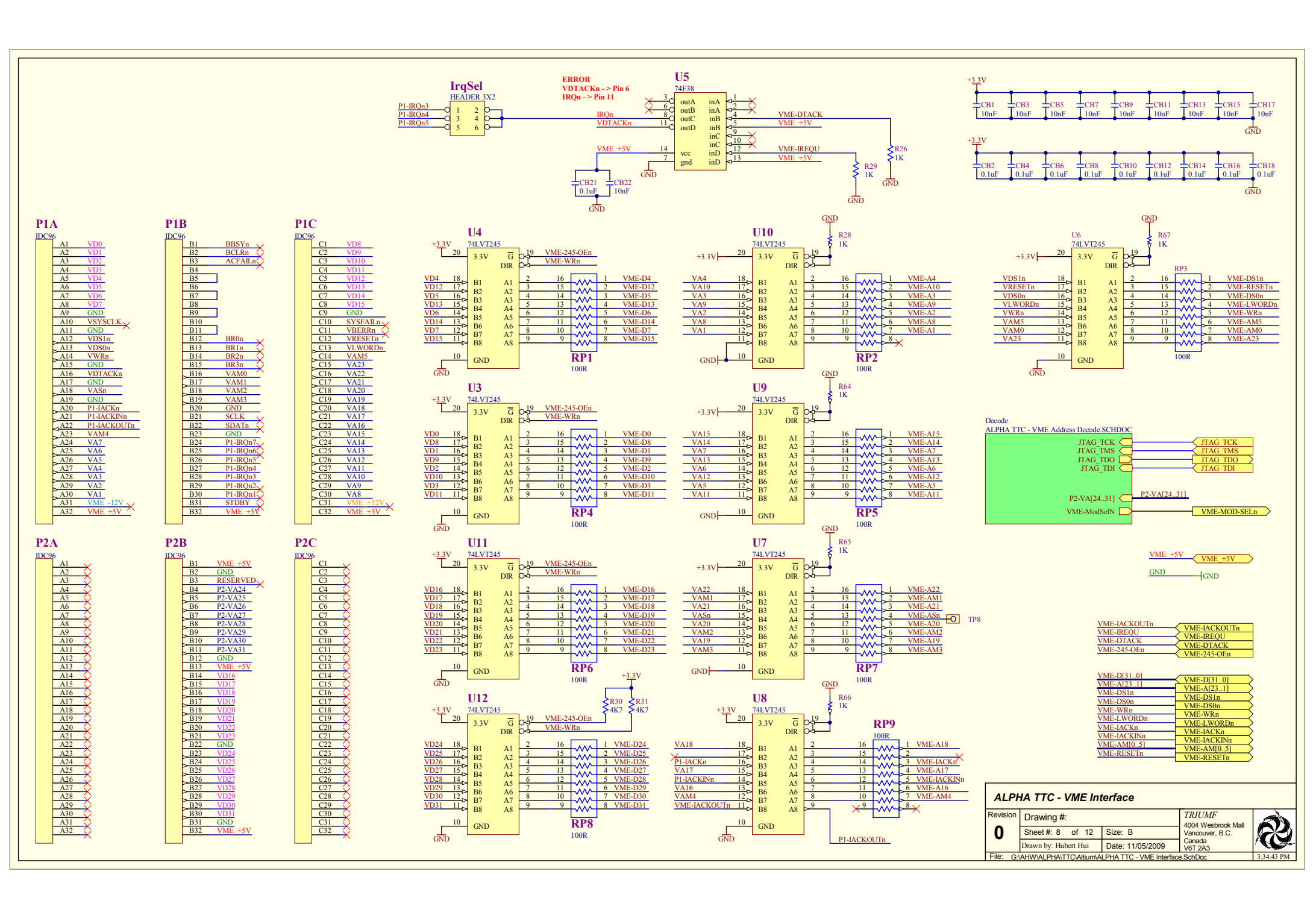
IrqSel
HEADER 3X2
P1-IRQn3
P1-IRQn4
P1-IRQn5
ERROR
VDTACKn - > Pin 6
IRQn - > Pin 11
U5
74F38
IRQn
VDTACKn
VME-DTACK
VME-IREQU
VME +5V
R26 1K
R29 1K
CB21 0.1uF
CB22 10nF
GND
+3.3V
CB1 10nF
CB3 10nF
CB5 10nF
CB7 10nF
CB9 10nF
CB11 10nF
CB13 10nF
CB15 10nF
CB17 10nF
CB2 0.1uF
CB4 0.1uF
CB6 0.1uF
CB8 0.1uF
CB10 0.1uF
CB12 0.1uF
CB14 0.1uF
CB16 0.1uF
CB18 0.1uF
P1A
P1B
P1C
IDC96
P2A
P2B
P2C
U4
U3
U11
U12
U10
U9
U7
U8
U6
74LVT245
3.3V
DIR
GND
VME-245-OEn
VME-WRn
RP1
RP2
RP3
RP4
RP5
RP6
RP7
RP8
RP9
100R
R28 1K
R64 1K
R65 1K
R66 1K
R67 1K
R30 4K7
R31 4K7
TP8
Decode
ALPHA TTC - VME Address Decode.SCHDOC
JTAG_TCK
JTAG_TMS
JTAG_TDO
JTAG_TDI
P2-VA[24..31]
VME-ModSelN
VME-MOD-SELn
VME-IACKOUTn
VME-IREQU
VME-DTACK
VME-245-OEn
VME-D[31..0]
VME-A[23..1]
VME-DS1n
VME-DS0n
VME-WRn
VME-LWORDn
VME-IACKn
VME-IACKINn
VME-AM[0..5]
VME-RESETn
P1-IACKOUTn
ALPHA TTC - VME Interface
Revision
0
Drawing #:
Sheet #: 8 of 12
Size: B
Drawn by: Hubert Hui
Date: 11/05/2009
TRIUMF
4004 Wesbrook Mall
Vancouver, B.C.
Canada
V6T 2A3
File: G:\AHW\ALPHA\TTC\Altium\ALPHA TTC - VME Interface.SchDoc
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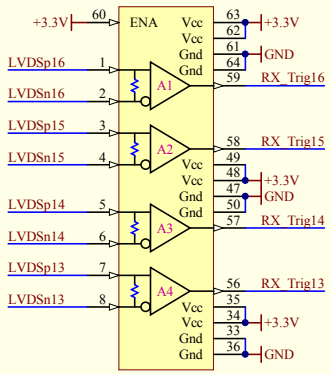
RX_Trig[1..16]

U1A
SN65LVDT386DGG



U1B
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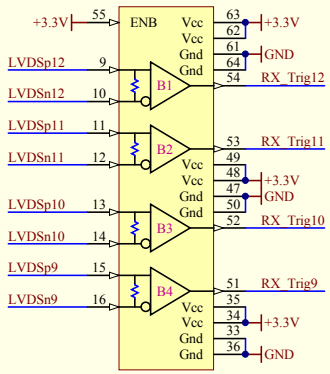

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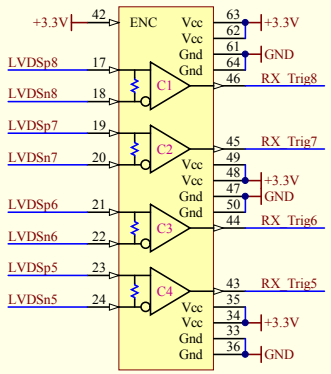

U1D
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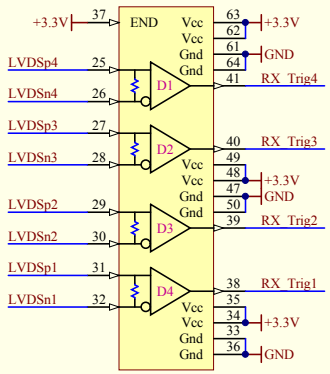
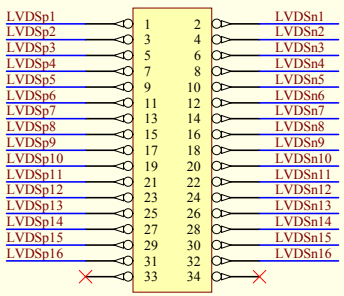
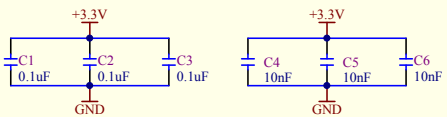


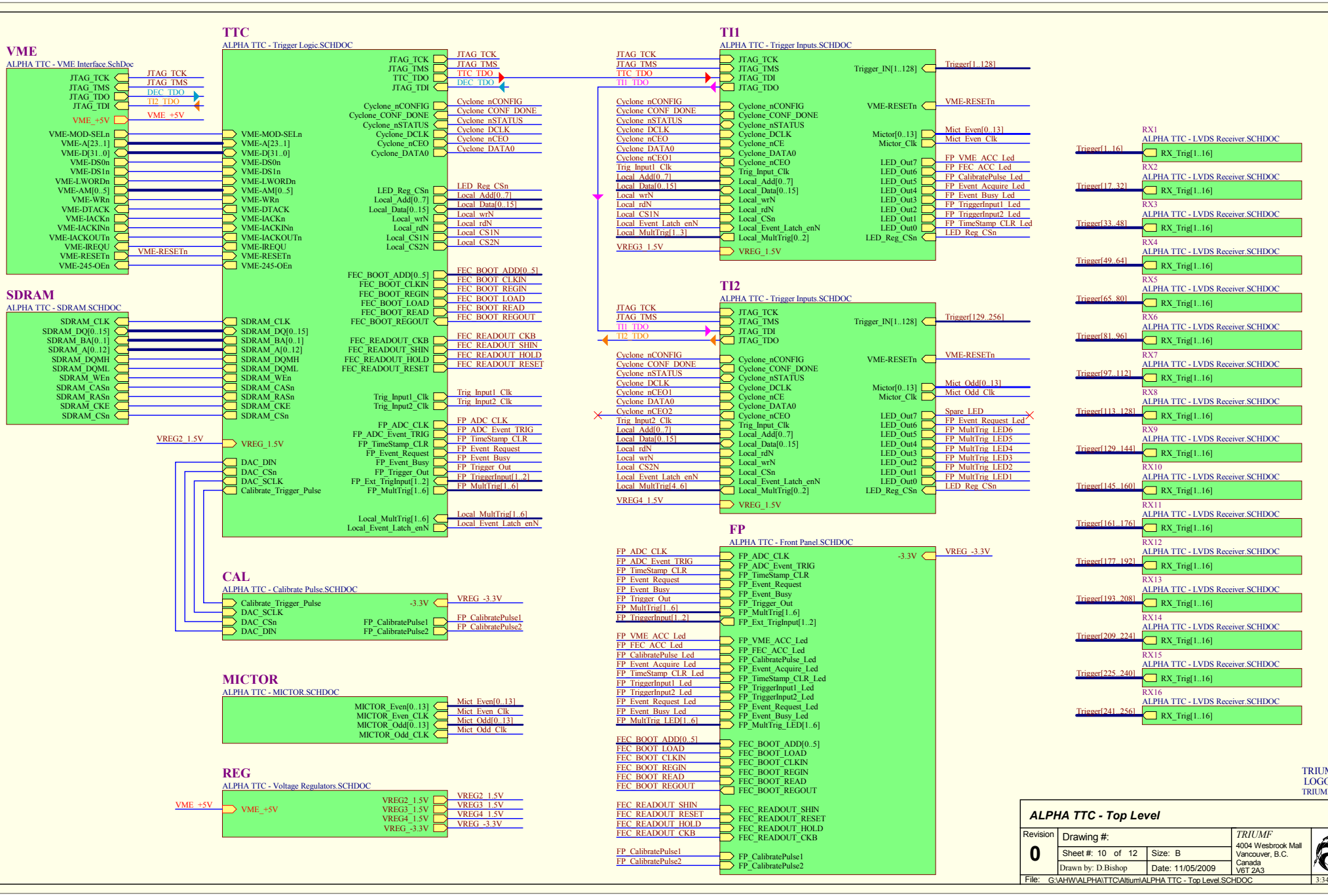
J1
FTSH-117-01-L-DV
Mates with SAMTEC - FFSD Series





ALPHA: LVDS Receiver

Revision 0	Drawing #:		TRIUMF 4004 Wesbrook Mall Vancouver, B.C. Canada V6T 2A3
	Sheet #: 9 of 12	Size: A	
	Drawn by: D.Bishop	Date: 11/05/2009	
File: G:\AHW\ALPHA\TTC\Altium\ALPHA TTC - LVDS Receiver.SCHDOC			3:34:43 PM


VME
ALPHA TTC - VME Interface.SchDoc
JTAG_TCK
JTAG_TMS
JTAG_TDO
JTAG_TDI
VME_+5V
VME-MOD-SELn
VME-A[23..1]
VME-D[31..0]
VME-DS0n
VME-DS1n
VME-LWORDn
VME-AM[0..5]
VME-WRn
VME-DTACK
VME-IACKn
VME-IACKINn
VME-IACKOUTn
VME-IREQU
VME-RESETn
VME-245-OEn
DEC_TDO
TI2_TDO
VME_+5V
VME-RESETn
SDRAM
ALPHA TTC - SDRAM.SCHDOC
SDRAM_CLK
SDRAM_DQ[0..15]
SDRAM_BA[0..1]
SDRAM_A[0..12]
SDRAM_DQMH
SDRAM_DQML
SDRAM_WEn
SDRAM_CASn
SDRAM_RASn
SDRAM_CKE
SDRAM_CSn
VREG2_1.5V
TTC
ALPHA TTC - Trigger Logic.SCHDOC
JTAG_TCK
JTAG_TMS
TTC_TDO
JTAG_TDI
Cyclone_nCONFIG
Cyclone_CONF_DONE
Cyclone_nSTATUS
Cyclone_DCLK
Cyclone_nCEO
Cyclone_DATA0
VME-MOD-SELn
VME-A[23..1]
VME-D[31..0]
VME-DS0n
VME-DS1n
VME-LWORDn
VME-AM[0..5]
VME-WRn
VME-DTACK
VME-IACKn
VME-IACKINn
VME-IACKOUTn
VME-IREQU
VME-RESETn
VME-245-OEn
LED_Reg_CSn
Local_Add[0..7]
Local_Data[0..15]
Local_wrN
Local_rdN
Local_CS1N
Local_CS2N
FEC_BOOT_ADD[0..5]
FEC_BOOT_CLKIN
FEC_BOOT_REGIN
FEC_BOOT_LOAD
FEC_BOOT_READ
FEC_BOOT_REGOUT
FEC_READOUT_CKB
FEC_READOUT_SHIN
FEC_READOUT_HOLD
FEC_READOUT_RESET
Trig_Input1_Clk
Trig_Input2_Clk
FP_ADC_CLK
FP_ADC_Event_TRIG
FP_TimeStamp_CLR
FP_Event_Request
FP_Event_Busy
FP_Trigger_Out
FP_Ext_TrigInput[1..2]
FP_MultTrig[1..6]
Local_MultTrig[1..6]
Local_Event_Latch_enN
VREG_1.5V
DAC_DIN
DAC_CSn
DAC_SCLK
Calibrate_Trigger_Pulse
CAL
ALPHA TTC - Calibrate Pulse.SCHDOC
Calibrate_Trigger_Pulse
DAC_SCLK
DAC_CSn
DAC_DIN
-3.3V
FP_CalibratePulse1
FP_CalibratePulse2
VREG_-3.3V
MICTOR
ALPHA TTC - MICTOR.SCHDOC
MICTOR_Even[0..13]
MICTOR_Even_CLK
MICTOR_Odd[0..13]
MICTOR_Odd_CLK
Mict_Even[0..13]
Mict_Even_Clk
Mict_Odd[0..13]
Mict_Odd_Clk
REG
ALPHA TTC - Voltage Regulators.SCHDOC
VME_+5V
VREG2_1.5V
VREG3_1.5V
VREG4_1.5V
VREG_-3.3V
TI1
ALPHA TTC - Trigger Inputs.SCHDOC
JTAG_TCK
JTAG_TMS
JTAG_TDI
JTAG_TDO
TTC_TDO
TI1_TDO
Cyclone_nCONFIG
Cyclone_CONF_DONE
Cyclone_nSTATUS
Cyclone_DCLK
Cyclone_nCEO
Cyclone_DATA0
Cyclone_nCEO1
Trig_Input1_Clk
Local_Add[0..7]
Local_Data[0..15]
Local_wrN
Local_rdN
Local_CS1N
Local_Event_Latch_enN
Local_MultTrig[1..3]
VREG3_1.5V
Trigger_IN[1..128]
VME-RESETn
Mictor[0..13]
Mictor_Clk
LED_Out7
LED_Out6
LED_Out5
LED_Out4
LED_Out3
LED_Out2
LED_Out1
LED_Out0
LED_Reg_CSn
Trigger[1..128]
Mict_Even[0..13]
Mict_Even_Clk
FP_VME_ACC_Led
FP_FEC_ACC_Led
FP_CalibratePulse_Led
FP_Event_Acquire_Led
FP_Event_Busy_Led
FP_TriggerInput1_Led
FP_TriggerInput2_Led
FP_TimeStamp_CLR_Led
LED_Reg_CSn
TI2
ALPHA TTC - Trigger Inputs.SCHDOC
JTAG_TCK
JTAG_TMS
TI1_TDO
TI2_TDO
Cyclone_nCONFIG
Cyclone_CONF_DONE
Cyclone_nSTATUS
Cyclone_DCLK
Cyclone_nCEO1
Cyclone_DATA0
Cyclone_nCEO2
Trig_Input2_Clk
Local_Add[0..7]
Local_Data[0..15]
Local_rdN
Local_wrN
Local_CS2N
Local_Event_Latch_enN
Local_MultTrig[4..6]
VREG4_1.5V
Trigger_IN[1..128]
VME-RESETn
Mictor[0..13]
Mictor_Clk
LED_Out7
LED_Out6
LED_Out5
LED_Out4
LED_Out3
LED_Out2
LED_Out1
LED_Out0
LED_Reg_CSn
Trigger[129..256]
VME-RESETn
Mict_Odd[0..13]
Mict_Odd_Clk
Spare_LED
FP_Event_Request_Led
FP_MultTrig_LED6
FP_MultTrig_LED5
FP_MultTrig_LED4
FP_MultTrig_LED3
FP_MultTrig_LED2
FP_MultTrig_LED1
LED_Reg_CSn
FP
ALPHA TTC - Front Panel.SCHDOC
FP_ADC_CLK
FP_ADC_Event_TRIG
FP_TimeStamp_CLR
FP_Event_Request
FP_Event_Busy
FP_Trigger_Out
FP_MultTrig[1..6]
FP_TriggerInput[1..2]
FP_VME_ACC_Led
FP_FEC_ACC_Led
FP_CalibratePulse_Led
FP_Event_Acquire_Led
FP_TimeStamp_CLR_Led
FP_TriggerInput1_Led
FP_TriggerInput2_Led
FP_Event_Request_Led
FP_Event_Busy_Led
FP_MultTrig_LED[1..6]
FEC_BOOT_ADD[0..5]
FEC_BOOT_LOAD
FEC_BOOT_CLKIN
FEC_BOOT_REGIN
FEC_BOOT_READ
FEC_BOOT_REGOUT
FEC_READOUT_SHIN
FEC_READOUT_RESET
FEC_READOUT_HOLD
FEC_READOUT_CKB
FP_CalibratePulse1
FP_CalibratePulse2
-3.3V
FP_Ext_TrigInput[1..2]
VREG_-3.3V
RX1
ALPHA TTC - LVDS Receiver.SCHDOC
RX_Trig[1..16]
Trigger[1..16]
RX2
Trigger[17..32]
RX3
Trigger[33..48]
RX4
Trigger[49..64]
RX5
Trigger[65..80]
RX6
Trigger[81..96]
RX7
Trigger[97..112]
RX8
Trigger[113..128]
RX9
Trigger[129..144]
RX10
Trigger[145..160]
RX11
Trigger[161..176]
RX12
Trigger[177..192]
RX13
Trigger[193..208]
RX14
Trigger[209..224]
RX15
Trigger[225..240]
RX16
Trigger[241..256]
TRIUMF
LOGO
TRIUMF LOGO
ALPHA TTC - Top Level
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Date: 11/05/2009
TRIUMF
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Canada
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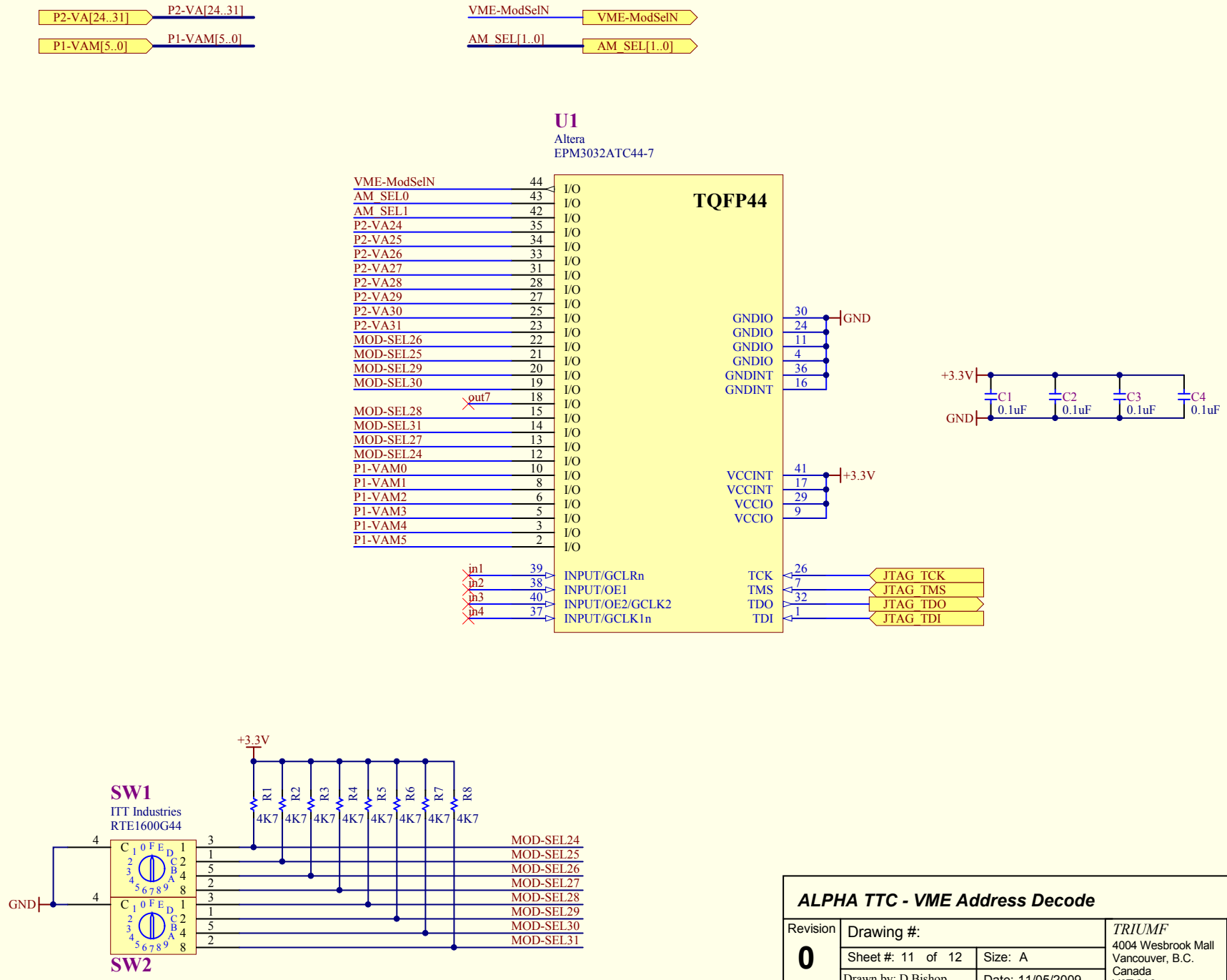
P2-VA[24..31]
P2-VA[24..31]
P1-VAM[5..0]
P1-VAM[5..0]
VME-ModSelN
VME-ModSelN
AM_SEL[1..0]
AM_SEL[1..0]
U1
Altera
EPM3032ATC44-7
TQFP44
VME-ModSelN 44
AM_SEL0 43
AM_SEL1 42
P2-VA24 35
P2-VA25 34
P2-VA26 33
P2-VA27 31
P2-VA28 28
P2-VA29 27
P2-VA30 25
P2-VA31 23
MOD-SEL26 22
MOD-SEL25 21
MOD-SEL29 20
MOD-SEL30 19
out7 18
MOD-SEL28 15
MOD-SEL31 14
MOD-SEL27 13
MOD-SEL24 12
P1-VAM0 10
P1-VAM1 8
P1-VAM2 6
P1-VAM3 5
P1-VAM4 3
P1-VAM5 2
GNDIO 30
GNDIO 24
GNDIO 11
GNDIO 4
GNDINT 36
GNDINT 16
GND
VCCINT 41
VCCINT 17
VCCIO 29
VCCIO 9
+3.3V
in1 39
in2 38
in3 40
in4 37
INPUT/GCLRn
INPUT/OE1
INPUT/OE2/GCLK2
INPUT/GCLK1n
TCK 26
TMS 7
TDO 32
TDI 1
JTAG_TCK
JTAG_TMS
JTAG_TDO
JTAG_TDI
+3.3V
C1 0.1uF
C2 0.1uF
C3 0.1uF
C4 0.1uF
GND
+3.3V
R1 4K7
R2 4K7
R3 4K7
R4 4K7
R5 4K7
R6 4K7
R7 4K7
R8 4K7
SW1
ITT Industries
RTE1600G44
SW2
GND
MOD-SEL24
MOD-SEL25
MOD-SEL26
MOD-SEL27
MOD-SEL28
MOD-SEL29
MOD-SEL30
MOD-SEL31
ALPHA TTC - VME Address Decode
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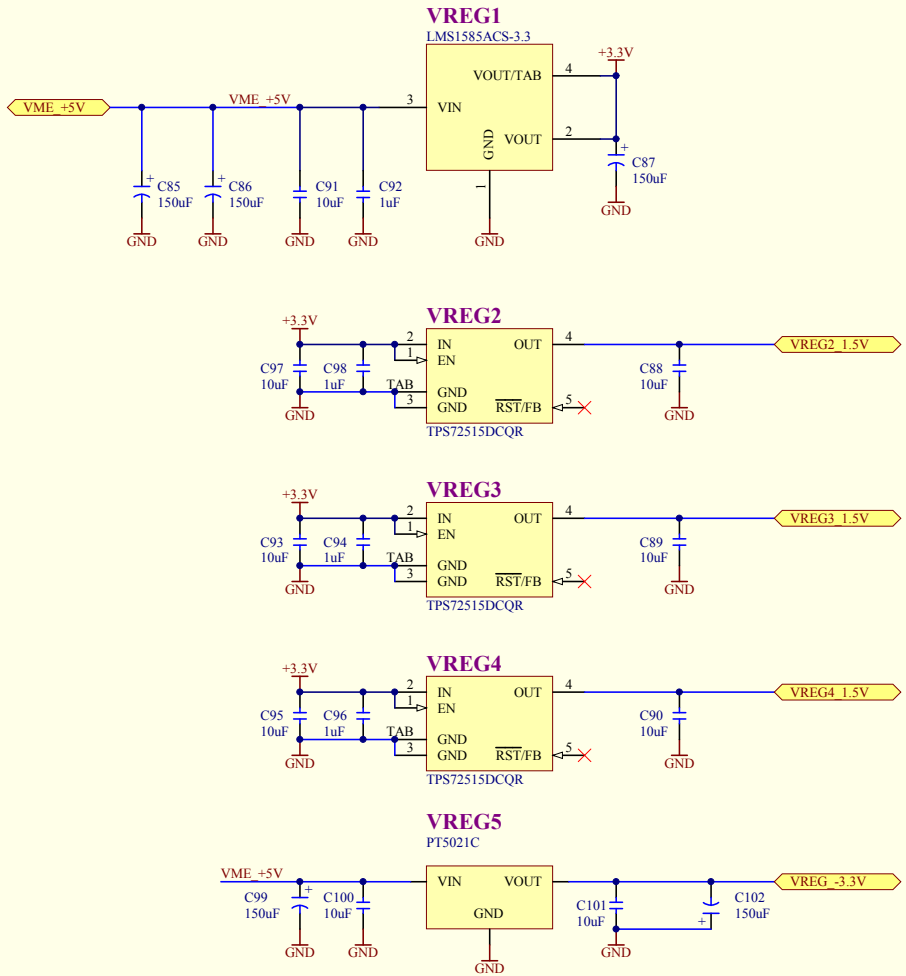

ALPHA TTC - Voltage Regulators

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