

REV	Description	DATE	BY
A4A	Initial production Release.	11/19/2012	GC
A5	On the initial production release the processors were to be found incorrect as supplied by TI. Parts while marked AMS359 were actually AMS352. This revision uses the correct parts.	1/2/2013	GC
A5A	<ol style="list-style-type: none"> Deleted R29-R44 from the LCD lines. Added 47pf capacitors C156-C173 to LCD data lines to ground. Changed schematic revision to A5A. Changed a few footprints after PCB update for above changes. Added access point for the battery function of the TPS65217C. Added Ferrite beads in series with LED power and 5V power rail of the USB host connector. Required to pass FCC/CE testing due to noise emissions on that pin. Added power button to enable sleep, wakeup, power down and power up features on the system. Added Modification to add 100K ohm resistor to ground to prevent crosstalk when serial cable is not plugged in. 	2/8/2013	GC
A5B	<ol style="list-style-type: none"> Added 100K pulldown on J1 pin 4 to prevent crosstalk when serial cable is not connected into PCB layout. Changed the LED resistors to 4.75K to lower the brightness. 	5/21/2013	GC
A5C	<ol style="list-style-type: none"> Changed R46, R47, R48 to 0 ohms. Changed R45 to 22 Ohms. Change was made due to production failures on some boards due to differences in impedances.	6/12/2013	GC

PAGE NO.	SCHEMATIC PAGE
1	COVER PAGE
2	POWER MANAGEMENT
3	PROCESSOR 1 OF 3, JTAG HEADER
4	PROCESSOR 2 OF 3, UAB PORTS
5	PROCESSOR 3 OF 3
6	LED, CONFIGURATION AND BUTTON
7	DDR3 MEMORY
8	eMMC FLASH
9	10/100 ETHERNET
10	HDMI FRAMER
11	EXP. CONN, uSD

NOTE: PCB Revision for this board is Rev B4.

This schematic is *NOT SUPPORTED* and DOES NOT constitute a reference design. Only "community" support is allowed via resources at BeagleBoard.org/discuss.

THERE IS NO WARRANTY FOR THIS DESIGN , TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE DESIGN "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE DESIGN IS WITH YOU. SHOULD THE DESIGN PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.



Title: BeagleBone Black Cover Page

Size: Document Number
 B 450-5500-001

Rev: A5C

Date: Wednesday, June 12, 2013 Sheet 1 of 11

TP1
TESTPT1

Battery access pins. Pins are randomly placed to fit them in, but will be able to tie into them either with a cape or wires. Pins will not be populated.

TP5
TESTPT5

TP6
TESTPT6

TP7
TESTPT7

TP8
TESTPT8

TP9
TESTPT9

TP10
TESTPT10

TP11
TESTPT11

TP12
TESTPT12

TP13
TESTPT13

TP14
TESTPT14

TP15
TESTPT15

TP16
TESTPT16

TP17
TESTPT17

TP18
TESTPT18

TP19
TESTPT19

TP20
TESTPT20

TP21
TESTPT21

TP22
TESTPT22

TP23
TESTPT23

TP24
TESTPT24

TP25
TESTPT25

TP26
TESTPT26

TP27
TESTPT27

TP28
TESTPT28

TP29
TESTPT29

TP30
TESTPT30

TP31
TESTPT31

TP32
TESTPT32

TP33
TESTPT33

TP34
TESTPT34

TP35
TESTPT35

TP36
TESTPT36

TP37
TESTPT37

TP38
TESTPT38

TP39
TESTPT39

TP40
TESTPT40

TP41
TESTPT41

TP42
TESTPT42

TP43
TESTPT43

TP44
TESTPT44

TP45
TESTPT45

TP46
TESTPT46

TP47
TESTPT47

TP48
TESTPT48

TP49
TESTPT49

TP50
TESTPT50

TP51
TESTPT51

TP52
TESTPT52

TP53
TESTPT53

TP54
TESTPT54

TP55
TESTPT55

TP56
TESTPT56

TP57
TESTPT57

TP58
TESTPT58

TP59
TESTPT59

TP60
TESTPT60

TP61
TESTPT61

TP62
TESTPT62

TP63
TESTPT63

TP64
TESTPT64

TP65
TESTPT65

TP66
TESTPT66

TP67
TESTPT67

TP68
TESTPT68

TP69
TESTPT69

TP70
TESTPT70

TP71
TESTPT71

TP72
TESTPT72

TP73
TESTPT73

TP74
TESTPT74

TP75
TESTPT75

TP76
TESTPT76

TP77
TESTPT77

TP78
TESTPT78

TP79
TESTPT79

TP80
TESTPT80

TP81
TESTPT81

TP82
TESTPT82

TP83
TESTPT83

TP84
TESTPT84

TP85
TESTPT85

TP86
TESTPT86

TP87
TESTPT87

TP88
TESTPT88

TP89
TESTPT89

TP90
TESTPT90

TP91
TESTPT91

TP92
TESTPT92

TP93
TESTPT93

TP94
TESTPT94

TP95
TESTPT95

TP96
TESTPT96

TP97
TESTPT97

TP98
TESTPT98

TP99
TESTPT99

TP100
TESTPT100

TP101
TESTPT101

TP102
TESTPT102

TP103
TESTPT103

TP104
TESTPT104

TP105
TESTPT105

TP106
TESTPT106

TP107
TESTPT107

TP108
TESTPT108

TP109
TESTPT109

TP110
TESTPT110

TP111
TESTPT111

TP112
TESTPT112

TP113
TESTPT113

TP114
TESTPT114

TP115
TESTPT115

TP116
TESTPT116

TP117
TESTPT117

TP118
TESTPT118

TP119
TESTPT119

TP120
TESTPT120

TP121
TESTPT121

TP122
TESTPT122

TP123
TESTPT123

TP124
TESTPT124

TP125
TESTPT125

TP126
TESTPT126

TP127
TESTPT127

TP128
TESTPT128

TP129
TESTPT129

TP130
TESTPT130

TP131
TESTPT131

TP132
TESTPT132

TP133
TESTPT133

TP134
TESTPT134

TP135
TESTPT135

TP136
TESTPT136

TP137
TESTPT137

TP138
TESTPT138

TP139
TESTPT139

TP140
TESTPT140

TP141
TESTPT141

TP142
TESTPT142

TP143
TESTPT143

TP144
TESTPT144

TP145
TESTPT145

TP146
TESTPT146

TP147
TESTPT147

TP148
TESTPT148

TP149
TESTPT149

TP150
TESTPT150

TP151
TESTPT151

TP152
TESTPT152

TP153
TESTPT153

TP154
TESTPT154

TP155
TESTPT155

TP156
TESTPT156

TP157
TESTPT157

TP158
TESTPT158

TP159
TESTPT159

TP160
TESTPT160

TP161
TESTPT161

TP162
TESTPT162

TP163
TESTPT163

TP164
TESTPT164

TP165
TESTPT165

TP166
TESTPT166

TP167
TESTPT167

TP168
TESTPT168

TP169
TESTPT169

TP170
TESTPT170

TP171
TESTPT171

TP172
TESTPT172

TP173
TESTPT173

TP174
TESTPT174

TP175
TESTPT175

TP176
TESTPT176

TP177
TESTPT177

TP178
TESTPT178

TP179
TESTPT179

TP180
TESTPT180

TP181
TESTPT181

TP182
TESTPT182

TP183
TESTPT183

TP184
TESTPT184

TP185
TESTPT185

TP186
TESTPT186

TP187
TESTPT187

TP188
TESTPT188

TP189
TESTPT189

TP190
TESTPT190

TP191
TESTPT191

TP192
TESTPT192

TP193
TESTPT193

TP194
TESTPT194

TP195
TESTPT195

TP196
TESTPT196

TP197
TESTPT197

TP198
TESTPT198

TP199
TESTPT199

TP200
TESTPT200

TP201
TESTPT201

TP202
TESTPT202

TP203
TESTPT203

TP204
TESTPT204

TP205
TESTPT205

TP206
TESTPT206

TP207
TESTPT207

TP208
TESTPT208

TP209
TESTPT209

TP210
TESTPT210

TP211
TESTPT211

TP212
TESTPT212

TP213
TESTPT213

TP214
TESTPT214

TP215
TESTPT215

TP216
TESTPT216

TP217
TESTPT217

TP218
TESTPT218

TP219
TESTPT219

TP220
TESTPT220

TP221
TESTPT221

TP222
TESTPT222

TP223
TESTPT223

TP224
TESTPT224

TP225
TESTPT225

TP226
TESTPT226

TP227
TESTPT227

TP228
TESTPT228

TP229
TESTPT229

TP230
TESTPT230

TP231
TESTPT231

TP232
TESTPT232

TP233
TESTPT233

TP234
TESTPT234

TP235
TESTPT235

TP236
TESTPT236

TP237
TESTPT237

TP238
TESTPT238

TP239
TESTPT239

TP240
TESTPT240

TP241
TESTPT241

TP242
TESTPT242

TP243
TESTPT243

TP244
TESTPT244

TP245
TESTPT245

TP246
TESTPT246

TP247
TESTPT247

TP248
TESTPT248

TP249
TESTPT249

TP250
TESTPT250

TP251
TESTPT251

TP252
TESTPT252

TP253
TESTPT253

TP254
TESTPT254

TP255
TESTPT255

TP256
TESTPT256

TP257
TESTPT257

TP258
TESTPT258

TP259
TESTPT259

TP260
TESTPT260

TP261
TESTPT261

TP262
TESTPT262

TP263
TESTPT263

TP264
TESTPT264

TP265
TESTPT265

TP266
TESTPT266

TP267
TESTPT267

TP268
TESTPT268

TP269
TESTPT269

TP270
TESTPT270

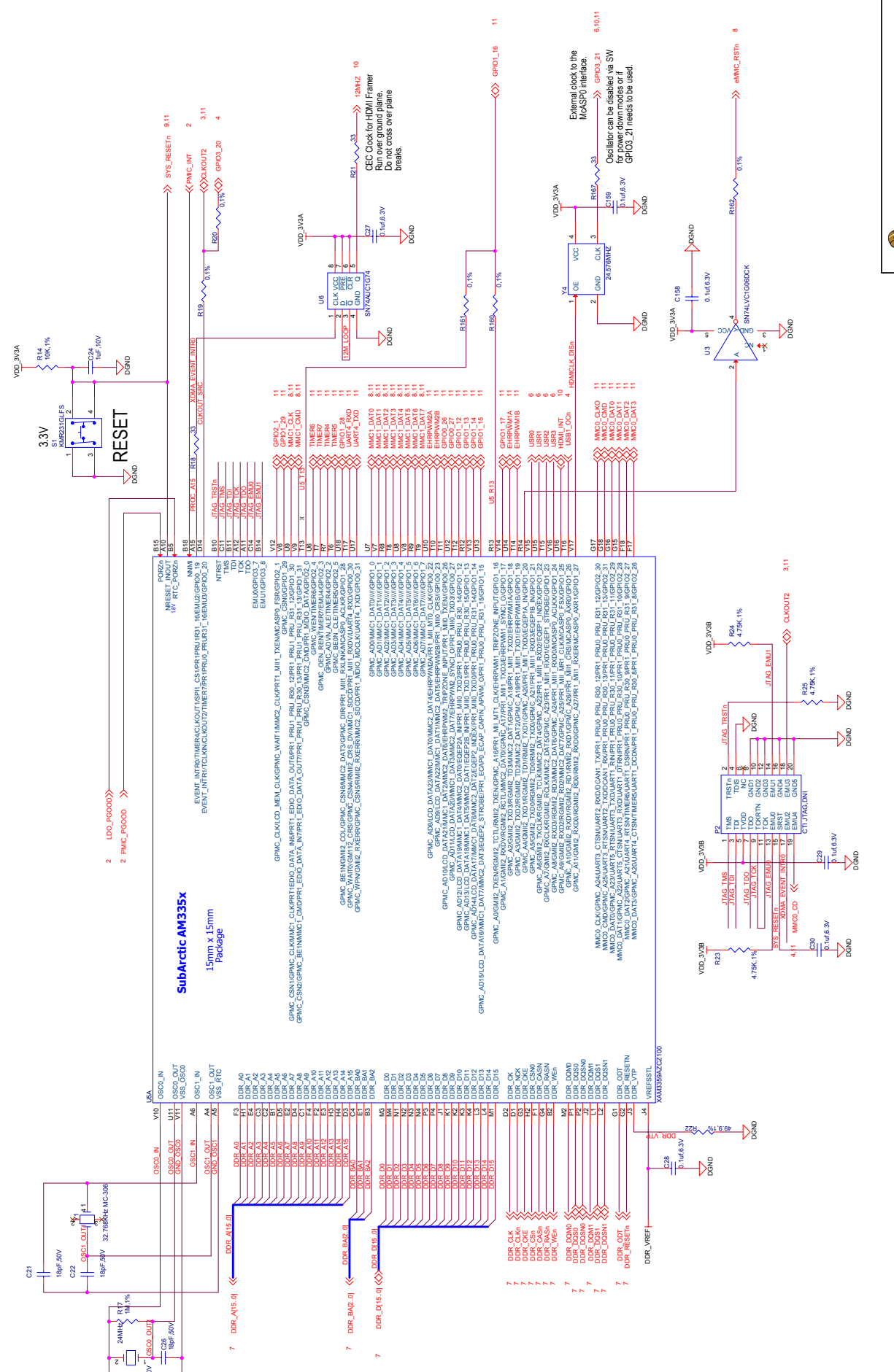
TP271
TESTPT271

TP272
TESTPT272

TP273
TESTPT273

TP274
TESTPT274

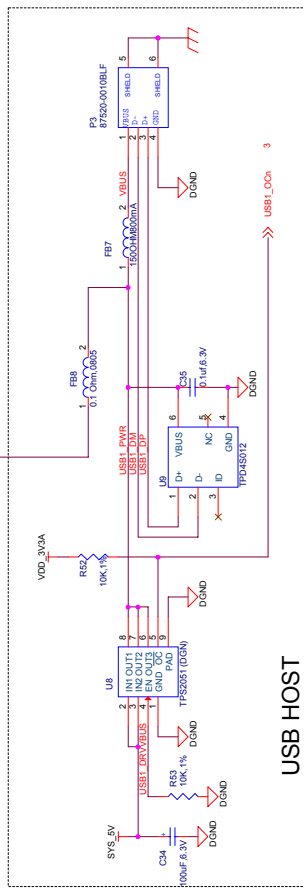
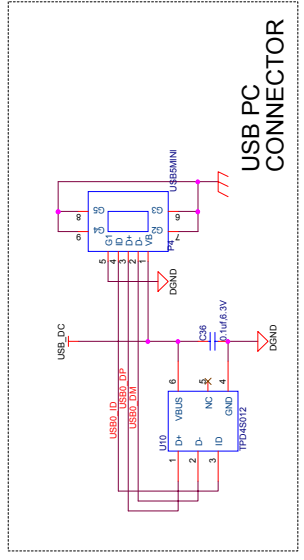
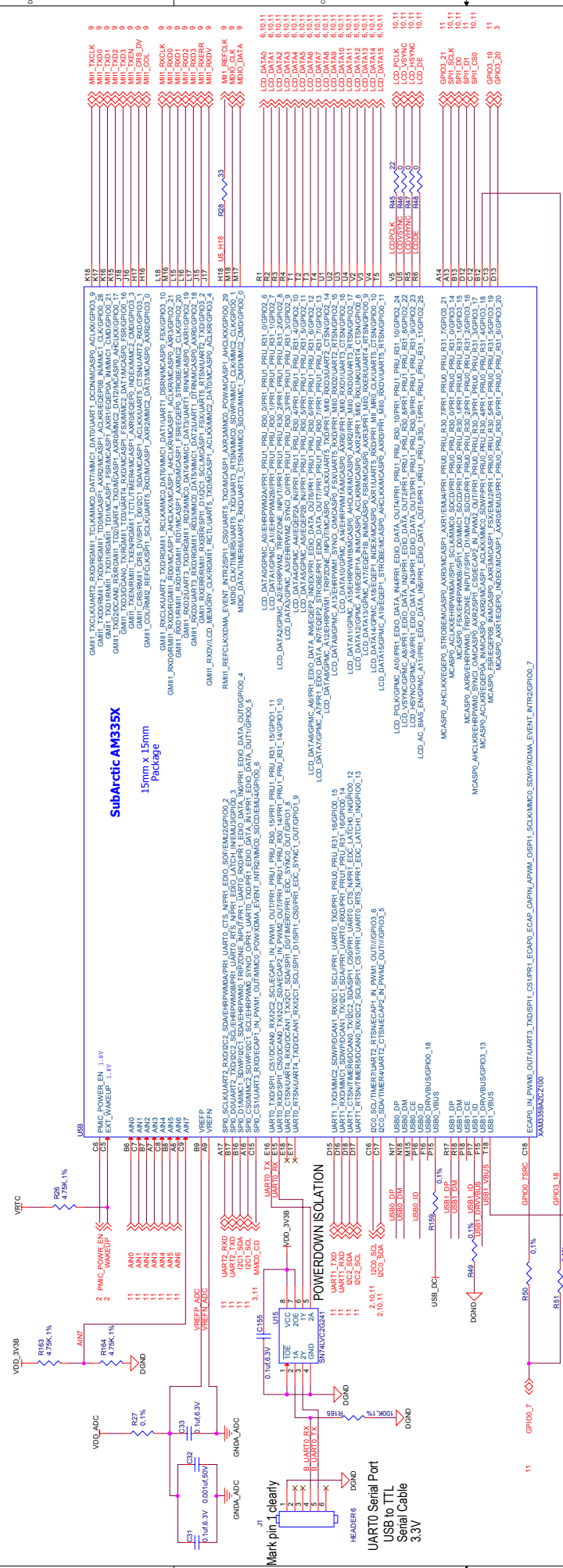
TP275
TESTPT275



CEC Clock for HDMI Framers
 Run over ground plane.
 Do not cross over plane breaks.

External clock to the IIC/SPI0 interfaces.
 Oscillator can be disabled via SW for power down modes or IIC/SPI0 needs to be used.

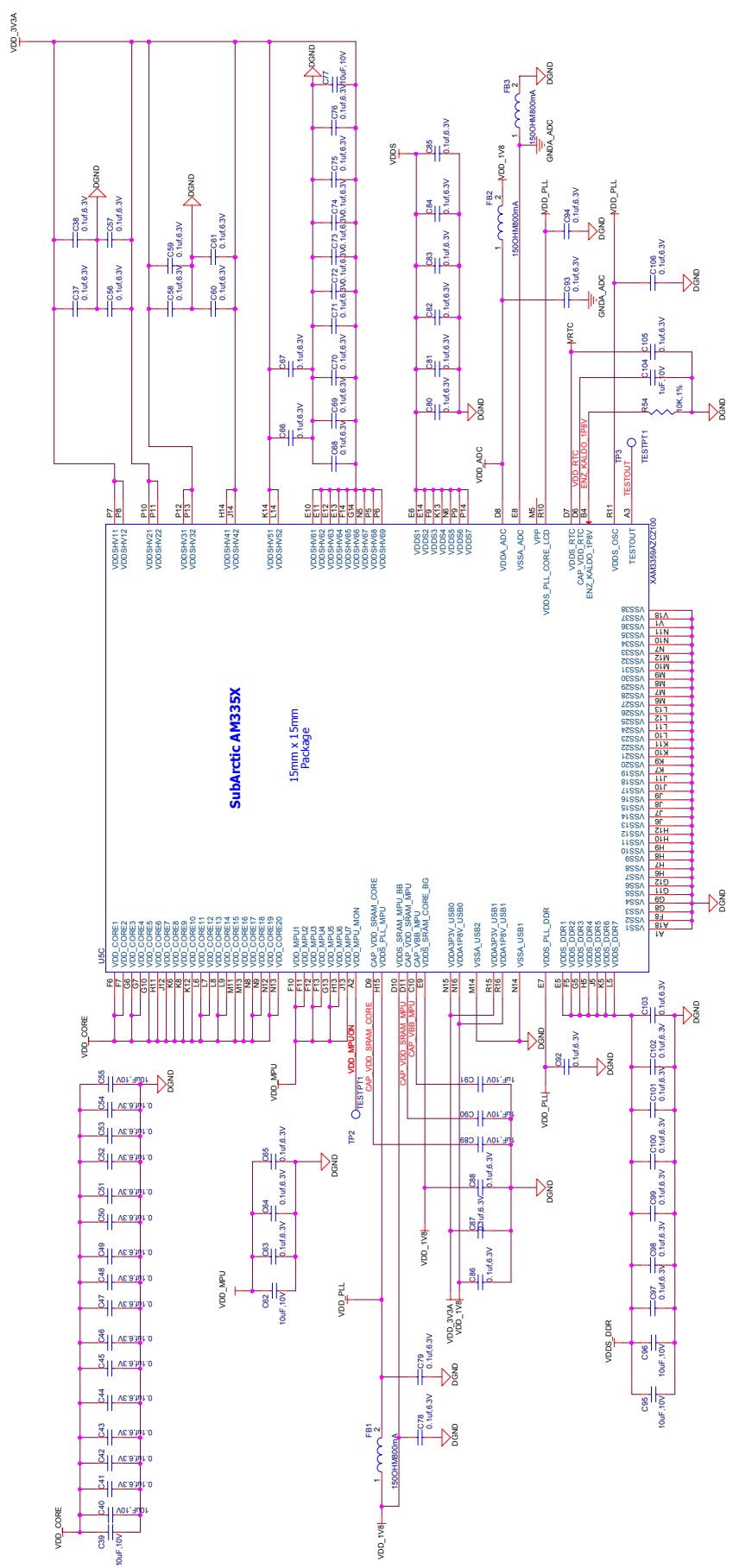
SubArctic-AM335X
 15mm x 15mm Package



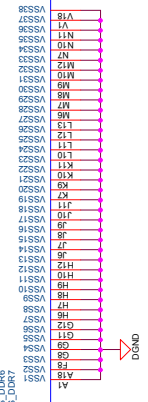
Mark pin 1 clearly
 HEADERS
 USB to TTL
 Serial Cable
 3.3V

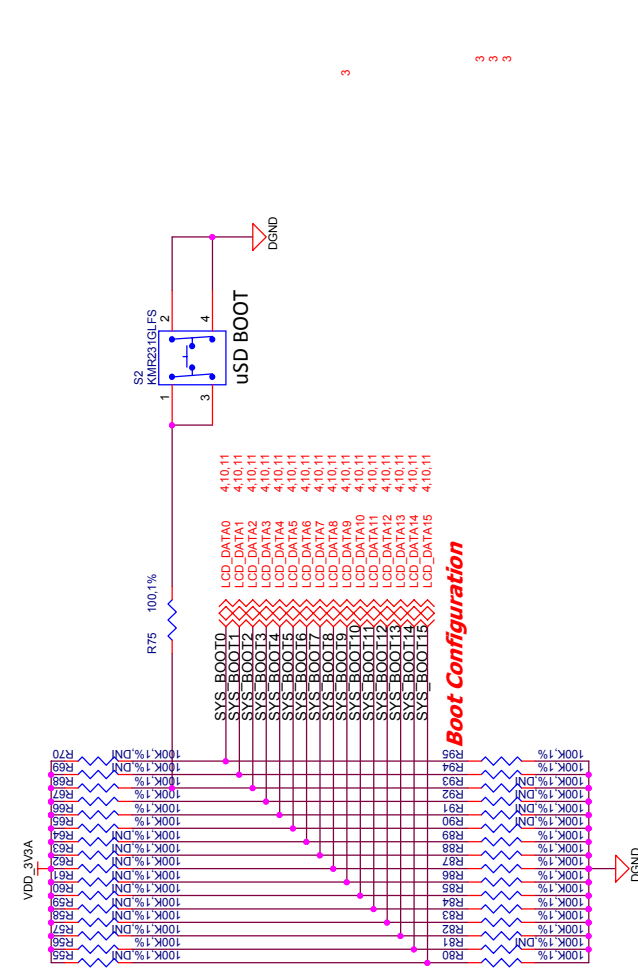
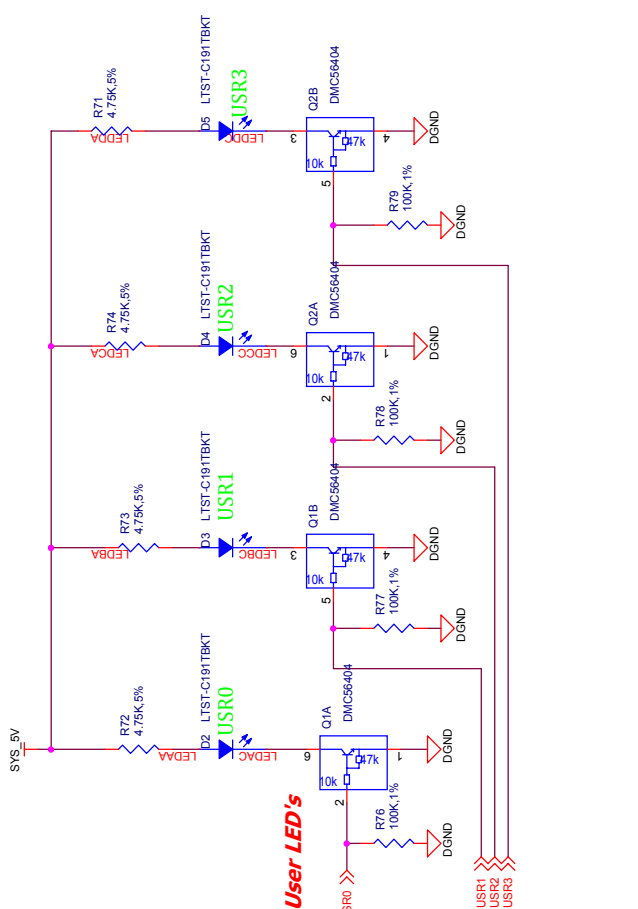
USB HOST

USB PC CONNECTOR



SubArctic AMB35X
 15mm x 1.5mm
 Package

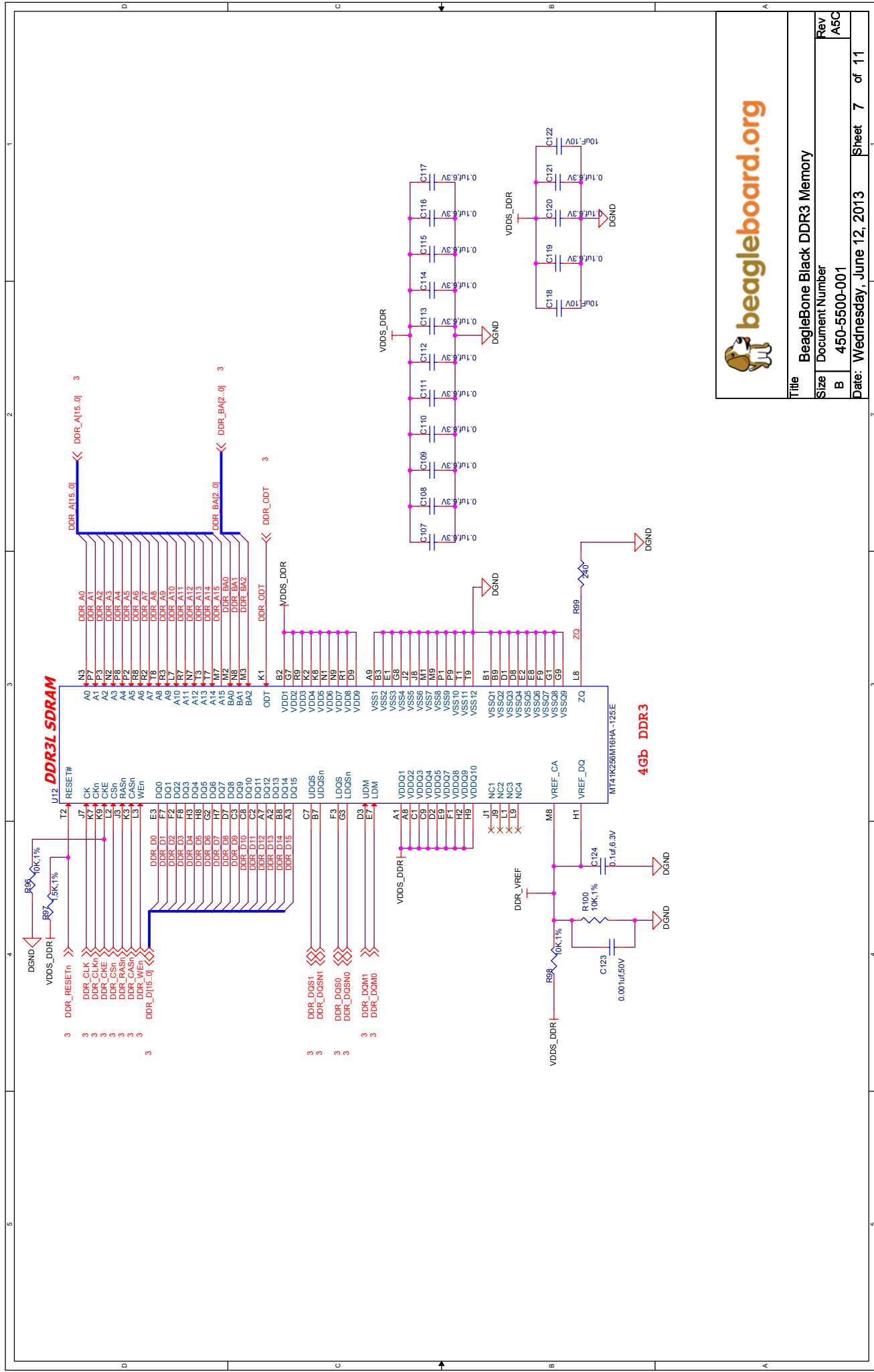




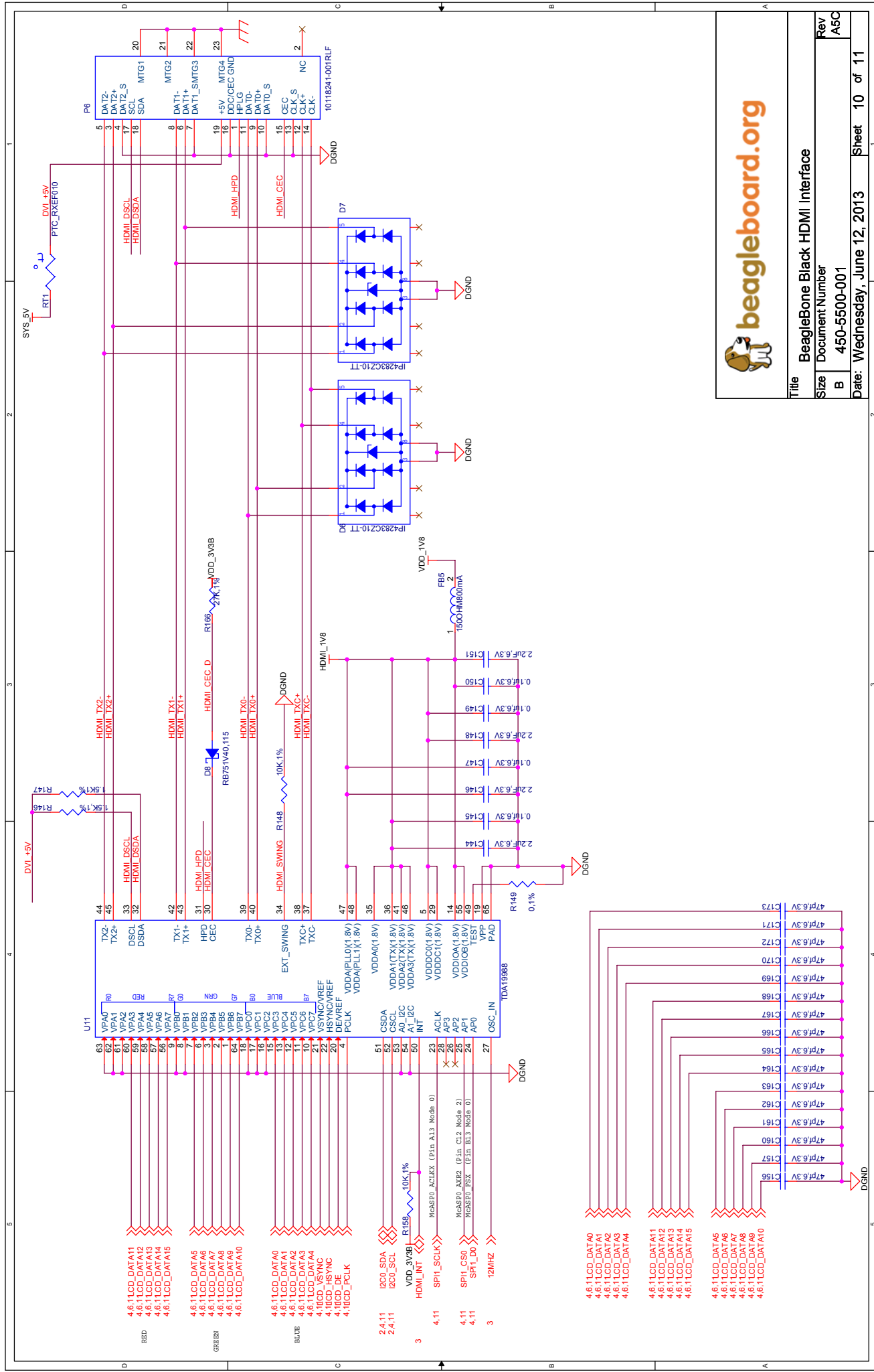
SYSBOOT[15:14]	SYSBOOT[13:12]	SYSBOOT[11:10]	SYSBOOT[9]	SYSBOOT[8]	SYSBOOT[7:6]	SYSBOOT[5]	SYSBOOT[4:0]	Boot Sequence
00b = 19.2MHz 01b = 24MHz 10b = 25MHz 11b = 26MHz	00b (all other values reserved)	Don't care for ROM code	Don't care for ROM code	Don't care for ROM code	Don't care for ROM code	0 = CLKOUT1 disabled 1 = CLKOUT1 enabled	11100b	MMC0 UART0 USB0[5]
00b = 19.2MHz 01b = 24MHz 10b = 25MHz 11b = 26MHz	00b (all other values reserved)	Don't care for ROM code	Don't care for ROM code	Don't care for ROM code	Don't care for ROM code	0 = CLKOUT1 disabled 1 = CLKOUT1 enabled	11000b	MMC0 SPI0 USB0[5] UART0



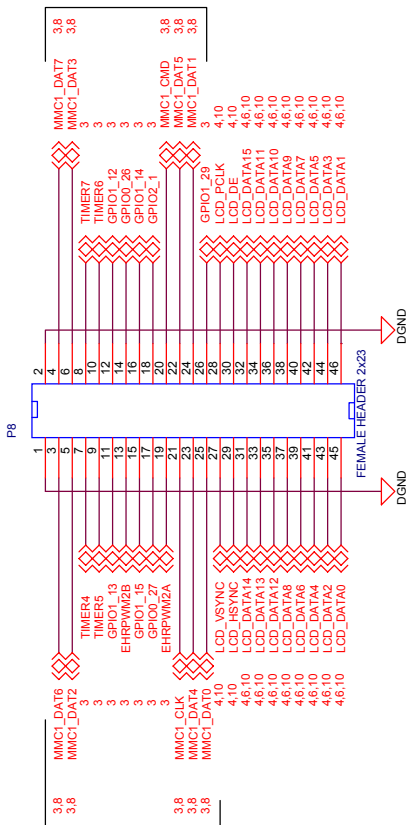
Title		BeagleBone Black LED, Configuration, and Reset	
Size	Document Number	Rev	A5C
B	450-5500-001	Date:	Wednesday, June 12, 2013
		Sheet	6 of 11



Title		BeagleBone Black DDR3 Memory	
Size	Document Number	Rev	
B	450-5500-001	A5C	
Date: Wednesday, June 12, 2013		Sheet 7 of 11	

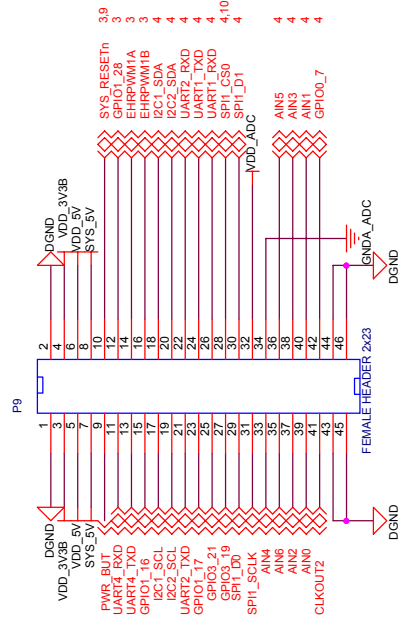


CAUTION: USED ON BOARD

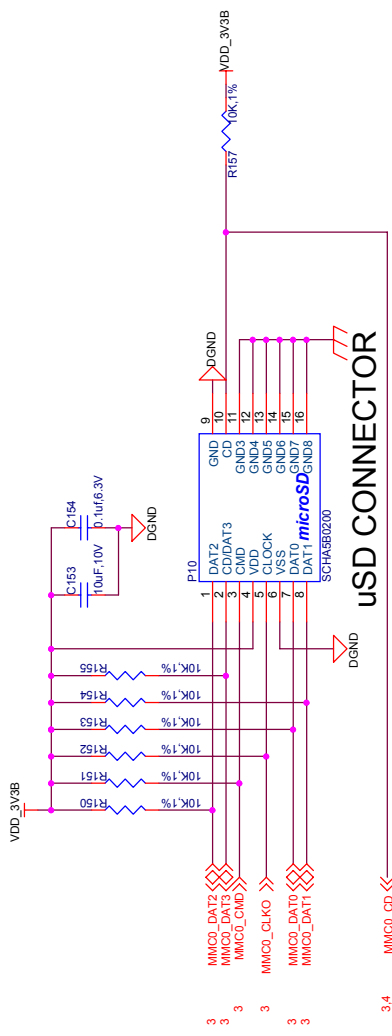


EXPANSION HEADER

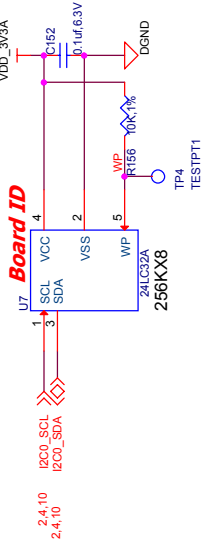
CAUTION: USED ON BOARD



EXPANSION HEADER



uSD CONNECTOR



beagleboard.org

Title	BeagleBone Black Expansion Headers, uSD and EEPROM
Size	Document Number
Rev	A5C
B	450-5500-001
Date:	Wednesday, June 12, 2013
Sheet	11 of 11