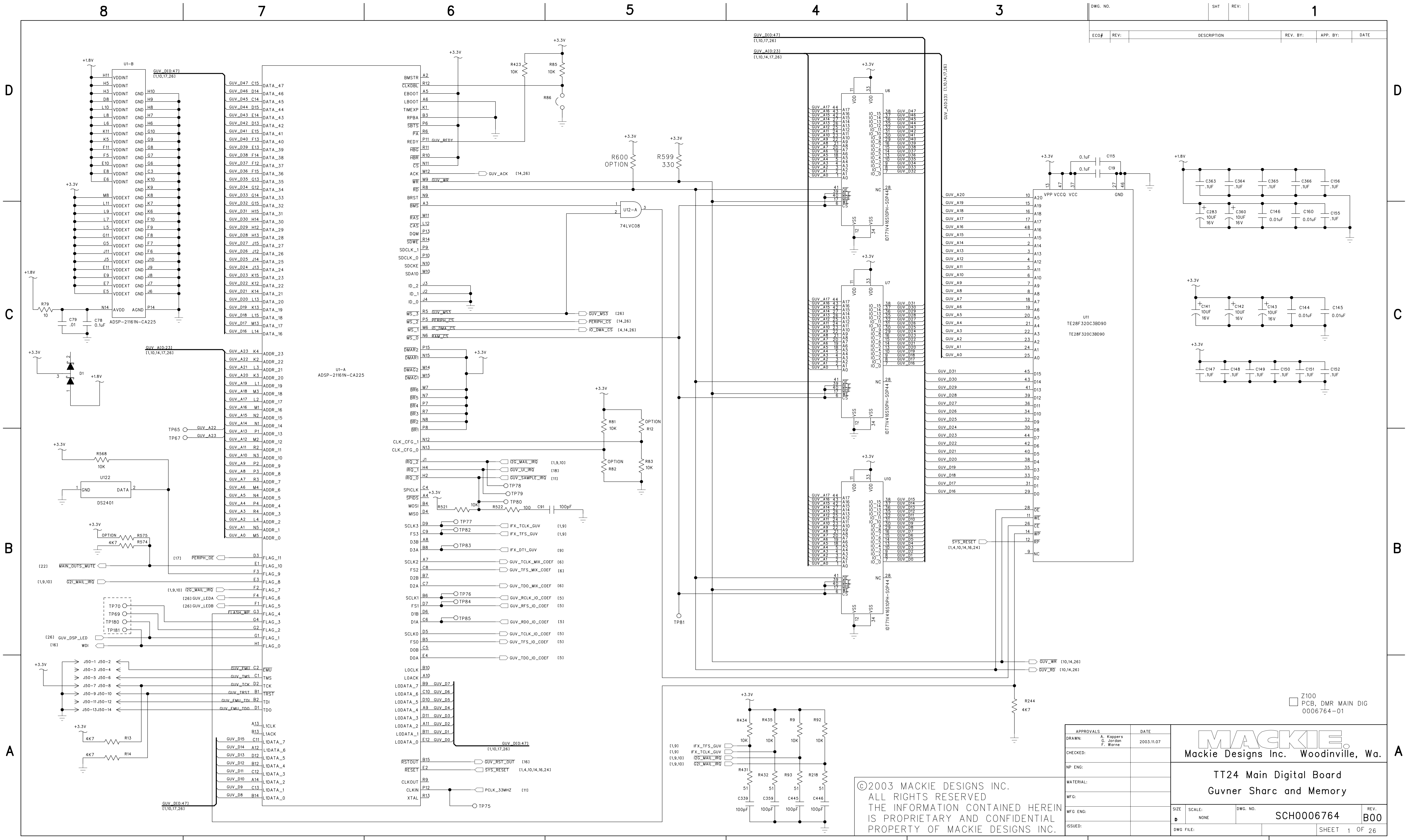
U1-A
ADSP-21161N-CA225
U1-B
ADSP-21161N-CA225
U6
U7
U10
IDT71V416S10PH-SOP44
U11
TE28F320C3BD90
U12-A
74LVC08
U122
DS2401
D1
GUV_D[0:47]
GUV_A[0:23]
+3.3V
+1.8V
GUV_WR
GUV_RD
SYS_RESET
PCLK_33MHZ
Z100
PCB, DMR MAIN DIG
0006764-01

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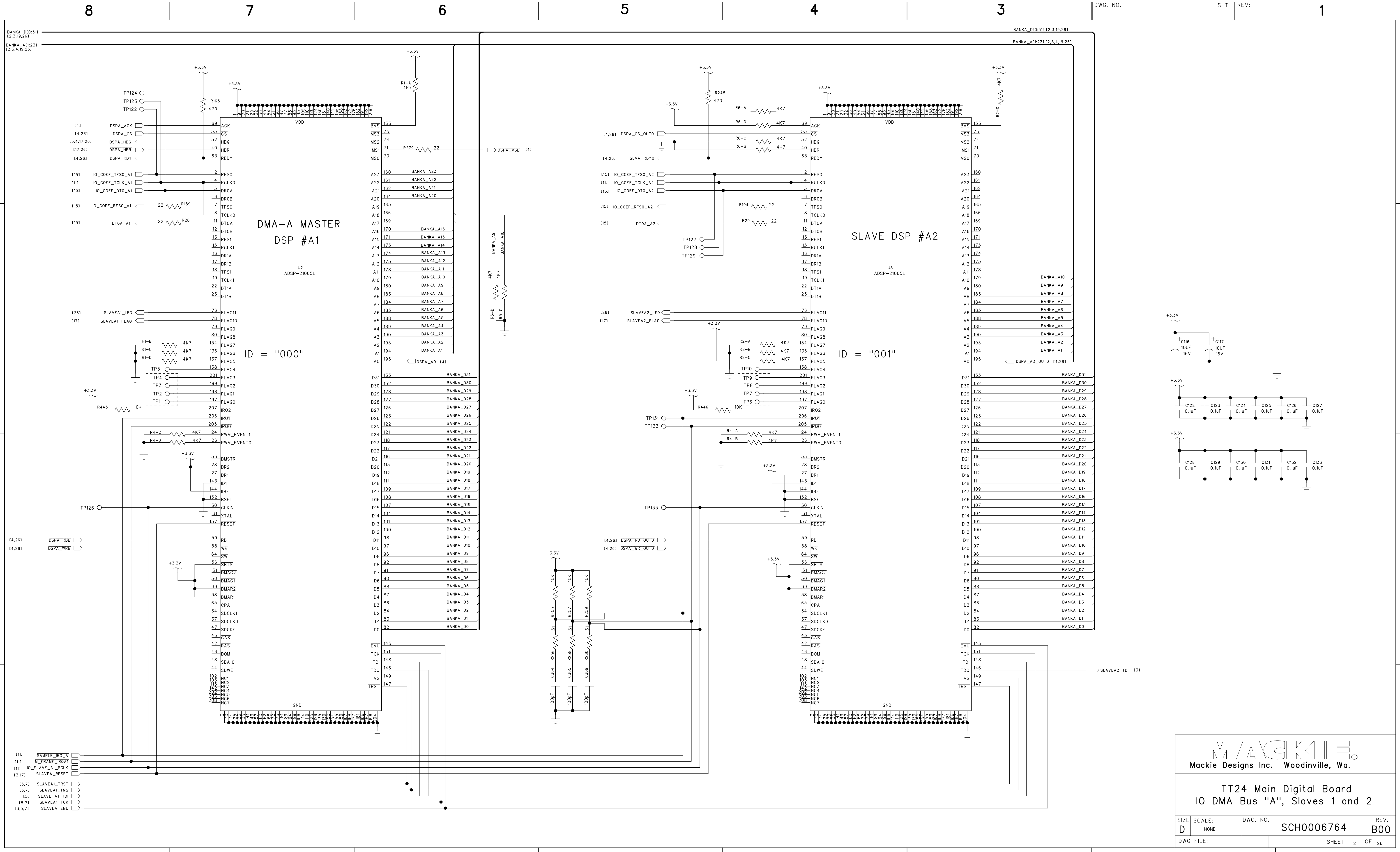
APPROVALS		DATE
DRAWN:	A. Kappers D. Jordan F. Warne	2003.11.07
CHECKED:		
NP ENG:		
MATERIAL:		
MFG:		
MFG ENG:		
ISSUED:		

Mackie Designs Inc. Woodinville, Wa.

TT24 Main Digital Board
Guvner Sharc and Memory

SIZE D SCALE: NONE DWG. NO. SCH0006764 REV. B00
DWG FILE: SHEET 1 OF 26

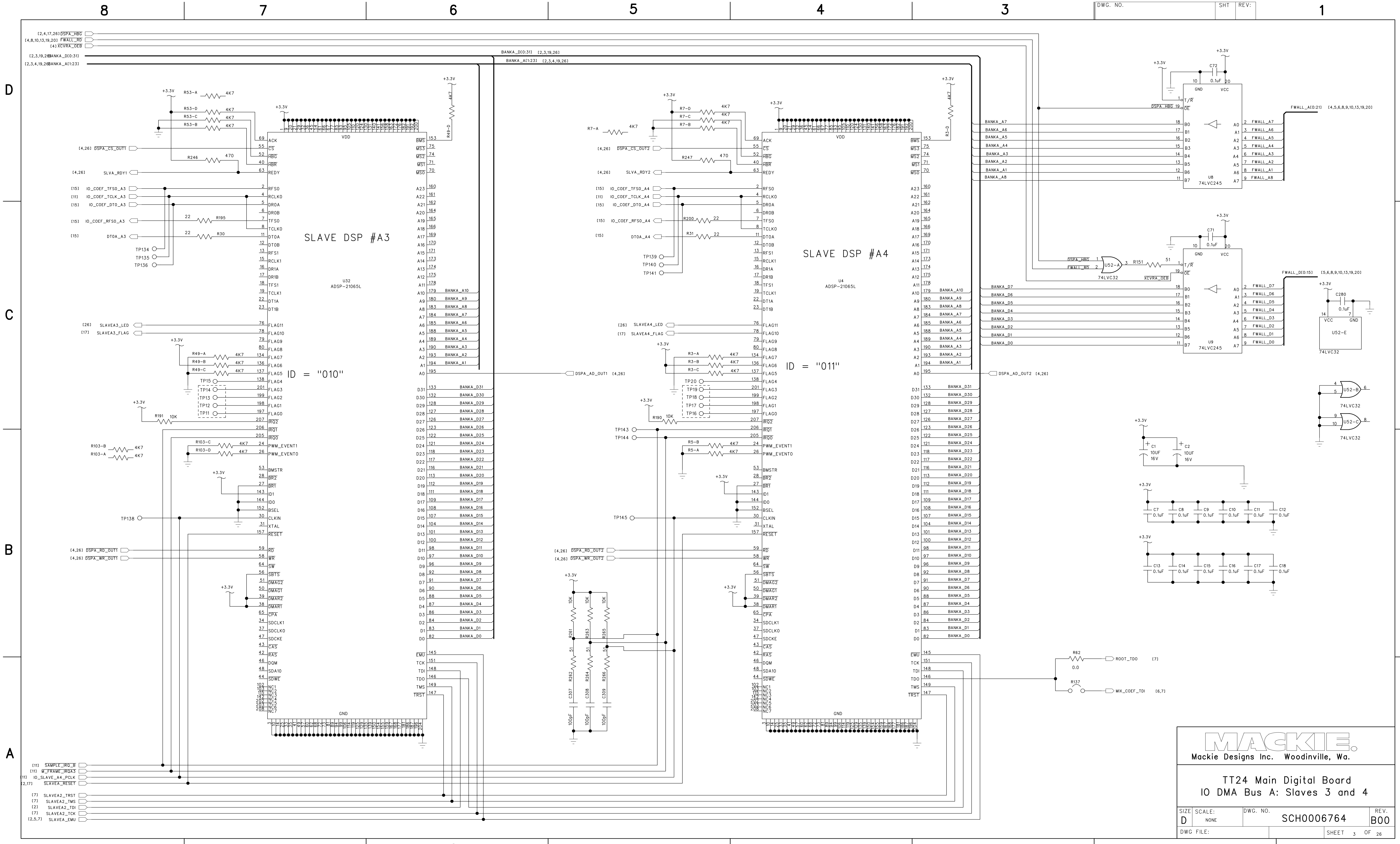

DMA-A MASTER
DSP #A1
U2
ADSP-21065L
SLAVE DSP #A2
U3
ADSP-21065L
ID = "000"
ID = "001"
BANKA_D[0:31] [2,3,19,26]
BANKA_A[1:23] [2,3,4,19,26]
DSPA_ACK
DSPA_CS
DSPA_HBG
DSPA_HBR
DSPA_RDY
IO_COEF_TFS0_A1
IO_COEF_TCLK_A1
IO_COEF_DT0_A1
IO_COEF_RFS0_A1
DT0A_A1
SLAVEA1_LED
SLAVEA1_FLAG
DSPA_RDB
DSPA_WRB
DSPA_MSB
DSPA_A0
DSPA_CS_OUT0
SLVA_RDY0
IO_COEF_TFS0_A2
IO_COEF_TCLK_A2
IO_COEF_DT0_A2
IO_COEF_RFS0_A2
DT0A_A2
SLAVEA2_LED
SLAVEA2_FLAG
DSPA_RD_OUT0
DSPA_WR_OUT0
DSPA_A0_OUT0
SLAVEA2_TDI
SAMPLE_IRQ_A
M_FRAME_IRQA1
IO_SLAVE_A1_PCLK
SLAVEA_RESET
SLAVEA1_TRST
SLAVEA1_TMS
SLAVE_A1_TDI
SLAVEA1_TCK
SLAVEA_EMU
+3.3V
VDD
GND
R165 470
R245 470
R279 22
R189 22
R28 22
R194 22
R29 22
R445 10K
R446 10K
R255 10K
R257 10K
R259 10K
R256 51
R258 51
R260 51
C304 100pF
C305 100pF
C306 100pF
C116 10UF 16V
C117 10UF 16V
C122 0.1uF
C123 0.1uF
C124 0.1uF
C125 0.1uF
C126 0.1uF
C127 0.1uF
C128 0.1uF
C129 0.1uF
C130 0.1uF
C131 0.1uF
C132 0.1uF
C133 0.1uF
TP124
TP123
TP122
TP126
TP127
TP128
TP129
TP131
TP132
TP133

Mackie Designs Inc. Woodinville, Wa.

TT24 Main Digital Board
IO DMA Bus "A", Slaves 1 and 2

SIZE D | SCALE: NONE | DWG. NO. SCH0006764 | REV. B00

DWG FILE: | SHEET 2 OF 26

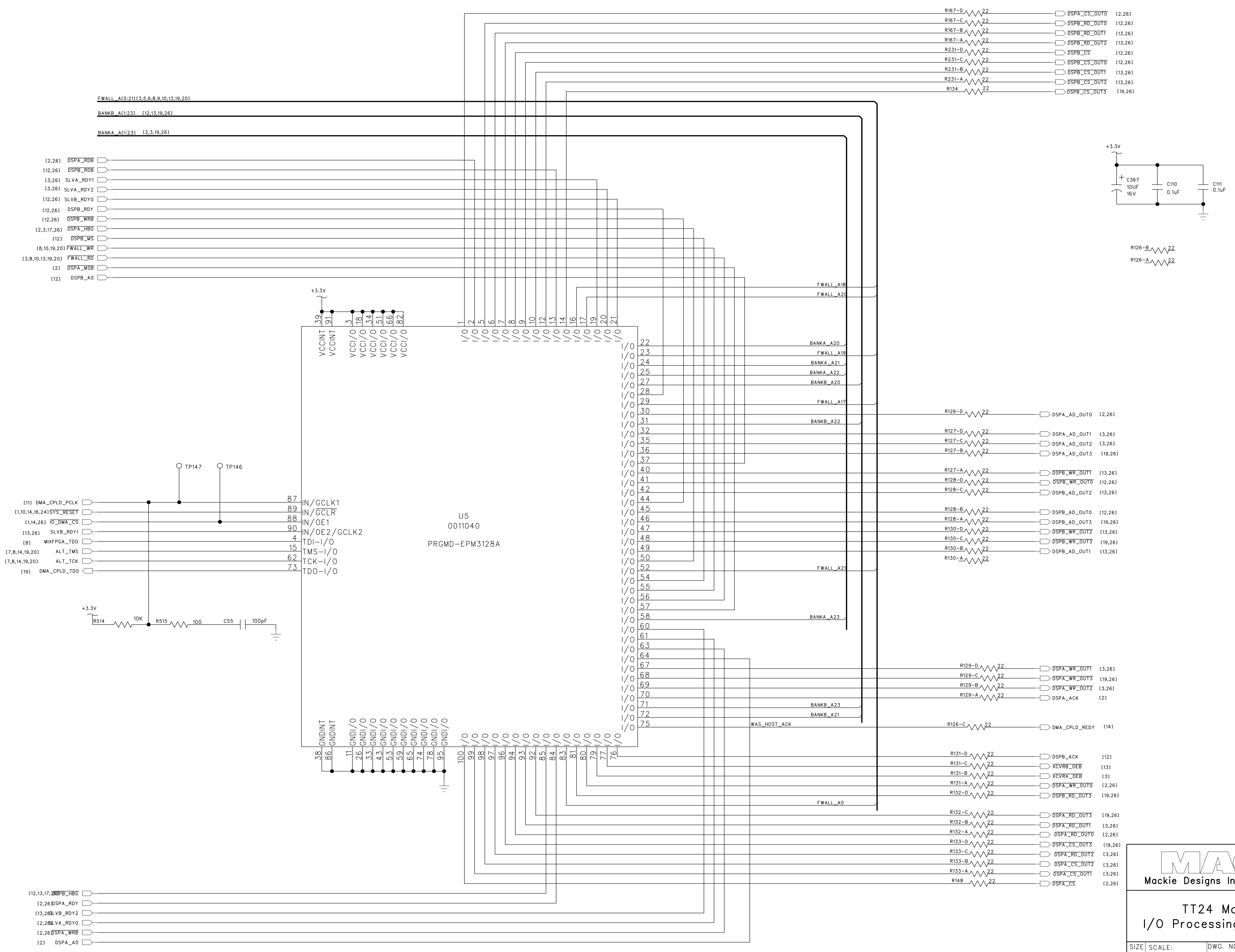

SLAVE DSP #A3
U32
ADSP-21065L
ID = "010"
SLAVE DSP #A4
U4
ADSP-21065L
ID = "011"
U8
74LVC245
U9
74LVC245
U52-A
74LVC32
U52-B
74LVC32
U52-C
74LVC32
U52-E
74LVC32
BANKA_D[0:31]
BANKA_A[1:23]
FWALL_A[0:21]
FWALL_D[0:15]
DSPA_HBG
FWALL_RD
XCVRA_OEB
DSPA_CS_OUT1
DSPA_CS_OUT2
SLVA_RDY1
SLVA_RDY2
IO_COEF_TFS0_A3
IO_COEF_TCLK_A3
IO_COEF_DT0_A3
IO_COEF_RFS0_A3
DT0A_A3
IO_COEF_TFS0_A4
IO_COEF_TCLK_A4
IO_COEF_DT0_A4
IO_COEF_RFS0_A4
DT0A_A4
SLAVEA3_LED
SLAVEA3_FLAG
SLAVEA4_LED
SLAVEA4_FLAG
DSPA_AD_OUT1
DSPA_AD_OUT2
DSPA_RD_OUT1
DSPA_WR_OUT1
DSPA_RD_OUT2
DSPA_WR_OUT2
SAMPLE_IRQ_B
M_FRAME_IRQA3
IO_SLAVE_A4_PCLK
SLAVEA_RESET
SLAVEA2_TRST
SLAVEA2_TMS
SLAVEA2_TDI
SLAVEA2_TCK
SLAVEA_EMU
ROOT_TDO
MIX_COEF_TDI
+3.3V
C1 10UF 16V
C2 10UF 16V
C7 C8 C9 C10 C11 C12 0.1uF
C13 C14 C15 C16 C17 C18 0.1uF
C71 0.1uF
C72 0.1uF
C280 0.1uF
C307 C308 C309 100pF
R261 R263 R265 10K
R262 R264 R266 51
R62 0.0
R137
R151 51
R190 10K
R191 10K
R246 470
R247 470
R195 22
R30 22
R200 22
R31 22

Mackie Designs Inc. Woodinville, Wa.

TT24 Main Digital Board
IO DMA Bus A: Slaves 3 and 4

SIZE	SCALE:	DWG. NO.	REV.
D	NONE	SCH0006764	B00

DWG FILE: SHEET 3 OF 26


FWALL_A[0:21][3,5,6,8,9,10,13,19,20]
BANKB_A[1:23] [12,13,19,26]
BANKA_A[1:23] [2,3,19,26]
[2,26] DSPA_RDB
[12,26] DSPB_RDB
[3,26] SLVA_RDY1
[3,26] SLVA_RDY2
[12,26] SLVB_RDY0
[12,26] DSPB_RDY
[12,26] DSPB_WRB
[2,3,17,26] DSPA_HBG
[12] DSPB_MS
[8,10,19,20] FWALL_WR
[3,8,10,13,19,20] FWALL_RD
[2] DSPA_MSB
[12] DSPB_A0
R167-D 22 DSPA_CS_OUT0 [2,26]
R167-C 22 DSPB_RD_OUT0 [12,26]
R167-B 22 DSPB_RD_OUT1 [13,26]
R167-A 22 DSPB_RD_OUT2 [13,26]
R231-D 22 DSPB_CS [12,26]
R231-C 22 DSPB_CS_OUT0 [12,26]
R231-B 22 DSPB_CS_OUT1 [13,26]
R231-A 22 DSPB_CS_OUT2 [13,26]
R134 22 DSPB_CS_OUT3 [19,26]
+3.3V
C367 10UF 16V
C110 0.1uF
C111 0.1uF
R126-B 22
R126-A 22
+3.3V
39 91 3 18 34 51 66 82
VCCINT VCCINT VCCI/O VCCI/O VCCI/O VCCI/O VCCI/O VCCI/O
1 2 5 6 7 8 9 10 12 13 14 16 17 19 20 21
I/O
FWALL_A18
FWALL_A20
BANKA_A20
FWALL_A19
BANKA_A21
BANKA_A22
BANKB_A20
FWALL_A17
BANKB_A22
FWALL_A21
BANKA_A23
BANKB_A23
BANKB_A21
WAS_HOST_ACK
FWALL_A0
22 23 24 25 27 28 29 30 31 32 35 36 37 40 41 42 44 45 46 47 48 49 50 52 54 55 56 57 58 60 61 63 64 67 68 69 70 71 72 75
R126-D 22 DSPA_AD_OUT0 [2,26]
R127-D 22 DSPA_AD_OUT1 [3,26]
R127-C 22 DSPA_AD_OUT2 [3,26]
R127-B 22 DSPA_AD_OUT3 [19,26]
R127-A 22 DSPB_WR_OUT1 [13,26]
R128-D 22 DSPB_WR_OUT0 [12,26]
R128-C 22 DSPB_AD_OUT2 [13,26]
R128-B 22 DSPB_AD_OUT0 [12,26]
R128-A 22 DSPB_AD_OUT3 [19,26]
R130-D 22 DSPB_WR_OUT2 [13,26]
R130-C 22 DSPB_WR_OUT3 [19,26]
R130-B 22 DSPB_AD_OUT1 [13,26]
R130-A 22
TP147
TP146
[11] DMA_CPLD_PCLK
[1,10,14,16,24] SYS_RESET
[1,14,26] IO_DMA_CS
[13,26] SLVB_RDY1
[8] MIXFPGA_TDO
[7,8,14,19,20] ALT_TMS
[7,8,14,19,20] ALT_TCK
[19] DMA_CPLD_TDO
87 IN/GCLK1
89 IN/GCLR
88 IN/OE1
90 IN/OE2/GCLK2
4 TDI-I/O
15 TMS-I/O
62 TCK-I/O
73 TDO-I/O
U5
0011040
PRGMD-EPM3128A
+3.3V
R514 10K
R515 100
C55 100pF
R129-D 22 DSPA_WR_OUT1 [3,26]
R129-C 22 DSPA_WR_OUT3 [19,26]
R129-B 22 DSPA_WR_OUT2 [3,26]
R129-A 22 DSPA_ACK [2]
R126-C 22 DMA_CPLD_REDY [14]
GNDINT GNDINT GNDI/O GNDI/O GNDI/O GNDI/O GNDI/O GNDI/O GNDI/O GNDI/O GNDI/O GNDI/O GNDI/O GNDI/O
38 86 11 26 33 43 53 59 65 74 78 95
100 99 98 97 96 94 93 92 85 84 83 81 80 79 77 76
R131-D 22 DSPB_ACK [12]
R131-C 22 XCVRB_OEB [13]
R131-B 22 XCVRA_OEB [3]
R131-A 22 DSPA_WR_OUT0 [2,26]
R132-D 22 DSPB_RD_OUT3 [19,26]
R132-C 22 DSPA_RD_OUT3 [19,26]
R132-B 22 DSPA_RD_OUT1 [3,26]
R132-A 22 DSPA_RD_OUT0 [2,26]
R133-D 22 DSPA_CS_OUT3 [19,26]
R133-C 22 DSPA_RD_OUT2 [3,26]
R133-B 22 DSPA_CS_OUT2 [3,26]
R133-A 22 DSPA_CS_OUT1 [3,26]
R148 22 DSPA_CS [2,26]
[12,13,17,26] DSPB_HBG
[2,26] DSPA_RDY
[13,26] SLVB_RDY2
[2,26] SLVA_RDY0
[2,26] DSPA_WRB
[2] DSPA_A0

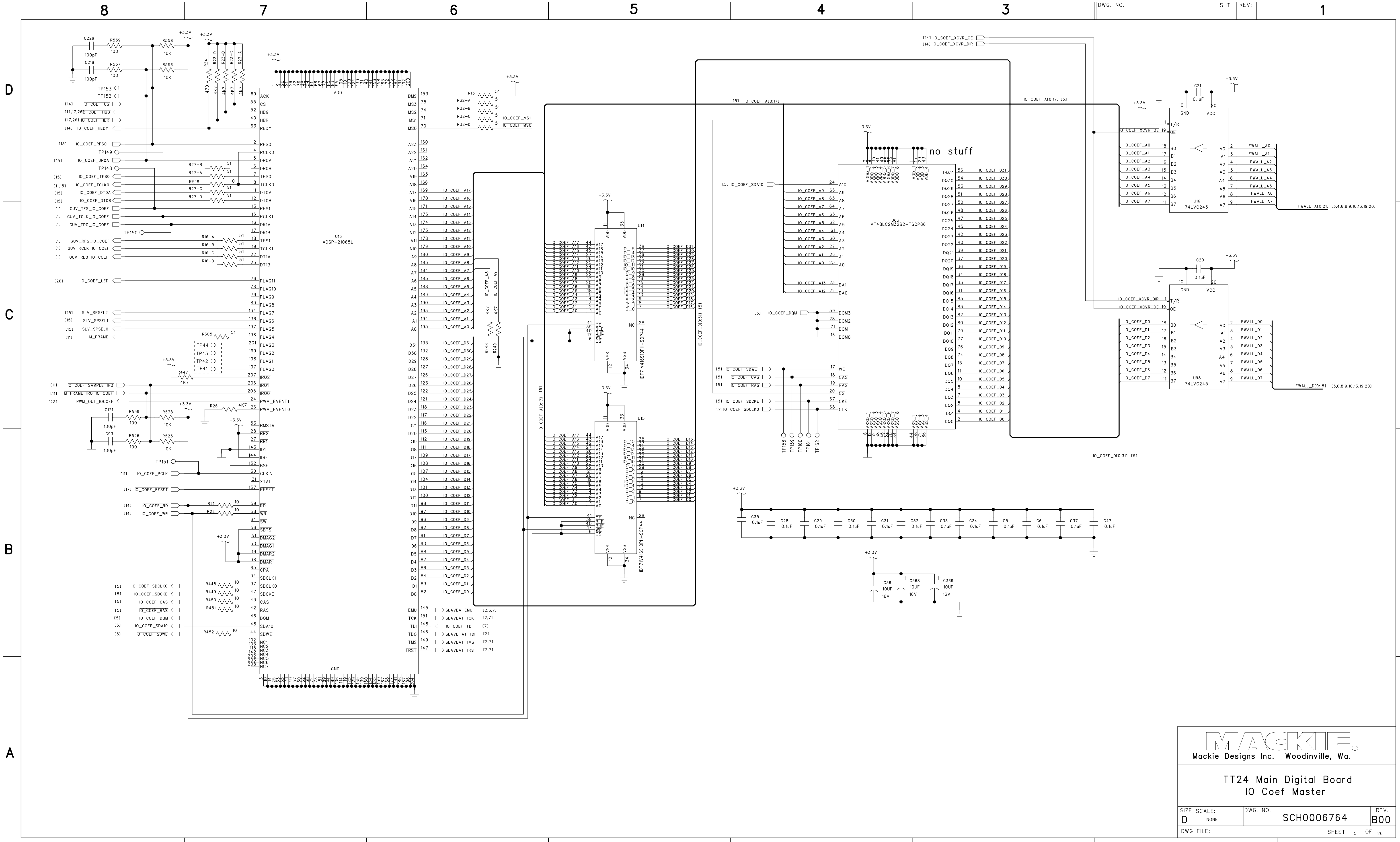
Mackie Designs Inc. Woodinville, Wa.

TT24 Main Digital Board
I/O Processing DMA Bus Controller

SIZE	SCALE:	DWG. NO.	REV.
D	NONE	SCH0006764	B00

DWG FILE: SHEET 4 OF 26

DWG. NO. SHT REV:

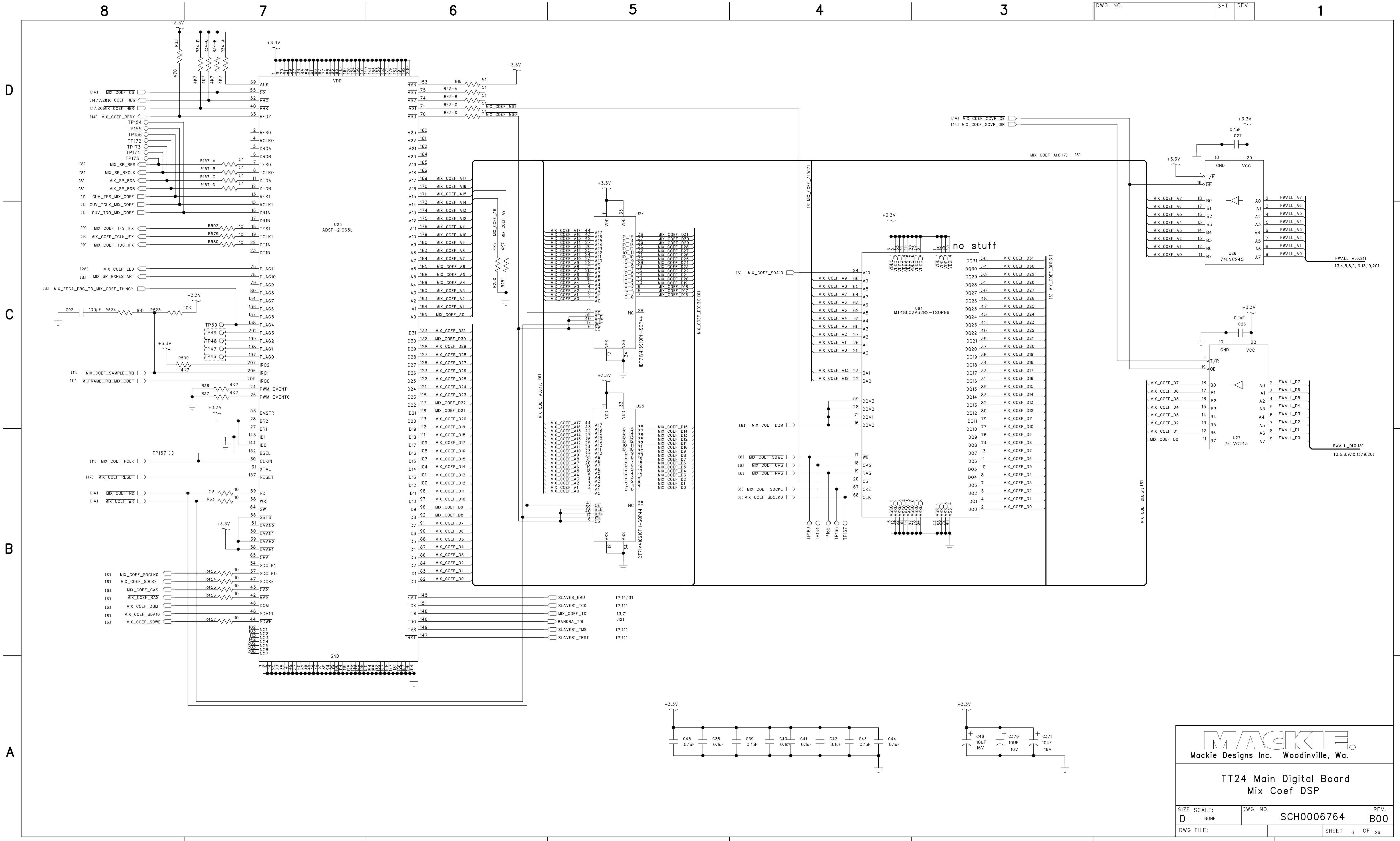

U13
ADSP-21065L
U14
IDT71V416S10PH-SOP44
U15
IDT71V416S10PH-SOP44
U63
MT48LC2M32B2-TSOP86
no stuff
U16
74LVC245
U98
74LVC245
+3.3V
IO_COEF_A[0:17] [5]
IO_COEF_D[0:31] [5]
FWALL_A[0:21] [3,4,6,8,9,10,13,19,20]
FWALL_D[0:15] [3,6,8,9,10,13,19,20]
[14] IO_COEF_XCVR_OE
[14] IO_COEF_XCVR_DIR
IO_COEF_MS1
IO_COEF_MS0
R24
R23-A
R23-B
R23-C
R23-D
R15
R32-A
R32-B
R32-C
R32-D
R248
R249
C35
C28
C29
C30
C31
C32
C33
C34
C5
C6
C37
C47
0.1uF
C36
C368
C369
10UF
16V
TP158
TP159
TP160
TP161
TP162

Mackie Designs Inc. Woodinville, Wa.

TT24 Main Digital Board
IO Coef Master

SIZE	SCALE:	DWG. NO.	REV.
D	NONE	SCH0006764	B00

DWG FILE: SHEET 5 OF 26

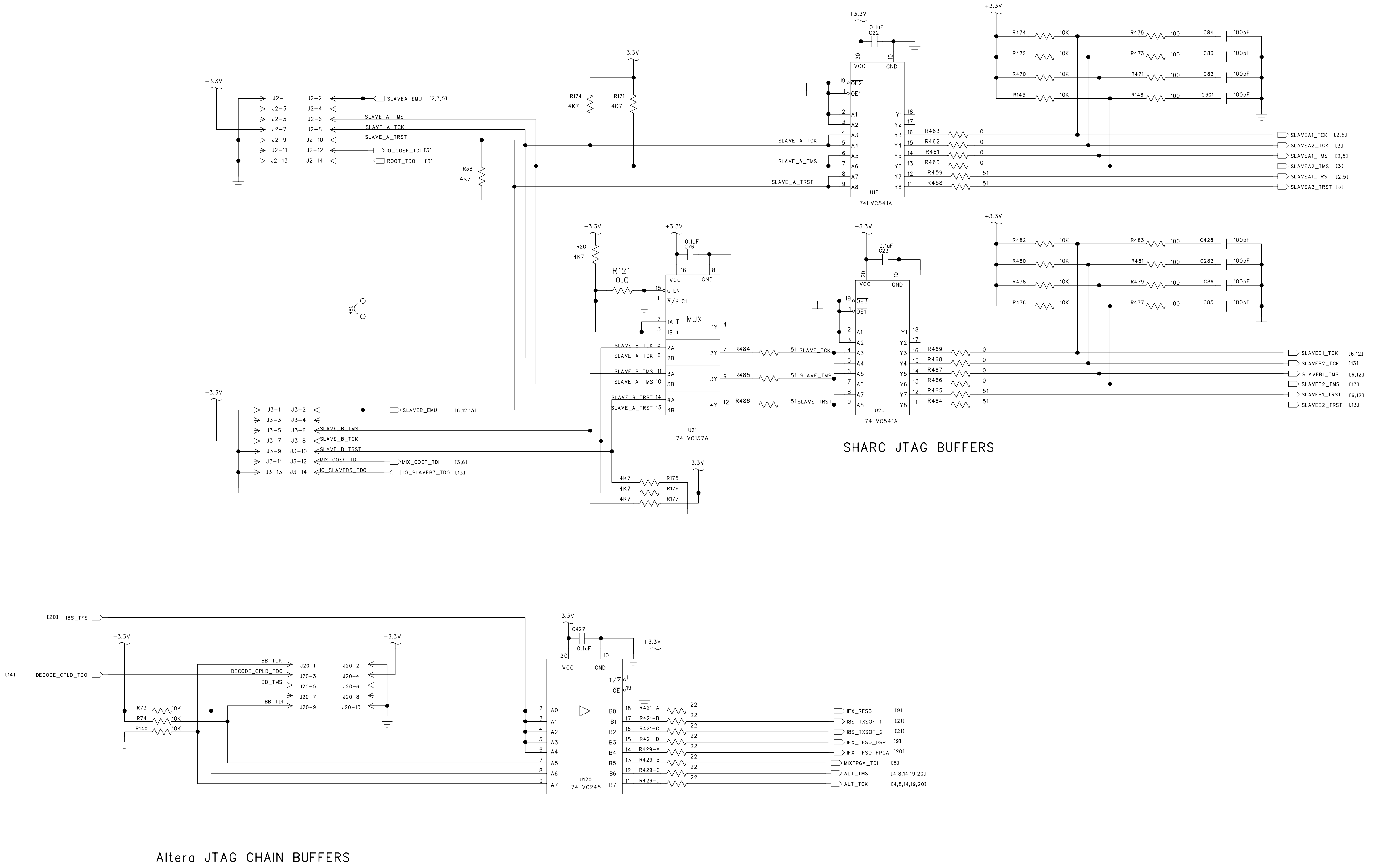

U23
ADSP-21065L
U24
IDT71V416S10PH-SOP44
U25
IDT71V416S10PH-SOP44
U64
MT48LC2M32B2-TSOP86
no stuff
U26
74LVC245
U27
74LVC245
MIX_COEF_A[0:17]
MIX_COEF_D[0:31]
FWALL_A[0:21]
FWALL_D[0:15]
MIX_COEF_XCVR_OE
MIX_COEF_XCVR_DIR
MIX_COEF_CS
MIX_COEF_HBG
MIX_COEF_HBR
MIX_COEF_REDY
MIX_COEF_RD
MIX_COEF_WR
MIX_COEF_SDCLK0
MIX_COEF_SDCKE
MIX_COEF_CAS
MIX_COEF_RAS
MIX_COEF_DQM
MIX_COEF_SDA10
MIX_COEF_SDWE
MIX_COEF_PCLK
MIX_COEF_RESET
MIX_COEF_SAMPLE_IRQ
M_FRAME_IRQ_MIX_COEF
MIX_FPGA_DBG_TO_MIX_COEF_THNGY
MIX_COEF_LED
MIX_SP_RXRESTART
SLAVEB_EMU
SLAVEB1_TCK
MIX_COEF_TDI
BANKBA_TDI
SLAVEB1_TMS
SLAVEB1_TRST
+3.3V
VDD
GND
C45 0.1uF
C38 0.1uF
C39 0.1uF
C40 0.1uF
C41 0.1uF
C42 0.1uF
C43 0.1uF
C44 0.1uF
C46 10UF 16V
C370 10UF 16V
C371 10UF 16V

MACKIE.
Mackie Designs Inc. Woodinville, Wa.

TT24 Main Digital Board
Mix Coef DSP

SIZE	SCALE:	DWG. NO.	REV.
D	NONE	SCH0006764	B00

DWG FILE: SHEET 6 OF 26

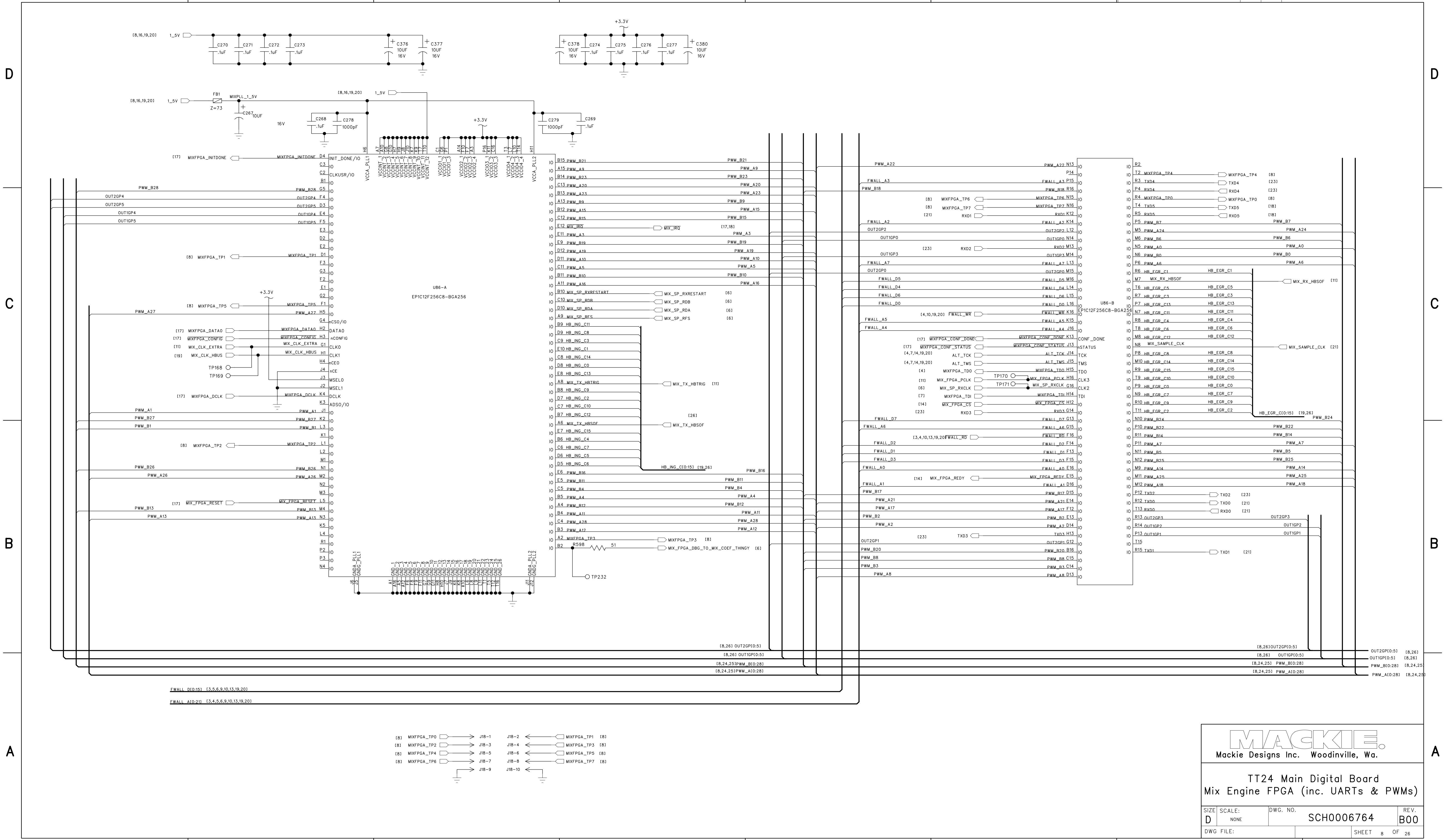


SHARC JTAG BUFFERS
U18 74LVC541A
U20 74LVC541A
U21 74LVC157A
MUX
+3.3V
0.1uF C22
0.1uF C76
0.1uF C23
R474 10K R475 100 C84 100pF
R472 10K R473 100 C83 100pF
R470 10K R471 100 C82 100pF
R145 10K R146 100 C301 100pF
R482 10K R483 100 C428 100pF
R480 10K R481 100 C282 100pF
R478 10K R479 100 C86 100pF
R476 10K R477 100 C85 100pF
R174 4K7
R171 4K7
R38 4K7
R20 4K7
R121 0.0
R80
R175 4K7
R176 4K7
R177 4K7
R484 51
R485 51
R486 51
R463 0
R462 0
R461 0
R460 0
R459 51
R458 51
R469 0
R468 0
R467 0
R466 0
R465 51
R464 51
SLAVEA_EMU [2,3,5]
SLAVE_A_TMS
SLAVE_A_TCK
SLAVE_A_TRST
IO_COEF_TDI [5]
ROOT_TDO [3]
SLAVEB_EMU [6,12,13]
SLAVE_B_TMS
SLAVE_B_TCK
SLAVE_B_TRST
MIX_COEF_TDI [3,6]
IO_SLAVEB3_TDO [13]
SLAVEA1_TCK [2,5]
SLAVEA2_TCK [3]
SLAVEA1_TMS [2,5]
SLAVEA2_TMS [3]
SLAVEA1_TRST [2,5]
SLAVEA2_TRST [3]
SLAVEB1_TCK [6,12]
SLAVEB2_TCK [13]
SLAVEB1_TMS [6,12]
SLAVEB2_TMS [13]
SLAVEB1_TRST [6,12]
SLAVEB2_TRST [13]
J2-1 … J2-14
J3-1 … J3-14
Altera JTAG CHAIN BUFFERS
U120 74LVC245
C427 0.1uF
[20] I8S_TFS
[14] DECODE_CPLD_TDO
BB_TCK
DECODE_CPLD_TDO
BB_TMS
BB_TDI
J20-1 … J20-10
R73 10K
R74 10K
R140 10K
R421-A 22
R421-B 22
R421-C 22
R421-D 22
R429-A 22
R429-B 22
R429-C 22
R429-D 22
IFX_RFS0 [9]
I8S_TXSOF_1 [21]
I8S_TXSOF_2 [21]
IFX_TFS0_DSP [9]
IFX_TFS0_FPGA [20]
MIXFPGA_TDI [8]
ALT_TMS [4,8,14,19,20]
ALT_TCK [4,8,14,19,20]

Mackie Designs Inc. Woodinville, Wa.

TT24 Main Digital Board
Sharc & Altera JTAG wrangling

SIZE: D
SCALE: NONE
DWG. NO. SCH0006764
REV. B00
DWG FILE:
SHEET 7 OF 26

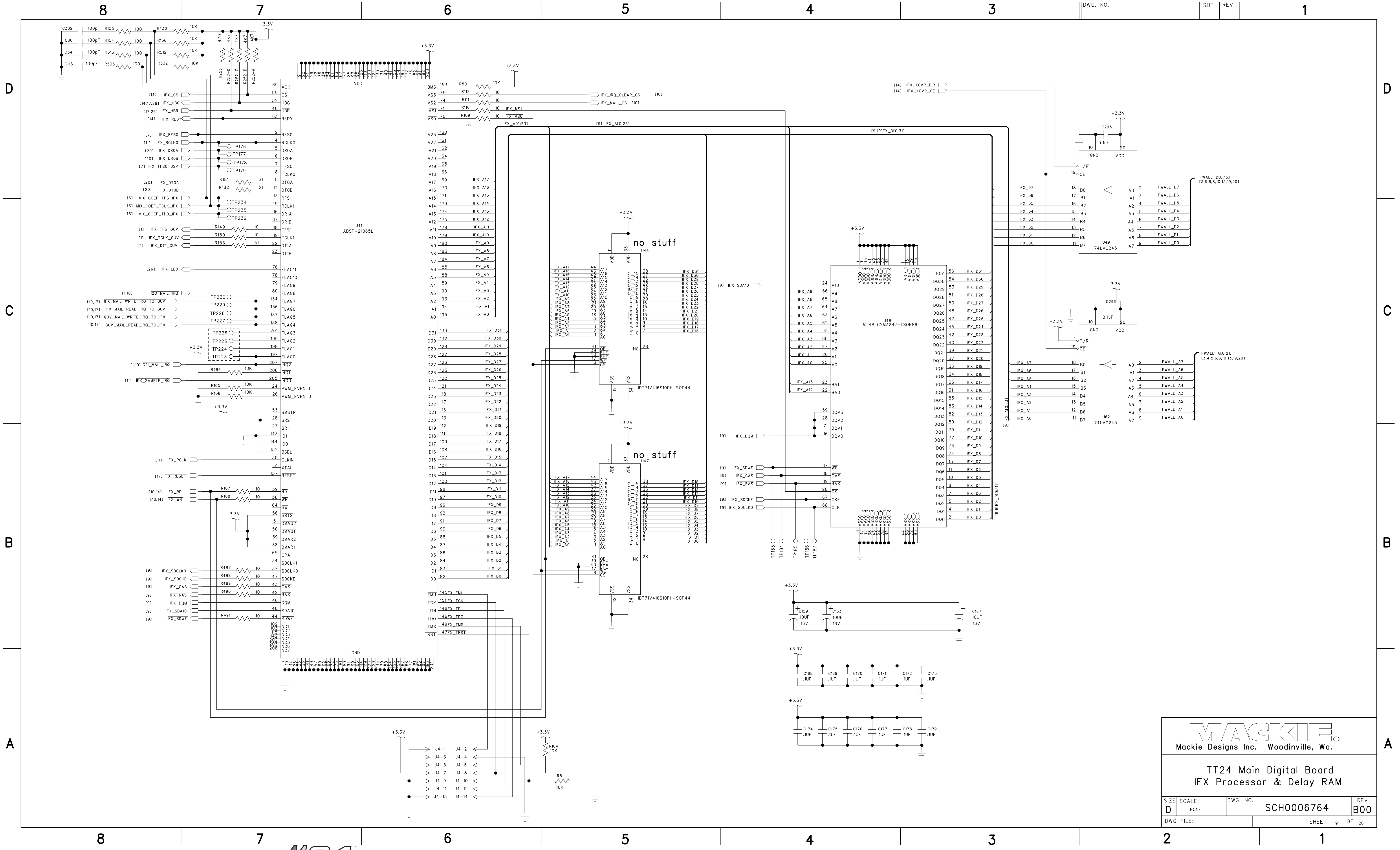


U86-A
EP1C12F256C8-BGA256
U86-B
EP1C12F256C8-BGA256
C270 .1uF
C271 .1uF
C272 .1uF
C273 .1uF
C376 10UF 16V
C377 10UF 16V
C378 10UF 16V
C274 .1uF
C275 .1uF
C276 .1uF
C277 .1uF
C380 10UF 16V
FB1 Z=73
MIXPLL_1_5V
C267 10UF 16V
C268 .1uF
C278 1000pF
C279 1000pF
C269 .1uF
1_5V
+3.3V
[8,16,19,20]
INIT_DONE/IO
CLKUSR/IO
nCSO/IO
DATA0
nCONFIG
CLK0
CLK1
nCEO
nCE
MSEL0
MSEL1
DCLK
ASDO/IO
CONF_DONE
nSTATUS
TCK
TMS
TDO
CLK3
CLK2
TDI
MIXFPGA_INITDONE
MIXFPGA_TP1
MIXFPGA_TP5
MIXFPGA_DATA0
MIXFPGA_CONFIG
MIX_CLK_EXTRA
MIX_CLK_HBUS
MIXFPGA_DCLK
MIXFPGA_TP2
MIX_FPGA_RESET
MIX_IRQ
MIX_SP_RXRESTART
MIX_SP_RDB
MIX_SP_RDA
MIX_SP_RFS
MIX_TX_HBTRIG
MIX_TX_HBSOF
HB_ING_C[0:15]
MIXFPGA_TP3
MIX_FPGA_DBG_TO_MIX_COEF_THINGY
R598 51
TP168
TP169
TP170
TP171
TP232
MIXFPGA_TP6
MIXFPGA_TP7
MIXFPGA_CONF_DONE
MIXFPGA_CONF_STATUS
ALT_TCK
ALT_TMS
MIXFPGA_TDO
MIX_FPGA_PCLK
MIX_SP_RXCLK
MIXFPGA_TDI
MIX_FPGA_CS
MIX_FPGA_REDY
FWALL_WR
FWALL_RD
MIXFPGA_TP4
MIXFPGA_TP0
TXD4
RXD4
TXD5
RXD5
TXD2
TXD0
RXD0
TXD1
RXD1
RXD2
RXD3
TXD3
MIX_RX_HBSOF
MIX_SAMPLE_CLK
HB_EGR_C[0:15]
OUT2GP[0:5] [8,26]
OUT1GP[0:5] [8,26]
PWM_B[0:28] [8,24,25]
PWM_A[0:28] [8,24,25]
FWALL_D[0:15] [3,5,6,9,10,13,19,20]
FWALL_A[0:21] [3,4,5,6,9,10,13,19,20]
J18-1
J18-2
J18-3
J18-4
J18-5
J18-6
J18-7
J18-8
J18-9
J18-10

Mackie Designs Inc. Woodinville, Wa.

TT24 Main Digital Board
Mix Engine FPGA (inc. UARTs & PWMs)

SIZE D
SCALE: NONE
DWG. NO. SCH0006764
REV. B00
DWG FILE:
SHEET 8 OF 26

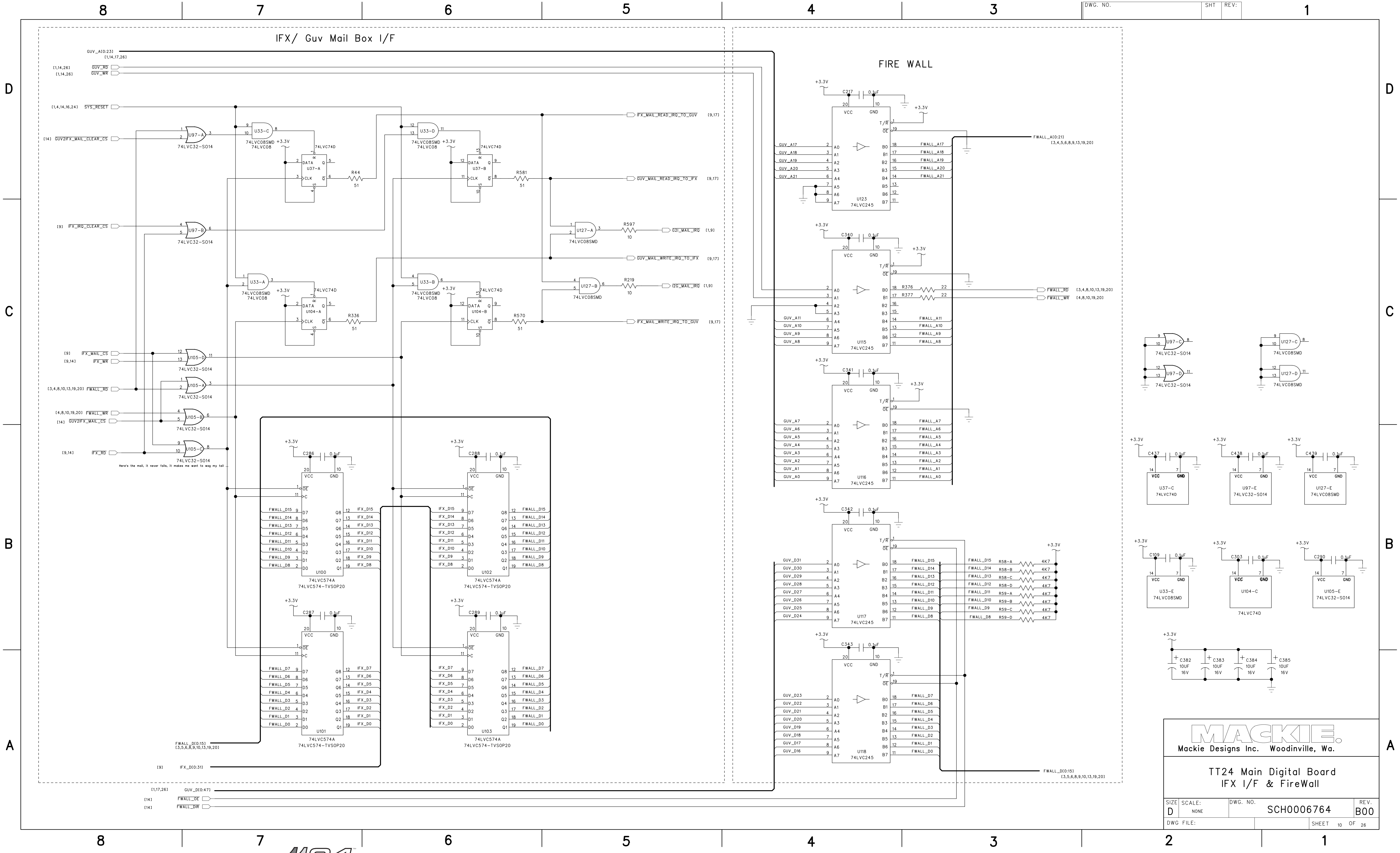

U41
ADSP-21065L
U46
IDT71V416S10PH-SOP44
no stuff
U47
IDT71V416S10PH-SOP44
no stuff
U48
MT48LC2M32B2-TSOP86
U49
74LVC245
U62
74LVC245
FWALL_D[0:15]
FWALL_A[0:21]
IFX_A[0:23]
IFX_D[0:31]
IFX_IRQ_CLEAR_CS
IFX_MAIL_CS
IFX_XCVR_DIR
IFX_XCVR_OE
IFX_SDA10
IFX_DQM
IFX_SDWE
IFX_CAS
IFX_RAS
IFX_SDCKE
IFX_SDCLK0
IFX_CS
IFX_HBG
IFX_HBR
IFX_REDY
IFX_RFS0
IFX_RCLK0
IFX_DR0A
IFX_DR0B
IFX_TFS0_DSP
IFX_DT0A
IFX_DT0B
MIX_COEF_TFS_IFX
MIX_COEF_TCLK_IFX
MIX_COEF_TDO_IFX
IFX_TFS_GUV
IFX_TCLK_GUV
IFX_DT1_GUV
IFX_LED
I2G_MAIL_IRQ
IFX_MAIL_WRITE_IRQ_TO_GUV
IFX_MAIL_READ_IRQ_TO_GUV
GUV_MAIL_WRITE_IRQ_TO_IFX
GUV_MAIL_READ_IRQ_TO_IFX
G2I_MAIL_IRQ
IFX_SAMPLE_IRQ
IFX_PCLK
IFX_RESET
IFX_RD
IFX_WR
IFX_EMU
IFX_TCK
IFX_TDI
IFX_TDO
IFX_TMS
IFX_TRST
+3.3V
VDD
GND
J4-1 … J4-14
R104 10K
R51 10K
C159 10UF 16V
C163 10UF 16V
C167 10UF 16V
C168 C169 C170 C171 C172 C173 .1UF
C174 C175 C176 C177 C178 C179 .1UF
C295 0.1uF
C296 0.1uF
TP183 TP184 TP185 TP186 TP187
8 7 6 5 4 3 2 1
D C B A

DWG. NO. SHT REV:

MACKIE.
Mackie Designs Inc. Woodinville, Wa.

TT24 Main Digital Board
IFX Processor & Delay RAM

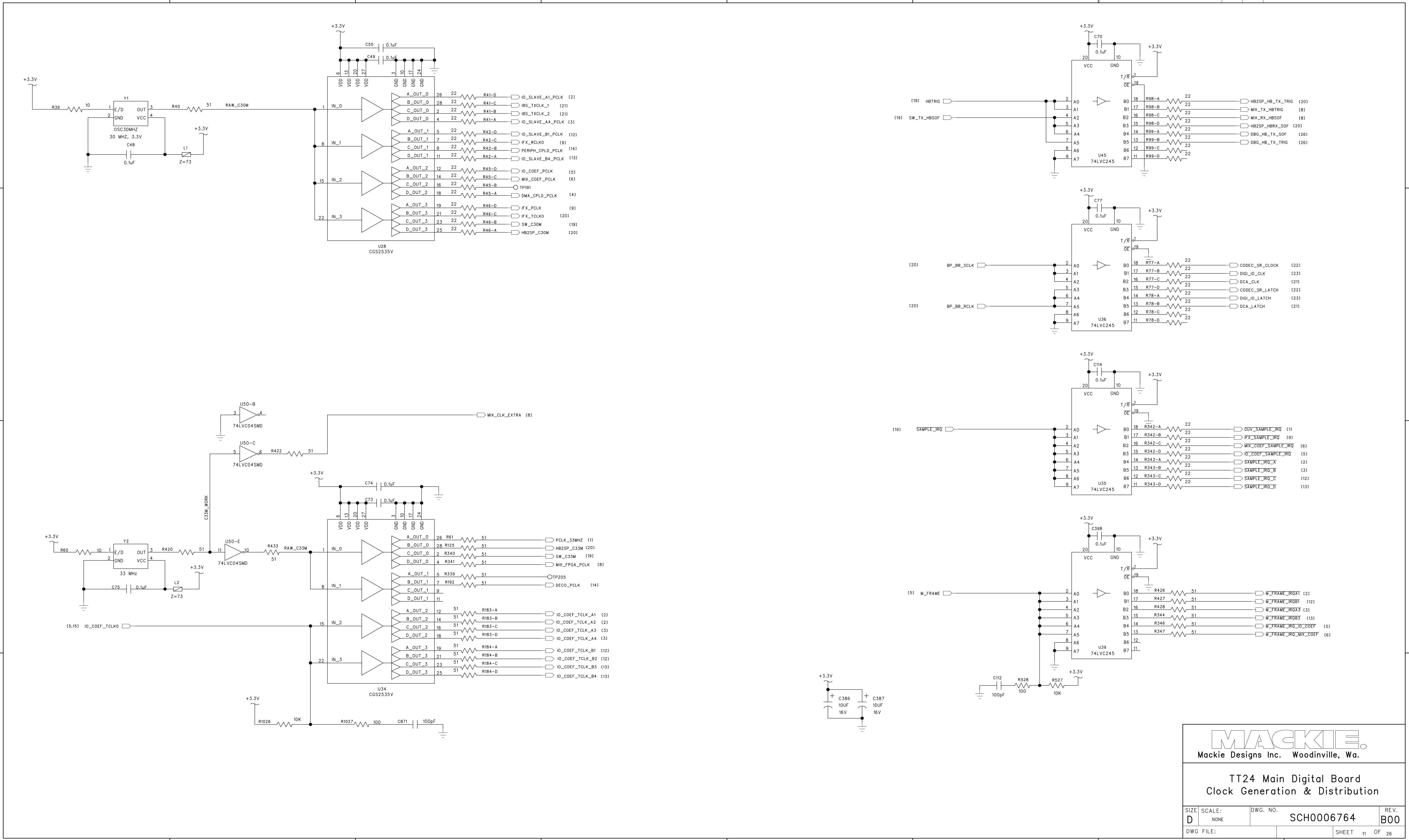
SIZE D SCALE: NONE DWG. NO. SCH0006764 REV. B00
DWG FILE: SHEET 9 OF 26


IFX/ Guv Mail Box I/F
FIRE WALL
GUV_A[0:23]
GUV_RD
GUV_WR
SYS_RESET
GUV2IFX_MAIL_CLEAR_CS
IFX_IRQ_CLEAR_CS
IFX_MAIL_CS
IFX_WR
FWALL_RD
FWALL_WR
GUV2IFX_MAIL_CS
IFX_RD
U97-A
U97-B
U33-C
U33-D
U33-A
U33-B
U37-A
U37-B
U104-A
U104-B
U105-D
U105-A
U105-B
U105-C
U127-A
U127-B
74LVC32-SO14
74LVC08SMD
74LVC08
74LVC74D
R44
R581
R336
R570
R597
R219
51
10
IFX_MAIL_READ_IRQ_TO_GUV
GUV_MAIL_READ_IRQ_TO_IFX
C2I_MAIL_IRQ
GUV_MAIL_WRITE_IRQ_TO_IFX
I2G_MAIL_IRQ
IFX_MAIL_WRITE_IRQ_TO_GUV
Here's the mail, it never fails, it makes me want to wag my tail
U100
U101
U102
U103
74LVC574A
74LVC574-TVSOP20
C286
C287
C288
C289
0.1uF
+3.3V
FWALL_D[0:15]
IFX_D[0:31]
GUV_D[0:47]
FWALL_OE
FWALL_DIR
U123
U115
U116
U117
U118
74LVC245
C217
C340
C341
C342
C343
FWALL_A[0:21]
R376
R377
22
R58-A
R58-B
R58-C
R58-D
R59-A
R59-B
R59-C
R59-D
4K7
U97-C
U97-D
U127-C
U127-D
U37-C
U97-E
U127-E
U33-E
U104-C
U105-E
C437
C438
C439
C109
C303
C290
C382
C383
C384
C385
10UF
16V

Mackie Designs Inc. Woodinville, Wa.

TT24 Main Digital Board
IFX I/F & FireWall

SIZE D
SCALE: NONE
DWG. NO. SCH0006764
REV. B00
DWG FILE:
SHEET 10 OF 26



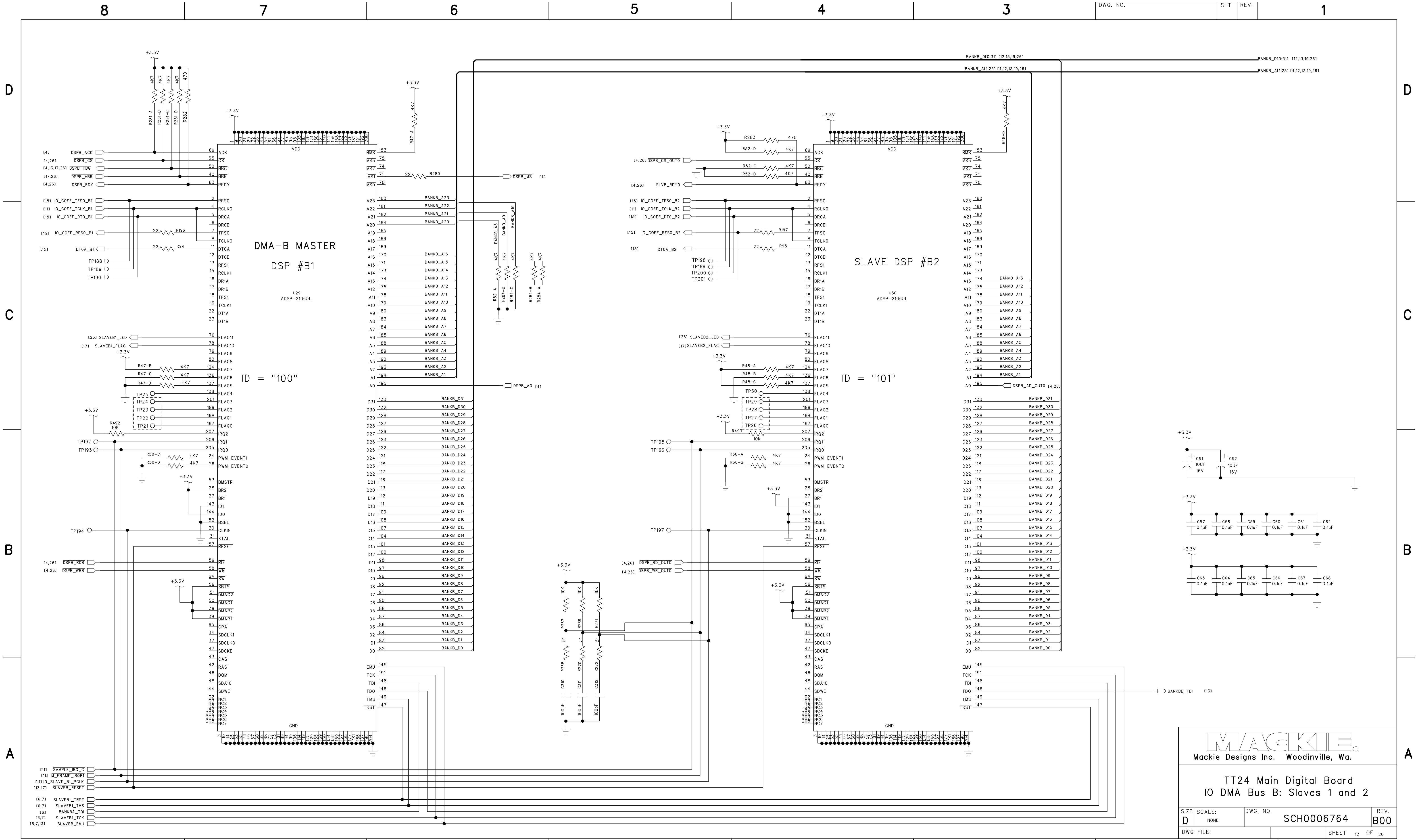
Y1
OSC30MHZ
30 MHZ, 3.3V
R39
R40
RAW_C30M
C48
0.1uF
L1
Z=73
U28
CGS2535V
IO_SLAVE_A1_PCLK
IBS_TXCLK_1
IBS_TXCLK_2
IO_SLAVE_A4_PCLK
IO_SLAVE_B1_PCLK
IFX_RCLKO
PERIPH_CPLD_PCLK
IO_SLAVE_B4_PCLK
IO_COEF_PCLK
MIX_COEF_PCLK
TP191
DMA_CPLD_PCLK
IFX_PCLK
IFX_TCLKO
SW_C30M
HB2SP_C30M
U50-B
U50-C
74LVC04SMD
MIX_CLK_EXTRA
R422
C33M_WORK
Y2
33 MHz
R60
R420
U50-E
R433
RAW_C33M
C75
L2
U34
CGS2535V
PCLK_33MHZ
HB2SP_C33M
SW_C33M
MIX_FPGA_PCLK
TP205
DECO_PCLK
IO_COEF_TCLKO
IO_COEF_TCLK_A1
IO_COEF_TCLK_A2
IO_COEF_TCLK_A3
IO_COEF_TCLK_A4
IO_COEF_TCLK_B1
IO_COEF_TCLK_B2
IO_COEF_TCLK_B3
IO_COEF_TCLK_B4
R1026
10K
R1027
100
C871
100pF
U45
74LVC245
HBTRIG
SW_TX_HBSOF
HB2SP_HB_TX_TRIG
MIX_TX_HBTRIG
MIX_RX_HBSOF
HB2SP_HBRX_SOF
DBG_HB_TX_SOF
DBG_HB_TX_TRIG
U36
74LVC245
BP_BB_SCLK
BP_BB_RCLK
CODEC_SR_CLOCK
DIGI_IO_CLK
DCA_CLK
CODEC_SR_LATCH
DIGI_IO_LATCH
DCA_LATCH
U35
74LVC245
SAMPLE_IRQ
GUV_SAMPLE_IRQ
IFX_SAMPLE_IRQ
MIX_COEF_SAMPLE_IRQ
IO_COEF_SAMPLE_IRQ
SAMPLE_IRQ_A
SAMPLE_IRQ_B
SAMPLE_IRQ_C
SAMPLE_IRQ_D
U39
74LVC245
M_FRAME
M_FRAME_IRQA1
M_FRAME_IRQB1
M_FRAME_IRQA3
M_FRAME_IRQB3
M_FRAME_IRQ_IO_COEF
M_FRAME_IRQ_MIX_COEF
C112
100pF
R528
R527
10K
C386
C387
10UF
16V
+3.3V

Mackie Designs Inc. Woodinville, Wa.

TT24 Main Digital Board
Clock Generation & Distribution

SIZE	SCALE:	DWG. NO.	REV.
D	NONE	SCH0006764	B00

DWG FILE: SHEET 11 OF 26


DMA-B MASTER
DSP #B1
U29
ADSP-21065L
ID = "100"
SLAVE DSP #B2
U30
ADSP-21065L
ID = "101"
BANKB_D[0:31] [12,13,19,26]
BANKB_A[1:23] [4,12,13,19,26]
+3.3V
VDD
GND
DSPB_ACK
DSPB_CS
DSPB_HBG
DSPB_HBR
DSPB_RDY
DSPB_MS
DSPB_A0
DSPB_CS_OUT0
SLVB_RDY0
IO_COEF_TFS0_B1
IO_COEF_TCLK_B1
IO_COEF_DT0_B1
IO_COEF_RFS0_B1
DT0A_B1
IO_COEF_TFS0_B2
IO_COEF_TCLK_B2
IO_COEF_DT0_B2
IO_COEF_RFS0_B2
DT0A_B2
SLAVEB1_LED
SLAVEB1_FLAG
SLAVEB2_LED
SLAVEB2_FLAG
DSPB_RDB
DSPB_WRB
DSPB_RD_OUT0
DSPB_WR_OUT0
DSPB_AD_OUT0
BANKBB_TDI
SAMPLE_IRQ_C
M_FRAME_IRQB1
IO_SLAVE_B1_PCLK
SLAVEB_RESET
SLAVEB1_TRST
SLAVEB1_TMS
BANKBA_TDI
SLAVEB1_TCK
SLAVEB_EMU
C51 10UF 16V
C52 10UF 16V
C57 C58 C59 C60 C61 C62 0.1uF
C63 C64 C65 C66 C67 C68 0.1uF
C310 C311 C312 100pF
R267 R269 R271 10K
R268 R270 R272 51
R492 10K
R493 10K

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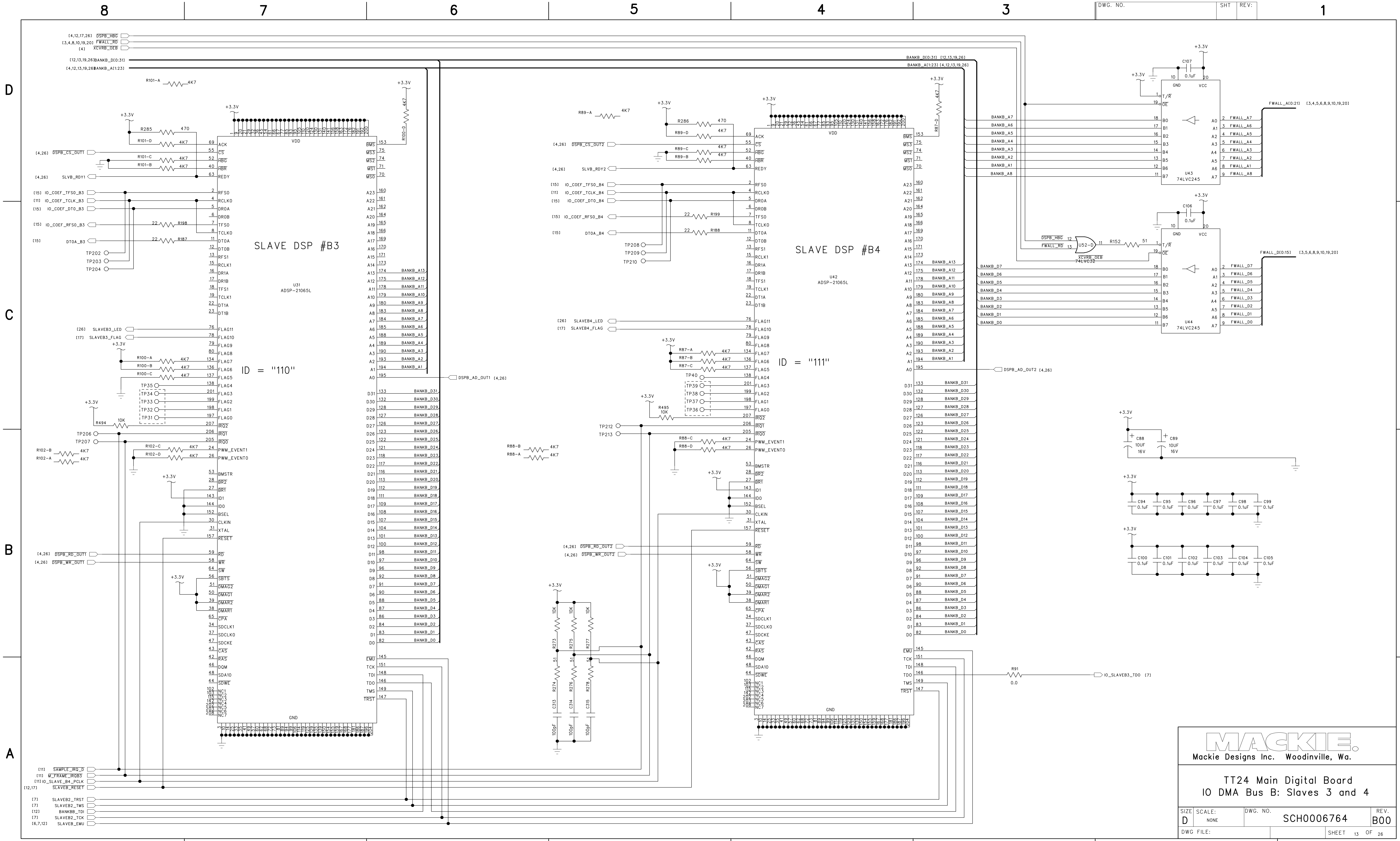
Mackie Designs Inc. Woodinville, Wa.

TT24 Main Digital Board
IO DMA Bus B: Slaves 1 and 2

SIZE	SCALE:	DWG. NO.	REV.
D	NONE	SCH0006764	B00

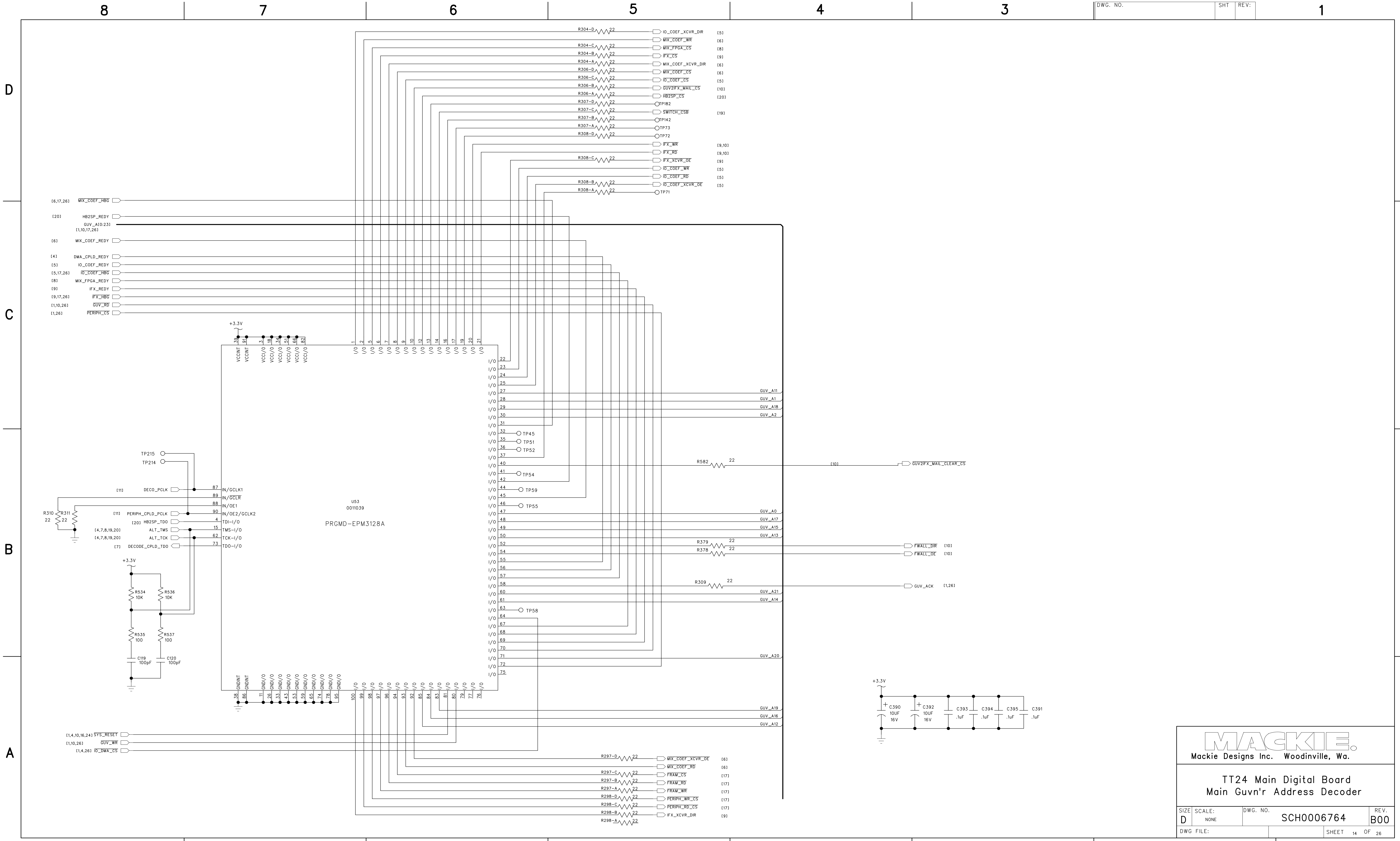
DWG FILE: SHEET 12 OF 26


SLAVE DSP #B3
U31
ADSP-21065L
ID = "110"
SLAVE DSP #B4
U42
ADSP-21065L
ID = "111"
U43
74LVC245
U44
74LVC245
U52-D
74LVC32
XCVRB_OEB
C107 0.1uF
C106 0.1uF
C88 10UF 16V
C89 10UF 16V
C94 C95 C96 C97 C98 C99 0.1uF
C100 C101 C102 C103 C104 C105 0.1uF
+3.3V
VDD
GND
DSPB_HBG
FWALL_RD
XCVRB_OEB
BANKB_D[0:31]
BANKB_A[1:23]
FWALL_A[0:21]
FWALL_D[0:15]
DSPB_AD_OUT1
DSPB_AD_OUT2
DSPB_CS_OUT1
DSPB_CS_OUT2
SLVB_RDY1
SLVB_RDY2
IO_COEF_TFS0_B3
IO_COEF_TCLK_B3
IO_COEF_DT0_B3
IO_COEF_RFS0_B3
DT0A_B3
IO_COEF_TFS0_B4
IO_COEF_TCLK_B4
IO_COEF_DT0_B4
IO_COEF_RFS0_B4
DT0A_B4
SLAVEB3_LED
SLAVEB3_FLAG
SLAVEB4_LED
SLAVEB4_FLAG
DSPB_RD_OUT1
DSPB_WR_OUT1
DSPB_RD_OUT2
DSPB_WR_OUT2
IO_SLAVEB3_TDO
SAMPLE_IRQ_D
M_FRAME_IRQB3
IO_SLAVE_B4_PCLK
SLAVEB_RESET
SLAVEB2_TRST
SLAVEB2_TMS
BANKBB_TDI
SLAVEB2_TCK
SLAVEB_EMU
8
7
6
5
4
3
2
1
D
C
B
A

Mackie Designs Inc. Woodinville, Wa.

TT24 Main Digital Board
IO DMA Bus B: Slaves 3 and 4

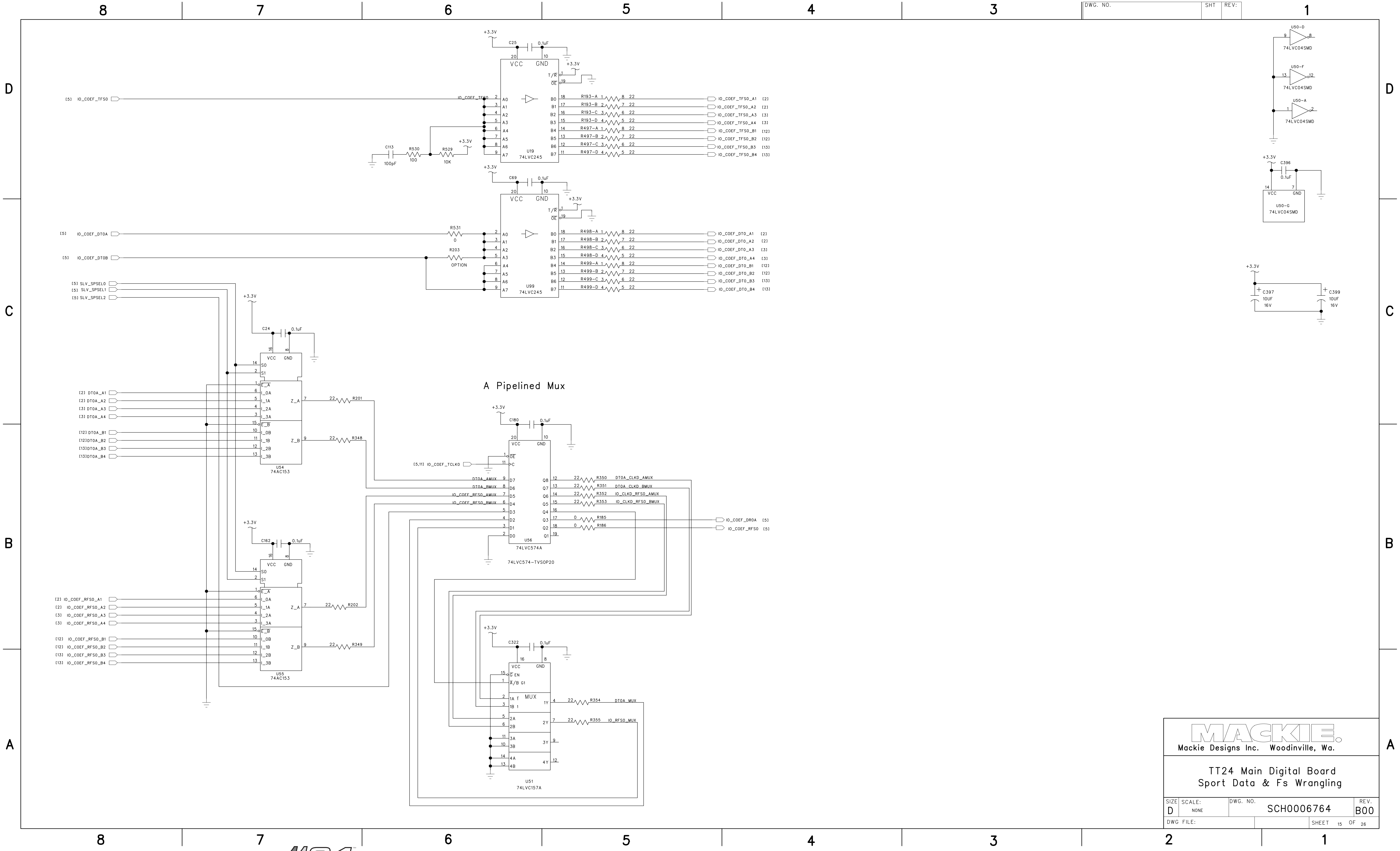
SIZE	SCALE:	DWG. NO.	REV.
D	NONE	SCH0006764	B00
DWG FILE:		SHEET 13 OF 26	


8
7
6
5
4
3
DWG. NO.
SHT
REV:
1
D
C
B
A
2
R304-D 22 IO_COEF_XCVR_DIR [5]
MIX_COEF_WR [6]
R304-C 22 MIX_FPGA_CS [8]
R304-B 22 IFX_CS [9]
R304-A 22 MIX_COEF_XCVR_DIR [6]
R306-D 22 MIX_COEF_CS [6]
R306-C 22 IO_COEF_CS [5]
R306-B 22 GUV2IFX_MAIL_CS [10]
R306-A 22 HB2SP_CS [20]
R307-D 22 TP182
R307-C 22 SWITCH_CSB [19]
R307-B 22 TP142
R307-A 22 TP73
R308-D 22 TP72
IFX_WR [9,10]
IFX_RD [9,10]
R308-C 22 IFX_XCVR_OE [9]
IO_COEF_WR [5]
IO_COEF_RD [5]
R308-B 22 IO_COEF_XCVR_OE [5]
R308-A 22 TP71
[6,17,26] MIX_COEF_HBG
[20] HB2SP_REDY
GUV_A[0:23]
[1,10,17,26]
[6] MIX_COEF_REDY
[4] DMA_CPLD_REDY
[5] IO_COEF_REDY
[5,17,26] IO_COEF_HBG
[8] MIX_FPGA_REDY
[9] IFX_REDY
[9,17,26] IFX_HBG
[1,10,26] GUV_RD
[1,26] PERIPH_CS
+3.3V
39 91 3 18 34 51 66 82
VCCINT VCCINT VCCI/O VCCI/O VCCI/O VCCI/O VCCI/O VCCI/O
1 2 5 6 7 8 9 10 12 13 14 16 17 19 20 21
I/O
22 23 24 25 27 28 29 30 31 32 33 35 36 37 40 41 42 44 45 46 47 48 49 50 52 54 55 56 57 58 60 61 63 64 67 68 69 70 71 72 75
TP45
TP51
TP52
TP54
TP59
TP55
TP58
GUV_A11
GUV_A1
GUV_A18
GUV_A2
R582 22 [10] GUV2IFX_MAIL_CLEAR_CS
GUV_A0
GUV_A17
GUV_A15
GUV_A13
R379 22 FWALL_DIR [10]
R378 22 FWALL_OE [10]
R309 22 GUV_ACK [1,26]
GUV_A21
GUV_A14
GUV_A20
U53
0011039
PRGMD-EPM3128A
TP215
TP214
[11] DECO_PCLK 87 IN/GCLK1
89 IN/GCLR
88 IN/OE1
[11] PERIPH_CPLD_PCLK 90 IN/OE2/GCLK2
[20] HB2SP_TDO 4 TDI-I/O
[4,7,8,19,20] ALT_TMS 15 TMS-I/O
[4,7,8,19,20] ALT_TCK 62 TCK-I/O
[7] DECODE_CPLD_TDO 73 TDO-I/O
R310 22
R311 22
+3.3V
R534 10K
R536 10K
R535 100
R537 100
C119 100pF
C120 100pF
GNDINT GNDINT GNDI/O GNDI/O GNDI/O GNDI/O GNDI/O GNDI/O GNDI/O GNDI/O GNDI/O GNDI/O
38 86 11 26 33 43 53 59 65 74 78 95
100 99 98 97 96 94 93 92 85 84 83 81 80 79 77 76
GUV_A19
GUV_A16
GUV_A12
[1,4,10,16,24] SYS_RESET
[1,10,26] GUV_WR
[1,4,26] IO_DMA_CS
R297-D 22 MIX_COEF_XCVR_OE [6]
MIX_COEF_RD [6]
R297-C 22 FRAM_CS [17]
R297-B 22 FRAM_RD [17]
R297-A 22 FRAM_WR [17]
R298-D 22 PERIPH_WR_CS [17]
R298-C 22 PERIPH_RD_CS [17]
R298-B 22 IFX_XCVR_DIR [9]
R298-A 22
+3.3V
C390 10UF 16V
C392 10UF 16V
C393 .1uF
C394 .1uF
C395 .1uF
C391 .1uF
MACKIE.

Mackie Designs Inc. Woodinville, Wa.

TT24 Main Digital Board
Main Guvn'r Address Decoder

SIZE D
SCALE: NONE
DWG. NO. SCH0006764
REV. B00
DWG FILE:
SHEET 14 OF 26


A Pipelined Mux
U19 74LVC245
U99 74LVC245
U54 74AC153
U55 74AC153
U56 74LVC574A
74LVC574-TVSOP20
U51 74LVC157A
U50-D 74LVC04SMD
U50-F 74LVC04SMD
U50-A 74LVC04SMD
U50-G 74LVC04SMD
C397 10UF 16V
C399 10UF 16V
IO_COEF_TFS0
IO_COEF_DT0A
IO_COEF_DT0B
SLV_SPSEL0
SLV_SPSEL1
SLV_SPSEL2
IO_COEF_TCLK0
IO_COEF_DR0A
IO_COEF_RFS0
DT0A_MUX
IO_RFS0_MUX
+3.3V

Mackie Designs Inc. Woodinville, Wa.

TT24 Main Digital Board
Sport Data & Fs Wrangling

SIZE D SCALE: NONE DWG. NO. SCH0006764 REV. B00
DWG FILE: SHEET 15 OF 26

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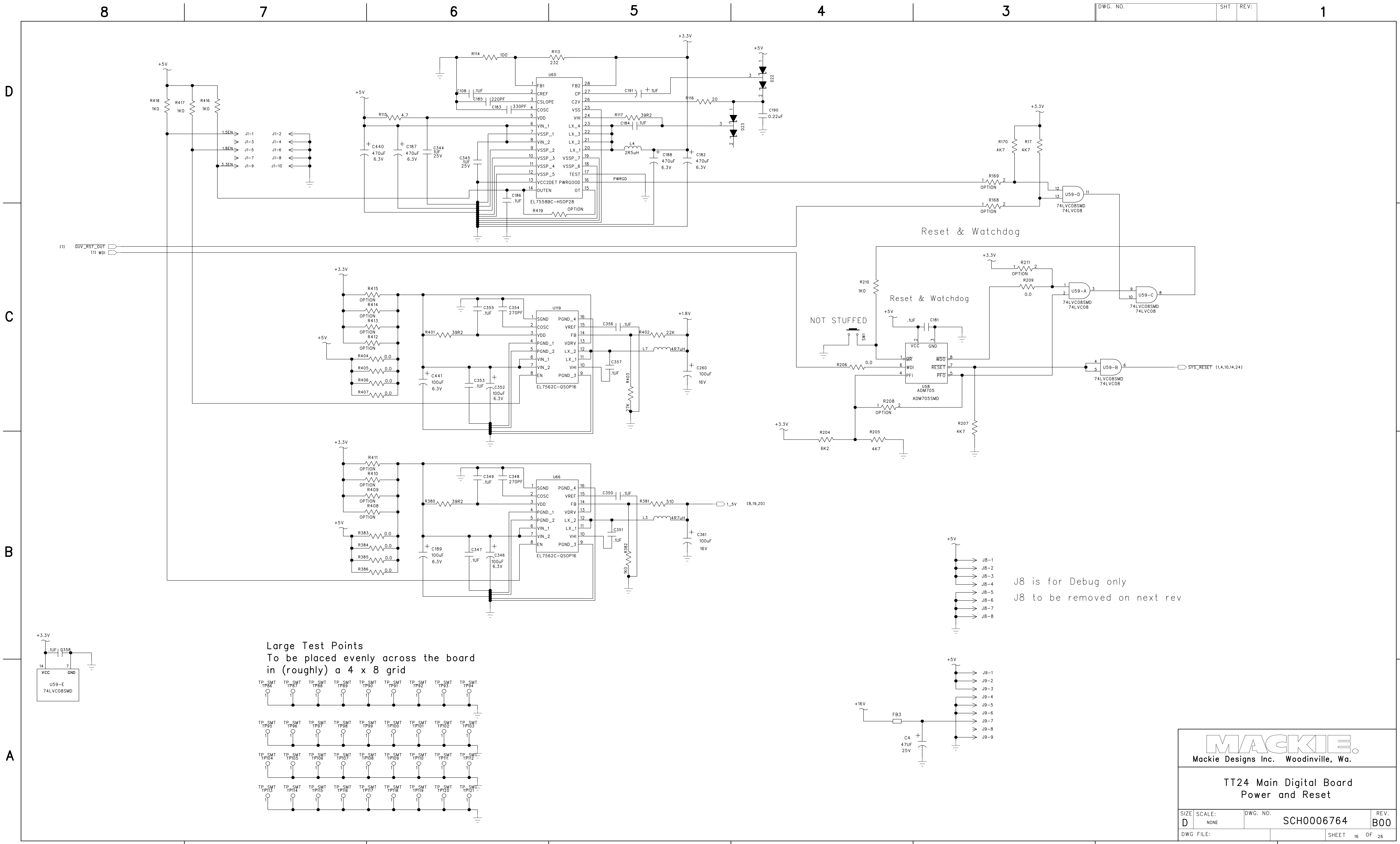
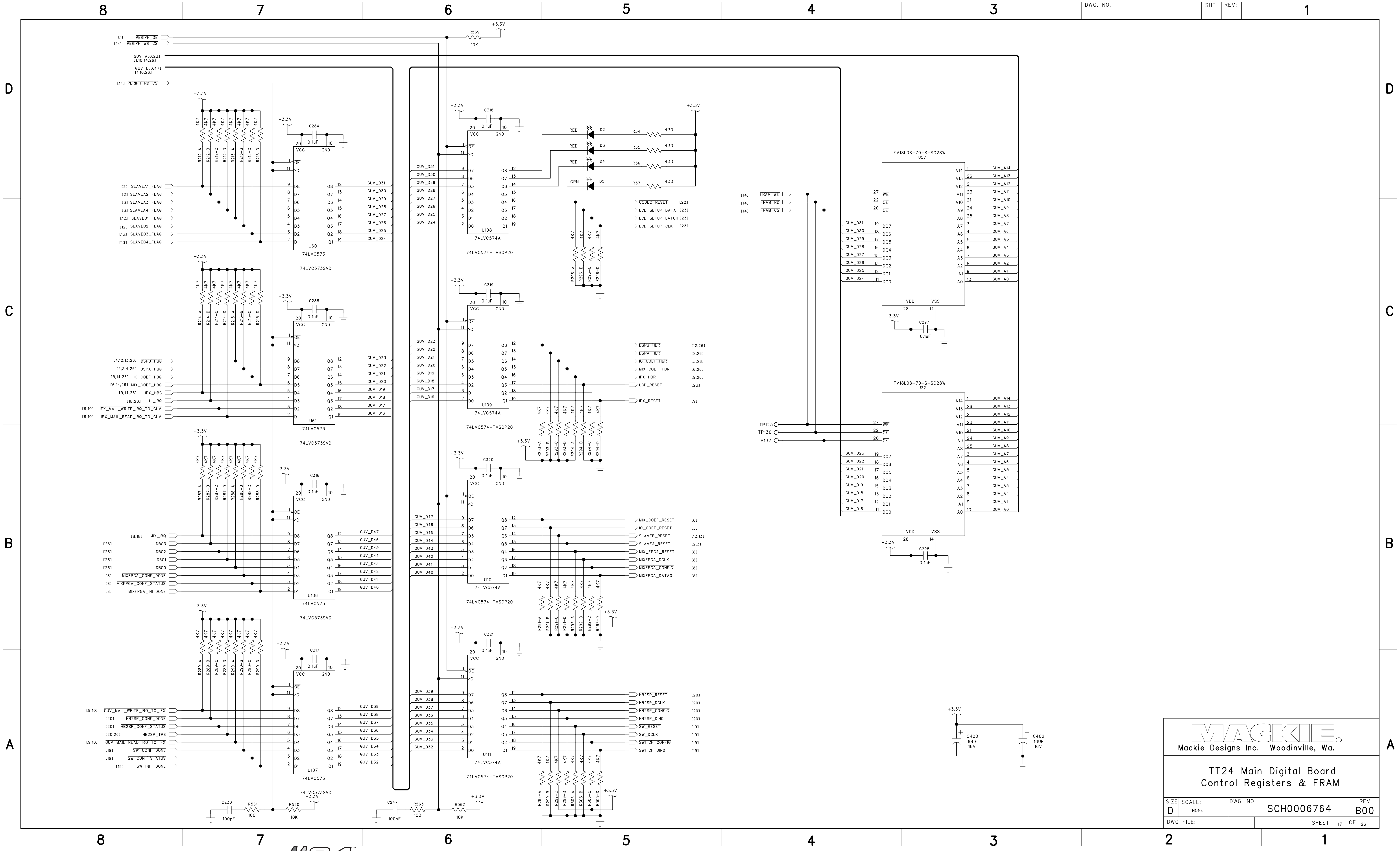
Main Digital Board Schematics


8
7
6
5
4
3
2
1
D
C
B
A
Reset & Watchdog
NOT STUFFED
J8 is for Debug only
J8 to be removed on next rev
Large Test Points
To be placed evenly across the board
in (roughly) a 4 x 8 grid
U65
EL7558BC-HSOP28
U119
EL7562C-QSOP16
U66
EL7562C-QSOP16
U58
ADM705
ADM705SMD
U59-A
U59-B
U59-C
U59-D
U59-E
74LVC08SMD
74LVC08
SYS_RESET
GUV_RST_OUT
WDI
PWRGD
1_5V
+3.3V
+5V
+1.8V
+16V
SW1
FB3
J8-1
J8-2
J8-3
J8-4
J8-5
J8-6
J8-7
J8-8
J9-1
J9-2
J9-3
J9-4
J9-5
J9-6
J9-7
J9-8
J9-9
D22
D23
L4 2R5uH
L7 4R7uH
L3 4R7uH

Mackie Designs Inc. Woodinville, Wa.

TT24 Main Digital Board
Power and Reset

SIZE D
SCALE: NONE
DWG. NO. SCH0006764
REV. B00
DWG FILE:
SHEET 16 OF 26


8
7
6
5
4
3
1
D
C
B
A
[1] PERIPH_OE
[14] PERIPH_WR_CS
GUV_A[0:23] [1,10,14,26]
GUV_D[0:47] [1,10,26]
[14] PERIPH_RD_CS
R569 10K
+3.3V
4K7
R212-A R212-B R212-C R212-D R213-A R213-B R213-C R213-D
C284 0.1uF
VCC GND
OE
C
D8 D7 D6 D5 D4 D3 D2 D1
Q8 Q7 Q6 Q5 Q4 Q3 Q2 Q1
[2] SLAVEA1_FLAG
[2] SLAVEA2_FLAG
[3] SLAVEA3_FLAG
[3] SLAVEA4_FLAG
[12] SLAVEB1_FLAG
[12] SLAVEB2_FLAG
[13] SLAVEB3_FLAG
[13] SLAVEB4_FLAG
U60
74LVC573
74LVC573SMD
GUV_D31 GUV_D30 GUV_D29 GUV_D28 GUV_D27 GUV_D26 GUV_D25 GUV_D24
R214-A R214-B R214-C R214-D R215-A R215-B R215-C R215-D
C285 0.1uF
[4,12,13,26] DSPB_HBG
[2,3,4,26] DSPA_HBG
[5,14,26] IO_COEF_HBG
[6,14,26] MIX_COEF_HBG
[9,14,26] IFX_HBG
[18,20] UI_IRQ
[9,10] IFX_MAIL_WRITE_IRQ_TO_GUV
[9,10] IFX_MAIL_READ_IRQ_TO_GUV
U61
74LVC573
74LVC573SMD
GUV_D23 GUV_D22 GUV_D21 GUV_D20 GUV_D19 GUV_D18 GUV_D17 GUV_D16
R287-A R287-B R287-C R287-D R288-A R288-B R288-C R288-D
C316 0.1uF
[8,18] MIX_IRQ
[26] DBG3
[26] DBG2
[26] DBG1
[26] DBG0
[8] MIXFPGA_CONF_DONE
[8] MIXFPGA_CONF_STATUS
[8] MIXFPGA_INITDONE
U106
74LVC573
74LVC573SMD
GUV_D47 GUV_D46 GUV_D45 GUV_D44 GUV_D43 GUV_D42 GUV_D41 GUV_D40
R289-A R289-B R289-C R289-D R290-A R290-B R290-C R290-D
C317 0.1uF
[9,10] GUV_MAIL_WRITE_IRQ_TO_IFX
[20] HB2SP_CONF_DONE
[20] HB2SP_CONF_STATUS
[20,26] HB2SP_TP8
[9,10] GUV_MAIL_READ_IRQ_TO_IFX
[19] SW_CONF_DONE
[19] SW_CONF_STATUS
[19] SW_INIT_DONE
U107
74LVC573
74LVC573SMD
GUV_D39 GUV_D38 GUV_D37 GUV_D36 GUV_D35 GUV_D34 GUV_D33 GUV_D32
C230 100pF
R561 100
R560 10K
C247 100pF
R563 100
R562 10K
C318 0.1uF
U108
74LVC574A
74LVC574-TVSOP20
RED D2 R54 430
RED D3 R55 430
RED D4 R56 430
GRN D5 R57 430
CODEC_RESET [22]
LCD_SETUP_DATA [23]
LCD_SETUP_LATCH [23]
LCD_SETUP_CLK [23]
R296-A R296-B R296-C R296-D
C319 0.1uF
U109
74LVC574A
74LVC574-TVSOP20
DSPB_HBR [12,26]
DSPA_HBR [2,26]
IO_COEF_HBR [5,26]
MIX_COEF_HBR [6,26]
IFX_HBR [9,26]
LCD_RESET [23]
IFX_RESET [9]
R293-A R293-B R293-C R293-D R294-A R294-B R294-C R294-D
C320 0.1uF
U110
74LVC574A
74LVC574-TVSOP20
MIX_COEF_RESET [6]
IO_COEF_RESET [5]
SLAVEB_RESET [12,13]
SLAVEA_RESET [2,3]
MIX_FPGA_RESET [8]
MIXFPGA_DCLK [8]
MIXFPGA_CONFIG [8]
MIXFPGA_DATA0 [8]
R291-A R291-B R291-C R291-D R292-A R292-B R292-C R292-D
C321 0.1uF
U111
74LVC574A
74LVC574-TVSOP20
HB2SP_RESET [20]
HB2SP_DCLK [20]
HB2SP_CONFIG [20]
HB2SP_DIN0 [20]
SW_RESET [19]
SW_DCLK [19]
SWITCH_CONFIG [19]
SWITCH_DIN0 [19]
R299-A R299-B R299-C R299-D R303-A R303-B R303-C R303-D
[14] FRAM_WR
[14] FRAM_RD
[14] FRAM_CS
FM18L08-70-S-SO28W
U57
WE OE CE
DQ7 DQ6 DQ5 DQ4 DQ3 DQ2 DQ1 DQ0
A14 A13 A12 A11 A10 A9 A8 A7 A6 A5 A4 A3 A2 A1 A0
GUV_A14 GUV_A13 GUV_A12 GUV_A11 GUV_A10 GUV_A9 GUV_A8 GUV_A7 GUV_A6 GUV_A5 GUV_A4 GUV_A3 GUV_A2 GUV_A1 GUV_A0
VDD VSS
C297 0.1uF
FM18L08-70-S-SO28W
U22
TP125
TP130
TP137
C298 0.1uF
C400 10UF 16V
C402 10UF 16V

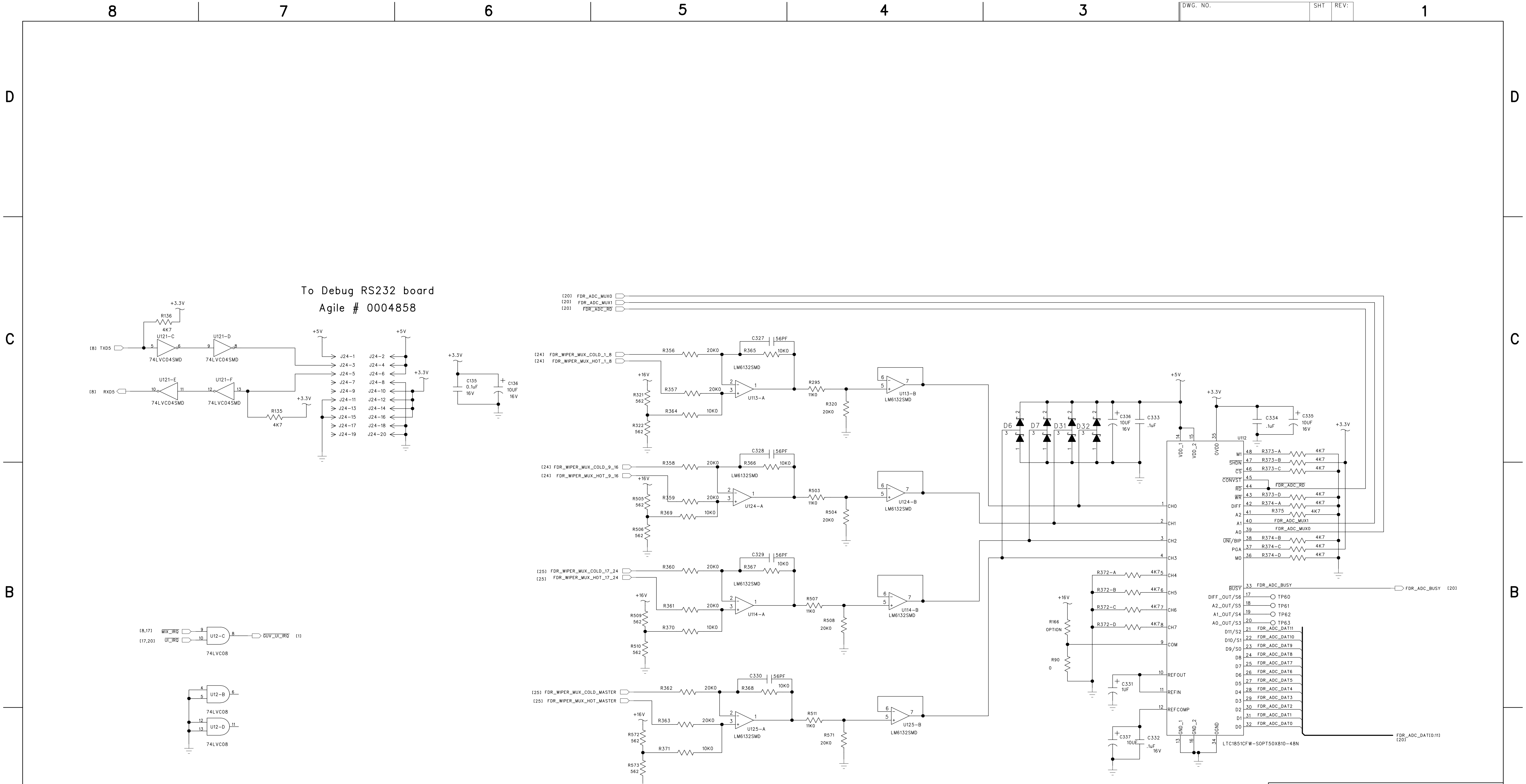
Mackie Designs Inc. Woodinville, Wa.

TT24 Main Digital Board
Control Registers & FRAM

SIZE	SCALE:	DWG. NO.	REV.
D	NONE	SCH0006764	B00

DWG FILE: SHEET 17 OF 26

To Debug RS232 board
Agile # 0004858



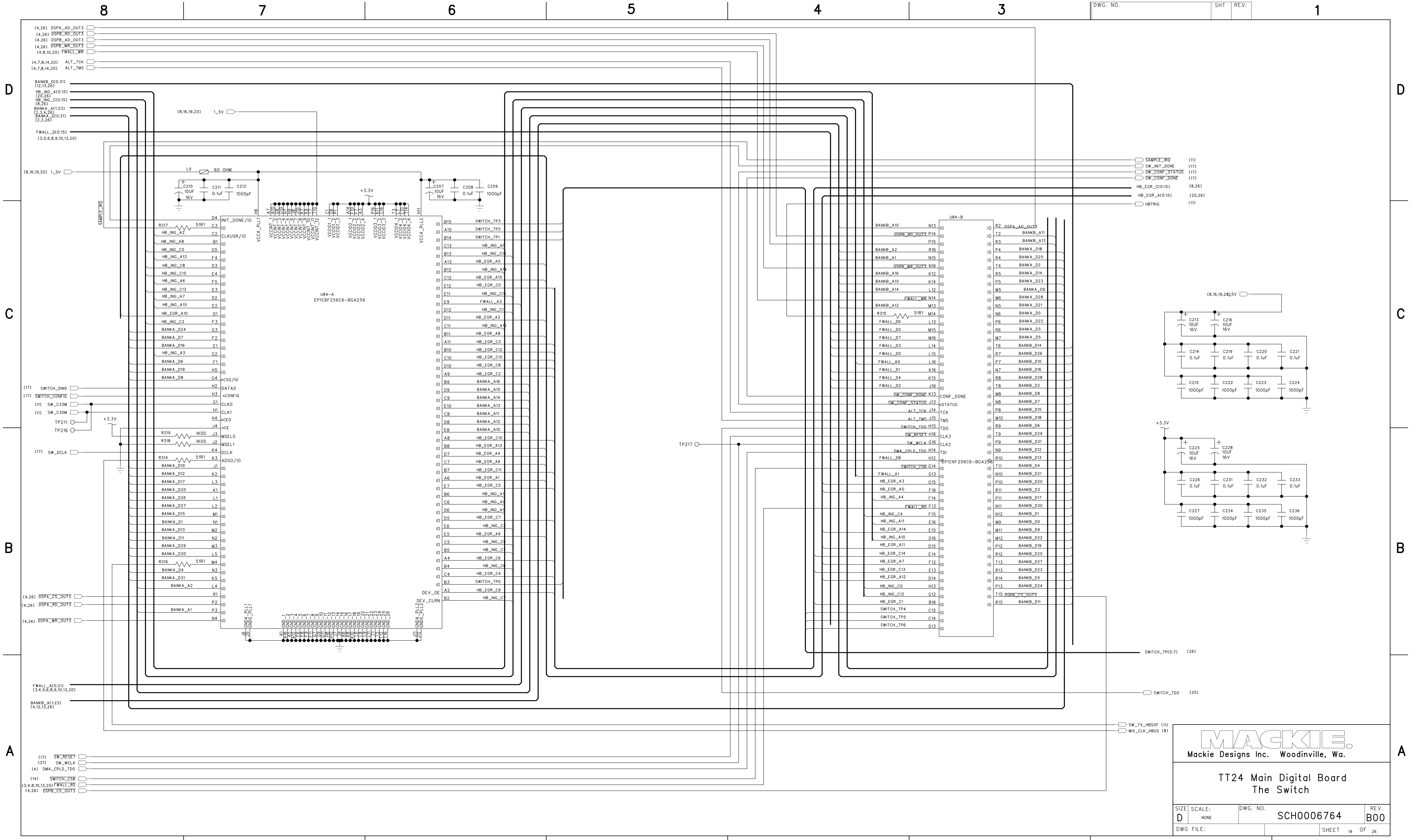
8
7
6
5
4
3
2
1
D
C
B
A
DWG. NO.
SHT
REV:
TXD5
RXD5
R136
4K7
+3.3V
U121-C
U121-D
U121-E
U121-F
74LVC04SMD
R135
4K7
+5V
J24-1
J24-3
J24-5
J24-7
J24-9
J24-11
J24-13
J24-15
J24-17
J24-19
J24-2
J24-4
J24-6
J24-8
J24-10
J24-12
J24-14
J24-16
J24-18
J24-20
C135
0.1uF
16V
C136
10UF
16V
FDR_ADC_MUX0
FDR_ADC_MUX1
FDR_ADC_RD
FDR_WIPER_MUX_COLD_1_8
FDR_WIPER_MUX_HOT_1_8
FDR_WIPER_MUX_COLD_9_16
FDR_WIPER_MUX_HOT_9_16
FDR_WIPER_MUX_COLD_17_24
FDR_WIPER_MUX_HOT_17_24
FDR_WIPER_MUX_COLD_MASTER
FDR_WIPER_MUX_HOT_MASTER
+16V
R356 20K0
R357 20K0
R364 10K0
R365 10K0
C327 56PF
R321 562
R322 562
LM6132SMD
U113-A
U113-B
R295 11K0
R320 20K0
R358 20K0
R359 20K0
R369 10K0
R366 10K0
C328 56PF
R505 562
R506 562
U124-A
U124-B
R503 11K0
R504 20K0
R360 20K0
R361 20K0
R370 10K0
R367 10K0
C329 56PF
R509 562
R510 562
U114-A
U114-B
R507 11K0
R508 20K0
R362 20K0
R363 20K0
R371 10K0
R368 10K0
C330 56PF
R572 562
R573 562
U125-A
U125-B
R511 11K0
R571 20K0
MIX_IRQ
UI_IRQ
U12-C
74LVC08
GUV_UI_IRQ
U12-B
U12-D
U12-E
U121-G
VCC
GND
C87
C3
0.1uF
74LVC04SMD
D6
D7
D31
D32
C336 10UF 16V
C333 .1uF
C334 .1uF
C335 10UF 16V
VDD_1
VDD_2
OVDD
U112
CH0
CH1
CH2
CH3
CH4
CH5
CH6
CH7
COM
REFOUT
REFIN
REFCOMP
GND_1
GND_2
OGND
R372-A 4K7
R372-B 4K7
R372-C 4K7
R372-D 4K7
R166 OPTION
R90 0
C331 1UF
C337 10UF
C332 .1uF 16V
M1
SHDN
CS
CONVST
RD
WR
DIFF
A2
A1
A0
UNI/BIP
PGA
M0
R373-A 4K7
R373-B 4K7
R373-C 4K7
R373-D 4K7
R374-A 4K7
R375 4K7
R374-B 4K7
R374-C 4K7
R374-D 4K7
BUSY
FDR_ADC_BUSY
DIFF_OUT/S6
A2_OUT/S5
A1_OUT/S4
A0_OUT/S3
TP60
TP61
TP62
TP63
D11/S2
D10/S1
D9/S0
D8
D7
D6
D5
D4
D3
D2
D1
D0
FDR_ADC_DAT11
FDR_ADC_DAT10
FDR_ADC_DAT9
FDR_ADC_DAT8
FDR_ADC_DAT7
FDR_ADC_DAT6
FDR_ADC_DAT5
FDR_ADC_DAT4
FDR_ADC_DAT3
FDR_ADC_DAT2
FDR_ADC_DAT1
FDR_ADC_DAT0
FDR_ADC_DAT[0:11]
LTC1851CFW-SOPT50X810-48N
C338 47UF 25V
C323 .1uF
C324 .1uF
C326 .1uF
C325 .1uF
U113-C
U124-C
U125-C
U114-C

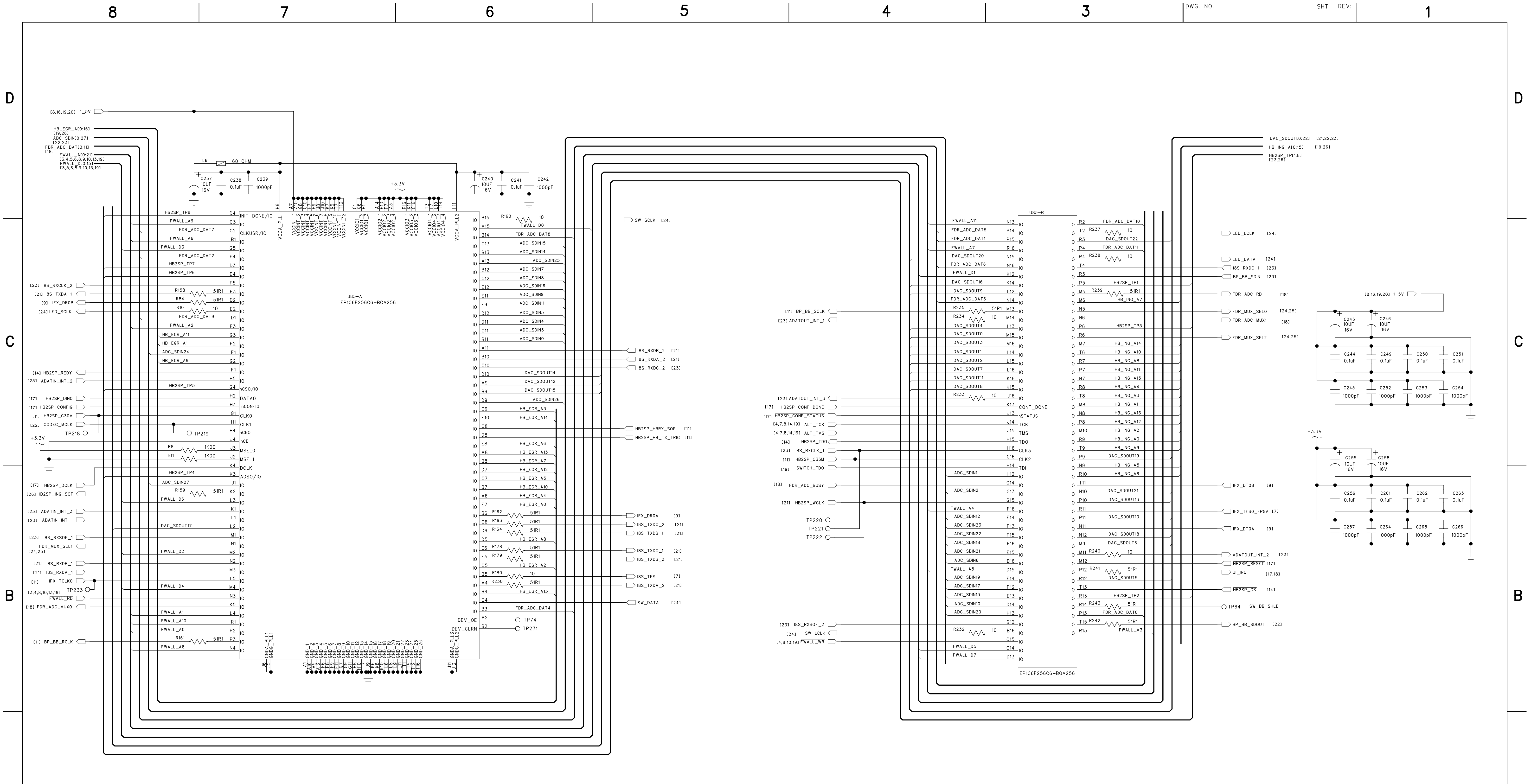
Mackie Designs Inc. Woodinville, Wa.

TT24 Main Digital Board
Fader A/D

SIZE	SCALE:	DWG. NO.	REV.
D	NONE	SCH0006764	B00

DWG FILE: SHEET 18 OF 26

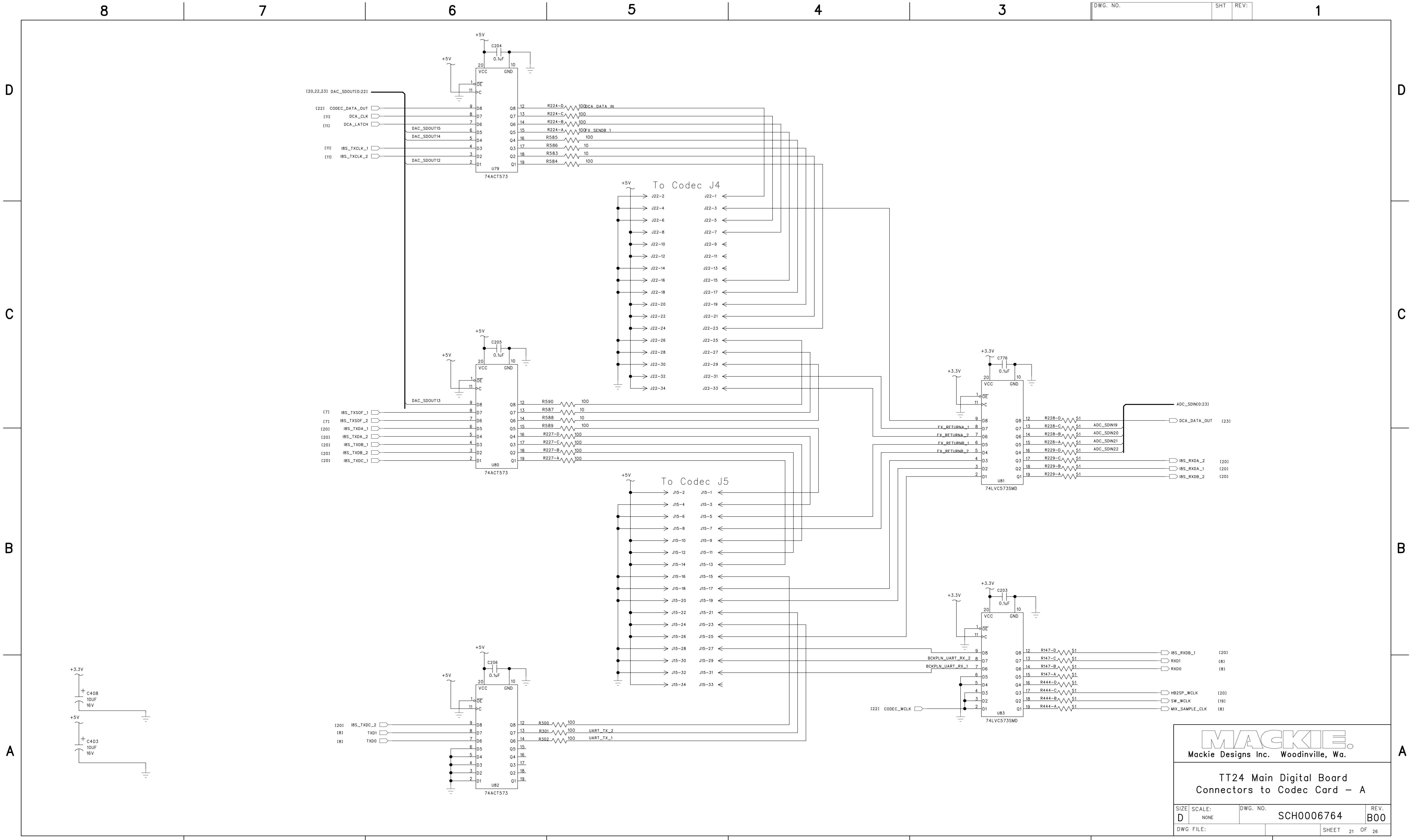

8
7
6
5
4
3
2
1
D
C
B
A
DWG. NO.
SHT
REV:
[4,26] DSPA_AD_OUT3
[4,26] DSPB_RD_OUT3
[4,26] DSPB_AD_OUT3
[4,26] DSPB_WR_OUT3
[4,8,10,20] FWALL_WR
[4,7,8,14,20] ALT_TCK
[4,7,8,14,20] ALT_TMS
BANKB_D[0:31] [12,13,26]
HB_ING_A[0:15] [20,26]
HB_ING_C[0:15] [8,26]
BANKA_A[1:23] [2,3,4,26]
BANKA_D[0:31] [2,3,26]
FWALL_D[0:15] [3,5,6,8,9,10,13,20]
[8,16,19,20] 1_5V
[8,16,19,20] 1_5V
L5
60 OHM
C210 10UF 16V
C211 0.1uF
C212 1000pF
C207 10UF 16V
C208 0.1uF
C209 1000pF
+3.3V
SAMPLE_IRQ
U84-A
EP1C6F256C6-BGA256
INIT_DONE/IO
CLKUSR/IO
nCSO/IO
DATA0
nCONFIG
CLK0
CLK1
nCEO
nCE
MSEL0
MSEL1
DCLK
ASDO/IO
DEV_OE
DEV_CLRN
VCCA_PLL1
VCCA_PLL2
GNDA_PLL1
GNDG_PLL1
GNDA_PLL2
GNDG_PLL2
R317 51R1
R319 1K00
R318 1K00
R314 51R1
R316 51R1
R315 51R1
[17] SWITCH_DINO
[17] SWITCH_CONFIG
[11] SW_C33M
[11] SW_C30M
TP211
TP216
[17] SW_DCLK
[4,26] DSPA_CS_OUT3
[4,26] DSPA_RD_OUT3
[4,26] DSPA_WR_OUT3
SWITCH_TP3
SWITCH_TP2
SWITCH_TP1
SWITCH_TP0
U84-B
EP1C6F256C6-BGA256
CONF_DONE
nSTATUS
TCK
TMS
TDO
CLK3
CLK2
TDI
SW_CONF_DONE
SW_CONF_STATUS
ALT_TCK
ALT_TMS
SWITCH_TDO
SW_RESET
SW_WCLK
DMA_CPLD_TDO
SWITCH_CSB
FWALL_RD
DSPB_CS_OUT3
SWITCH_TP4
SWITCH_TP5
SWITCH_TP6
TP217
SAMPLE_IRQ [11]
SW_INIT_DONE [17]
SW_CONF_STATUS [17]
SW_CONF_DONE [17]
HB_EGR_C[0:15] [8,26]
HB_EGR_A[0:15] [20,26]
HBTRIG [11]
SWITCH_TP[0:7] [26]
SWITCH_TDO [20]
SW_TX_HBSOF [11]
MIX_CLK_HBUS [8]
[8,16,19,20] 1_5V
C213 10UF 16V
C216 10UF 16V
C214 0.1uF
C219 0.1uF
C220 0.1uF
C221 0.1uF
C215 1000pF
C222 1000pF
C223 1000pF
C224 1000pF
+3.3V
C225 10UF 16V
C228 10UF 16V
C226 0.1uF
C231 0.1uF
C232 0.1uF
C233 0.1uF
C227 1000pF
C234 1000pF
C235 1000pF
C236 1000pF
FWALL_A[0:21] [3,4,5,6,8,9,10,13,20]
BANKB_A[1:23] [4,12,13,26]
[17] SW_RESET
[21] SW_WCLK
[4] DMA_CPLD_TDO
[14] SWITCH_CSB
[3,4,8,10,13,20] FWALL_RD
[4,26] DSPB_CS_OUT3
MACKIE.
Mackie Designs Inc. Woodinville, Wa.
TT24 Main Digital Board
The Switch
SIZE D
SCALE: NONE
DWG. NO. SCH0006764
REV. B00
DWG FILE:
SHEET 19 OF 26


U85-A
EP1C6F256C6-BGA256
U85-B
EP1C6F256C6-BGA256
L6 60 OHM
C237 10UF 16V
C238 0.1uF
C239 1000pF
C240 10UF 16V
C241 0.1uF
C242 1000pF
+3.3V
1_5V
HB_EGR_A[0:15]
ADC_SDIN[0:27]
FDR_ADC_DAT[0:11]
FWALL_A[0:21]
FWALL_D[0:15]
DAC_SDOUT[0:22]
HB_ING_A[0:15]
HB2SP_TP[1:8]
INIT_DONE/IO
CLKUSR/IO
nCSO/IO
DATA0
nCONFIG
CLK0
CLK1
nCEO
nCE
MSEL0
MSEL1
DCLK
ASDO/IO
DEV_OE
DEV_CLRN
CONF_DONE
nSTATUS
TCK
TMS
TDO
CLK3
CLK2
TDI
SW_SCLK
SW_DATA
IBS_RXDB_2
IBS_RXDA_2
IBS_RXDC_2
HB2SP_HBRX_SOF
HB2SP_HB_TX_TRIG
IFX_DR0A
IBS_TXDC_2
IBS_TXDB_1
IBS_TXDC_1
IBS_TXDB_2
IBS_TFS
IBS_TXDA_2
IBS_RXCLK_2
IBS_TXDA_1
IFX_DR0B
LED_SCLK
HB2SP_REDY
ADATIN_INT_2
HB2SP_DIN0
HB2SP_CONFIG
HB2SP_C30M
CODEC_MCLK
TP218
TP219
HB2SP_DCLK
HB2SP_ING_SOF
ADATIN_INT_3
ADATIN_INT_1
IBS_RXSOF_1
FDR_MUX_SEL1
IBS_RXDB_1
IBS_RXDA_1
IFX_TCLK0
TP233
FWALL_RD
FDR_ADC_MUX0
BP_BB_RCLK
TP74
TP231
BP_BB_SCLK
ADATOUT_INT_1
ADATOUT_INT_3
HB2SP_CONF_DONE
HB2SP_CONF_STATUS
ALT_TCK
ALT_TMS
HB2SP_TDO
IBS_RXCLK_1
HB2SP_C33M
SWITCH_TDO
FDR_ADC_BUSY
HB2SP_WCLK
TP220
TP221
TP222
IBS_RXSOF_2
SW_LCLK
FWALL_WR
LED_LCLK
LED_DATA
IBS_RXDC_1
BP_BB_SDIN
FDR_ADC_RD
FDR_MUX_SEL0
FDR_ADC_MUX1
FDR_MUX_SEL2
IFX_DT0B
IFX_TFS0_FPGA
IFX_DT0A
ADATOUT_INT_2
HB2SP_RESET
UI_IRQ
HB2SP_CS
TP64
SW_BB_SHLD
BP_BB_SDOUT
C243 10UF 16V
C246 10UF 16V
C244 0.1uF
C249 0.1uF
C250 0.1uF
C251 0.1uF
C245 1000pF
C252 1000pF
C253 1000pF
C254 1000pF
C255 10UF 16V
C258 10UF 16V
C256 0.1uF
C261 0.1uF
C262 0.1uF
C263 0.1uF
C257 1000pF
C264 1000pF
C265 1000pF
C266 1000pF
R8 1K00
R11 1K00
R160 10
R237 10
R238 10
DWG. NO.
SHT
REV:
8
7
6
5
4
3
2
1
D
C
B
A

Mackie Designs Inc. Woodinville, Wa.

TT24 Main Digital Board
Hbus-2-Sport Device

SIZE	SCALE:	DWG. NO.	REV.
D	NONE	SCH0006764	B00
DWG FILE:		SHEET 20 OF 26	



8
7
6
5
4
3
2
1
D
C
B
A
DWG. NO.
SHT
REV:
+5V
C204
0.1uF
VCC
GND
[20,22,23] DAC_SDOUT[0:22]
[22] CODEC_DATA_OUT
[11] DCA_CLK
[11] DCA_LATCH
DAC_SDOUT15
DAC_SDOUT14
[11] I8S_TXCLK_1
[11] I8S_TXCLK_2
DAC_SDOUT12
U79
74ACT573
R224-D
R224-C
R224-B
R224-A
R585
R586
R583
R584
DCA_DATA_IN
FX_SENDB_1
To Codec J4
J22-1
J22-2
J22-34
+5V
C205
0.1uF
DAC_SDOUT13
[7] I8S_TXSOF_1
[7] I8S_TXSOF_2
[20] I8S_TXDA_1
[20] I8S_TXDA_2
[20] I8S_TXDB_1
[20] I8S_TXDB_2
[20] I8S_TXDC_1
U80
74ACT573
R590
R587
R588
R589
R227-D
R227-C
R227-B
R227-A
To Codec J5
J15-1
J15-2
J15-34
+3.3V
C776
0.1uF
U81
74LVC573SMD
FX_RETURNA_1
FX_RETURNA_2
FX_RETURNB_1
FX_RETURNB_2
R228-D
R228-C
R228-B
R228-A
R229-D
R229-C
R229-B
R229-A
ADC_SDIN[0:23]
DCA_DATA_OUT [23]
ADC_SDIN19
ADC_SDIN20
ADC_SDIN21
ADC_SDIN22
I8S_RXDA_2 [20]
I8S_RXDA_1 [20]
I8S_RXDB_2 [20]
C203
0.1uF
U83
74LVC573SMD
BCKPLN_UART_RX_2
BCKPLN_UART_RX_1
[22] CODEC_WCLK
R147-D
R147-C
R147-B
R147-A
R444-D
R444-C
R444-B
R444-A
I8S_RXDB_1 [20]
RXD1 [8]
RXD0 [8]
HB2SP_WCLK [20]
SW_WCLK [19]
MIX_SAMPLE_CLK [8]
+3.3V
C408
10UF
16V
+5V
C403
10UF
16V
C206
0.1uF
[20] I8S_TXDC_2
[8] TXD1
[8] TXD0
U82
74ACT573
R300
R301
R302
UART_TX_2
UART_TX_1

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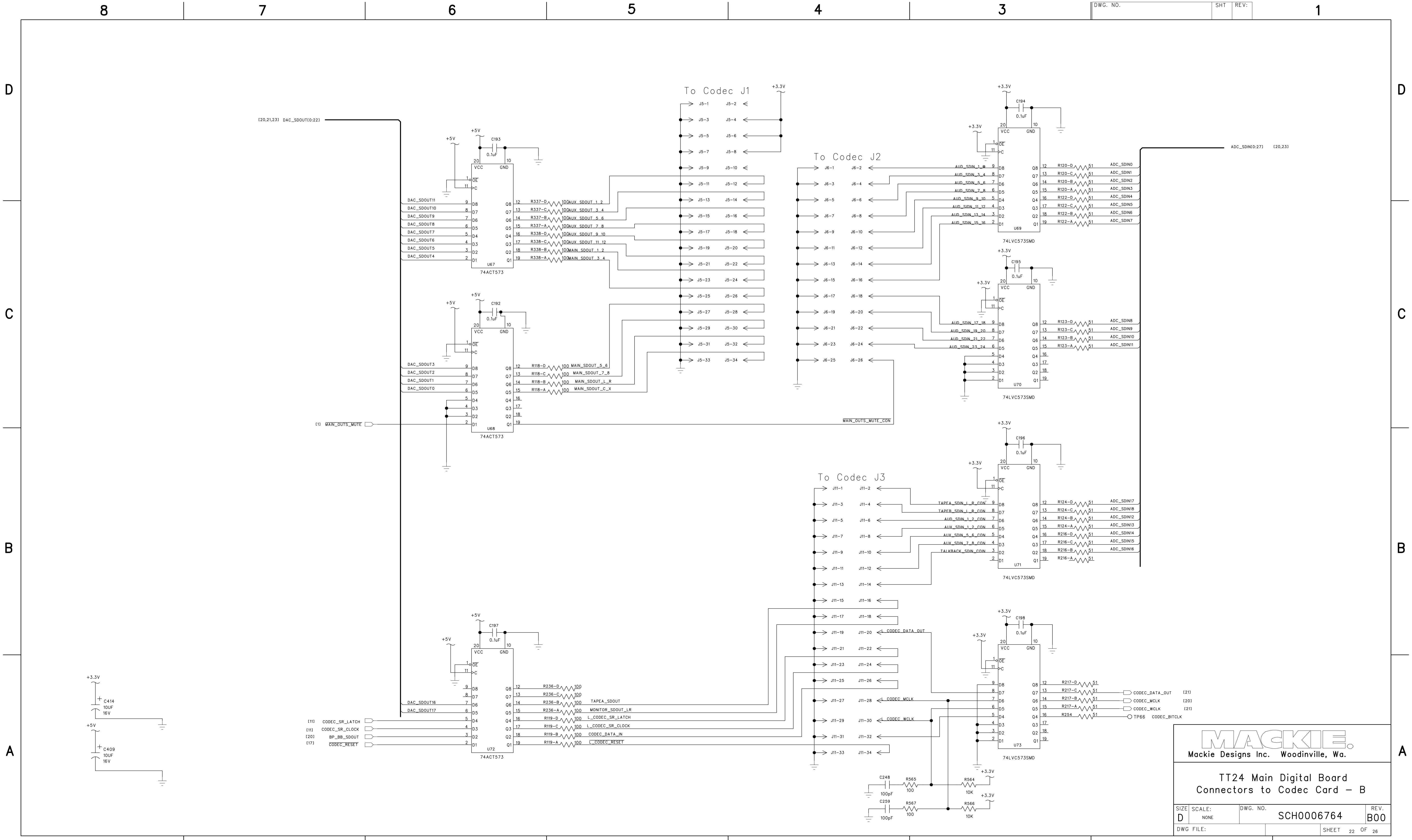
Mackie Designs Inc. Woodinville, Wa.

TT24 Main Digital Board
Connectors to Codec Card – A

SIZE	SCALE:	DWG. NO.	REV.
D	NONE	SCH0006764	B00

DWG FILE: SHEET 21 OF 26


To Codec J1
To Codec J2
To Codec J3
[20,21,23] DAC_SDOUT[0:22]
ADC_SDIN[0:27] [20,23]
U67
74ACT573
U68
74ACT573
U72
74ACT573
U69
74LVC573SMD
U70
74LVC573SMD
U71
74LVC573SMD
U73
74LVC573SMD
C193 0.1uF
C192 0.1uF
C197 0.1uF
C194 0.1uF
C195 0.1uF
C196 0.1uF
C198 0.1uF
+5V
+3.3V
VCC
GND
OE
C
DAC_SDOUT11
DAC_SDOUT10
DAC_SDOUT9
DAC_SDOUT8
DAC_SDOUT7
DAC_SDOUT6
DAC_SDOUT5
DAC_SDOUT4
DAC_SDOUT3
DAC_SDOUT2
DAC_SDOUT1
DAC_SDOUT0
DAC_SDOUT16
DAC_SDOUT17
AUX_SDOUT_1_2
AUX_SDOUT_3_4
AUX_SDOUT_5_6
AUX_SDOUT_7_8
AUX_SDOUT_9_10
AUX_SDOUT_11_12
MAIN_SDOUT_1_2
MAIN_SDOUT_3_4
MAIN_SDOUT_5_6
MAIN_SDOUT_7_8
MAIN_SDOUT_L_R
MAIN_SDOUT_C_X
[1] MAIN_OUTS_MUTE
MAIN_OUTS_MUTE_CON
R337-D 100
R337-C 100
R337-B 100
R337-A 100
R338-D 100
R338-C 100
R338-B 100
R338-A 100
R118-D 100
R118-C 100
R118-B 100
R118-A 100
R236-D 100
R236-C 100
R236-B 100
R236-A 100
R119-D 100
R119-C 100
R119-B 100
R119-A 100
TAPEA_SDOUT
MONITOR_SDOUT_LR
L_CODEC_SR_LATCH
L_CODEC_SR_CLOCK
CODEC_DATA_IN
L_CODEC_RESET
[11] CODEC_SR_LATCH
[11] CODEC_SR_CLOCK
[20] BP_BB_SDOUT
[17] CODEC_RESET
J5-1 … J5-34
J6-1 … J6-26
J11-1 … J11-34
AUD_SDIN_1_2
AUD_SDIN_3_4
AUD_SDIN_5_6
AUD_SDIN_7_8
AUD_SDIN_9_10
AUD_SDIN_11_12
AUD_SDIN_13_14
AUD_SDIN_15_16
AUD_SDIN_17_18
AUD_SDIN_19_20
AUD_SDIN_21_22
AUD_SDIN_23_24
R120-D 51
R120-C 51
R120-B 51
R120-A 51
R122-D 51
R122-C 51
R122-B 51
R122-A 51
R123-D 51
R123-C 51
R123-B 51
R123-A 51
ADC_SDIN0
ADC_SDIN1
ADC_SDIN2
ADC_SDIN3
ADC_SDIN4
ADC_SDIN5
ADC_SDIN6
ADC_SDIN7
ADC_SDIN8
ADC_SDIN9
ADC_SDIN10
ADC_SDIN11
TAPEA_SDIN_L_R_CON
TAPEB_SDIN_L_R_CON
AUD_SDIN_1_2_CON
AUX_SDIN_1_2_CON
AUX_SDIN_5_6_CON
AUX_SDIN_7_8_CON
TALKBACK_SDIN_CON
R124-D 51
R124-C 51
R124-B 51
R124-A 51
R216-D 51
R216-C 51
R216-B 51
R216-A 51
ADC_SDIN17
ADC_SDIN18
ADC_SDIN12
ADC_SDIN13
ADC_SDIN14
ADC_SDIN15
ADC_SDIN16
CODEC_DATA_OUT
CODEC_MCLK
CODEC_WCLK
R217-D 51
R217-C 51
R217-B 51
R217-A 51
R254 51
CODEC_DATA_OUT [21]
CODEC_MCLK [20]
CODEC_WCLK [21]
TP66 CODEC_BITCLK
C248 100pF
R565 100
C259 100pF
R567 100
R564 10K
R566 10K
C414 10UF 16V
C409 10UF 16V
8 7 6 5 4 3 2 1
D C B A

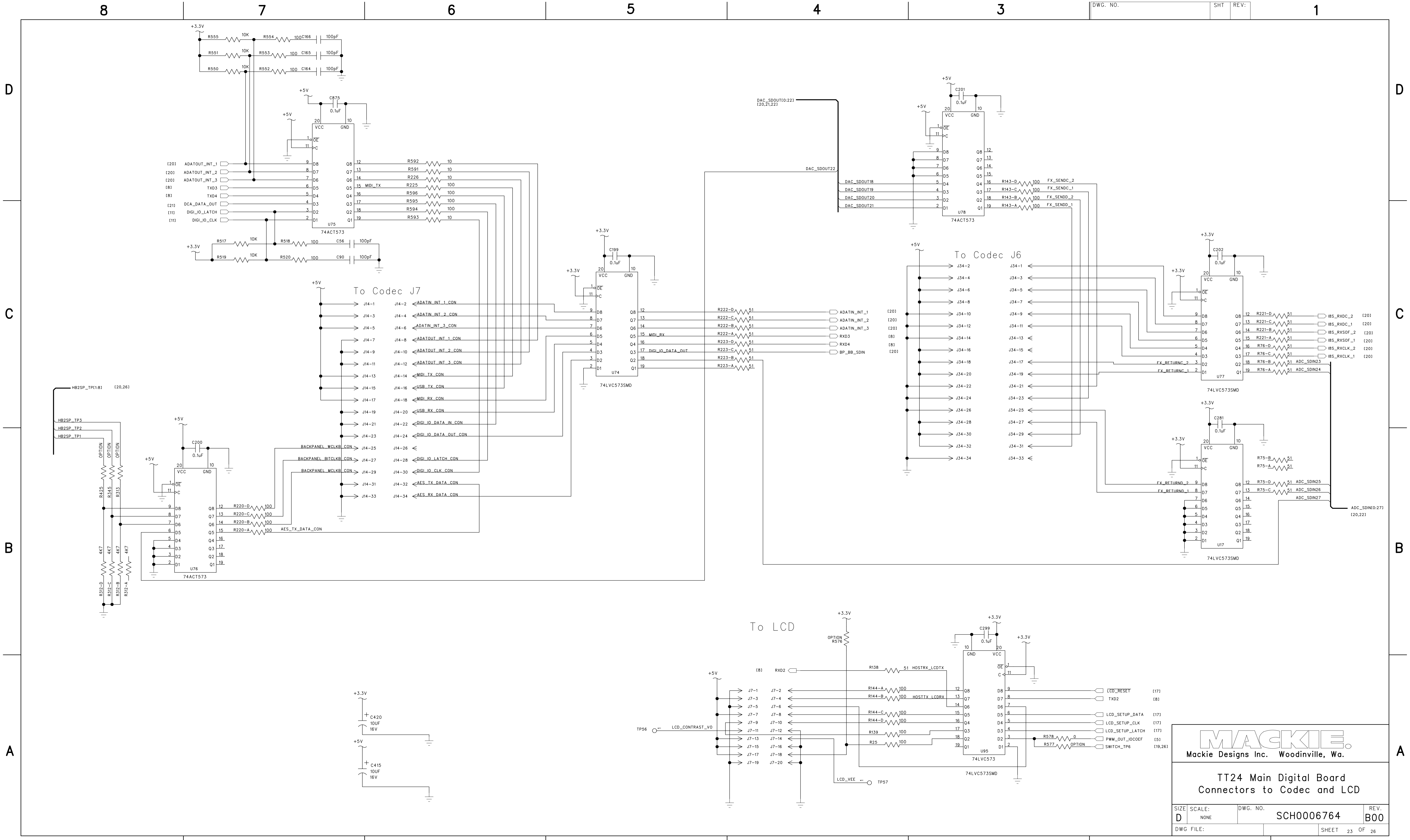
DWG. NO. SHT REV:

MACKIE.
Mackie Designs Inc. Woodinville, Wa.

TT24 Main Digital Board
Connectors to Codec Card – B

SIZE	SCALE:	DWG. NO.	REV.
D	NONE	SCH0006764	B00

DWG FILE: SHEET 22 OF 26


To Codec J7
To Codec J6
To LCD
74ACT573
U75
74LVC573SMD
U74
U78
U77
U17
U76
U95
74LVC573
ADATOUT_INT_1
ADATOUT_INT_2
ADATOUT_INT_3
TXD3
TXD4
DCA_DATA_OUT
DIGI_IO_LATCH
DIGI_IO_CLK
ADATIN_INT_1_CON
ADATIN_INT_2_CON
ADATIN_INT_3_CON
ADATOUT_INT_1_CON
ADATOUT_INT_2_CON
ADATOUT_INT_3_CON
MIDI_TX_CON
USB_TX_CON
MIDI_RX_CON
USB_RX_CON
DIGI_IO_DATA_IN_CON
DIGI_IO_DATA_OUT_CON
BACKPANEL_WCLKB_CON
BACKPANEL_BITCLKB_CON
BACKPANEL_MCLKB_CON
DIGI_IO_LATCH_CON
DIGI_IO_CLK_CON
AES_TX_DATA_CON
AES_RX_DATA_CON
AES_TX_DATA_CON
MIDI_RX
DIGI_IO_DATA_OUT
ADATIN_INT_1
ADATIN_INT_2
ADATIN_INT_3
RXD3
RXD4
BP_BB_SDIN
DAC_SDOUT[0:22]
[20,21,22]
DAC_SDOUT22
DAC_SDOUT18
DAC_SDOUT19
DAC_SDOUT20
DAC_SDOUT21
FX_SENDC_2
FX_SENDC_1
FX_SENDD_2
FX_SENDD_1
FX_RETURNC_2
FX_RETURNC_1
FX_RETURND_2
FX_RETURND_1
I85_RXDC_2
I85_RXDC_1
I85_RXSOF_2
I85_RXSOF_1
I85_RXCLK_2
I85_RXCLK_1
ADC_SDIN23
ADC_SDIN24
ADC_SDIN25
ADC_SDIN26
ADC_SDIN27
ADC_SDIN[0:27]
[20,22]
HB2SP_TP[1:8]
[20,26]
HB2SP_TP3
HB2SP_TP2
HB2SP_TP1
OPTION
4K7
R312-D
R312-C
R312-B
R312-A
RXD2
HOSTRX_LCDTX
HOSTTX_LCDRX
LCD_CONTRAST_VO
TP56
LCD_VEE
TP57
LCD_RESET
TXD2
LCD_SETUP_DATA
LCD_SETUP_CLK
LCD_SETUP_LATCH
PWM_OUT_IOCOEF
SWITCH_TP6
C420 10UF 16V
C415 10UF 16V
+3.3V
+5V

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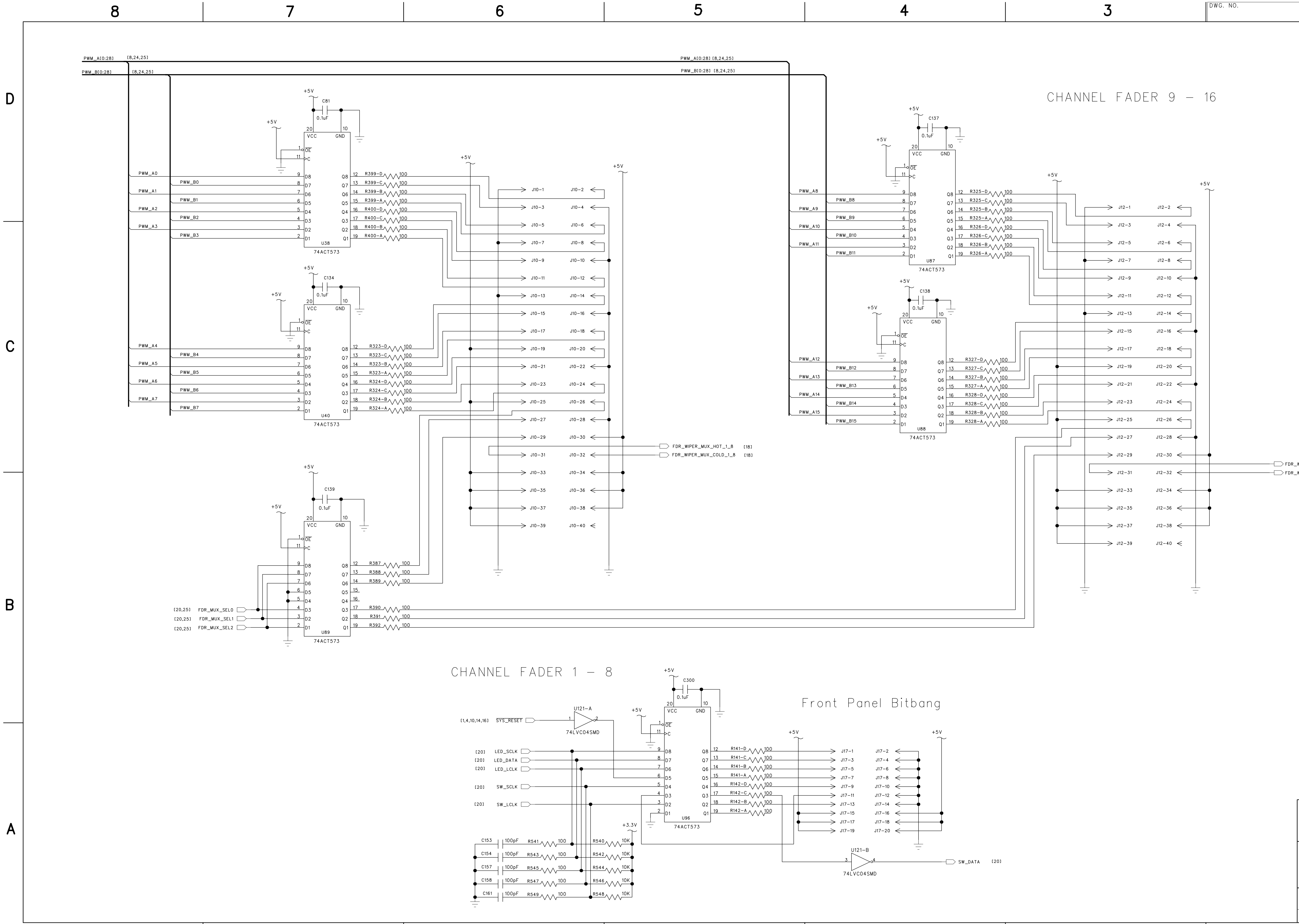
TT24 Main Digital Board
Connectors to Codec and LCD

SIZE D SCALE: NONE DWG. NO. SCH0006764 REV. B00

DWG FILE: SHEET 23 OF 26

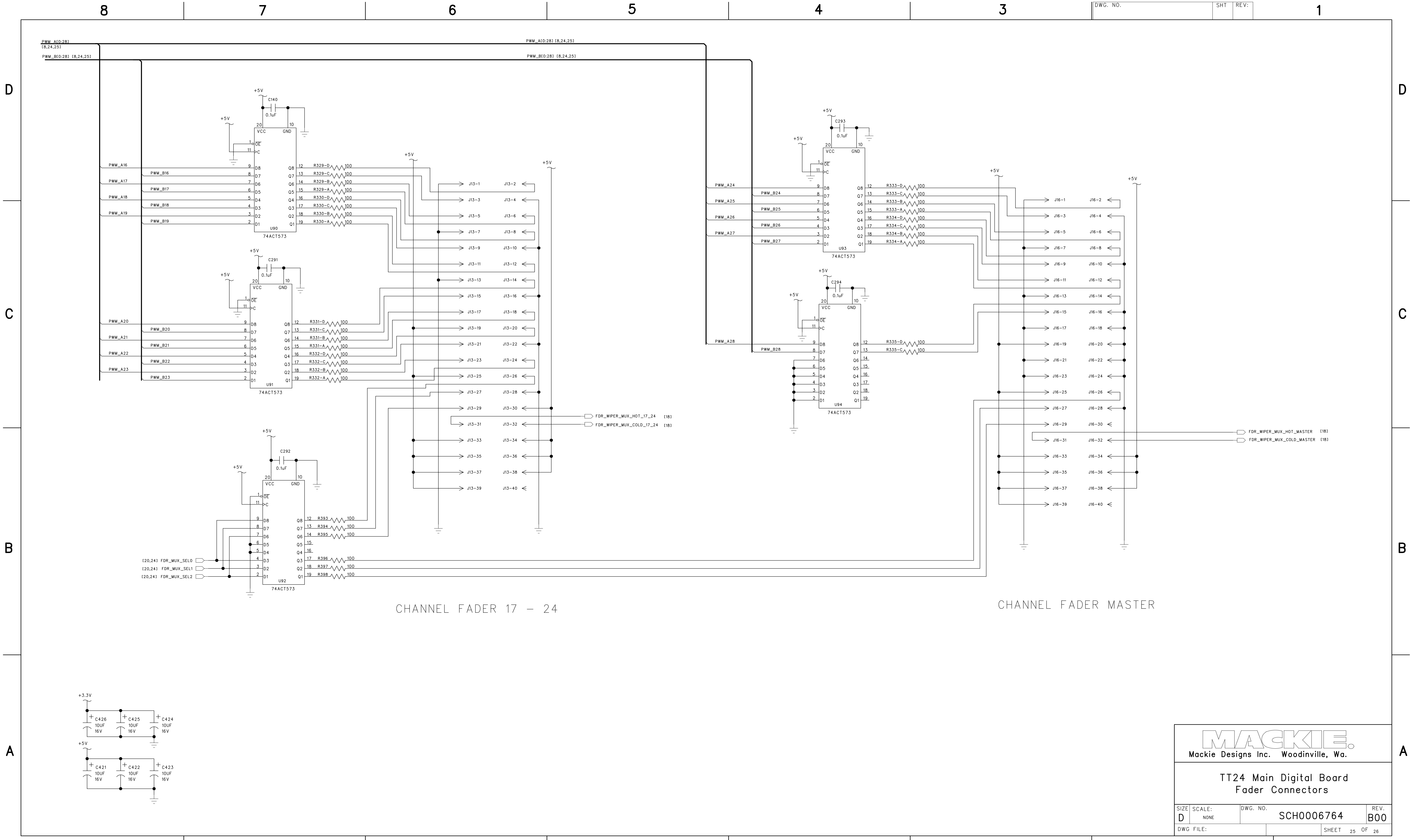

CHANNEL FADER 9 – 16
CHANNEL FADER 1 – 8
Front Panel Bitbang
PWM_A[0:28] [8,24,25]
PWM_B[0:28] [8,24,25]
+5V
C81 0.1uF
C134 0.1uF
C139 0.1uF
C137 0.1uF
C138 0.1uF
C300 0.1uF
VCC
GND
OE
C
U38 74ACT573
U40 74ACT573
U89 74ACT573
U87 74ACT573
U88 74ACT573
U96 74ACT573
PWM_A0
PWM_B0
PWM_A1
PWM_B1
PWM_A2
PWM_B2
PWM_A3
PWM_B3
PWM_A4
PWM_B4
PWM_A5
PWM_B5
PWM_A6
PWM_B6
PWM_A7
PWM_B7
PWM_A8
PWM_B8
PWM_A9
PWM_B9
PWM_A10
PWM_B10
PWM_A11
PWM_B11
PWM_A12
PWM_B12
PWM_A13
PWM_B13
PWM_A14
PWM_B14
PWM_A15
PWM_B15
R399-D 100
R399-C 100
R399-B 100
R399-A 100
R400-D 100
R400-C 100
R400-B 100
R400-A 100
R323-D 100
R323-C 100
R323-B 100
R323-A 100
R324-D 100
R324-C 100
R324-B 100
R324-A 100
R325-D 100
R325-C 100
R325-B 100
R325-A 100
R326-D 100
R326-C 100
R326-B 100
R326-A 100
R327-D 100
R327-C 100
R327-B 100
R327-A 100
R328-D 100
R328-C 100
R328-B 100
R328-A 100
R387 100
R388 100
R389 100
R390 100
R391 100
R392 100
J10-1 … J10-40
J12-1 … J12-40
J17-1 … J17-20
FDR_WIPER_MUX_HOT_1_8 [18]
FDR_WIPER_MUX_COLD_1_8 [18]
FDR_WIPER_MUX_HOT_9_16 [18]
FDR_WIPER_MUX_COLD_9_16 [18]
[20,25] FDR_MUX_SEL0
[20,25] FDR_MUX_SEL1
[20,25] FDR_MUX_SEL2
[1,4,10,14,16] SYS_RESET
U121-A 74LVC04SMD
U121-B 74LVC04SMD
[20] LED_SCLK
[20] LED_DATA
[20] LED_LCLK
[20] SW_SCLK
[20] SW_LCLK
SW_DATA [20]
+3.3V
R141-D 100
R141-C 100
R141-B 100
R141-A 100
R142-D 100
R142-C 100
R142-B 100
R142-A 100
C153 100pF R541 100 R540 10K
C154 100pF R543 100 R542 10K
C157 100pF R545 100 R544 10K
C158 100pF R547 100 R546 10K
C161 100pF R549 100 R548 10K

Mackie Designs Inc. Woodinville, Wa.

TT24 Main Digital Board
Front Panel & Fader Connectors

SIZE	SCALE:	DWG. NO.	REV.
D	NONE	SCH0006764	B00

DWG FILE: SHEET 24 OF 26


PWM_A[0:28] [8,24,25]
PWM_B[0:28] [8,24,25]
PWM_A16 … PWM_A28
PWM_B16 … PWM_B28
+5V
+3.3V
C140 0.1uF
C291 0.1uF
C292 0.1uF
C293 0.1uF
C294 0.1uF
VCC GND
OE C
D1 … D8 Q1 … Q8
U90 74ACT573
U91 74ACT573
U92 74ACT573
U93 74ACT573
U94 74ACT573
R329-A … R329-D 100
R330-A … R330-D 100
R331-A … R331-D 100
R332-A … R332-D 100
R333-A … R333-D 100
R334-A … R334-D 100
R335-C R335-D 100
R393 … R398 100
J13-1 … J13-40
J16-1 … J16-40
FDR_WIPER_MUX_HOT_17_24 [18]
FDR_WIPER_MUX_COLD_17_24 [18]
FDR_WIPER_MUX_HOT_MASTER [18]
FDR_WIPER_MUX_COLD_MASTER [18]
[20,24] FDR_MUX_SEL0
[20,24] FDR_MUX_SEL1
[20,24] FDR_MUX_SEL2
CHANNEL FADER 17 – 24
CHANNEL FADER MASTER
C421 C422 C423 C424 C425 C426 10UF 16V
8 7 6 5 4 3 2 1
D C B A

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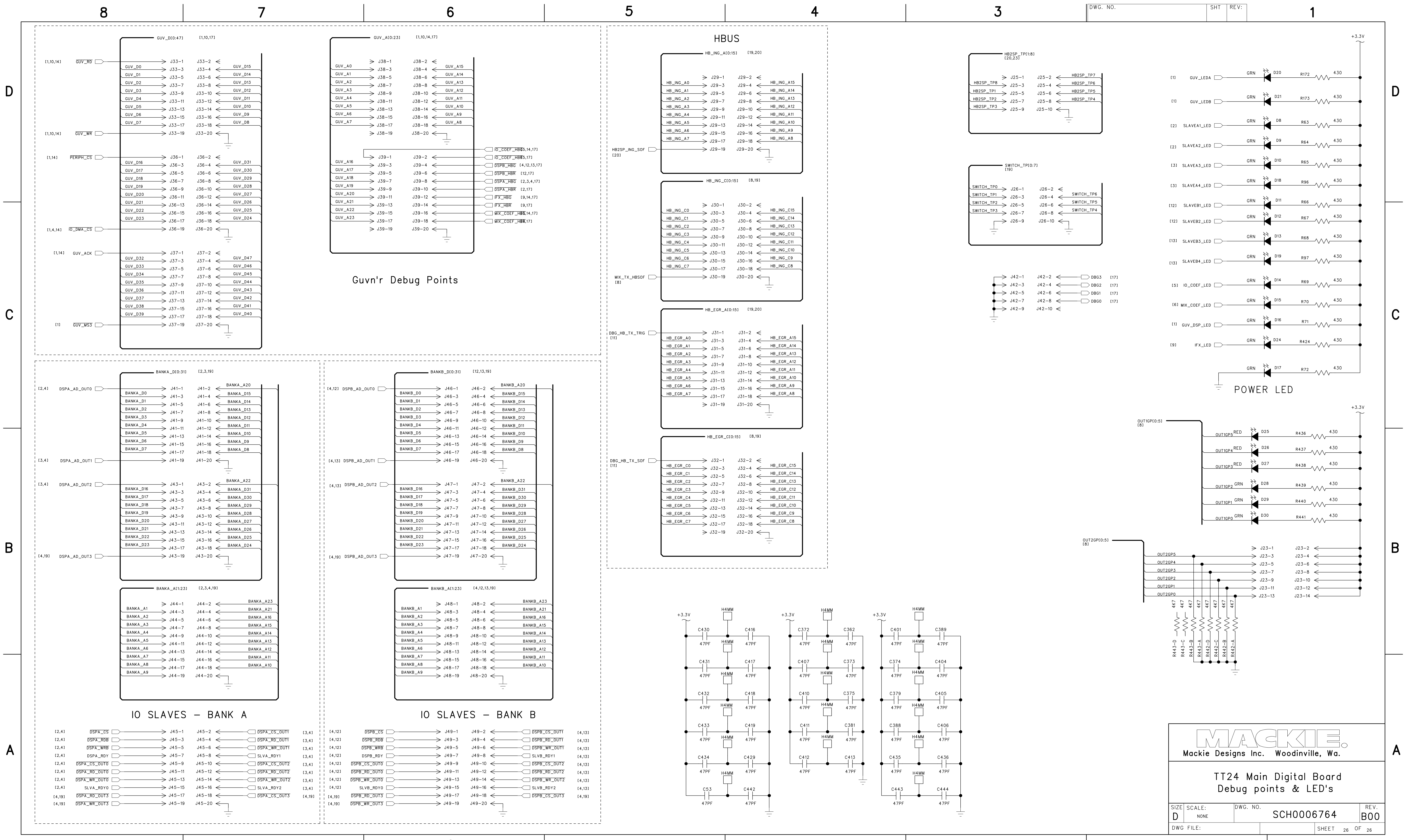
TT24 Main Digital Board
Fader Connectors

SIZE D SCALE: NONE DWG. NO. SCH0006764 REV. B00
DWG FILE: SHEET 25 OF 26


Guvn'r Debug Points
HBUS
POWER LED
IO SLAVES – BANK A
IO SLAVES – BANK B
GUV_D[0:47]
GUV_A[0:23]
BANKA_D[0:31]
BANKA_A[1:23]
BANKB_D[0:31]
BANKB_A[1:23]
HB_ING_A[0:15]
HB_ING_C[0:15]
HB_EGR_A[0:15]
HB_EGR_C[0:15]
HB2SP_TP[1:8]
SWITCH_TP[0:7]
OUT1GP[0:5]
OUT2GP[0:5]
+3.3V
H4MM
47PF
430
4K7
GRN
RED
Mackie Designs Inc. Woodinville, Wa.
TT24 Main Digital Board
Debug points & LED's
SIZE D
SCALE: NONE
DWG. NO. SCH0006764
REV. B00
DWG FILE:
SHEET 26 OF 26