5916PIA2-DK_Rev0

Piano Module

Development and Reference Board for SAM5916

Overview

5916PIA2-DK is a high quality stand-alone development and reference board based on SAM5916 (AUDIO & MUSIC MULTI-DSP PROCESSOR) dedicated to digital piano and keyboard instruments.
The SAM5916 can be used in 6 different hardware configurations for different applications. On 5916PIA2-DK board the SAM5916 is running in the hardware configuration dedicated to Piano applications with firmware and sound bank stored in NAND Flash, sample cache and extended delay lines in SDRAM.

Beside the SAM5916 the 5916PIA2-DK hardware includes:
- 1 x Audio DAC: AKM AK4490EQ (120dB DR, -112dB THD+N)
- 1 Audio ADC AKM AK5386VT (24-bit, DR:110dB, S/(N+D):96dB)
- 2 x 8Gbit NAND Flash MICRON MT29F8G16ABACAWP (2Gbyte)
- 256Mbit SDRAM: WINBOND W9825G6KH-6
- DataFlash® memory ADESTO AT45DB081E (8Mbit) for firmware, sequencer and data storage.
- USB High Speed Device Port
- USB High Speed Host Port

Dream NAND Flash Solution

DREAM NAND Flash solution allows the storage of large sound banks in cost-effective NAND Flash memory devices. Thanks to its sophisticated sample cache system, the SAM5916 offers high performances, security and reliability:

- Support SLC NAND Flash technology (up to 8GByte)
- High polyphony: up to 256 voices + effects
- Transparent pages transfer from NAND to SDRAM buffers
- Automatic error correction (ECC)
- Bad block management and wear leveling ensuring NAND Flash lifetime
- AES-protected sound banks with on-the-fly decryption
- Sound bank compiler for NAND Flash technology

Hardware Configuration

5916PIA2-DK is designed to be connected to an 88-note velocity sensitive piano keyboard with 3 contacts per key (e.g., FATAR TP40M, 3-contact).
The 5916PIA-C-PDK reference design kit includes the 5916PIFP-DK front panel.

Operating Modes

5916PIA2-DK operates on two modes:

- Debug/Program mode:
  The board is connected to a PC through the Dream 5000DBG-IF adaptor. Firmware can be downloaded and debugged into internal RAM or external SDRAM with Dream SamVS-C development software.
  With SamVS or ProgSam software tool it is possible to program the firmware into NAND Flash memory or serial DataFlash memory for stand-alone mode.
  The sound bank can loaded into NAND Flash memory from USB stick.
  With ProgSam tool it is also possible to program the eFuses on SAM5916 for encryption / copy protection of firmware code and sound bank content.
- Stand-alone mode:
  In this mode the SAM5916 loads the program from the NAND Flash or serial DataFlash into RAM (internal RAM + external SDRAM) at startup, then executes it in RAM and scans the front panel and the piano keyboard.

Connectors Configuration

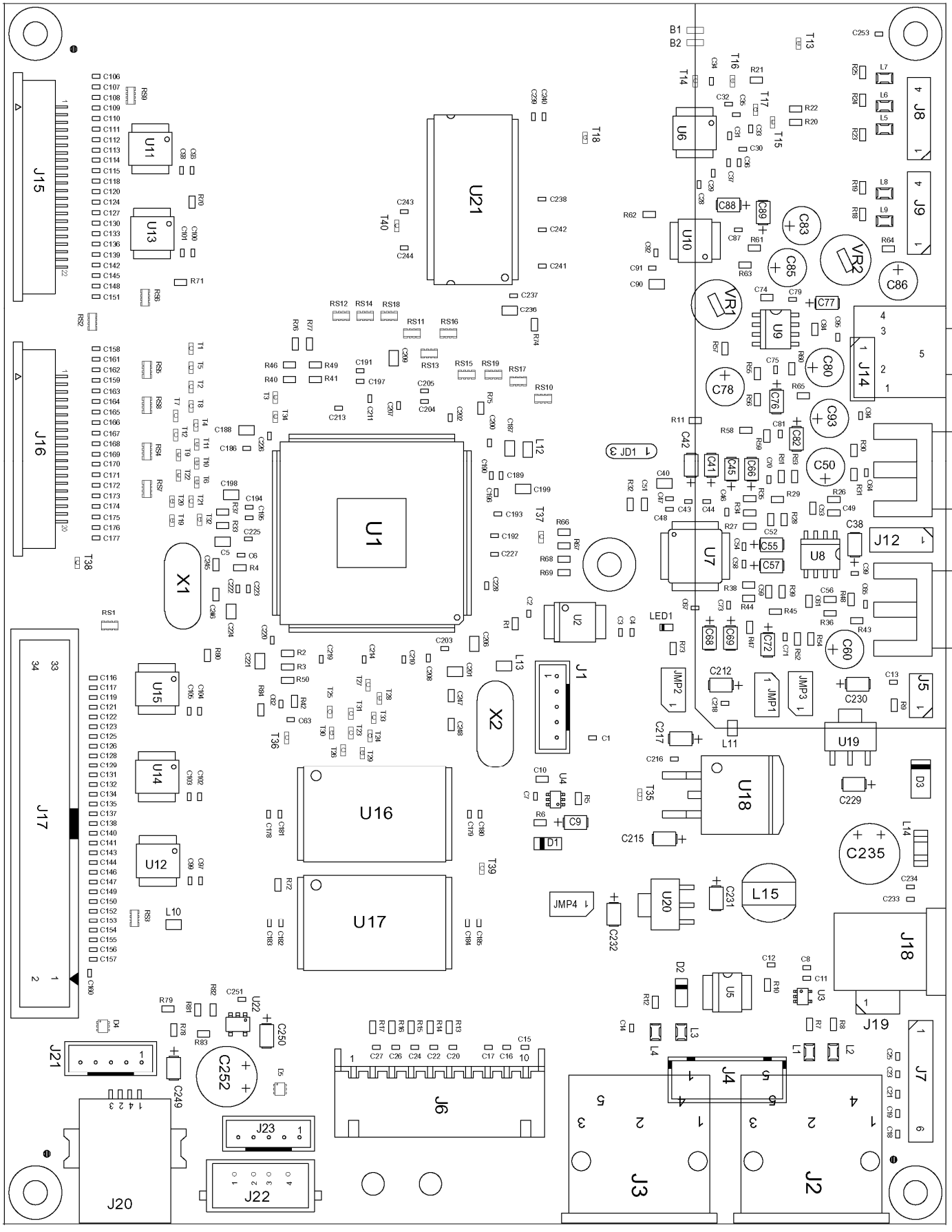
Name	Reference	Type	Description
DEBUG / PROGRAM	J1	JST PH Series, 1*5	Serial connection for debug and program, compatible with Dream 5000DBG-IF
MIDI OUT	J2	5-pin Din	Standard MIDI OUT at 31.25kb/s
MIDI IN	J3	5-pin Din	Standard MIDI IN at 31.25kb/s
	J4 (Optional, n.m.)	1*5	Connection to external MIDI IN an OUT connectors
HEADPHONES DETECT	J5	1*2	Headphones detection
SPI LCD	J6	JST XH Series,1*10	SPI connection to a Graphic LCD Display
GPIOs	J7	1*6	General purpose I/Os P3.7, P5[11:9]
PEDALS INPUT	J8	1*4	Connection for pedals (analog inputs)
SLIDERS INPUT	J9 (Optional, n.m.)	1*4	Connection for analog potentiometers
LINE OUT L	J10	RCA	Left Main audio line output (1.5V RMS)
LINE OUT R	J11	RCA	Right Main audio line output (1.5V RMS)
	J12 (Optional, n.m.)	1*3	Stereo Main audio line output (1.5V RMS)
AUDIO IN STEREO	J13	Mini Jack	Stereo audio input(0.02 to 1V RMS)
	J14 (Optional, n.m.)	1*3	Stereo audio input(0.02 to 1V RMS)
KEYBOARD LOWER PART	J15	FFC, 1mm, 22way	Connection of a Fatar type piano keyboard. e.g. TP40M, 3-contact
KEYBOARD HIGHER PART	J16	FFC, 1mm, 20way	Connection of a Fatar type piano keyboard. e.g. TP40M, 3-contact
FRONT PANEL	J17	HE10 - 2*17	Connection of the dedicated front panel
9 / 12 V DC	J18	DC Plug	Power Supply, +9V…12V/1A, minus on tip
	J19 (Optional, n.m.)	1*2	Power Supply, +9V…12V/1A
USB DEVICE	J20	USB B	USB Device, full or high speed port.
	J21 (Optional, n.m.)	JST XH Series,1*5	USB Device, full or high speed port.
USB HOST	J22	USB A	USB Host, full or high speed port.
	J23 (Optional, n.m.)	JST XH Series,1*5	USB Host, full or high speed port.

“n.m.” = not mounted

Jumper Configuration

Reference	Default Setting	Description
JMP1	Closed	For test and measurements on VA33
JMP2	Closed	For test and measurements on VD33
JMP3	Closed	For test and measurements on VA50
JMP4	Closed	For test and measurements on VD50
JD1	2-3	Select Digital audio source for Main audio out. • 2-3: DABD2 • 1-2: DABD0 (cannot be used while SPDIF OUT is needed)

Layout – Top side



Bill of Material

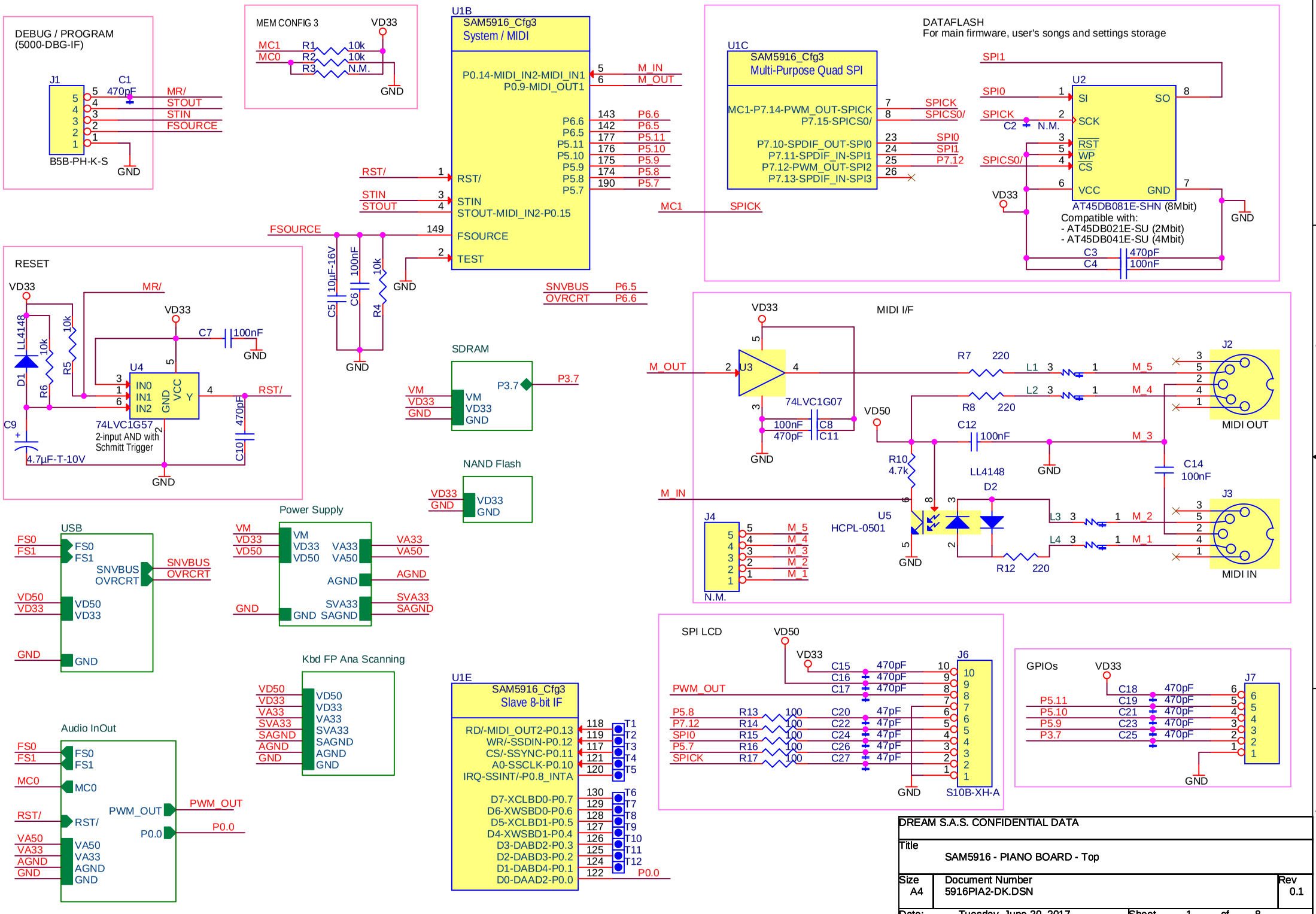
SAM5916 - PIANO BOARD - Revised: March 10, 2017
5916PIA2-DK.DSN Revision: 0.1
Page 1

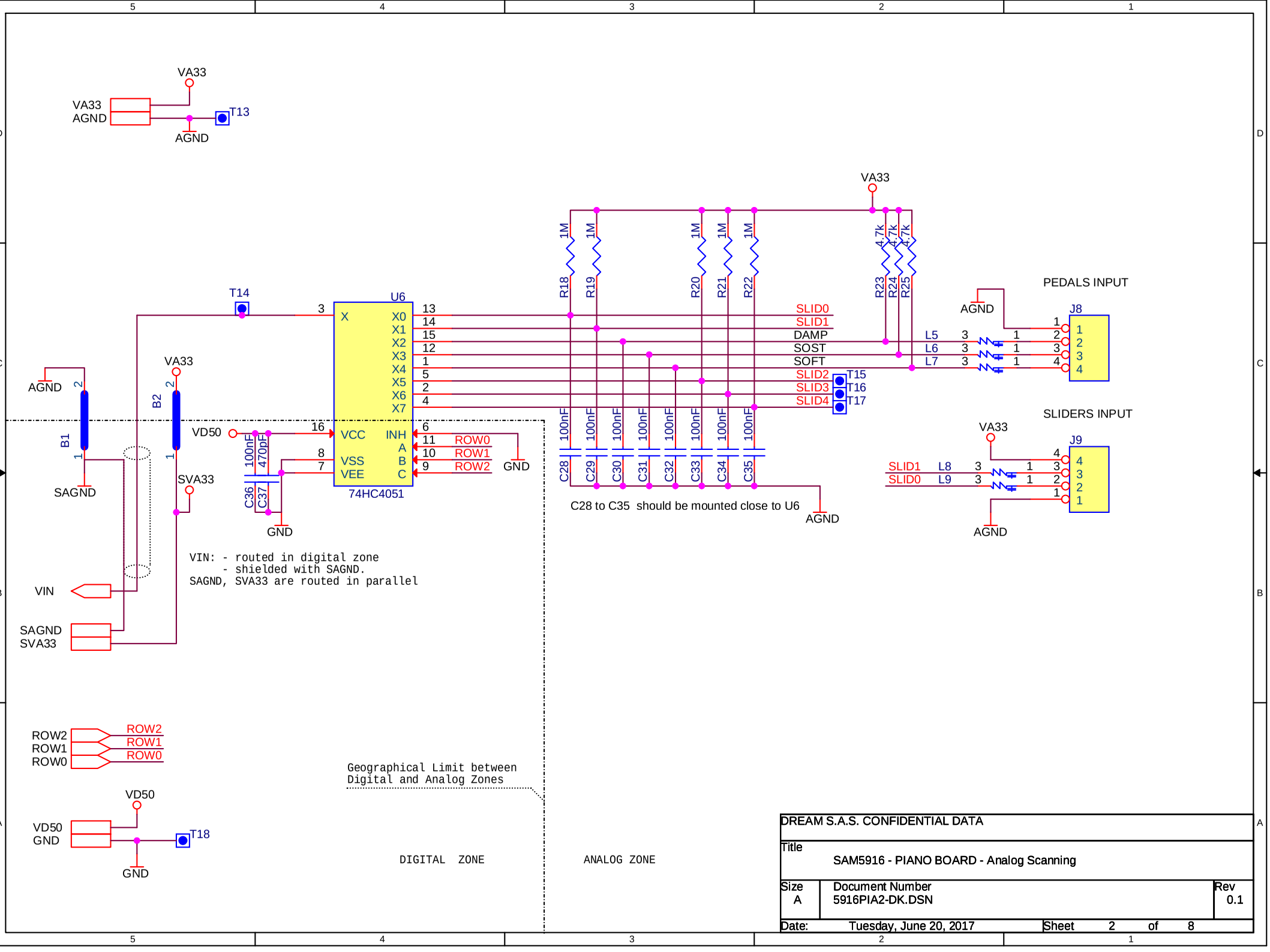
Item	Quantity	Reference	Part	Manufacturer	Designation
1	2	B1, B2	BRIDGE		
2	83	C1, C3, C11, C13, C15, C16, C17, C18, C19, C21, C23, C25, C37, C48, C92, C94, C95, C98, C99, C101, C103, C105, C160, C181, C184, C190, C204, C211, C214, C223, C228, C234, C237, C239	470pF		
3	8	C2, C62, C63, C64, C65, C180, C183, C233	N.M.		
4	67	C4, C6, C7, C8, C12, C14, C28, C29, C30, C31, C32, C33, C34, C35, C36, C39, C43, C44, C46, C47, C54, C58, C67, C70, C71, C73, C75, C79, C81, C87, C91, C96, C97, C100, C102, C104, C178, C179, C182, C185, C186, C189, C191, C192, C194, C196, C200, C202, C203, C207, C208, C210, C213, C216, C218, C219, C222, C225, C226, C227, C238, C240, C241, C242, C243, C244, C251	100nF		
5	12	C5, C40, C90, C187, C188, C198, C199, C206, C209, C221, C224, C236	10µF-16V		
6	2	C9, C89	4.7µF-T-10V		
7	6	C10, C49, C51, C53, C56, C61	470pF		
8	5	C20, C22, C24, C26, C27	47pF		
9	15	C38, C42, C45, C55, C57, C69, C76, C77, C82, C88, C212, C217, C230, C232, C250	10µF-T-10V		
10	2	C41, C68	100µF-T-10V		
11	4	C50, C60, C78, C86	10µF-Low Dist	PANASONIC	ECA1HAM100X
12	2	C52, C59	1nF		
13	2	C66, C72	47µF-T-6V		
14	2	C74, C84,C106, C108, C114, C117, C121, C123, C124, C126, C129, C135, C136, C138, C141, C150, C153, C155, C161, C163, C166, C169, C172, C177,	100pF		

Item	Quantity	Reference	Part	Manufacturer	Designation
15	2	C80, C93	2.2µF-Low dist	PANASONIC	ECA1HAK2R2X
16	2	C83, C85	4.7µF-Low dist	PANASONIC	ECA1HAM4R7X
17	23	C107, C109, C110, C111, C112, C113, C115, C116, C118, C119, C120, C122, C125, C127, C128, C130, C131, C132, C133, C134, C137, C139, C140, C142, C143, C144, C145, C146, C147, C148, C149, C151, C152, C154, C156, C157, C158, C159, C162, C164, C165, C167, C168, C170, C171, C173, C174, C175, C176, C253	220pF		
18	5	C193, C195, C197, C205, C220	10nF		
19	1	C201	4.7µF-16V		
20	3	C215, C229, C231	10µF-T-16V		
21	1	C235	470µF-25V		
22	4	C245, C246, C247, C248	22pF		
23	1	C249	1µF-T		
24	1	C252	150µF		
25	2	D1, D2	LL4148	VISHAY	LL4148
26	1	D3	1N4002		
27	2	D4, D5	TPD2E1B06	TI	TPD2E1B06
28	5	H1, H2, H3, H4, H5	Fixing_Hole		
29	1	JD1	Jumper Disk2P		
30	4	JMP1, JMP2, JMP3, JMP4	Jumper1P	Generic	BA25-Male-7mm-Gold
31	1	J1	B5B-PH-K-S	JST	B5B-PH-K-S
32	2	J2, J3	MIDI_DIN		
33	1	J4	N.M.	JST	B5B-XH-A
34	1	J5	HEAD_2	Generic	BA25-Male-7mm-Gold
35	1	J6	S10B-XH-A	JST	S10B-XH-A
36	1	J7	HEAD_6	Generic	BA25-Male-7mm-Gold
37	1	J8	HEAD_4	Generic	BA25-Male-7mm-Gold
38	1	J9	N.M.	Generic	BA25-Male-7mm-Gold
39	2	J10, J11	RCA_JACK	3E	10.575N
40	2	J12, J14	N.M.		
41	1	J13	JACK 3.5 STEREO	3E	15.427

Item	Quantity	Reference	Part	Manufacturer	Designation
42	1	J15	AMP-2-84952-2	TYCO ELECTRONICS	AMP- 2-84952-2
43	1	J16	AMP- 2-84952-0	TYCO ELECTRONICS	AMP- 2-84952-0
44	1	J17	HEAD_17X2_Splitted		
45	1	J18	DC PLUG	3E	LD02.02
46	1	J19	N.M.		
47	1	J20	WERI 62910416121	WERI	WERI 62910416121
48	2	J21, J23	N.M.	JST	B5B-PH-K-S
49	1	J22	WERI 614004185023	WERI	WERI 614004185023
50	1	LED1	TLMS1000-Vishay	VISHAY	TLMS1000-GS08
51	9	L1, L2, L3, L4, L5, L6, L7, L8, L9	NFM21CC102R1H3	MURATA	NFM21CC102R1H
52	1	L10	742792093	WURTH	742792093
53	2	L11, L12	742792093	WURTH	742792093
54	1	L13	7427920415	WURTH	7427920415
55	1	L14	NFM41PC204F1H3	MURATA	NFM41PC204F1H3
56	1	L15	74477510	WURTH	74477510
57	9	RS1, RS2, RS3, RS4, RS5, RS6, RS7, RS8, RS9	4x2.2k		
58	10	RS10, RS11, RS12, RS13, RS14, RS15, RS16, RS17, RS18, RS19	4x33		
59	17	R1, R2, R4, R5, R6, R9, R31, R48, R55, R56, R58, R59, R60, R65, R76, R77, R81	10k		
60	1	R3	N.M.		
61	5	R7, R8, R12, R30, R43	220		
62	9	R10, R23, R24, R25, R51, R52, R53, R54, R72	4.7k		
63	3	R11, R78, R83	22k		
64	5	R13, R14, R15, R16, R17	100		
65	5	R18, R19, R20, R21, R22	1M		
66	4	R26, R35, R36, R47	3k		
67	4	R27, R34, R38, R44	3.9k		
68	4	R28, R29, R39, R45	3.6k		
69	1	R32	22		
70	9	R33, R37, R40, R41, R42, R46, R49, R50, R62	33		
71	8	R57, R64, R66, R67, R68, R69, R70, R71	1k		
72	2	R61, R63	0		

Item	Quantity	Reference	Part	Manufacturer	Designation
73	1	R73	750		
74	2	R74, R75	33		
75	2	R79, R82	47k		
76	2	R80, R84	12k, 1%		
77	40	T1, T2, T3, T4, T5, T6, T7, T8, T9, T10, T11, T12, T13, T14, T15, T16, T17, T18, T19, T20, T21, T22, T23, T24, T25, T26, T27, T28, T29, T30, T31, T32, T33, T34, T35, T36, T37, T38, T39, T40	TestPoint	Vogt	N.M. (985.62 or 1000C.22)
78	1	U1	SAM5916_Cfg3	DREAM	SAM5916B
79	1	U2	AT45DB081E-SHN	ADESTO	AT45DB081E-SHN
80	1	U3	74LVC1G07	TI	74LVC1G07DCK
81	1	U4	74LVC1G57	TI	74LVC1G57DCK
82	1	U5	HCPL-0501		
83	1	U6	74HC4051	TI	CD74HC4051PW
84	1	U7	AK4490EQ		
85	1	U8	OPA2353	TI	OPA2353
86	1	U9	OPA2353	BURR-BROWN	OPA2353
87	1	U10	AK5386VT	AKM	AK5386VT
88	2	U11, U12	74HC238	TI	74HC238PW
89	3	U13, U14, U15	74HC257	TI	74HC257PW
90	2	U16, U17	MT29F8G16ABACAWP	MICRON	MT29F8G16ABACAWP
91	1	U18	LD1086D2T33	ST	LD1086D2T33
92	2	U19, U20	LM1117MPX-5.0	NS	LM1117MPX-5.0
93	1	U21	MT48LC16M16A2P-7E W9825G6KH-6	MICRON WINBOND	MT48LC16M16A2P-7E W9825G6KH-6
94	1	U22	MIC2005A-1YM5	MICREL	MIC2005A-1YM5
95	2	VR1, VR2	50k	BOURNS	POT-3329H
96	1	X1	12 MHz		
97	1	X2	12.288 MHz + socket	FISCHER	PQ18


DEBUG / PROGRAM
(5000-DBG-IF)
J1
B5B-PH-K-S
C1
470pF
MR/
STOUT
STIN
FSOURCE
GND
MEM CONFIG 3
VD33
MC1
MC0
R1
R2
R3
10k
10k
N.M.
GND
U1B
SAM5916_Cfg3
System / MIDI
P0.14-MIDI_IN2-MIDI_IN1
P0.9-MIDI_OUT1
M_IN
M_OUT
P6.6
P6.5
P5.11
P5.10
P5.9
P5.8
P5.7
RST/
STIN
STOUT
STOUT-MIDI_IN2-P0.15
FSOURCE
TEST
U1C
SAM5916_Cfg3
Multi-Purpose Quad SPI
MC1-P7.14-PWM_OUT-SPICK
P7.15-SPICS0/
P7.10-SPDIF_OUT-SPI0
P7.11-SPDIF_IN-SPI1
P7.12-PWM_OUT-SPI2
P7.13-SPDIF_IN-SPI3
SPICK
SPICS0/
SPI0
SPI1
P7.12
DATAFLASH
For main firmware, user's songs and settings storage
U2
SI
SO
SCK
RST
WP
CS
VCC
GND
AT45DB081E-SHN (8Mbit)
Compatible with:
- AT45DB021E-SU (2Mbit)
- AT45DB041E-SU (4Mbit)
C2
N.M.
C3
470pF
C4
100nF
RESET
VD33
MR/
LL4148
D1
R5
10k
R6
10k
U4
IN0
IN1
IN2
GND
VCC
Y
74LVC1G57
2-input AND with
Schmitt Trigger
C7
100nF
C9
4.7µF-T-10V
C10
470pF
RST/
FSOURCE
C5
10µF-16V
C6
100nF
R4
10k
SNVBUS
OVRCRT
P6.5
P6.6
SDRAM
VM
VD33
GND
P3.7
NAND Flash
MIDI I/F
M_OUT
U3
74LVC1G07
C8
100nF
C11
470pF
VD50
R7
220
R8
220
L1
L2
M_5
M_4
M_3
M_2
M_1
J2
MIDI OUT
C12
100nF
C14
100nF
R10
4.7k
LL4148
D2
U5
HCPL-0501
M_IN
J4
N.M.
R12
220
J3
MIDI IN
USB
FS0
FS1
SNVBUS
OVRCRT
VD50
VD33
GND
Power Supply
VM
VD33
VD50
VA33
VA50
AGND
SVA33
SAGND
Kbd FP Ana Scanning
Audio InOut
MC0
RST/
PWM_OUT
P0.0
VA50
VA33
AGND
GND
U1E
SAM5916_Cfg3
Slave 8-bit IF
RD/-MIDI_OUT2-P0.13
WR/-SSDIN-P0.12
CS/-SSYNC-P0.11
A0-SSCLK-P0.10
IRQ-SSINT/-P0.8_INTA
D7-XCLBD0-P0.7
D6-XWSBD0-P0.6
D5-XCLBD1-P0.5
D4-XWSBD1-P0.4
D3-DABD2-P0.3
D2-DABD3-P0.2
D1-DABD4-P0.1
D0-DAAD2-P0.0
T1
T2
T3
T4
T5
T6
T7
T8
T9
T10
T11
T12
SPI LCD
PWM_OUT
P5.8
P7.12
SPI0
P5.7
SPICK
R13
R14
R15
R16
R17
100
C20
C22
C24
C26
C27
47pF
J6
S10B-XH-A
GPIOs
P5.11
P5.10
P5.9
P3.7
C18
C19
C21
C23
C25
J7
DREAM S.A.S. CONFIDENTIAL DATA
Title
SAM5916 - PIANO BOARD - Top
Size
A4
Document Number
5916PIA2-DK.DSN
Rev
0.1
Date:
Tuesday, June 20, 2017
Sheet
1
of
8



DREAM S.A.S. CONFIDENTIAL DATA

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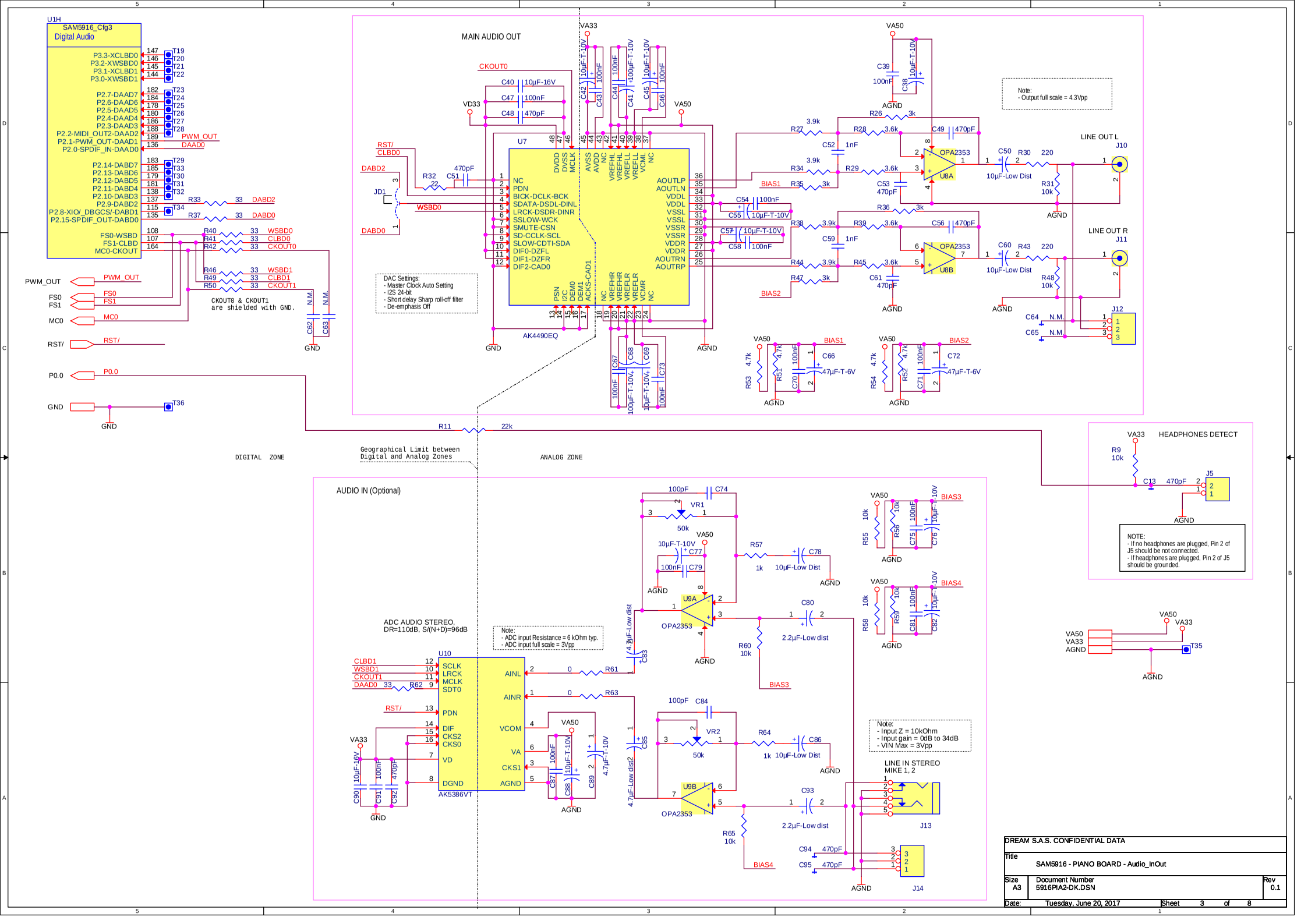
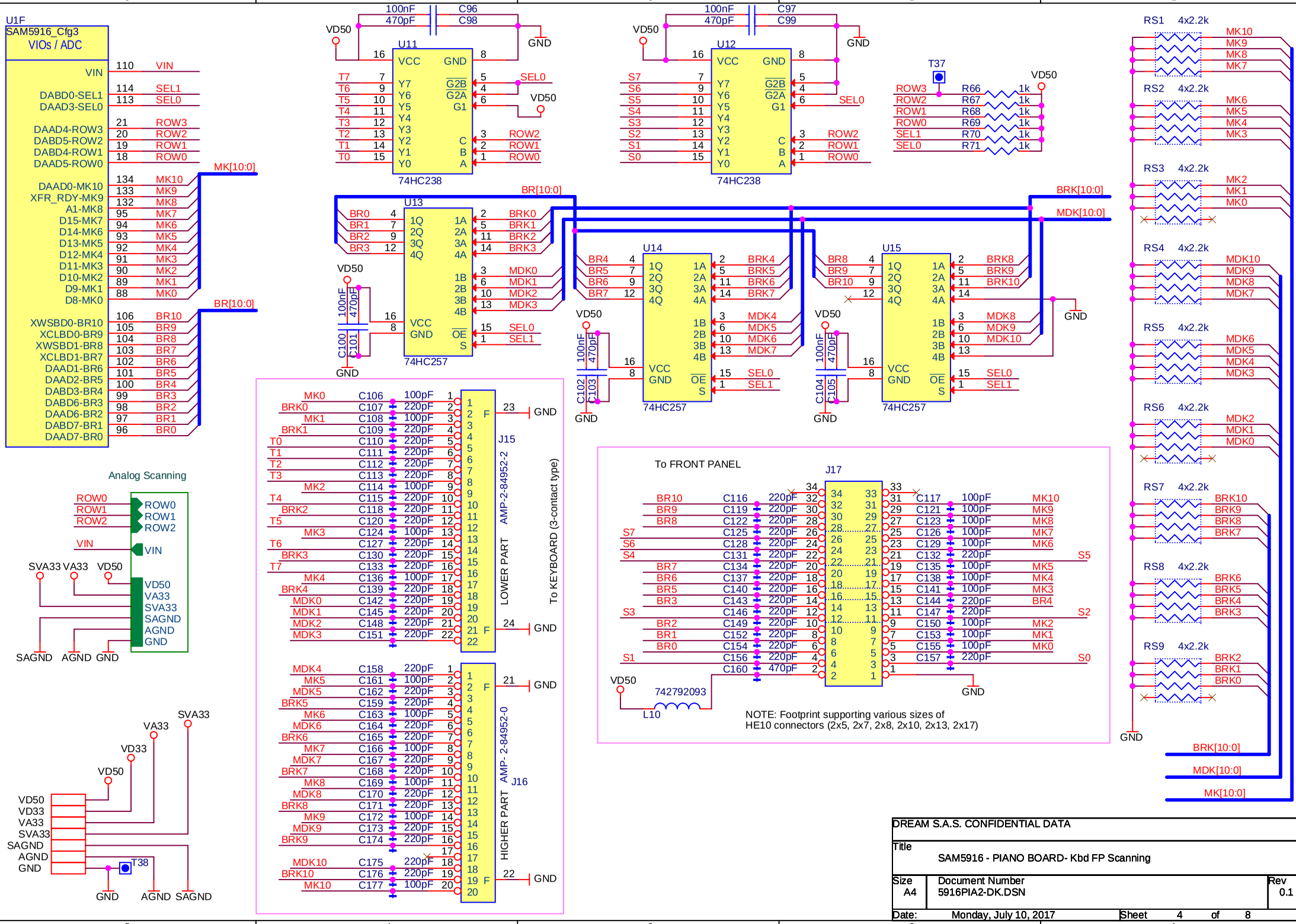
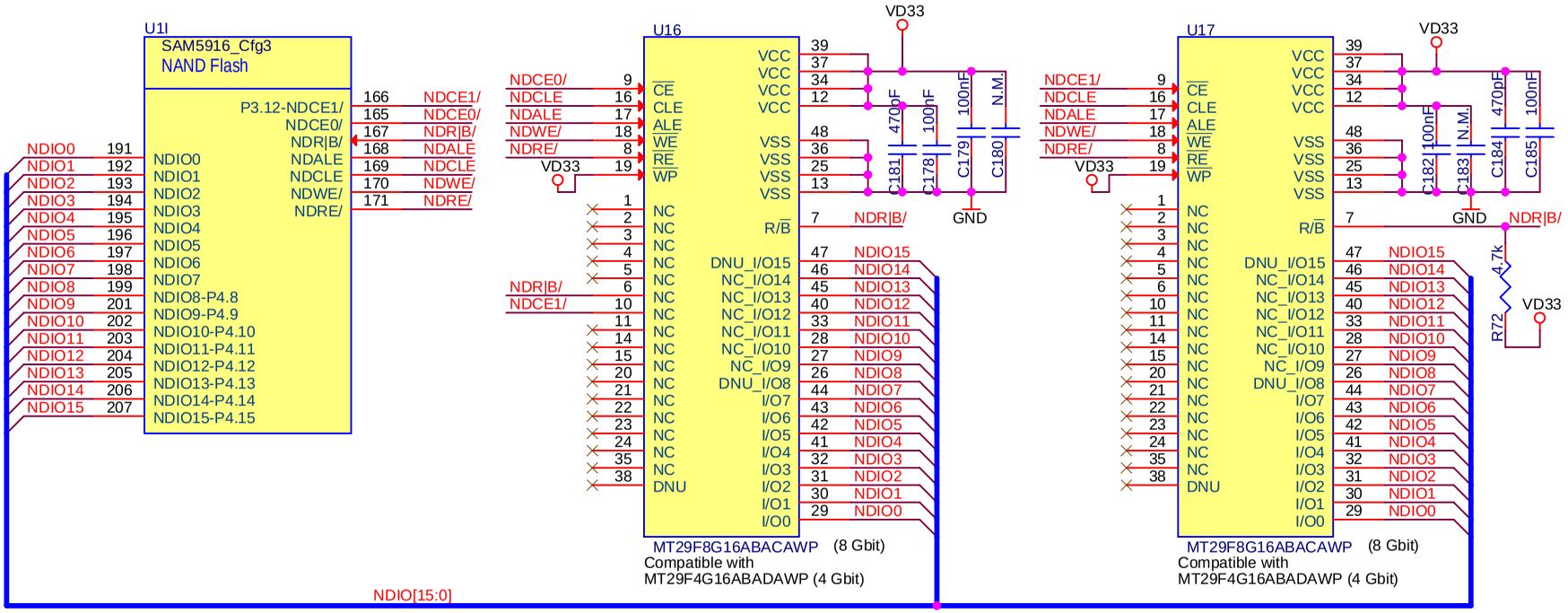
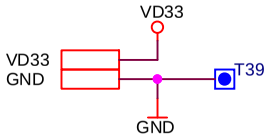
Size A	Document Number 5916PIA2-DK.DSN	Rev 0.1
Date: Tuesday, June 20, 2017	Sheet 2 of 8	


U1H
SAM5916_Cfg3
Digital Audio
P3.3-XCLBD0
P3.2-XWSBD0
P3.1-XCLBD1
P3.0-XWSBD1
P2.7-DAAD7
P2.6-DAAD6
P2.5-DAAD5
P2.4-DAAD4
P2.3-DAAD3
P2.2-MIDI_OUT2-DAAD2
P2.1-PWM_OUT-DAAD1
P2.0-SPDIF_IN-DAAD0
P2.14-DABD7
P2.13-DABD6
P2.12-DABD5
P2.11-DABD4
P2.10-DABD3
P2.9-DABD2
P2.8-XIO/_DBGCS/-DABD1
P2.15-SPDIF_OUT-DABD0
FS0-WSBD
FS1-CLBD
MC0-CKOUT
PWM_OUT
FS0
FS1
MC0
RST/
P0.0
GND
CKOUT0 & CKOUT1 are shielded with GND.
MAIN AUDIO OUT
U7
AK4490EQ
DAC Settings:
- Master Clock Auto Setting
- I2S 24-bit
- Short delay Sharp roll-off filter
- De-emphasis Off
LINE OUT L
LINE OUT R
J10
J11
J12
Note:
- Output full scale = 4.3Vpp
DIGITAL ZONE
Geographical Limit between Digital and Analog Zones
ANALOG ZONE
AUDIO IN (Optional)
ADC AUDIO STEREO, DR=110dB, S/(N+D)=96dB
U10
AK5386VT
Note:
- ADC input Resistance = 6 kOhm typ.
- ADC input full scale = 3Vpp
Note:
- Input Z = 10kOhm
- Input gain = 0dB to 34dB
- VIN Max = 3Vpp
LINE IN STEREO MIKE 1, 2
J13
J14
HEADPHONES DETECT
J5
NOTE:
- If no headphones are plugged, Pin 2 of J5 should be not connected.
- If headphones are plugged, Pin 2 of J5 should be grounded.
T35
DREAM S.A.S. CONFIDENTIAL DATA
Title
SAM5916 - PIANO BOARD - Audio_InOut
Size A3
Document Number 5916PIA2-DK.DSN
Rev 0.1
Date: Tuesday, June 20, 2017
Sheet 3 of 8

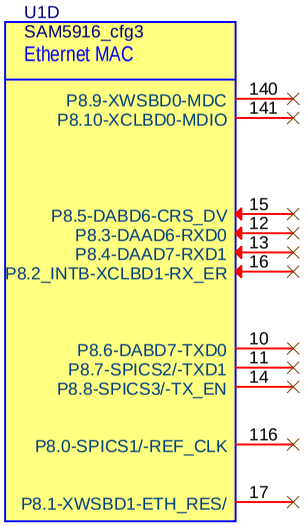

U1F
SAM5916_Cfg3
VIOs / ADC
VIN
DABD0-SEL1
DAAD3-SEL0
DAAD4-ROW3
DABD5-ROW2
DABD4-ROW1
DAAD5-ROW0
DAAD0-MK10
XFR_RDY-MK9
A1-MK8
D15-MK7
D14-MK6
D13-MK5
D12-MK4
D11-MK3
D10-MK2
D9-MK1
D8-MK0
XWSBD0-BR10
XCLBD0-BR9
XWSBD1-BR8
XCLBD1-BR7
DAAD1-BR6
DAAD2-BR5
DABD3-BR4
DABD6-BR3
DAAD6-BR2
DABD7-BR1
DAAD7-BR0
MK[10:0]
BR[10:0]
Analog Scanning
ROW0
ROW1
ROW2
VIN
VD50
VA33
SVA33
SAGND
AGND
GND
U11
U12
U13
U14
U15
74HC238
74HC257
100nF
470pF
C96
C98
C97
C99
SEL0
SEL1
ROW3
ROW2
ROW1
ROW0
BRK[10:0]
MDK[10:0]
T37
R66
R67
R68
R69
R70
R71
1k
RS1
RS2
RS3
RS4
RS5
RS6
RS7
RS8
RS9
4x2.2k
J15
J16
J17
AMP-2-84952-2
AMP- 2-84952-0
LOWER PART
HIGHER PART
To KEYBOARD (3-contact type)
To FRONT PANEL
742792093
L10
T38
NOTE: Footprint supporting various sizes of
HE10 connectors (2x5, 2x7, 2x8, 2x10, 2x13, 2x17)
DREAM S.A.S. CONFIDENTIAL DATA
Title
SAM5916 - PIANO BOARD- Kbd FP Scanning
Size
A4
Document Number
5916PIA2-DK.DSN
Rev
0.1
Date:
Monday, July 10, 2017
Sheet
4
of
8

SLC NAND FLASH



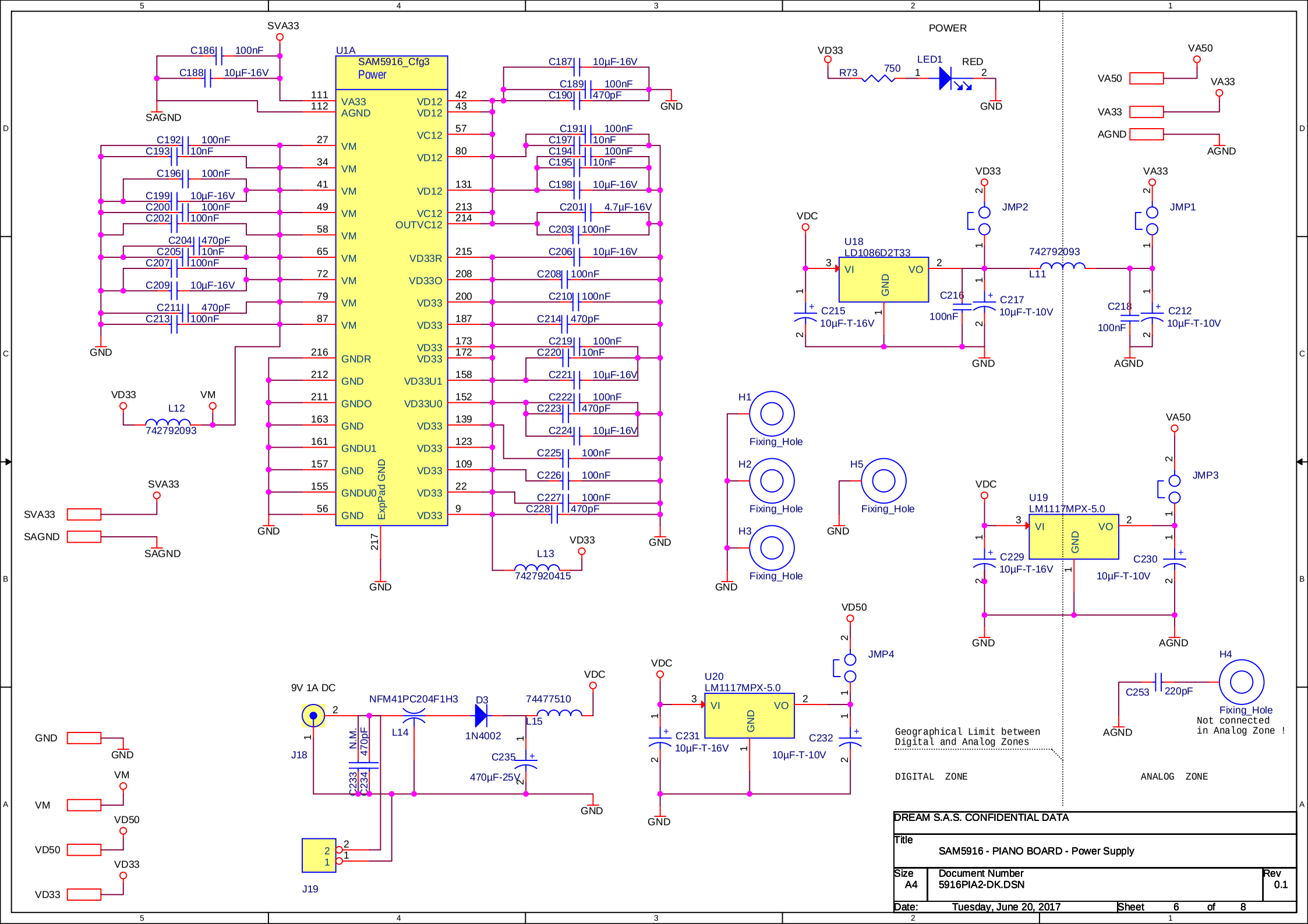


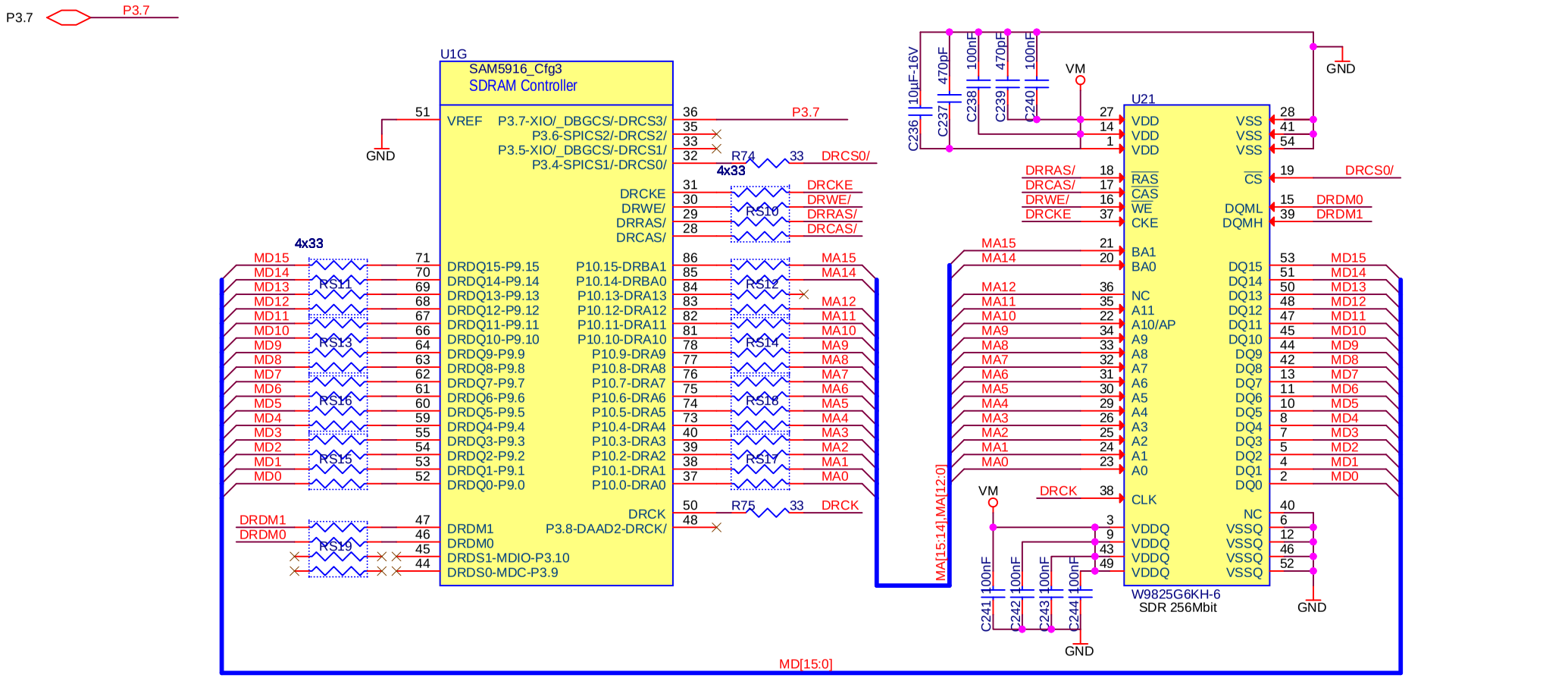
NOT USED



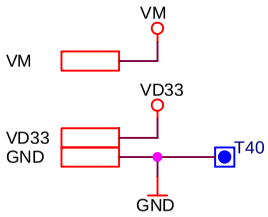
DREAM S.A.S. CONFIDENTIAL DATA

Title	SAM5916 - PIANO BOARD - NAND Flash	
Size A4	Document Number 5916PIA2-DK.DSN	Rev 0.1
Date: Monday, July 10, 2017	Sheet 5 of 8	

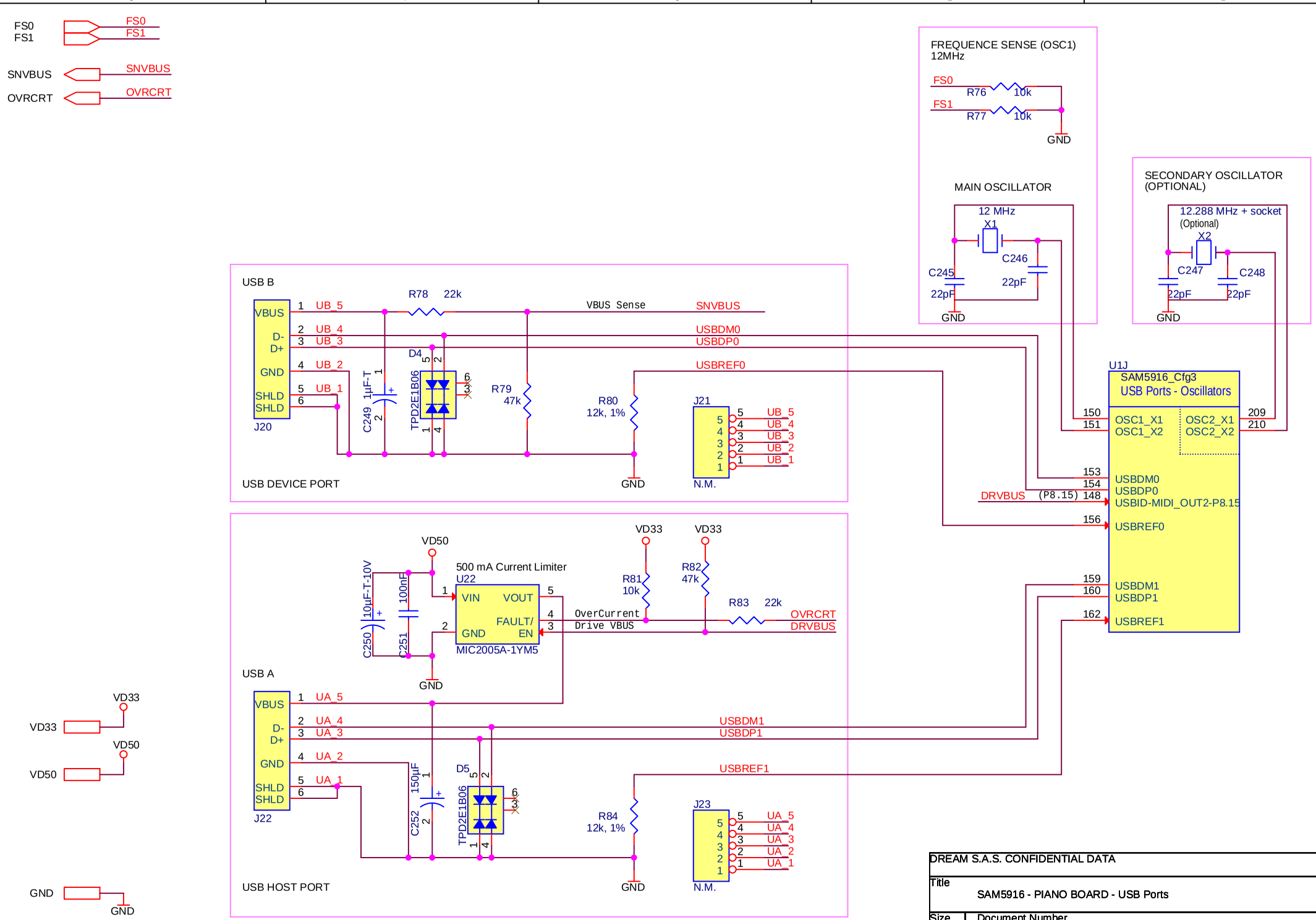

SVA33
U1A
SAM5916_Cfg3
Power
VA33
AGND
VD12
VC12
VD12
VM
VD12
VM
VM
VC12
OUTVC12
VM
VM
VD33R
VM
VD33O
VM
VD33
VM
VD33
VD33
GNDR
VD33
GND
VD33U1
GNDO
VD33U0
GND
VD33
GNDU1
VD33
GND
VD33
GNDU0
VD33
GND
VD33
ExpPad GND
SAGND
GND
VD33
VM
L12
742792093
SVA33
SAGND
VD33
L13
7427920415
POWER
VD33
R73
750
LED1
RED
GND
VA50
VA33
AGND
VDC
U18
LD1086D2T33
VI
VO
GND
C215
10µF-T-16V
C216
100nF
C217
10µF-T-10V
JMP2
JMP1
742792093
L11
C218
100nF
C212
10µF-T-10V
H1
H2
H3
H5
Fixing_Hole
VA50
JMP3
U19
LM1117MPX-5.0
C229
10µF-T-16V
C230
10µF-T-10V
H4
C253
220pF
Not connected
in Analog Zone !
VD50
JMP4
U20
LM1117MPX-5.0
C231
10µF-T-16V
C232
10µF-T-10V
9V 1A DC
NFM41PC204F1H3
L14
D3
1N4002
74477510
L15
C235
470µF-25V
N.M.
C233
C234
J18
J19
Geographical Limit between
Digital and Analog Zones
DIGITAL ZONE
ANALOG ZONE
DREAM S.A.S. CONFIDENTIAL DATA
Title
SAM5916 - PIANO BOARD - Power Supply
Size
A4
Document Number
5916PIA2-DK.DSN
Rev
0.1
Date:
Tuesday, June 20, 2017
Sheet
6
of
8



Note:
- Only 64Mbit SDRAM is needed for standard 256-voice piano with effects.
- 256Mbit is mounted to be ready for further options.



DREAM S.A.S. CONFIDENTIAL DATA		
Title: SAM5916 - PIANO BOARD - SDR SDRAM		
Size: A4	Document Number: 5916PIA2-DK.DSN	Rev: 0.1
Date: Friday, June 23, 2017	Sheet 7 of 8	


FS0
FS1
SNVBUS
OVRCRT
FREQUENCE SENSE (OSC1)
12MHz
R76 10k
R77 10k
GND
MAIN OSCILLATOR
12 MHz
X1
C245 22pF
C246 22pF
SECONDARY OSCILLATOR
(OPTIONAL)
12.288 MHz + socket
(Optional)
X2
C247 22pF
C248 22pF
USB B
VBUS
D-
D+
GND
SHLD
SHLD
J20
UB_5
UB_4
UB_3
UB_2
UB_1
R78 22k
VBUS Sense
SNVBUS
USBDM0
USBDP0
USBREF0
D4
TPD2E1B06
C249 1µF-T
R79 47k
R80 12k, 1%
J21
N.M.
USB DEVICE PORT
U1J
SAM5916_Cfg3
USB Ports - Oscillators
OSC1_X1
OSC1_X2
OSC2_X1
OSC2_X2
USBDM0
USBDP0
USBID-MIDI_OUT2-P8.15
USBREF0
DRVBUS (P8.15)
USBDM1
USBDP1
USBREF1
VD50
VD33
500 mA Current Limiter
U22
VIN
VOUT
FAULT/
GND
EN
MIC2005A-1YM5
C250 10µF-T-10V
C251 100nF
R81 10k
R82 47k
R83 22k
OverCurrent
Drive VBUS
OVRCRT
DRVBUS
USB A
J22
UA_5
UA_4
UA_3
UA_2
UA_1
USBDM1
USBDP1
USBREF1
D5
TPD2E1B06
C252 150µF
R84 12k, 1%
J23
N.M.
USB HOST PORT
DREAM S.A.S. CONFIDENTIAL DATA
Title
SAM5916 - PIANO BOARD - USB Ports
Size A4
Document Number 5916PIA2-DK.DSN
Rev 0.1
Date: Tuesday, June 20, 2017
Sheet 8 of 8

Dream Contact

info@dream.fr

Website

http://www.dream.fr