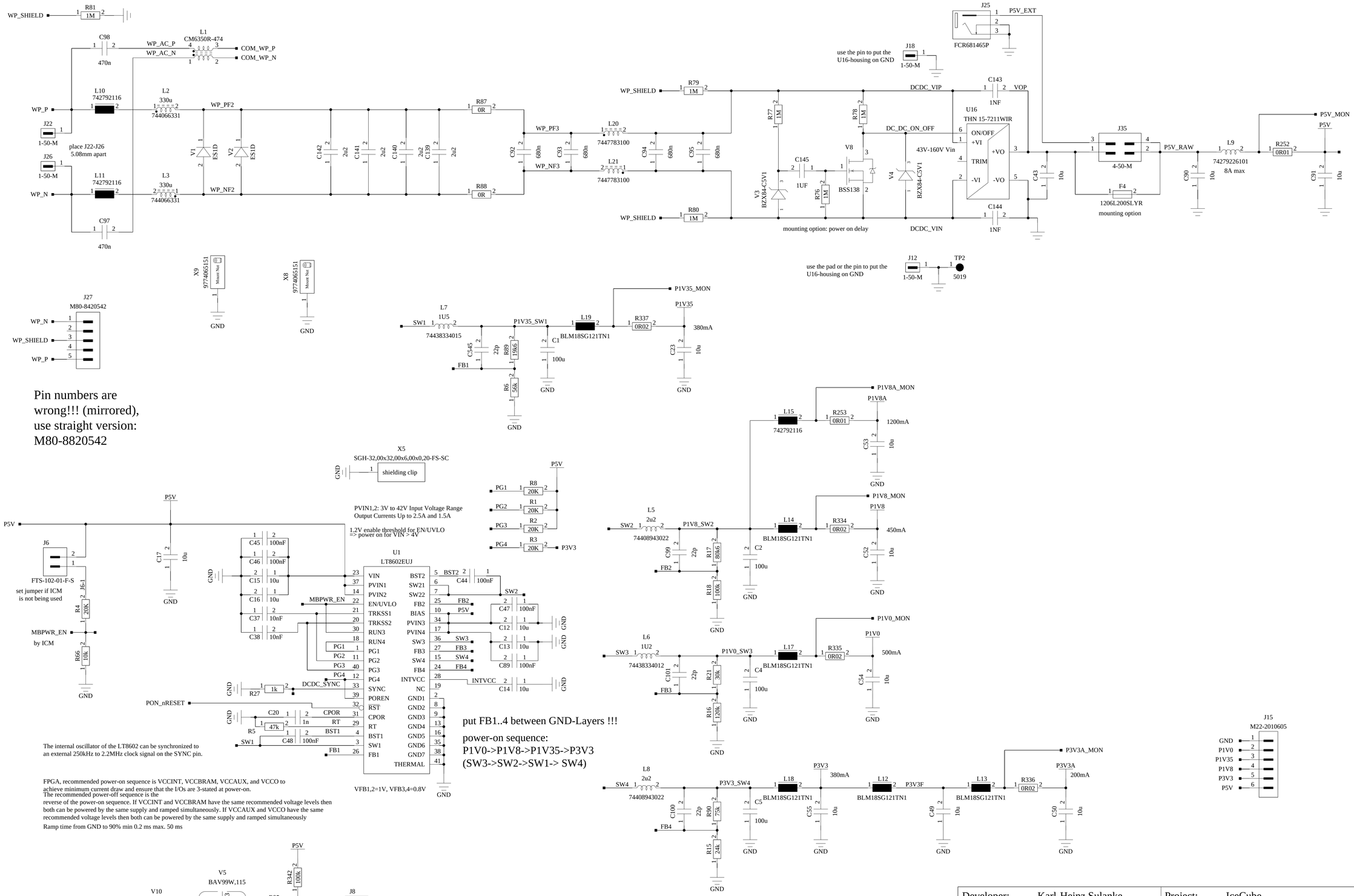
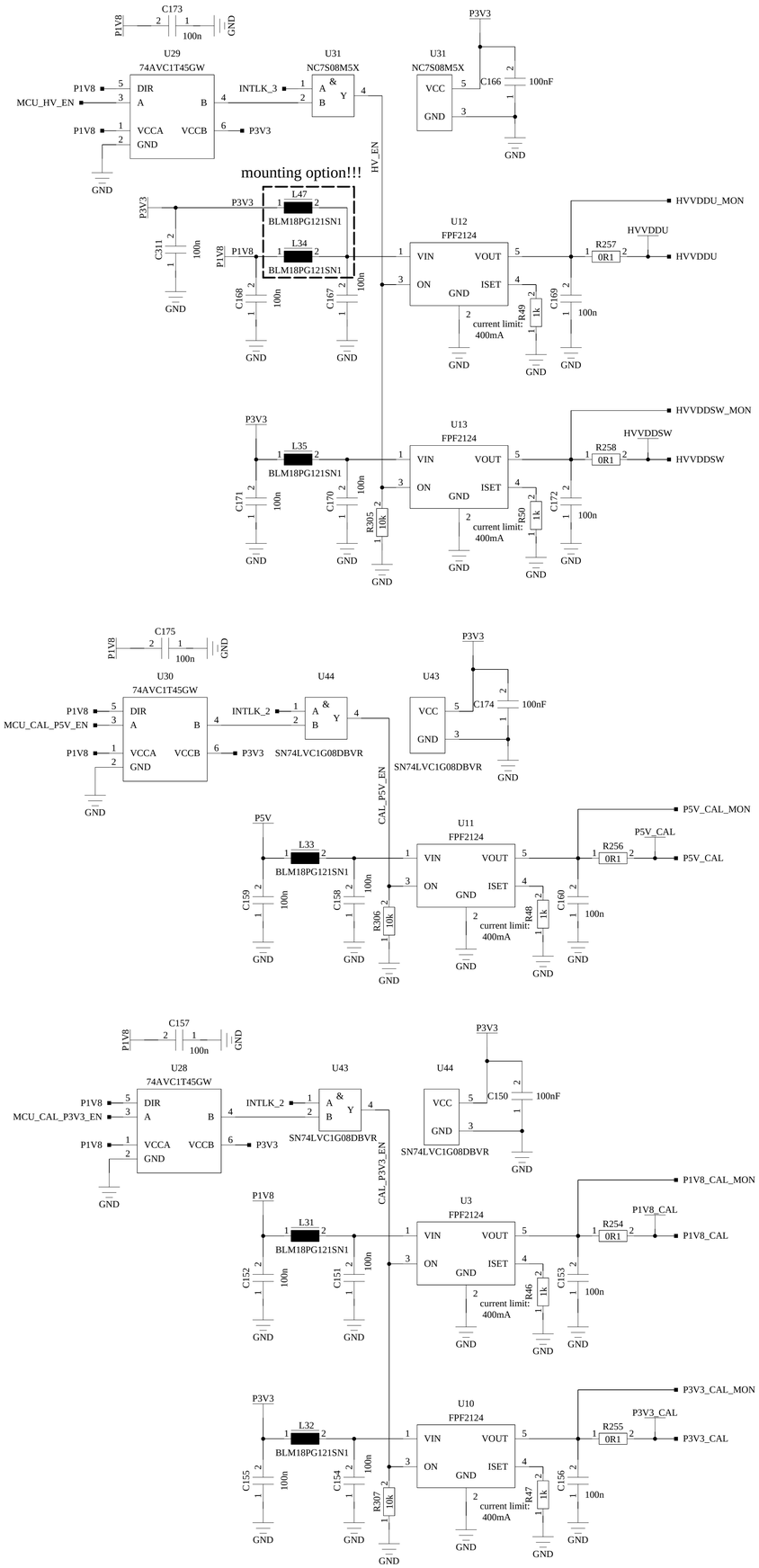
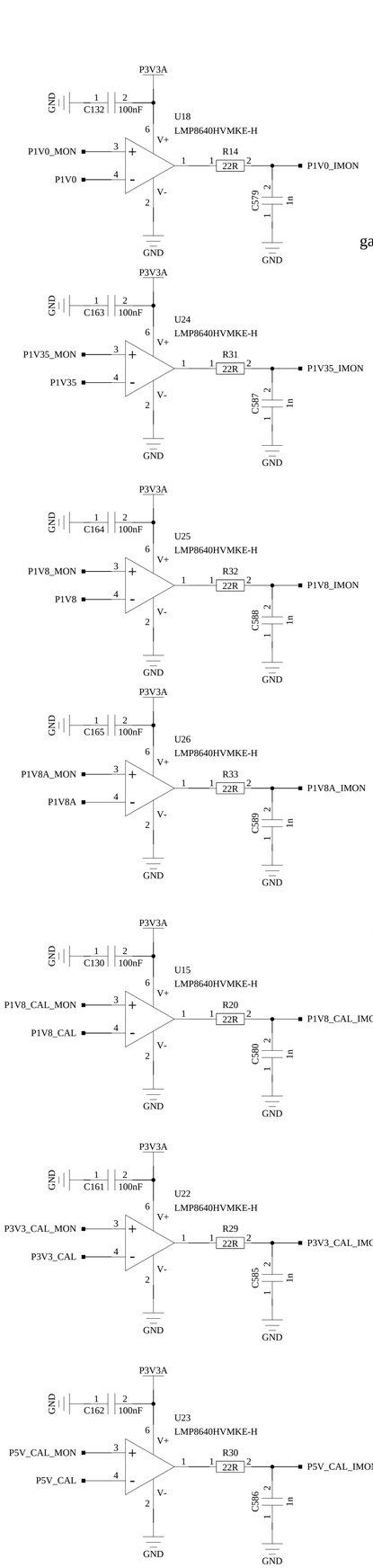
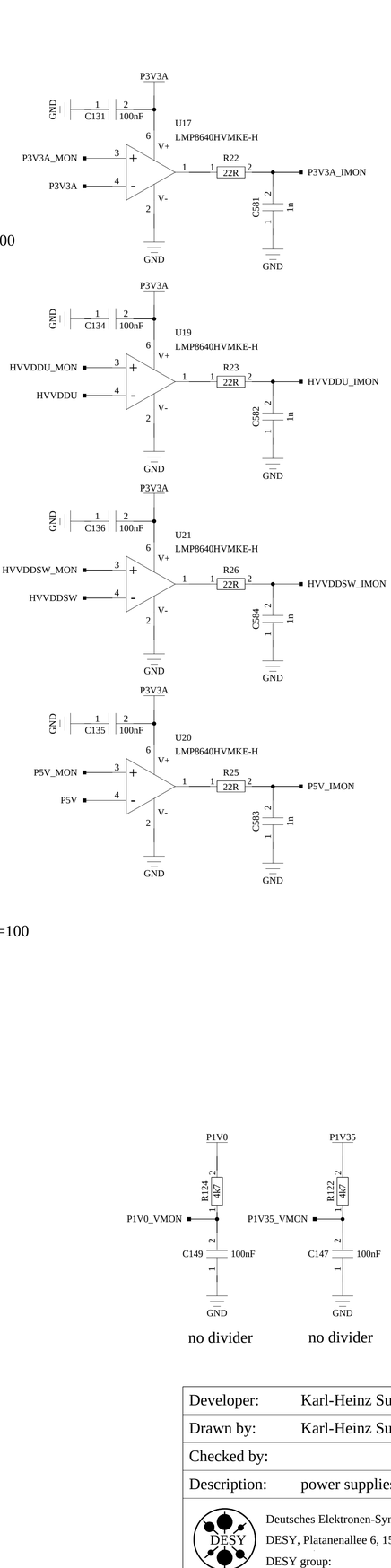
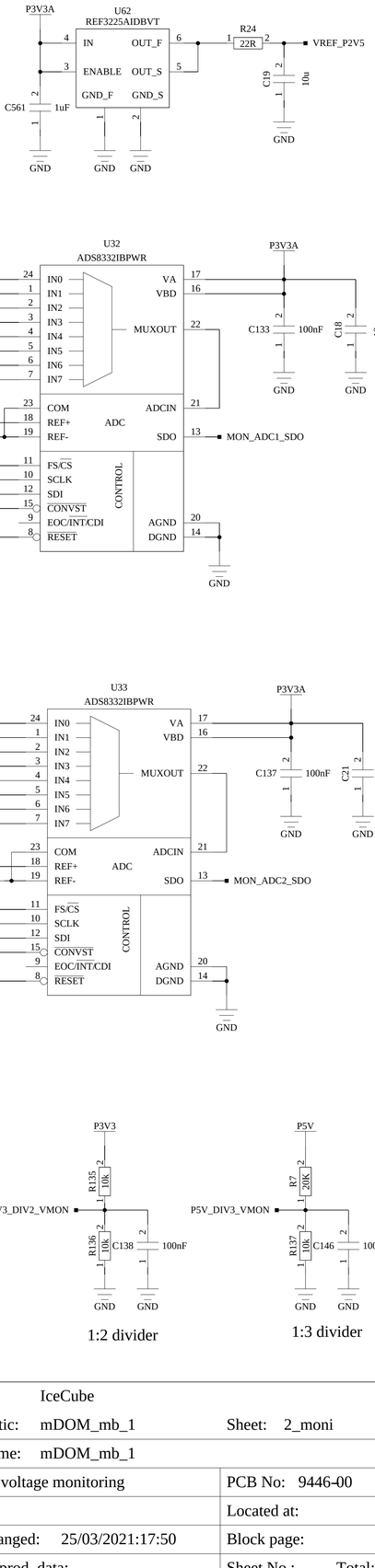
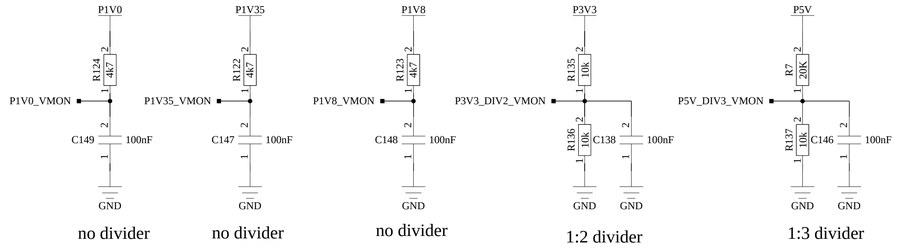

WP_SHIELD
R81 1M
C98 470n
L1 CM6350R-474
WP_AC_P
WP_AC_N
COM_WP_P
COM_WP_N
WP_P
WP_N
J22 1-50-M
J26 1-50-M
place J22-J26 5.08mm apart
L10 742792116
L11 742792116
L2 330u 744066331
L3 330u 744066331
C97 470n
WP_PF2
WP_NF2
V1 ES1D
V2 ES1D
C142 2u2
C141 2u2
C140 2u2
C139 2u2
R87 0R
R88 0R
C92 680n
C93 680n
C94 680n
C95 680n
WP_PF3
WP_NF3
L20 7447783100
L21 7447783100
R79 1M
R80 1M
R77 1M
R78 1M
R76 1M
C145 1UF
V8 BSS138
V3 BZX84-C5V1
V4 BZX84-C5V1
DC_DC_ON_OFF
DCDC_VIP
DCDC_VIN
mounting option: power on delay
J18 1-50-M
use the pin to put the U16-housing on GND
J25 FCR681465P
P5V_EXT
C143 1NF
C144 1NF
VOP
U16 THN 15-7211WIR
ON/OFF
+VI
TRIM
-VI
+VO
-VO
43V-160V Vin
C43 10u
J35 4-50-M
F4 1206L200SLYR
mounting option
P5V_RAW
L9 74279226101 8A max
C90 10u
R252 0R01
P5V_MON
P5V
C91 10u
J12 1-50-M
TP2 5019
use the pad or the pin to put the U16-housing on GND
X9 9774065151 Mount Not
X8 9774065151 Mount Not
GND
J27 M80-8420542
WP_N
WP_SHIELD
WP_P
Pin numbers are wrong!!! (mirrored), use straight version: M80-8820542
L7 1U5 74438334015
SW1
P1V35_SW1
L19 BLM18SG121TN1
P1V35_MON
P1V35
R337 0R02
380mA
C545 22p
R89 19k6
FB1
C1 100u
C23 10u
R6 56k
C23 10u
X5 SGH-32,00x32,00x6,00x0,20-FS-SC
shielding clip
P5V
PG1
PG2
PG3
PG4
R8 20K
R1 20K
R2 20K
R3 20K
P3V3
PVIN1,2: 3V to 42V Input Voltage Range
Output Currents Up to 2.5A and 1.5A
1.2V enable threshold for EN/UVLO
=> power on for VIN > 4V
J6 FTS-102-01-F-S
set jumper if ICM is not being used
R4 20K
MBPWR_EN
by ICM
R66 10k
C17 10u
U1 LT8602EUJ
VIN
PVIN1
PVIN2
EN/UVLO
TRKSS1
TRKSS2
RUN3
RUN4
PG1
PG2
PG3
PG4
SYNC
POREN
RST
CPOR
RT
BST1
SW1
FB1
BST2
SW21
SW22
FB2
BIAS
PVIN3
PVIN4
SW3
FB3
SW4
FB4
INTVCC
NC
GND1
GND2
GND3
GND4
GND5
GND6
GND7
THERMAL
C45 100nF
C46 100nF
C15 10u
C16 10u
C37 10nF
C38 10nF
C44 100nF
C47 100nF
C12 10u
C13 10u
C89 100nF
C14 10u
C20 1n
R5 47k
C48 100nF
R27 1k
DCDC_SYNC
PON_nRESET
CPOR
RT
BST1
FB1
SW1
VFB1,2=1V, VFB3,4=0.8V
put FB1..4 between GND-Layers !!!
power-on sequence:
P1V0->P1V8->P1V35->P3V3
(SW3->SW2->SW1-> SW4)
The internal oscillator of the LT8602 can be synchronized to an external 250kHz to 2.2MHz clock signal on the SYNC pin.
FPGA, recommended power-on sequence is VCCINT, VCCBRAM, VCCAUX, and VCCO to achieve minimum current draw and ensure that the I/Os are 3-stated at power-on.
The recommended power-off sequence is the reverse of the power-on sequence. If VCCINT and VCCBRAM have the same recommended voltage levels then both can be powered by the same supply and ramped simultaneously. If VCCAUX and VCCO have the same recommended voltage levels then both can be powered by the same supply and ramped simultaneously
Ramp time from GND to 90% min 0.2 ms max. 50 ms
V5 BAV99W,115
V10 blue
V11 red
BLUE
LED_CATH
FPGA_DONE
R95 470R
R342 100k
J8 FTS-102-01-F-S
LED-enable
L5 2u2 74408943022
SW2
P1V8_SW2
L14 BLM18SG121TN1
P1V8_MON
P1V8
R334 0R02
450mA
C99 22p
R17 80k6
FB2
C2 100u
C52 10u
R18 100k
L6 1U2 74438334012
SW3
P1V0_SW3
L17 BLM18SG121TN1
P1V0_MON
P1V0
R335 0R02
500mA
C101 22p
R21 30k
FB3
C4 100u
C54 10u
R16 120k
L8 2u2 74408943022
SW4
P3V3_SW4
L18 BLM18SG121TN1
P3V3
380mA
L12 BLM18SG121TN1
P3V3F
L13 BLM18SG121TN1
R336 0R02
P3V3A_MON
P3V3A
200mA
C100 22p
R90 75k
FB4
C5 100u
C55 10u
C49 10u
C50 10u
R15 24k
J15 M22-2010605
GND
P1V0
P1V35
P1V8
P3V3
P5V
Developer: Karl-Heinz Sulanke
Drawn by: Karl-Heinz Sulanke
Checked by:
Description: DCDC power supplies
Project: IceCube
Schematic: mDOM_mb_1
Sheet: 1_psupply
PCB name: mDOM_mb_1
PCB No: 9446-00
A3
Deutsches Elektronen-Synchrotron
DESY, Platanenallee 6, 15738 Zeuthen
DESY group:
Variant:
Located at:
Date changed: 23/12/2020:10:20
Block page:
Date of prod. data:
Sheet No.:
Total: 14



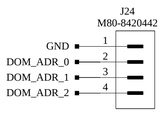




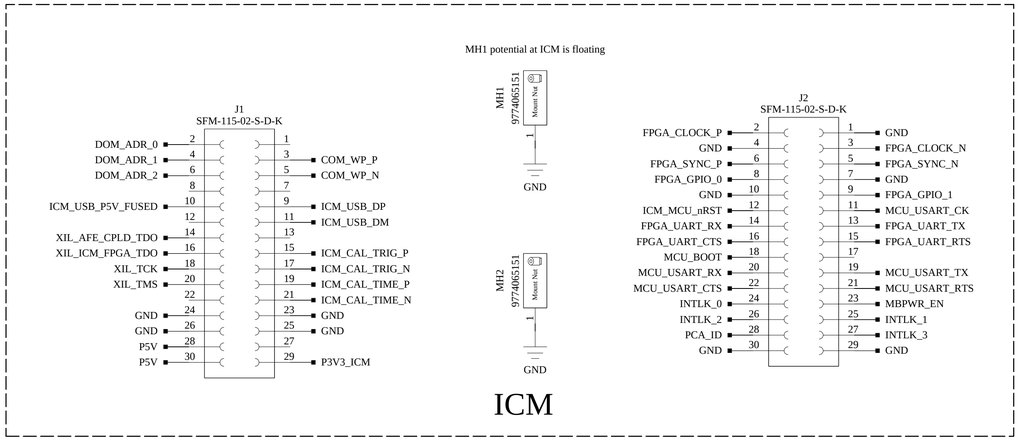




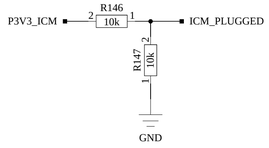
Developer:	Karl-Heinz Sulanke	Project:	IceCube	
Drawn by:	Karl-Heinz Sulanke	Schematic:	mDOM_mb_1	Sheet: 2_moni
Checked by:		PCB name:	mDOM_mb_1	
Description:	power supplies, switches, current and voltage monitoring		PCB No: 9446-00	A3
Deutsches Elektronen-Synchrotron DESY, Platanenallee 6, 15738 Zeuthen DESY group:		Variant:	Located at:	
		Date changed: 25/03/2021:17:50	Block page:	
		Date of prod. data:	Sheet No.:	Total: 14

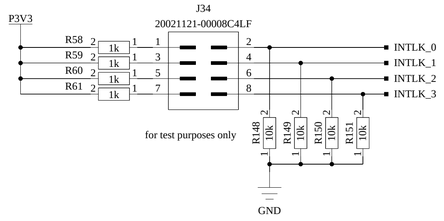


Pin numbers are wrong!!! (mirrored), use straight version: M80-8820442

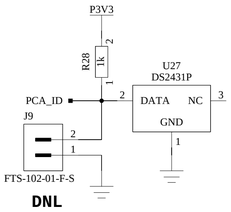


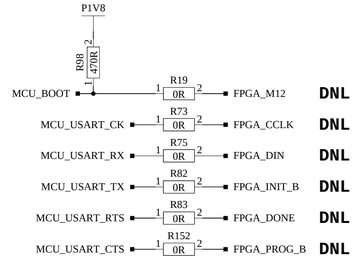
set jumper if ICM is not being used



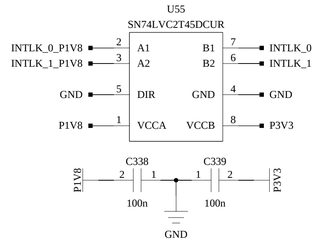


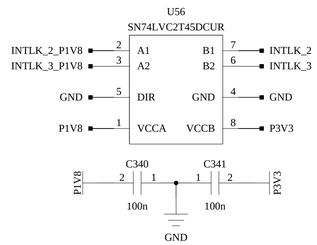
for test purposes only



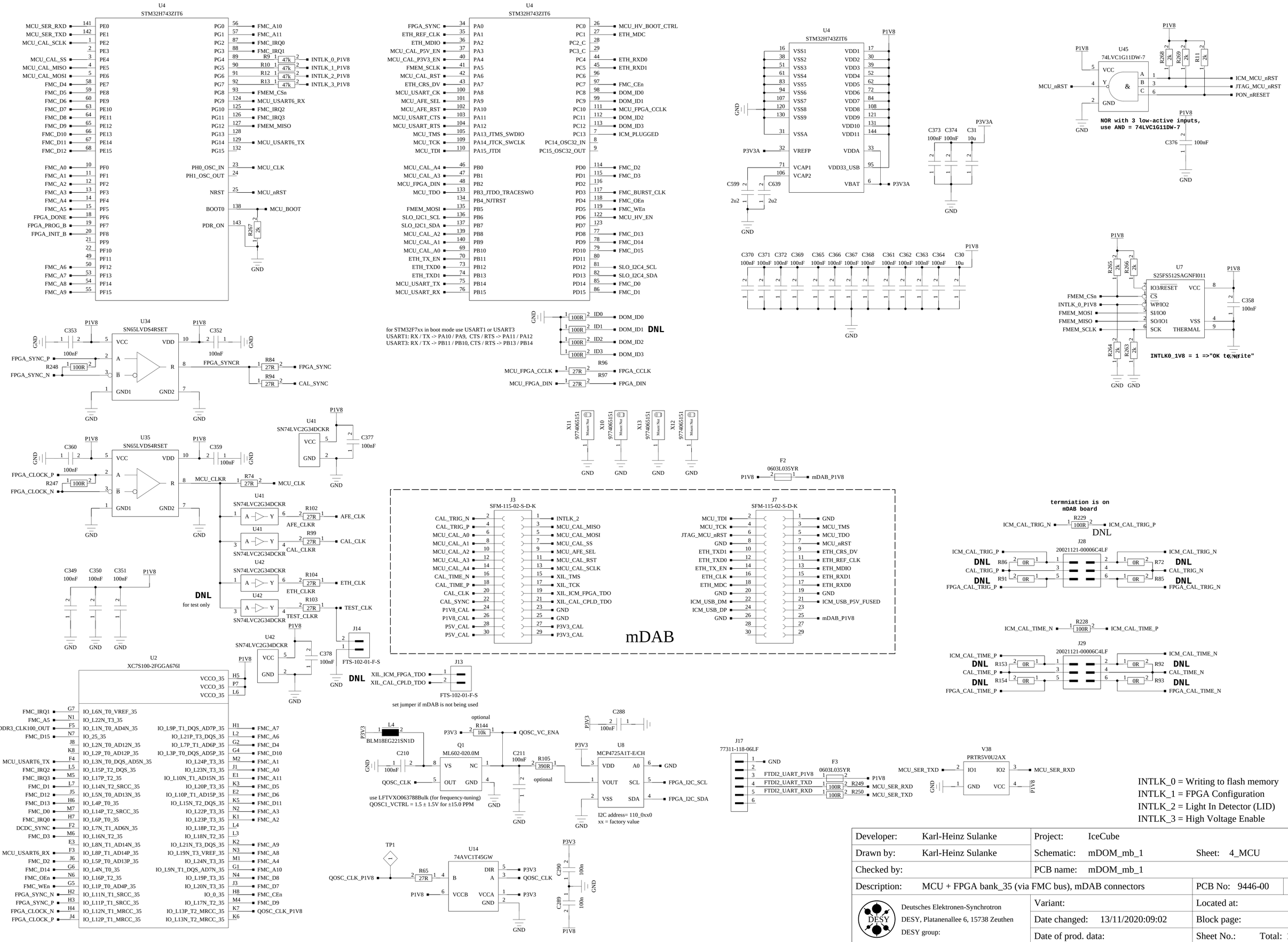


mount 0R jumpers in MCU-less version, when ICM is config. master





Developer: Karl-Heinz Sulanke		Project: IceCube		
Drawn by: Karl-Heinz Sulanke		Schematic: mDOM_mb_1	Sheet: 3_ICM	
Checked by:		PCB name: mDOM_mb_1		
Description: IceCube Communication Module (ICM), 64bit ID chip			PCB No: 9446-00	A3
Deutsches Elektronen-Synchrotron DESY, Platanenallee 6, 15738 Zeuthen DESY group:		Variant:	Located at:	
		Date changed: 23/12/2020:10:19	Block page:	
		Date of prod. data:	Sheet No.:	Total: 14



Developer: Karl-Heinz Sulanke	Project: IceCube		
Drawn by: Karl-Heinz Sulanke	Schematic: mDOM_mb_1	Sheet: 4_MCU	
Checked by:	PCB name: mDOM_mb_1		
Description: MCU + FPGA bank_35 (via FMC bus), mDAB connectors		PCB No: 9446-00	A3
Deutsches Elektronen-Synchrotron DESY, Platanenallee 6, 15738 Zeuthen DESY group:	Variant:	Located at:	
	Date changed: 13/11/2020:09:02	Block page:	
	Date of prod. data:	Sheet No.: Total: 14	

The maximum electrical delay between any DQ and its associated DQS_P/N should be ±5 ps.

The maximum electrical delay between any address and control signals and the corresponding CK_P/N should be ±25 ps.

The maximum electrical delay of any DQS_P/N should be less than that of CK_P/N

C418 100nF — DDR3_VREF — GND

C302 100nF, C303 100nF, C309 100nF — P1V35 — GND

U2
XC7S100-2FGGA676I

P1V35 — VCCO_36_0 (C10), VCCO_36_1 (D7), VCCO_36_2 (F11)

DDR3_nRESET	A12	IO_0_36	
DDR3_ODT	A4	IO_25_36	
DDR3_DQ15	E10	IO_L1N_T0_36	IO_L24P_T3_36 D4 — DDR3_A5
DDR3_DQ14	E11	IO_L1P_T0_36	IO_L24N_T3_36 D3 — DDR3_A0
DDR3_DQ13	E12	IO_L2N_T0_36	IO_L23P_T3_36 D1 — DDR3_A3
DDR3_DQ12	F12	IO_L2P_T0_36	IO_L23N_T3_36 C1 — DDR3_BA2
DDR3_DQS1_N	D10	IO_L3N_T0_DQS_36	IO_L22P_T3_36 A3 — DDR3_A8
DDR3_DQS1_P	D11	IO_L3P_T0_DQS_36	IO_L22N_T3_36 A2 — DDR3_A9
DDR3_DQ11	A10	IO_L4N_T0_36	IO_L21P_T3_DQS_36 B2 — DDR3_CK_P
DDR3_DQ10	B10	IO_L4P_T0_36	IO_L21N_T3_DQS_36 B1 — DDR3_CK_N
DDR3_DQ9	C11	IO_L5N_T0_36	IO_L20P_T3_36 C4 — DDR3_A13
DDR3_DQ8	C12	IO_L5P_T0_36	IO_L20N_T3_36 B4 — DDR3_CKE
DDR3_VREF	B11	IO_L6N_T0_VREF_36	IO_L19P_T3_36 C3 — DDR3_BA0
DDR3_DM1	B12	IO_L6P_T0_36	IO_L19N_T3_VREF_36 C2 — DDR3_A7
DDR3_DQ7	E8	IO_L7N_T1_36	IO_L18P_T2_36 B5 — DDR3_nWE
DDR3_DQ6	F8	IO_L7P_T1_36	IO_L18N_T2_36 A5 — DDR3_A12
DDR3_DQ5	C8	IO_L8N_T1_36	IO_L17P_T2_36 E5 — DDR3_nCS
DDR3_DQ4	C9	IO_L8P_T1_36	IO_L17N_T2_36 D5 — DDR3_A2
DDR3_DQS0_N	A9	IO_L9N_T1_DQS_36	IO_L16P_T2_36 F7 — DDR3_A4
DDR3_DQS0_P	B9	IO_L9P_T1_DQS_36	IO_L16N_T2_36 E7 — DDR3_A11
DDR3_DQ3	F9	IO_L10N_T1_36	IO_L15P_T2_DQS_36 E6 — DDR3_nCAS
DDR3_DQ2	F10	IO_L10P_T1_36	IO_L15N_T2_DQS_36 D6 — DDR3_BA1
DDR3_DQ1	A7	IO_L11N_T1_SRCC_36	IO_L14P_T2_SRCC_36 B7 — DDR3_A6
DDR3_DQ0	A8	IO_L11P_T1_SRCC_36	IO_L14N_T2_SRCC_36 B6 — DDR3_A10
DDR3_DM0	D8	IO_L12N_T1_MRCC_36	IO_L13P_T2_MRCC_36 C7 — DDR3_nRAS
DDR3_CLK100	D9	IO_L12P_T1_MRCC_36	IO_L13N_T2_MRCC_36 C6 — DDR3_A1

DDR3_VTT — R296 49R9 (1, 2), R297 49R9 (1, 2) — DDR3_CK_P, DDR3_CK_N

mounting option

DDR3_VTT — R286–R293 49R9 (1, 2) — DDR3_nWE, DDR3_nCAS, DDR3_nRAS, DDR3_nCS, DDR3_ODT, DDR3_BA0, DDR3_BA1, DDR3_BA2

R311 51Rx8: DDR3_A10, DDR3_A12, DDR3_A1, DDR3_A4, DDR3_A8, DDR3_A11, DDR3_A6 — 5 — DDR3_VTT

pin 5 and 10 are connected !

R310 51Rx8: DDR3_A7, DDR3_A2, DDR3_A0, DDR3_A13, DDR3_A3, DDR3_A9, DDR3_A5 — 5 — DDR3_VTT

U9
MT41K128M16JT-125

DDR3_A0	N3	A0	VREFCA M8	DDR3_VREF
DDR3_A1	P7	A1	VREFDQ H1	
DDR3_A2	P3	A2		
DDR3_A3	N2	A3	DQ0 E3	DDR3_DQ0
DDR3_A4	P8	A4	DQ1 F7	DDR3_DQ1
DDR3_A5	P2	A5	DQ2 F2	DDR3_DQ2
DDR3_A6	R8	A6	DQ3 F8	DDR3_DQ3
DDR3_A7	R2	A7	DQ4 H3	DDR3_DQ4
DDR3_A8	T8	A8	DQ5 H8	DDR3_DQ5
DDR3_A9	R3	A9	DQ6 G2	DDR3_DQ6
DDR3_A10	L7	A10/AP	DQ7 H7	DDR3_DQ7
DDR3_A11	R7	A11	DQ8 D7	DDR3_DQ8
DDR3_A12	N7	A12/$\overline{BC}$	DQ9 C3	DDR3_DQ9
DDR3_A13	T3	A13	DQ10 C8	DDR3_DQ10
			DQ11 C2	DDR3_DQ11
DDR3_BA0	M2	BA0	DQ12 A7	DDR3_DQ12
DDR3_BA1	N8	BA1	DQ13 A2	DDR3_DQ13
DDR3_BA2	M3	BA2	DQ14 B8	DDR3_DQ14
			DQ15 A3	DDR3_DQ15
DDR3_nWE	L3	$\overline{WE}$	ZQ L8 — R314 240R (1, 2) — GND	
DDR3_nCAS	K3	$\overline{CAS}$		
DDR3_nRAS	J3	$\overline{RAS}$	LDQS F3	DDR3_DQS0_P
DDR3_nCS	L2	$\overline{CS}$	$\overline{LDQS}$ G3	DDR3_DQS0_N
DDR3_DM0	E7	LDM	UDQS C7	DDR3_DQS1_P
DDR3_DM1	D3	UDM	$\overline{UDQS}$ B7	DDR3_DQS1_N
	J7	CK		
	K7	$\overline{CK}$	NC1 J1	
DDR3_CKE	K9	CKE	NC2 J9	
			NC3 L1	
DDR3_ODT	K1	ODT	NC4 L9	
			NC5 M7	
DDR3_nRESET	T2	$\overline{RESET}$	NC6 T7	

C415 100nF — DDR3_VTT

R295 49R9, R294 49R9 — DDR3_CK_P, DDR3_CK_N

R251 100R

optional

R131 4k7 — GND — DDR3_CKE

R62 1k — P1V35 — DDR3_nRESET

C394 100nF, C395 100nF — DDR3_VREF — GND

U9
MT41K128M16JT-125

A9	VSS1	VDD1	B2
B3	VSS2	VDD2	D9
E1	VSS3	VDD3	G7
G8	VSS4	VDD4	K2
J2	VSS5	VDD5	K8
J8	VSS6	VDD6	N1
M1	VSS7	VDD7	N9
M9	VSS8	VDD8	R1
P1	VSS9	VDD9	R9
P9	VSS10		
T1	VSS11		
T9	VSS12		
B1	VSSQ1	VDDQ1	A1
B9	VSSQ2	VDDQ2	A8
D1	VSSQ3	VDDQ3	C1
D8	VSSQ4	VDDQ4	C9
E2	VSSQ5	VDDQ5	D2
E8	VSSQ6	VDDQ6	E9
F9	VSSQ7	VDDQ7	F1
G1	VSSQ8	VDDQ8	H2
G9	VSSQ9	VDDQ9	H9

P1V35 — GND

C380 100nF, C381 100nF, C382 100nF, C383 100nF, C384 100nF, C390 100nF — P1V35 — GND

C385 100nF, C386 100nF, C387 100nF, C388 100nF, C389 100nF, C391 100nF — P1V35 — GND

DDR3_CLK100 — R340 91R — DDR3_CLK100_OUT

R341 270R — GND

C399 100nF, C413 100nF, C414 100nF — P1V35 — GND

C305 10nF, C304 10nF — DISCR_VREF — GND

U2
XC7S100-2FGGA676I

P1V35 — VCCO_33_0 (AA11), VCCO_33_1 (AD12), VCCO_33_2 (AD7)

	AE2	IO_0_33	
	AE13	IO_25_33	
DISCR_OUT0	AE1	IO_L1N_T0_33	IO_L24P_T3_33 AD14 — DISCR_OUT23
	AD1	IO_L1P_T0_33	IO_L24N_T3_33 AD13
DISCR_OUT1	AC2	IO_L2N_T0_33	IO_L23P_T3_33 AB11 — DISCR_OUT18
	AC3	IO_L2P_T0_33	IO_L23N_T3_33 AC11
DISCR_OUT2	AF2	IO_L3N_T0_DQS_33	IO_L22P_T3_33 AF14 — DISCR_OUT22
	AF3	IO_L3P_T0_DQS_33	IO_L22N_T3_33 AF13
DISCR_OUT7	AF4	IO_L4N_T0_33	IO_L21P_T3_DQS_33 AE11 — DISCR_OUT19
	AF5	IO_L4P_T0_33	IO_L21N_T3_DQS_33 AE10
DISCR_OUT4	AD4	IO_L5N_T0_33	IO_L20P_T3_33 AE12 — DISCR_OUT21
	AC4	IO_L5P_T0_33	IO_L20N_T3_33 AF12
DISCR_VREF	AE3	IO_L6N_T0_VREF_33	IO_L19P_T3_33 AC12 — DISCR_OUT20
DISCR_OUT5	AD3	IO_L6P_T0_33	IO_L19N_T3_VREF_33 AD11 — DISCR_VREF
	AE5	IO_L7N_T1_33	IO_L18P_T2_33 AA9 — DISCR_OUT14
DISCR_OUT9	AE6	IO_L7P_T1_33	IO_L18N_T2_33 AB9
	AD5	IO_L8N_T1_33	IO_L17P_T2_33 AF10 — DISCR_OUT16
DISCR_OUT3	AD6	IO_L8P_T1_33	IO_L17N_T2_33 AF9
	AB7	IO_L9N_T1_DQS_33	IO_L16P_T2_33 AD10 — DISCR_OUT15
DISCR_OUT8	AA8	IO_L9P_T1_DQS_33	IO_L16N_T2_33 AD9
	AC6	IO_L10N_T1_33	IO_L15P_T2_DQS_33 AC9 — DISCR_OUT13
DISCR_OUT6	AB6	IO_L10P_T1_33	IO_L15N_T2_DQS_33 AD8
	AC7	IO_L11N_T1_SRCC_33	IO_L14P_T2_SRCC_33 AF8 — DISCR_OUT12
DISCR_OUT10	AC8	IO_L11P_T1_SRCC_33	IO_L14N_T2_SRCC_33 AF7
	AE7	IO_L12N_T1_MRCC_33	IO_L13P_T2_MRCC_33 AA10 — DISCR_OUT17
DISCR_OUT11	AE8	IO_L12P_T1_MRCC_33	IO_L13N_T2_MRCC_33 AB10

GND — C379 100nF

U57
TPS51206DSQR

P1V35	1	VDDQSNS	VDD 10 — P3V3
P1V35	2	VLDOIN	VTT 3 — DDR3_VTT
	7	S3	VTTSNS 5
	9	S5	
			VTTREF 6 — DDR3_VREF
	4	PGND	
	8	GND	THERMAL 11

C32 10u — GND

DDR3_VTT_S3, DDR3_VTT_S5

C590 220n — GND

C392 100nF, C393 100nF, C33 10u — DDR3_VTT — GND

use 2.5V or 3.3V FPGA I/Os

GND — C306 100nF

U72
TPS51206DSQR

P1V35	1	VDDQSNS	VDD 10 — P3V3
P1V35	2	VLDOIN	VTT 3 — DISCR_VTT
	7	S3	VTTSNS 5
	9	S5	
			VTTREF 6 — DISCR_VREF
	4	PGND	
	8	GND	THERMAL 11

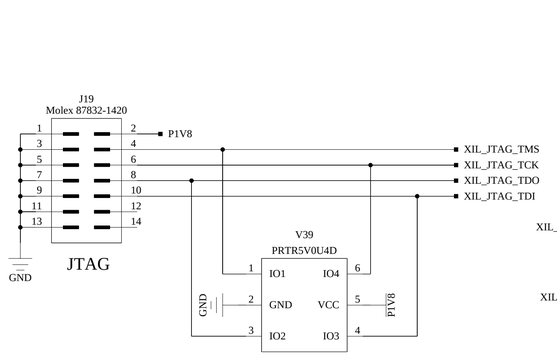
C296 10u — GND

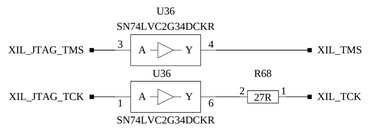
R304 4k7 — P3V3

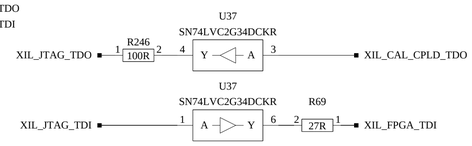
C308 220n — GND

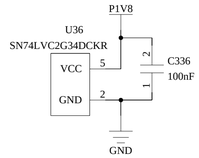
C307 100nF, C301 10u, C300 10u — DISCR_VTT — GND

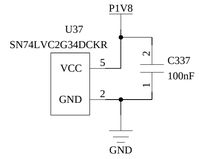
Developer: Karl-Heinz Sulanke	Project: IceCube	
Drawn by: Karl-Heinz Sulanke	Schematic: mDOM_mb_1	Sheet: 5_DDR3
Checked by:	PCB name: mDOM_mb_1	
Description: DDR3 RAM + FPGA_bank_36, DISCR_OUT0..23 at FPGA_bank_33	PCB No: 9446-00	A3
Deutsches Elektronen-Synchrotron DESY, Platanenallee 6, 15738 Zeuthen DESY group:	Variant:	Located at:
	Date changed: 20/08/2020:10:14	Block page:
	Date of prod. data:	Sheet No.: Total: 14

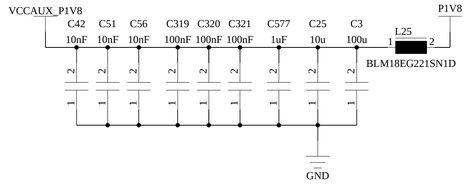


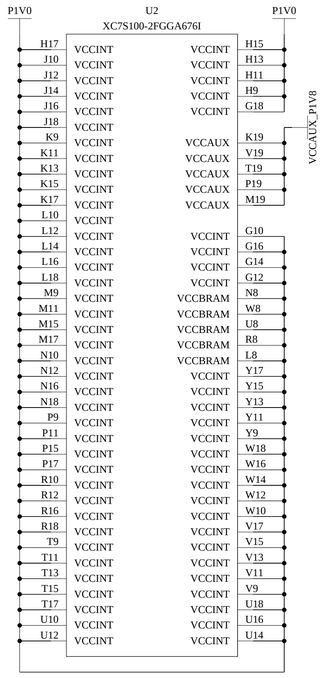


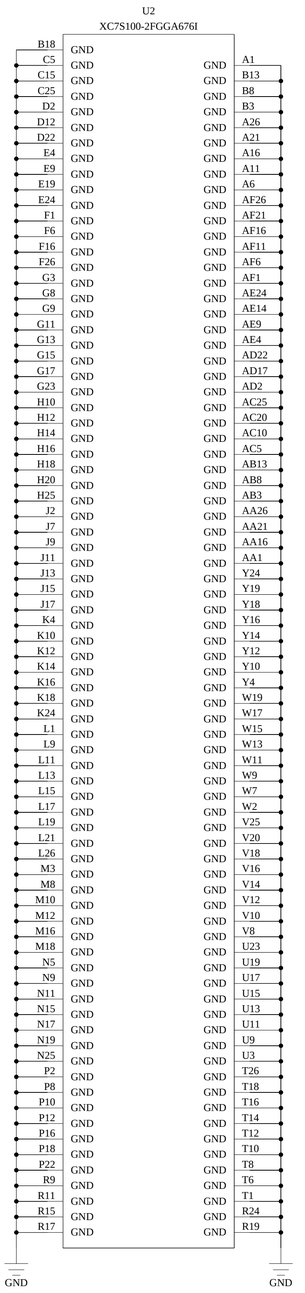


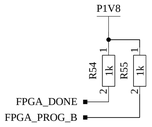


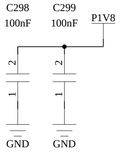


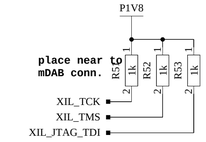


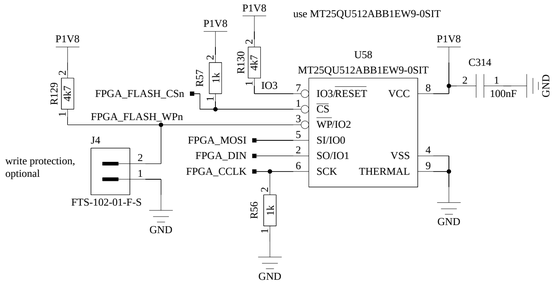


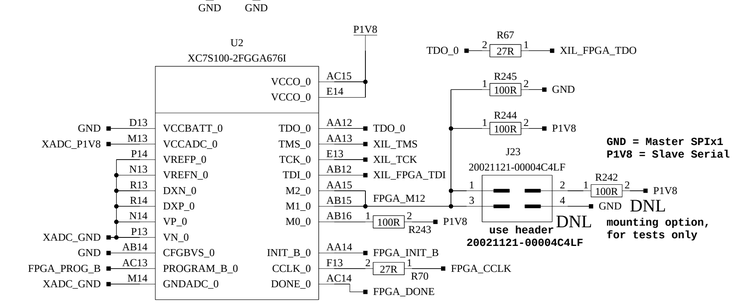


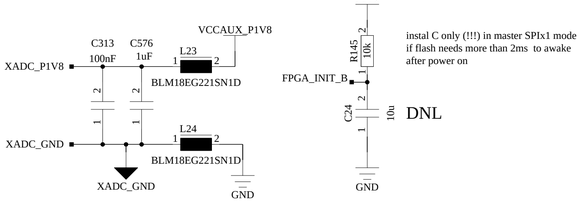


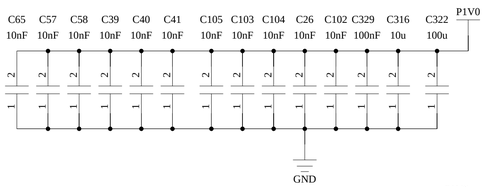


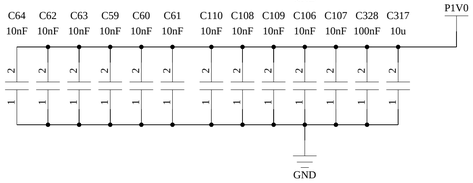


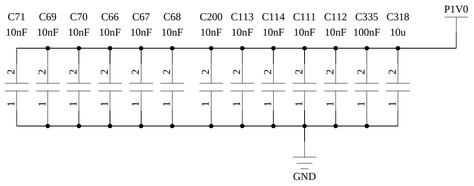












Developer: Karl-Heinz Sulanke	Project: IceCube		
Drawn by: Karl-Heinz Sulanke	Schematic: mDOM_mb_1	Sheet: 6_fpga1	
Checked by:	PCB name: mDOM_mb_1		
Description: FPGA bank_0, configuration and flash (optional)		PCB No: -	A3
Deutsches Elektronen-Synchrotron DESY, Platanenallee 6, 15738 Zeuthen DESY group:	Variant:	Located at:	
	Date changed: 24/11/2020:16:53	Block page:	
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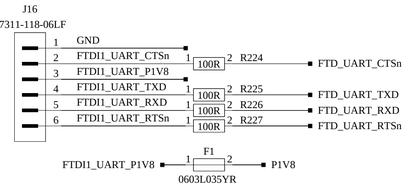

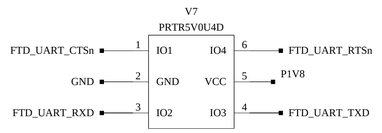

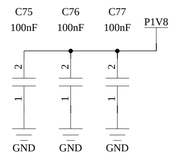

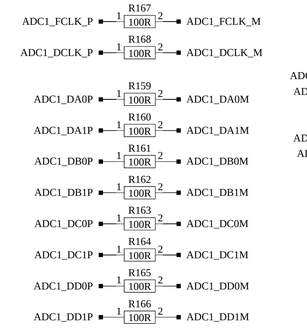

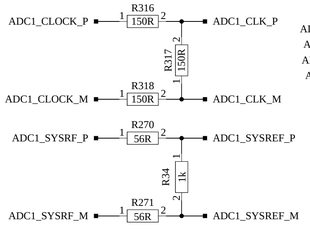

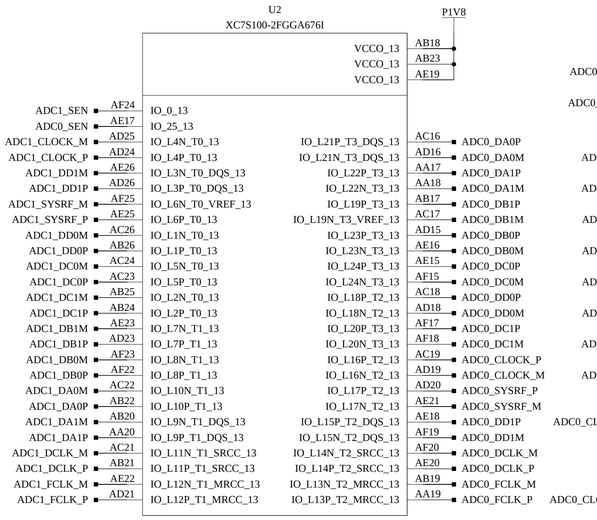

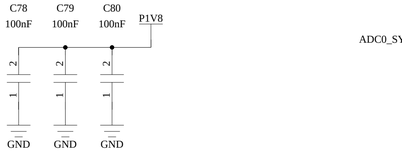

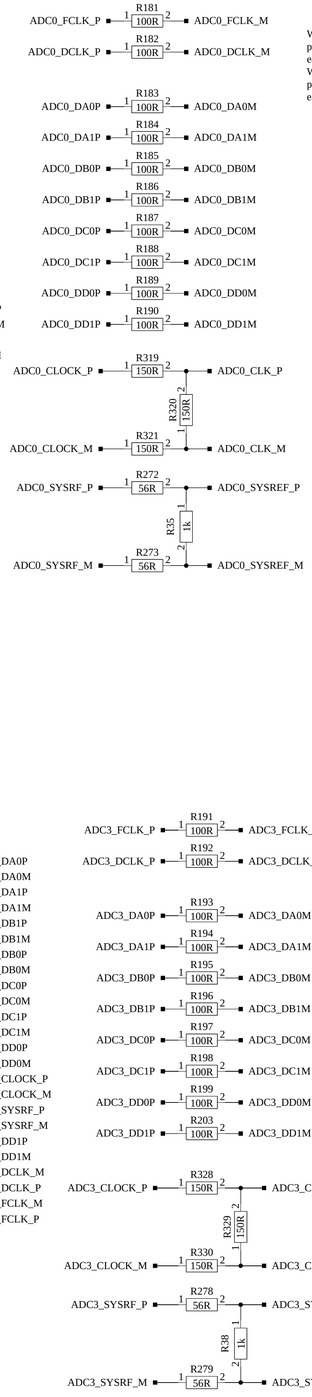

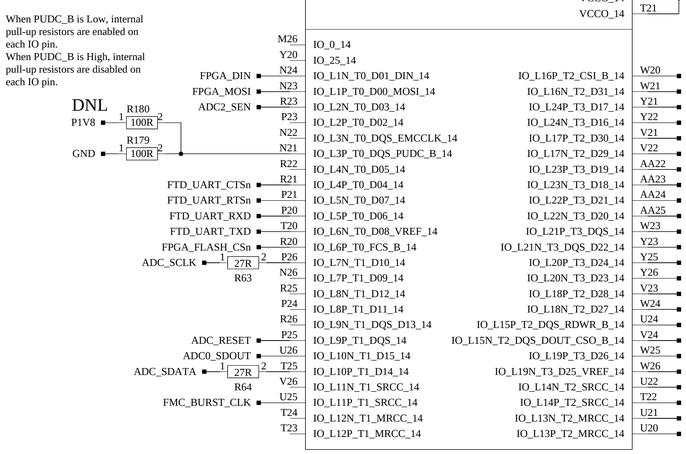

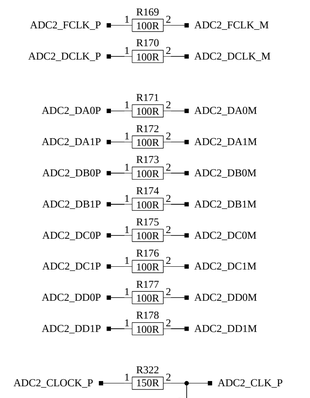

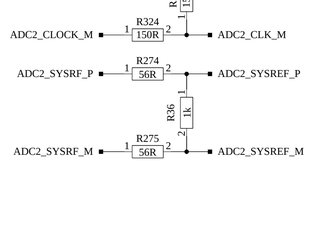

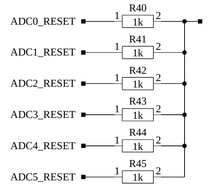

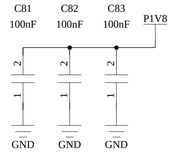

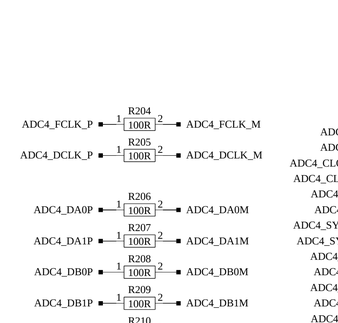

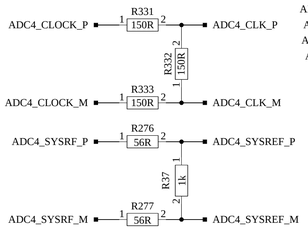

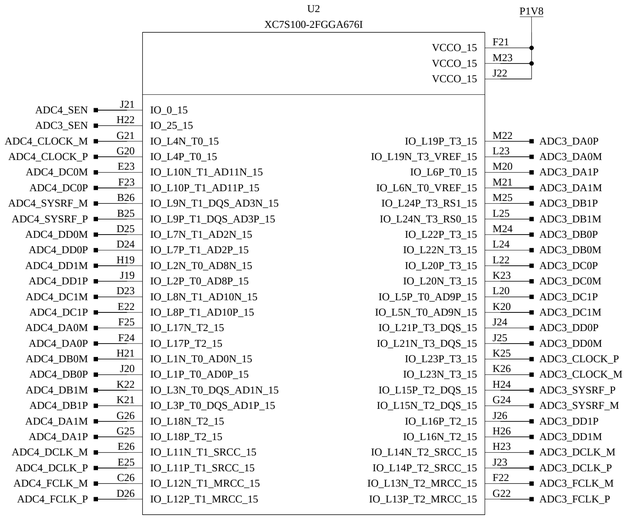

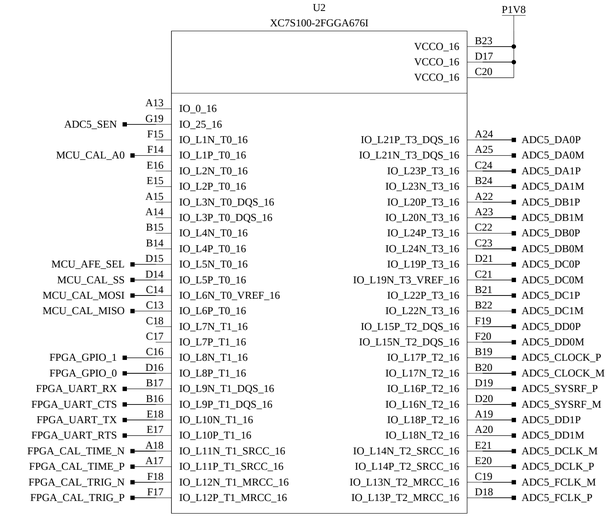

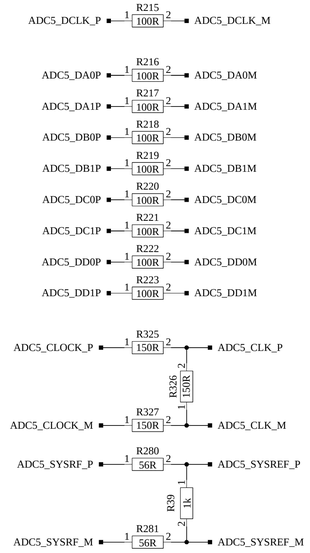

Developer:	Karl-Heinz Sulanke	Project:	IceCube	
Drawn by:	Karl-Heinz Sulanke	Schematic:	mDOM_mb_1	Sheet: 7_fpga2
Checked by:		PCB name:	mDOM_mb_1	
Description:	FPGA banks_13,14,15,16 used for AFE-ADC readout / control		PCB No: 9446-00	A3
Deutsches Elektronen-Synchrotron DESY, Platanenallee 6, 15738 Zeuthen DESY group:		Variant:	Located at:	
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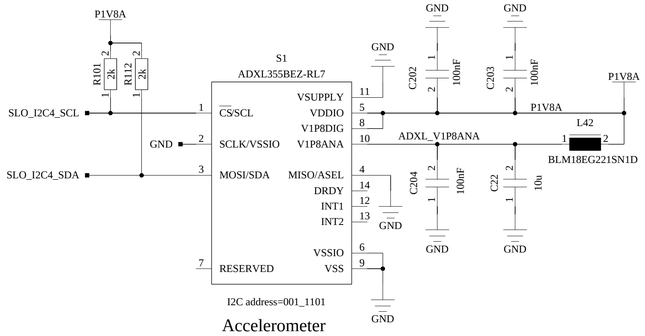
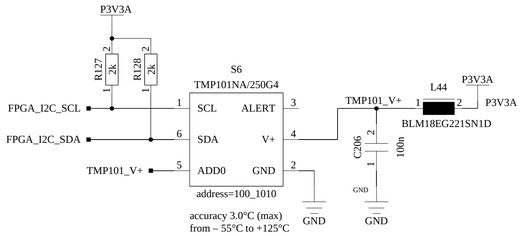
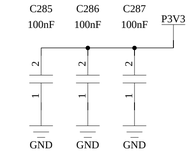
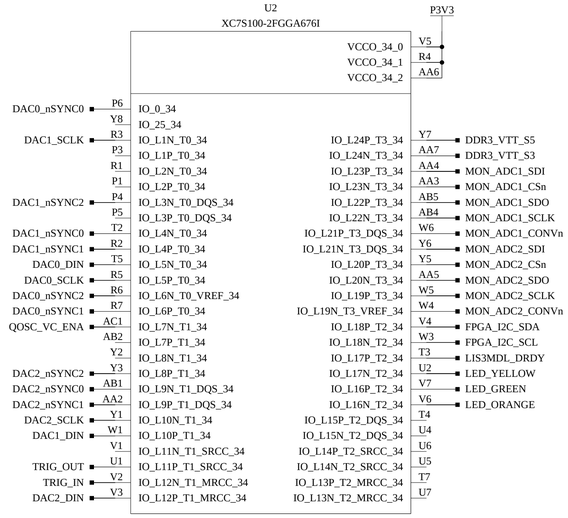
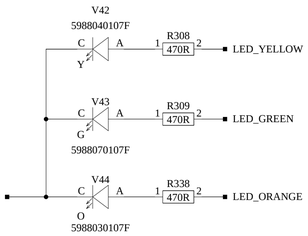


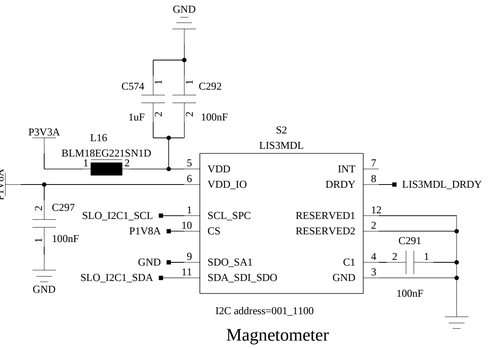
Accelerometer



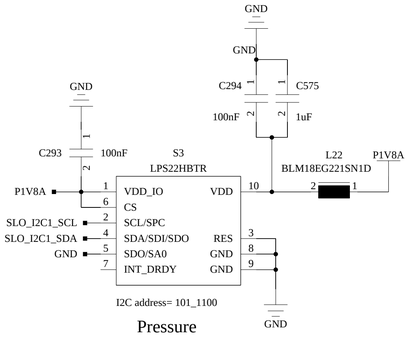




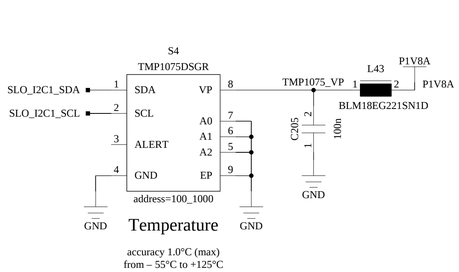




Magnetometer

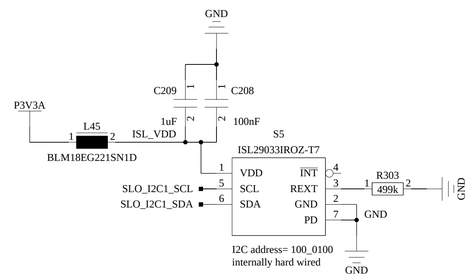


Pressure

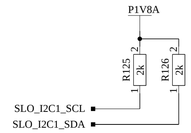


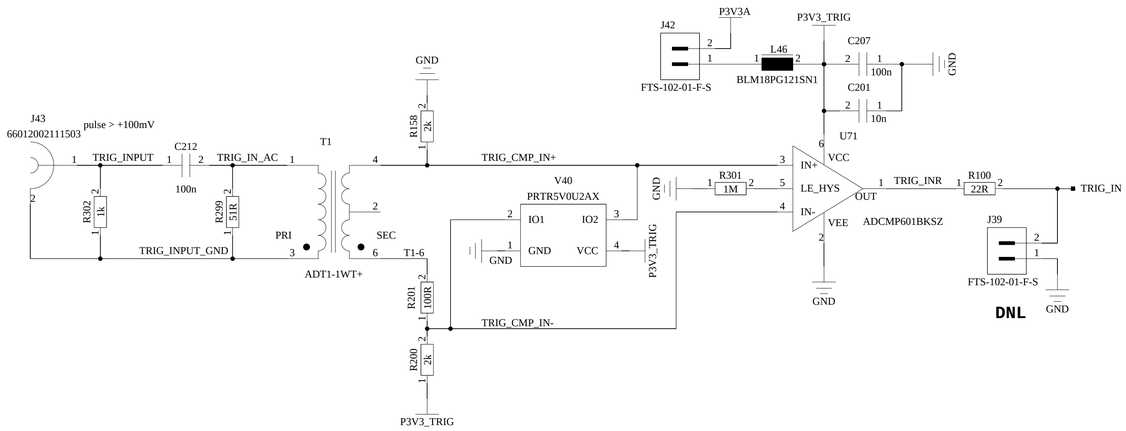
Temperature

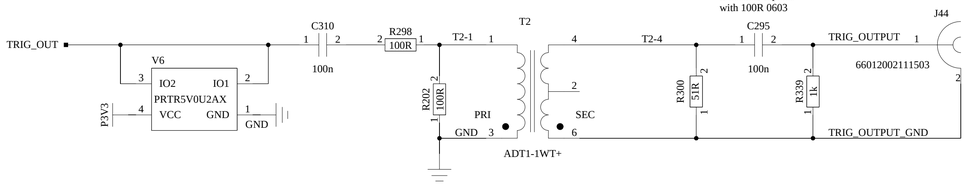
accuracy 1.0°C (max)
from – 55°C to +125°C



Light Sensor







Developer:	Karl-Heinz Sulanke	Project:	IceCube	
Drawn by:	Karl-Heinz Sulanke	Schematic:	mDOM_mb_1	Sheet: 8_fpga3
Checked by:		PCB name:	mDOM_mb_1	
Description:	FPGA_bank_34, sensors, monitoring control, trigger in / out		PCB No: 9446-00	A3
Deutsches Elektronen-Synchrotron DESY, Platanenallee 6, 15738 Zeuthen DESY group:		Variant:	Located at:	
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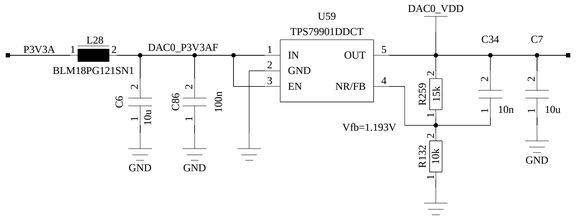

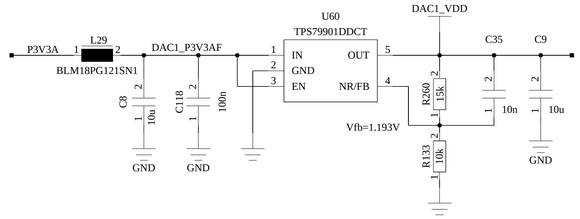

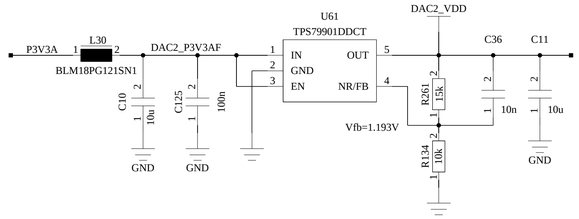

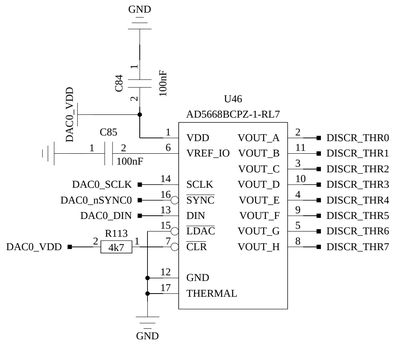

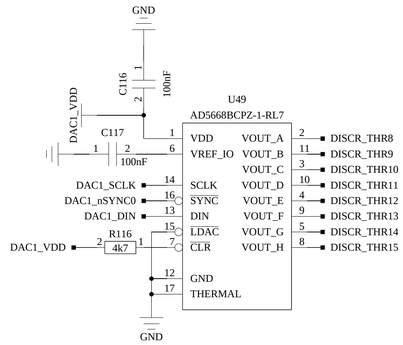

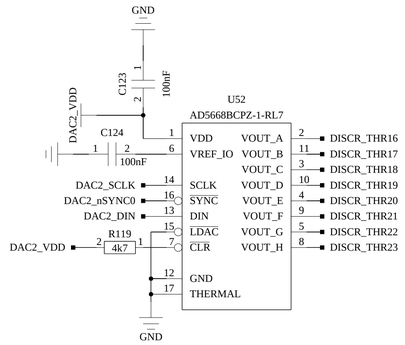

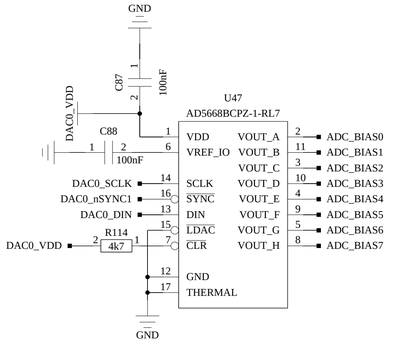

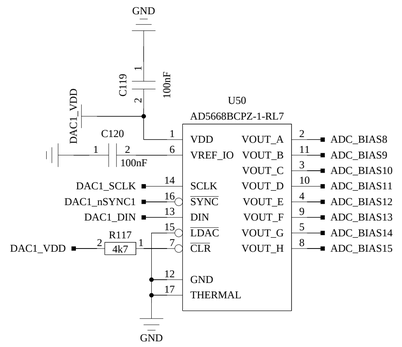

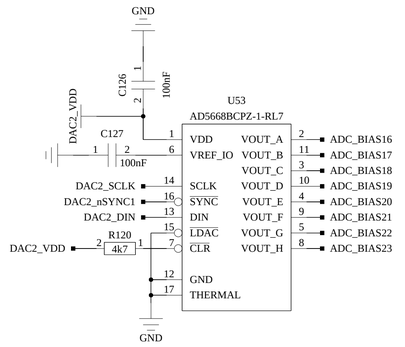

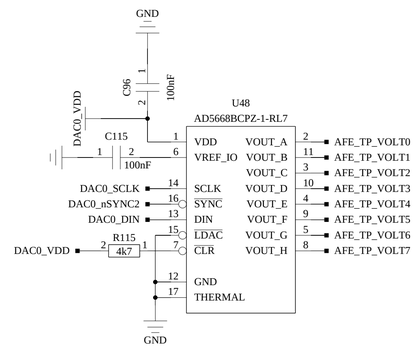

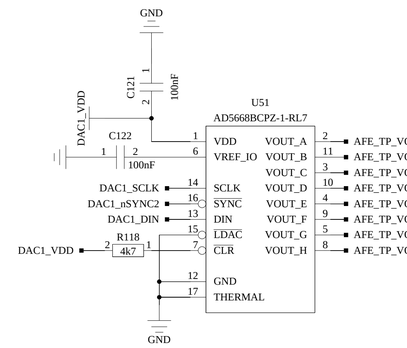

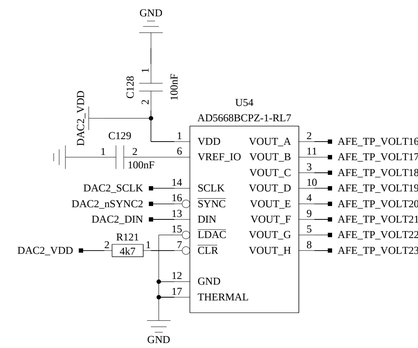

Developer:	Karl-Heinz Sulanke	Project:	IceCube	
Drawn by:	Karl-Heinz Sulanke	Schematic:	mDOM_mb_1	Sheet: 9_dac
Checked by:		PCB name:	mDOM_mb_1	
Description:	16bit DACs, to adjust Discr.-thr., ADC-bias, Test pulse		PCB No: 9446-00	A3
Deutsches Elektronen-Synchrotron DESY, Platanenallee 6, 15738 Zeuthen DESY group:		Variant:	Located at:	
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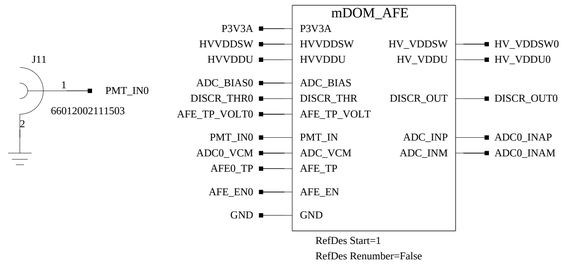
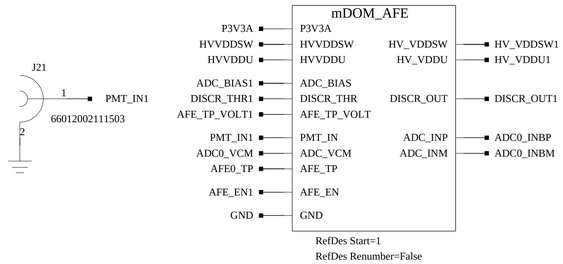
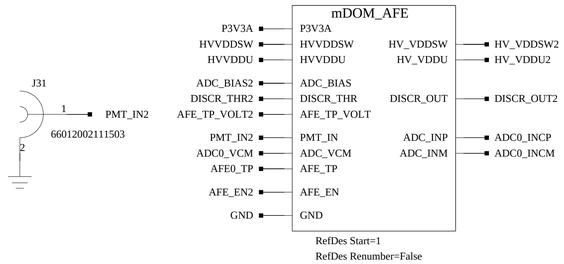
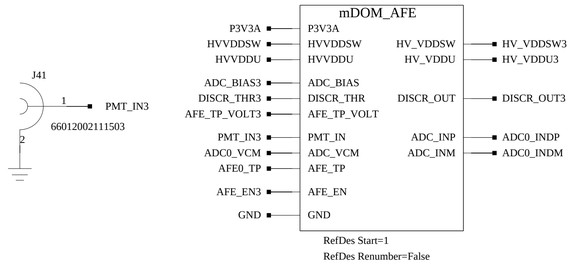
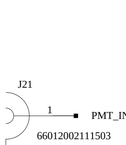
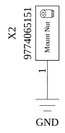


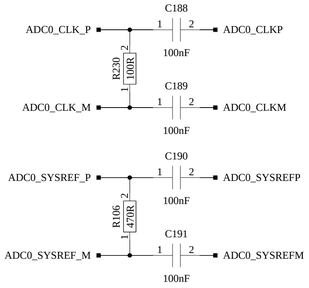


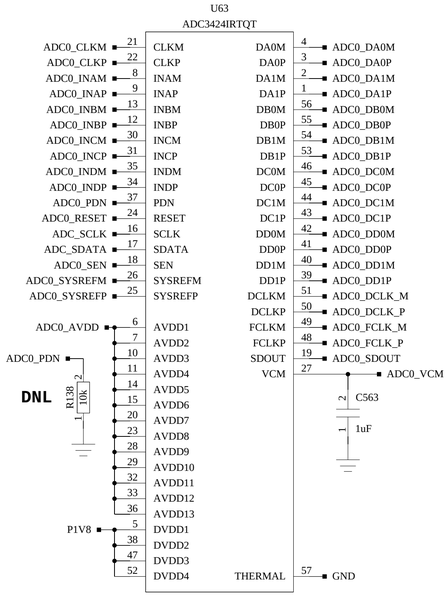


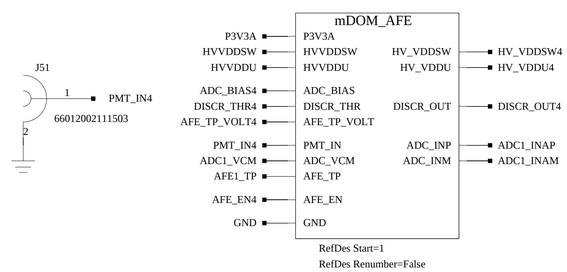


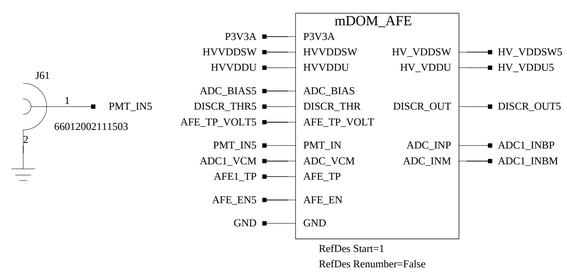


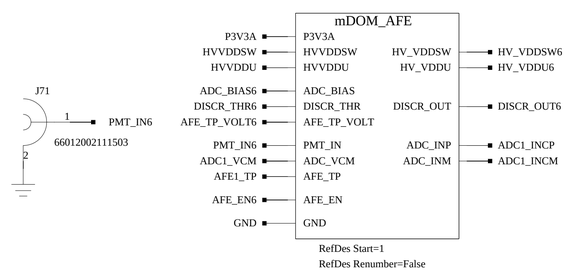


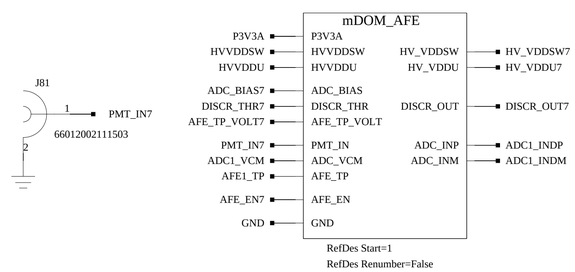


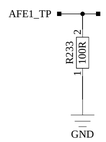


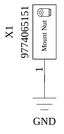


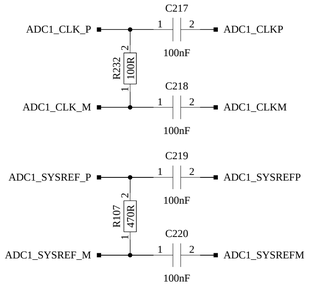


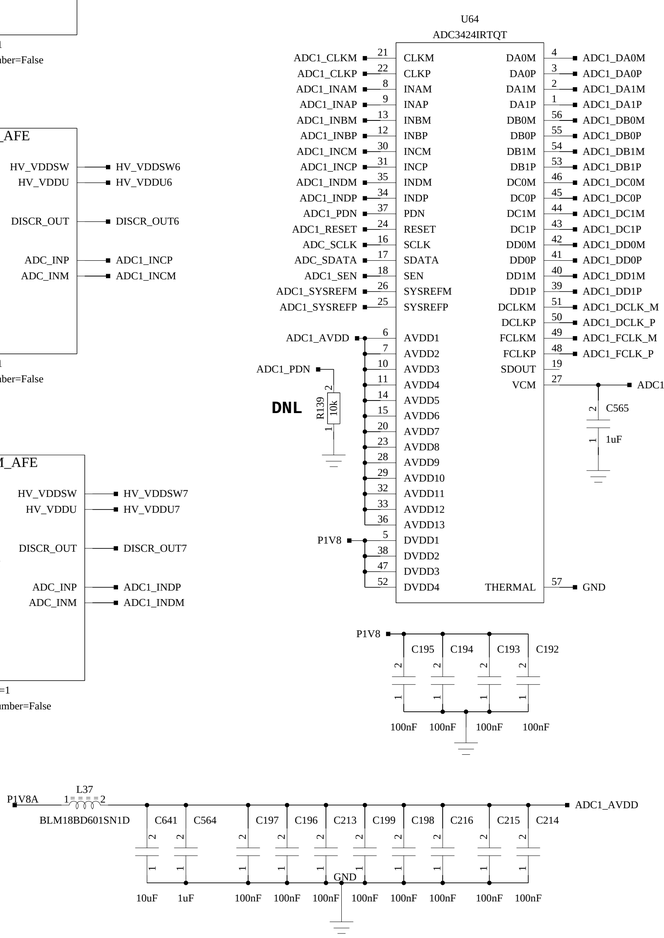




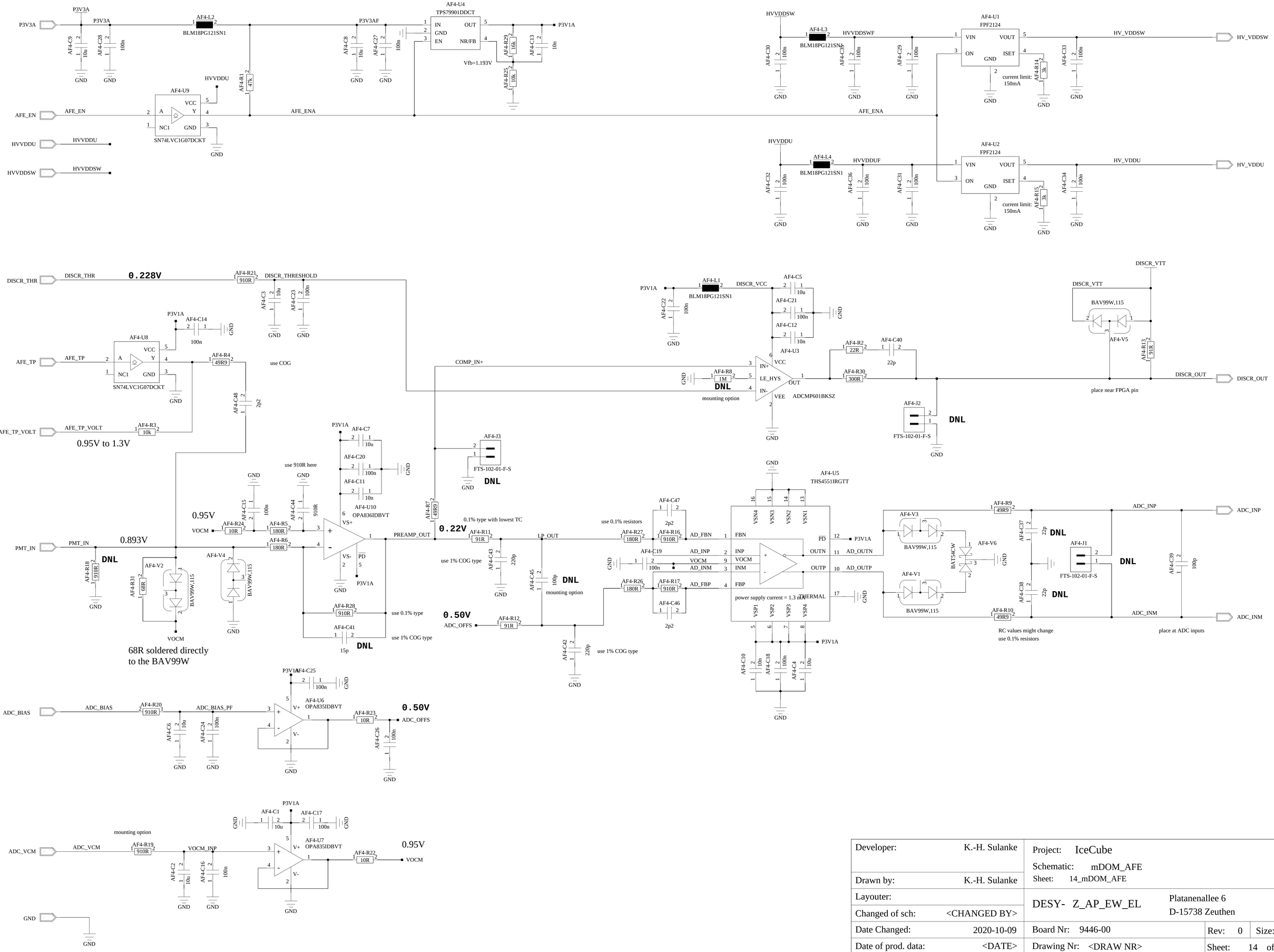






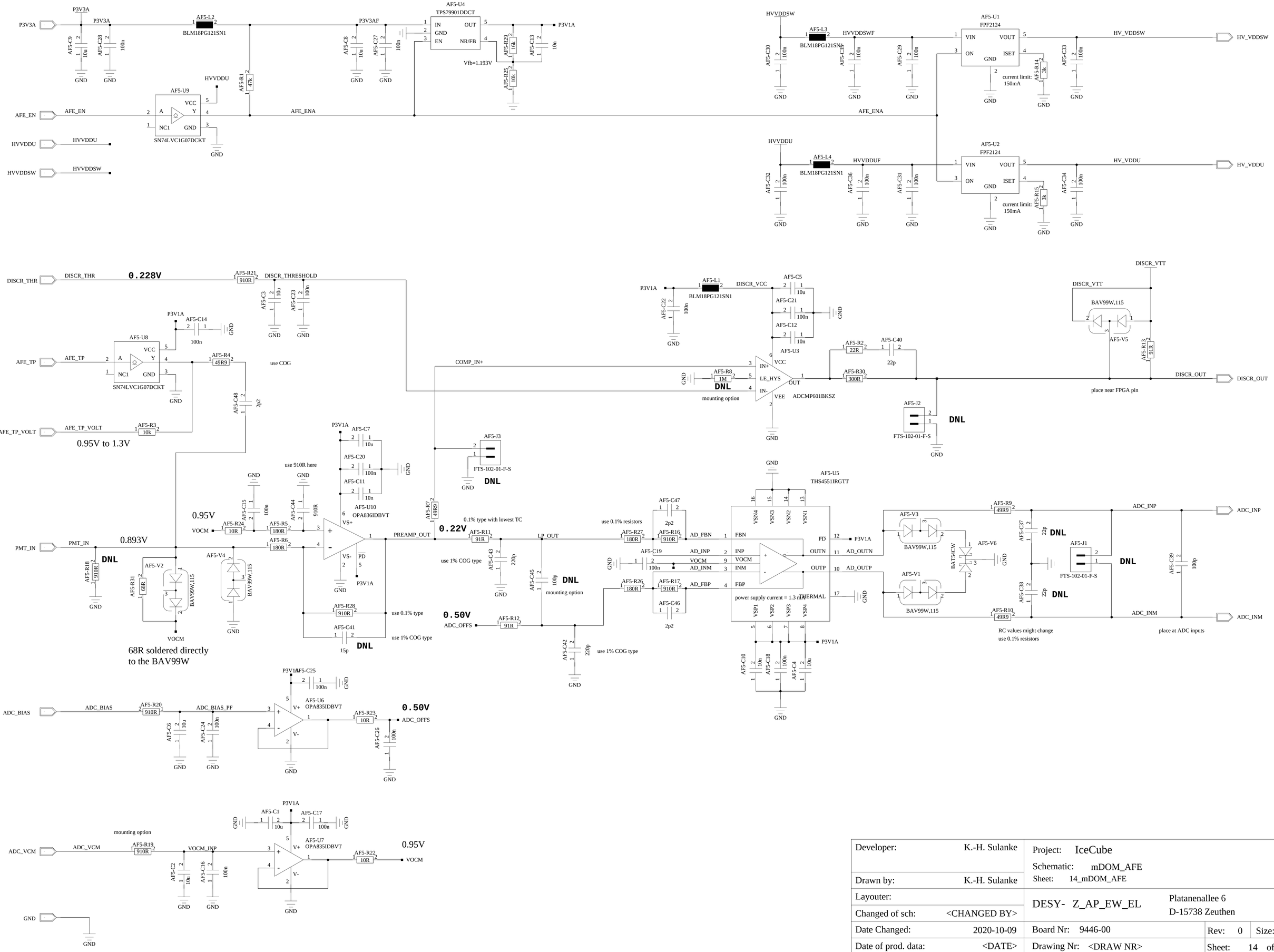


Developer: Karl-Heinz Sulanke		Project: IceCube		
Drawn by: Karl-Heinz Sulanke		Schematic: mDOM_mb_1	Sheet: 10_adc_01	
Checked by:		PCB name: mDOM_mb_1		
Description: AFE_0..7, ADC_0..1			PCB No: 9446-00	A3
Deutsches Elektronen-Synchrotron DESY, Platanenallee 6, 15738 Zeuthen DESY group:		Variant:	Located at:	
		Date changed: 07/08/2020:14:20	Block page:	
		Date of prod. data:	Sheet No.:	Total: 14



Developer: K.-H. Sulanke	Project: IceCube
	Schematic: mDOM_AFE
Drawn by: K.-H. Sulanke	Sheet: 14_mDOM_AFE
Layouter:	DESY- Z_AP_EW_EL — Platanenallee 6, D-15738 Zeuthen
Changed of sch: <CHANGED BY>	
Date Changed: 2020-10-09	Board Nr: 9446-00 — Rev: 0 — Size: A3
Date of prod. data: <DATE>	Drawing Nr: <DRAW NR> — Sheet: 14 of 14

Schematic Property: Landscape, width 3392, height 2388



Developer: K.-H. Sulanke	Project: IceCube
	Schematic: mDOM_AFE
	Sheet: 14_mDOM_AFE
Drawn by: K.-H. Sulanke	
Layouter:	DESY- Z_AP_EW_EL — Platanenallee 6, D-15738 Zeuthen
Changed of sch: <CHANGED BY>	
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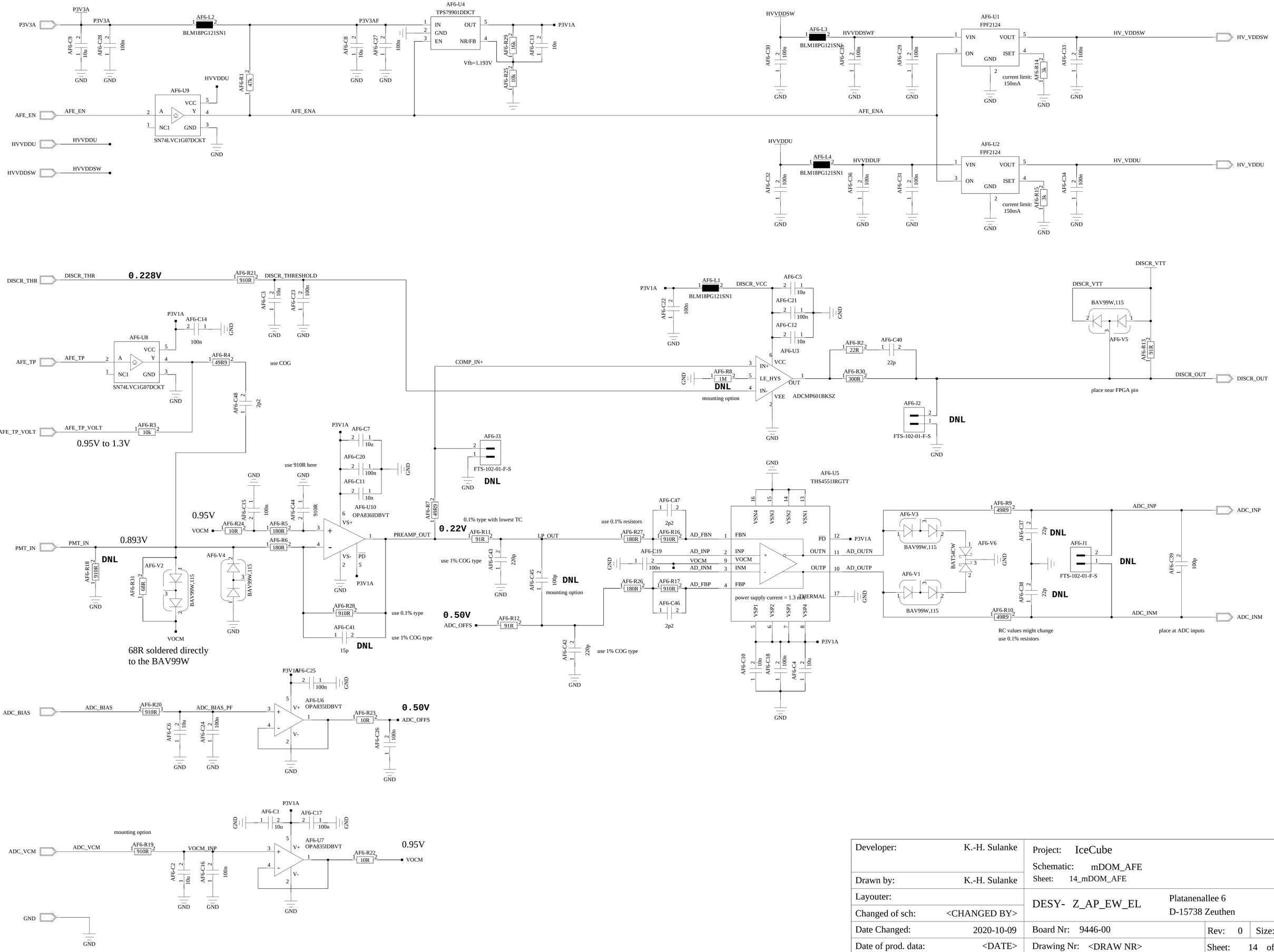
Date of prod. data: <DATE>	Drawing Nr: <DRAW NR> — Sheet: 14 of 14



Developer: K.-H. Sulanke	Project: IceCube
	Schematic: mDOM_AFE
	Sheet: 14_mDOM_AFE
Drawn by: K.-H. Sulanke	
Layouter:	DESY- Z_AP_EW_EL — Platanenallee 6, D-15738 Zeuthen
Changed of sch: <CHANGED BY>	
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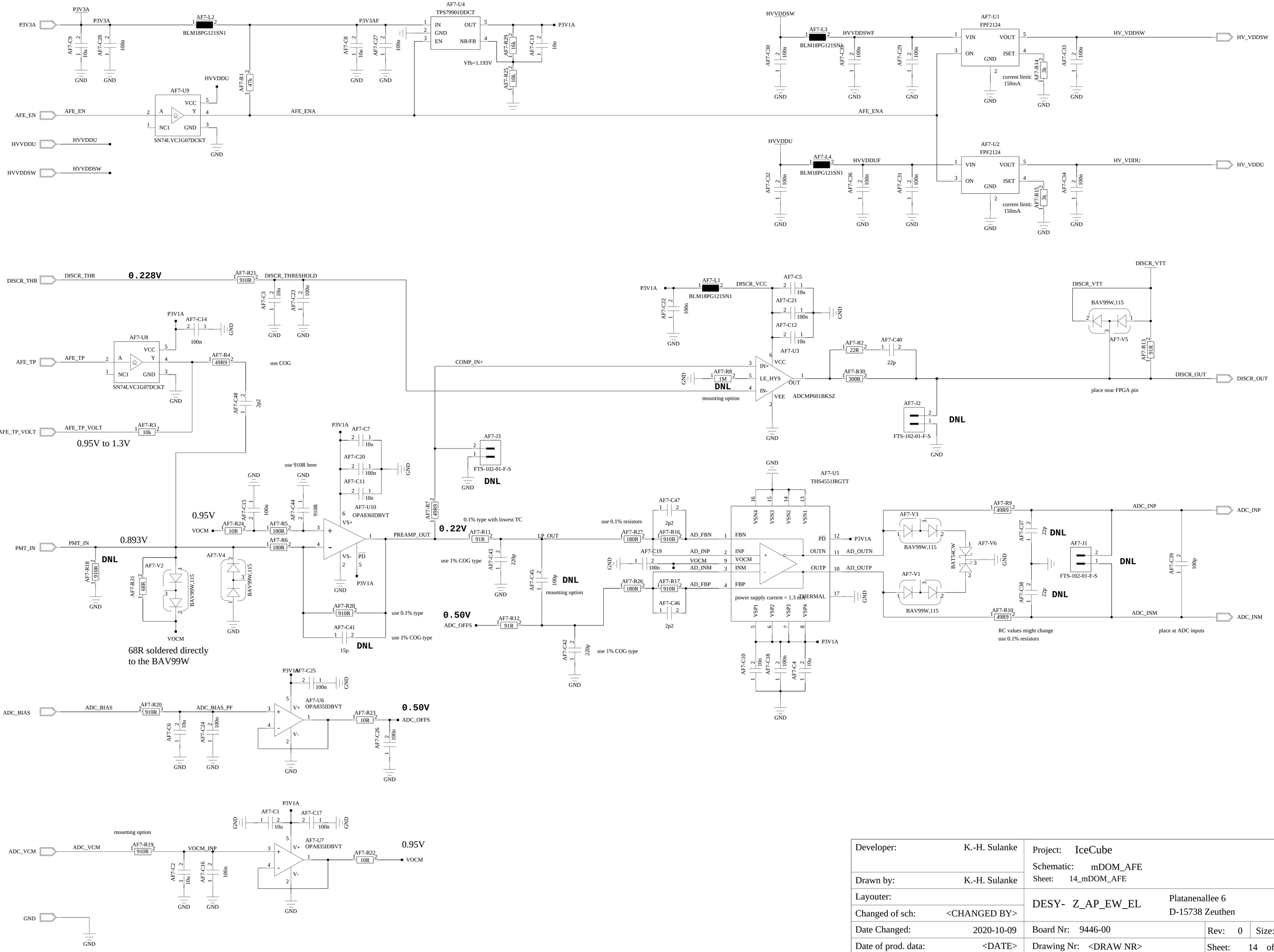
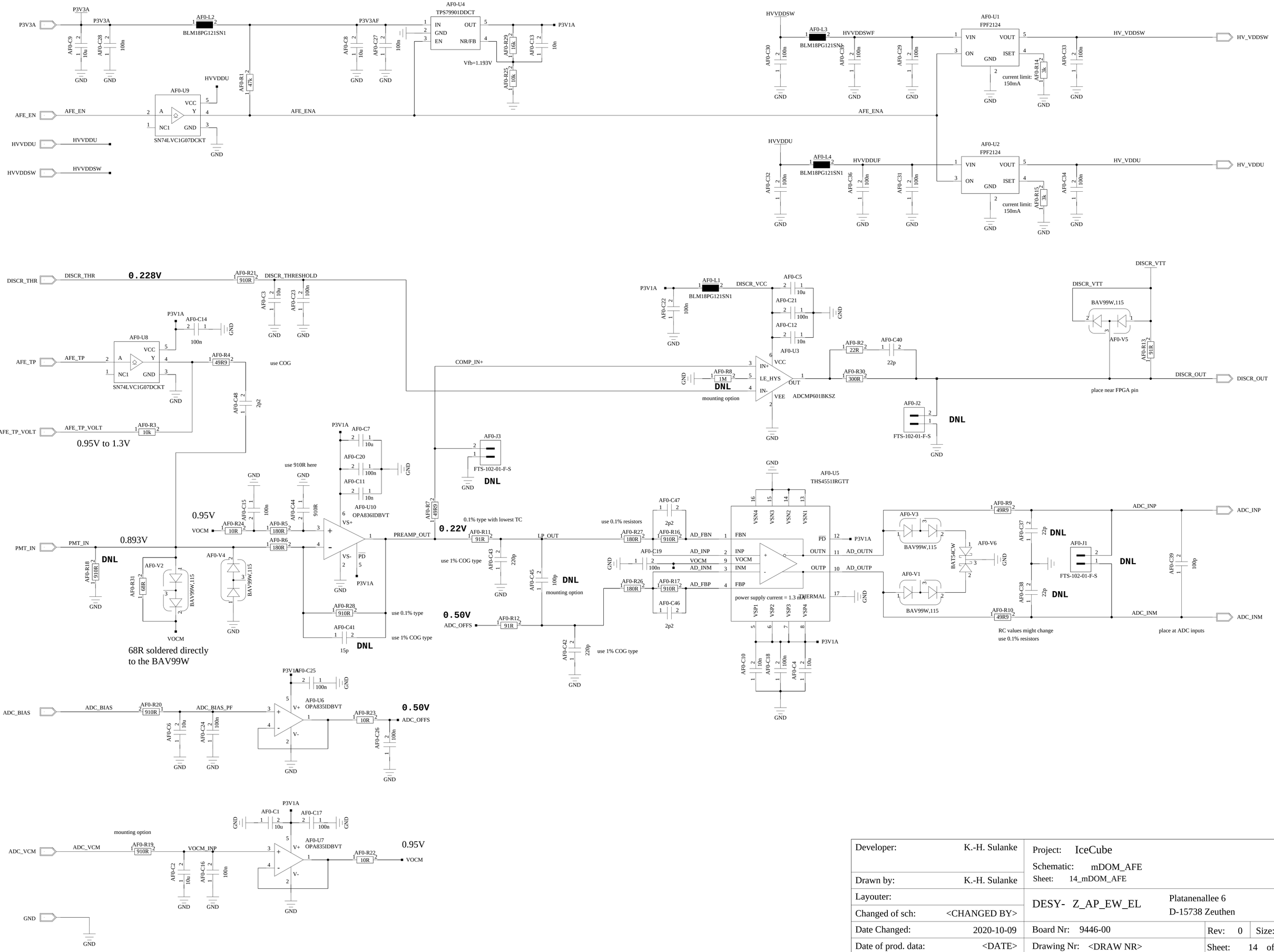
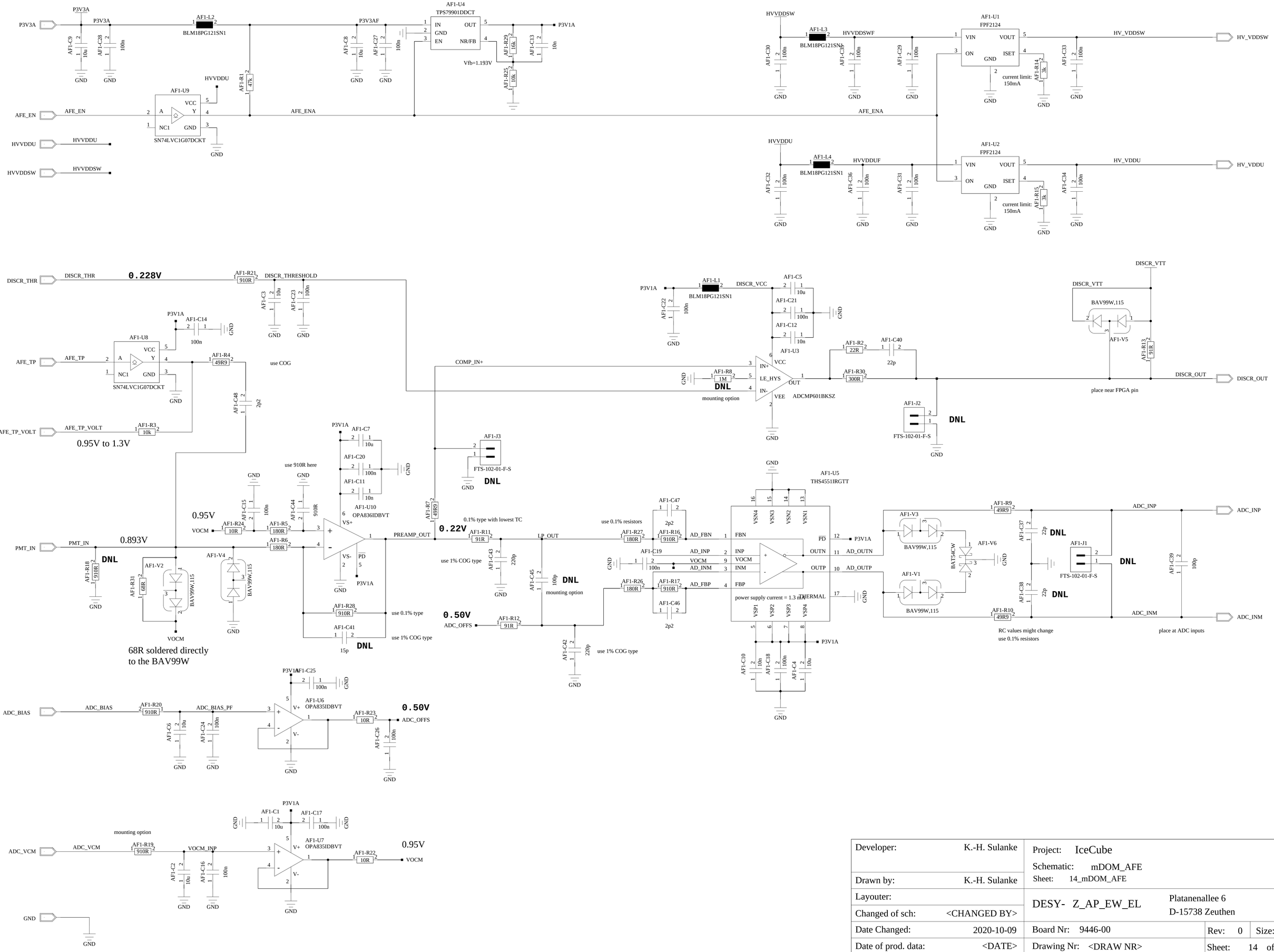


Developer: K.-H. Sulanke	Project: IceCube
	Schematic: mDOM_AFE
Drawn by: K.-H. Sulanke	Sheet: 14_mDOM_AFE
Layouter:	DESY- Z_AP_EW_EL — Platanenallee 6, D-15738 Zeuthen
Changed of sch: <CHANGED BY>	
Date Changed: 2020-10-09	Board Nr: 9446-00 — Rev: 0 — Size: A3
Date of prod. data: <DATE>	Drawing Nr: <DRAW NR> — Sheet: 14 of 14

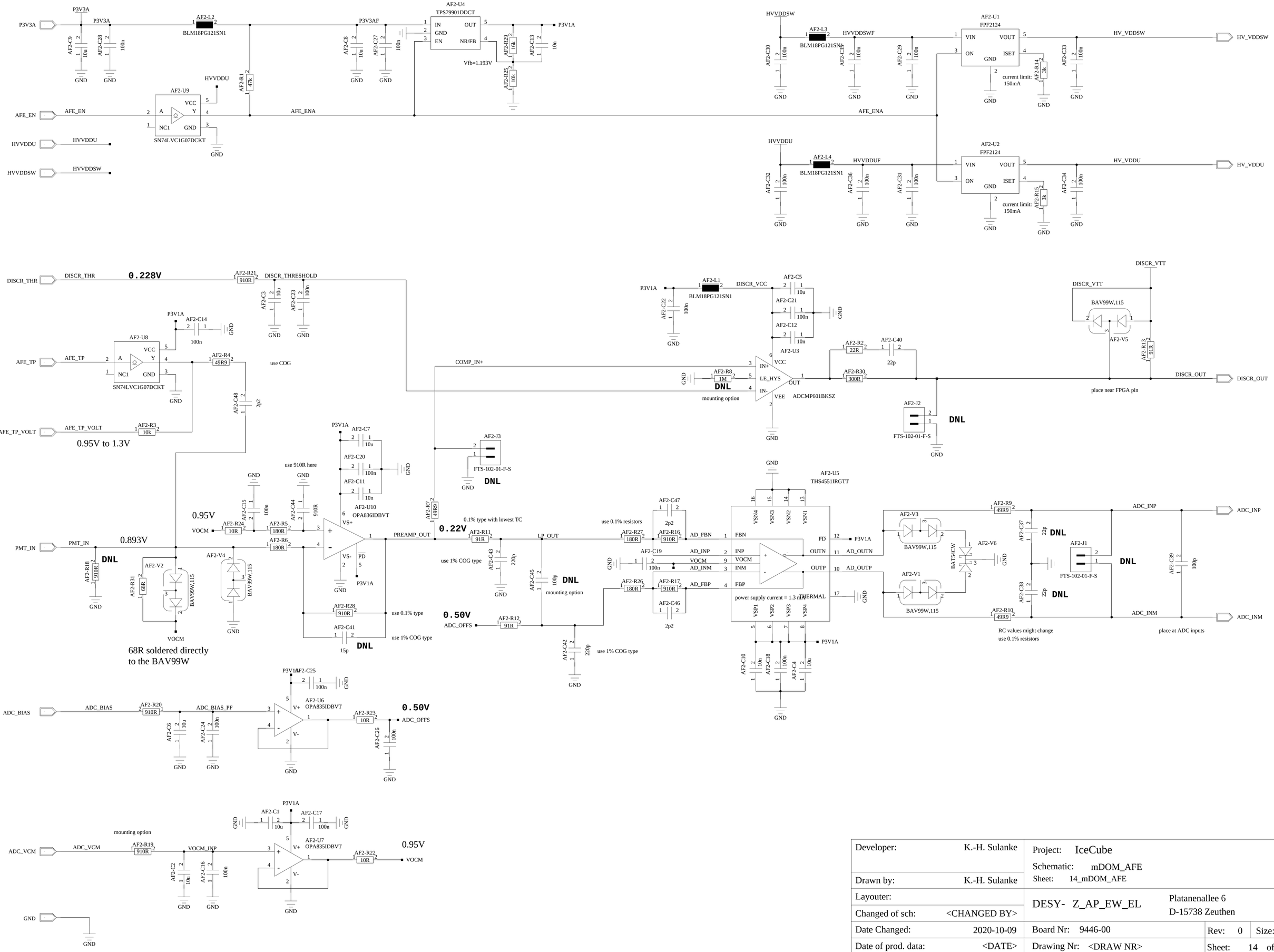
Schematic Property: Landscape, width 3392, height 2388



Developer:	K.-H. Sulanke	Project: IceCube	
		Schematic: mDOM_AFE	
Drawn by:	K.-H. Sulanke	Sheet: 14_mDOM_AFE	
Layouter:		DESY- Z_AP_EW_EL	Platanenallee 6 D-15738 Zeuthen
Changed of sch:	<CHANGED BY>		
Date Changed:	2020-10-09	Board Nr: 9446-00	Rev: 0 / Size: A3
Date of prod. data:	<DATE>	Drawing Nr: <DRAW NR>	Sheet: 14 of 14



Developer:	K.-H. Sulanke	Project: IceCube	
		Schematic: mDOM_AFE	
Drawn by:	K.-H. Sulanke	Sheet: 14_mDOM_AFE	
Layouter:		DESY- Z_AP_EW_EL	Platanenallee 6 D-15738 Zeuthen
Changed of sch:	<CHANGED BY>		
Date Changed:	2020-10-09	Board Nr: 9446-00	Rev: 0 / Size: A3
Date of prod. data:	<DATE>	Drawing Nr: <DRAW NR>	Sheet: 14 of 14



Developer:	K.-H. Sulanke	Project: IceCube	
		Schematic: mDOM_AFE	
Drawn by:	K.-H. Sulanke	Sheet: 14_mDOM_AFE	
Layouter:		DESY- Z_AP_EW_EL	Platanenallee 6 D-15738 Zeuthen
Changed of sch:	<CHANGED BY>		
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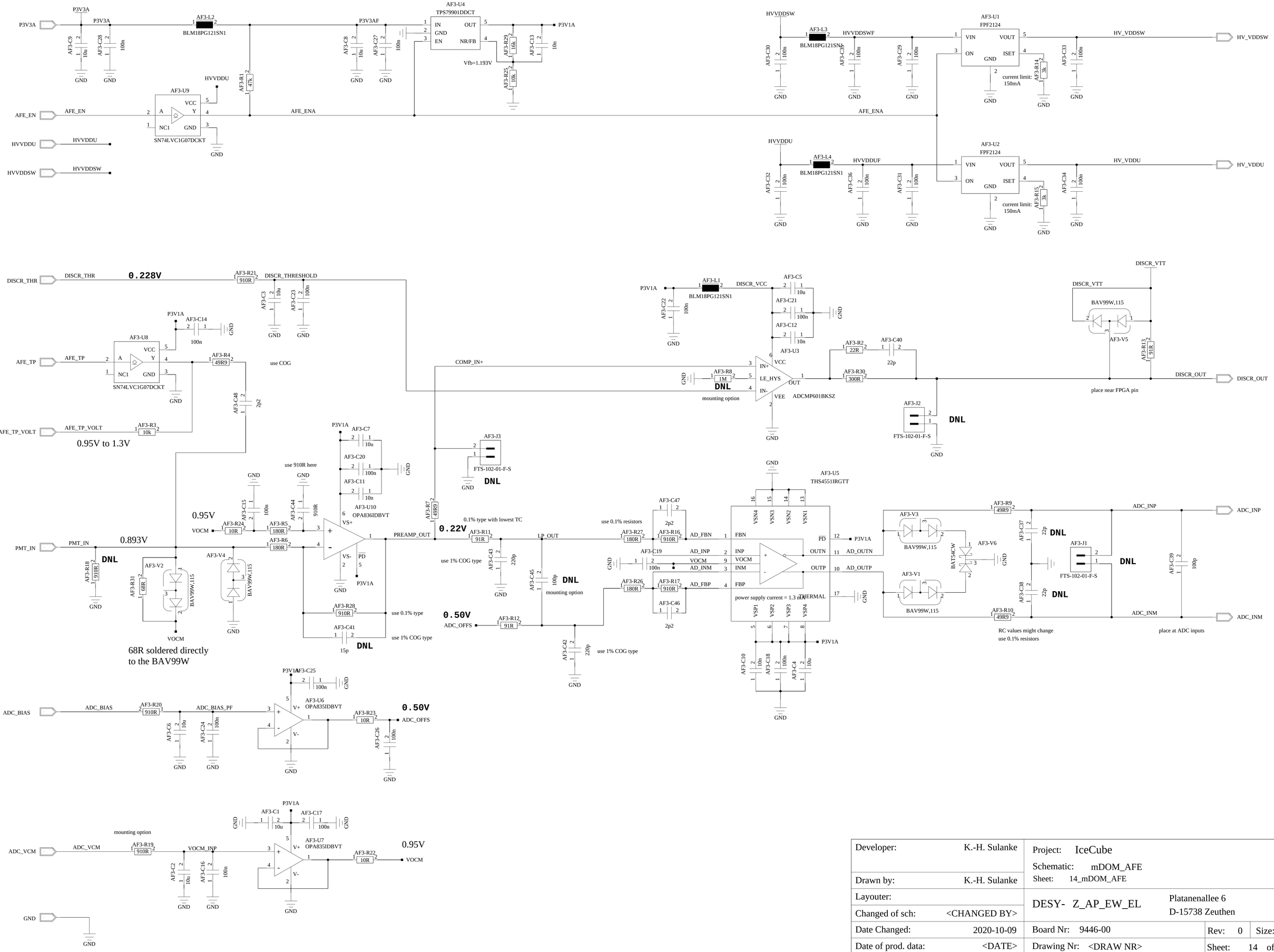
Date of prod. data:	<DATE>	Drawing Nr: <DRAW NR>	Sheet: 14 of 14



Developer:	K.-H. Sulanke	Project: IceCube	
		Schematic: mDOM_AFE	
Drawn by:	K.-H. Sulanke	Sheet: 14_mDOM_AFE	
Layouter:		DESY- Z_AP_EW_EL	Platanenallee 6 D-15738 Zeuthen
Changed of sch:	<CHANGED BY>		
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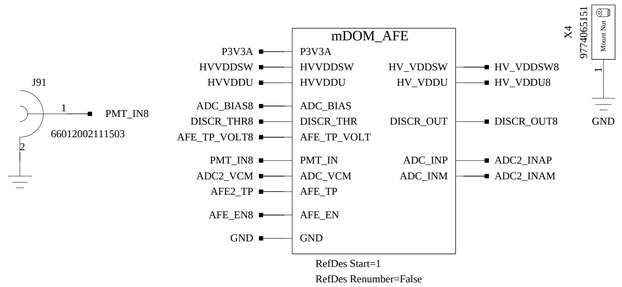

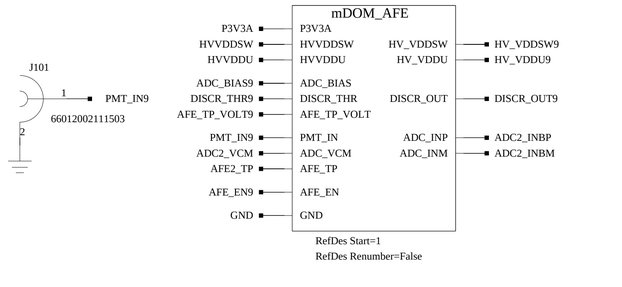

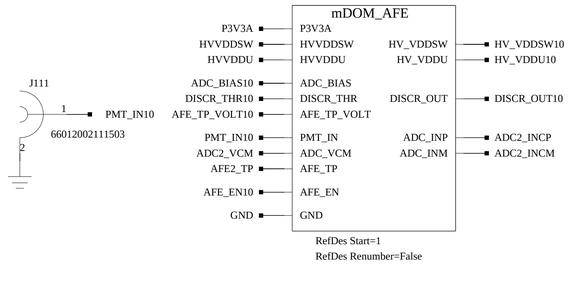

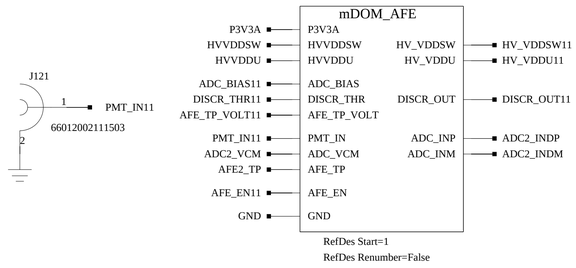

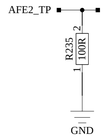

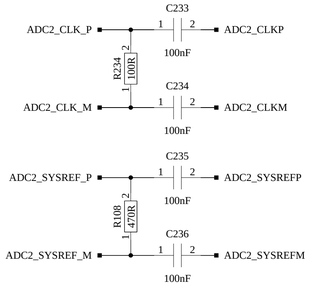

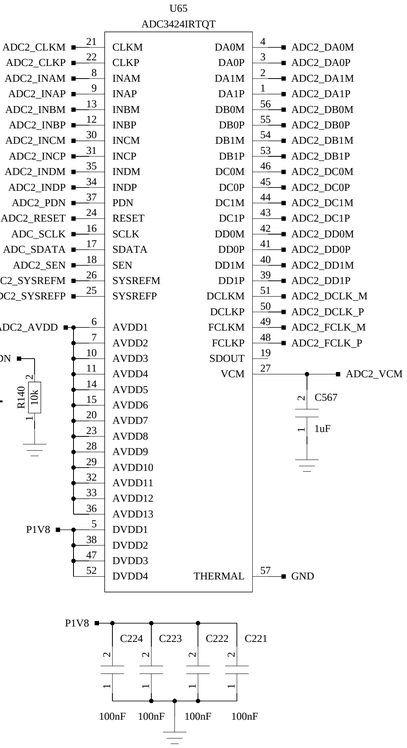

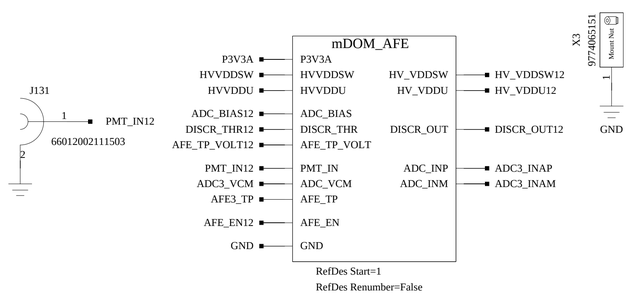

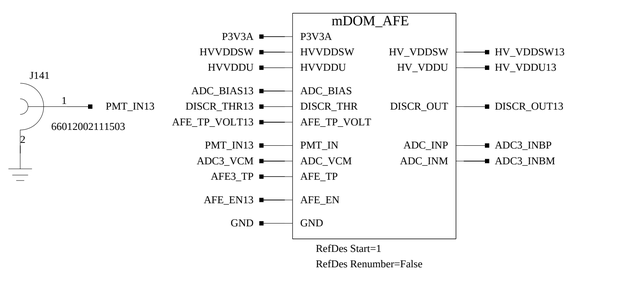

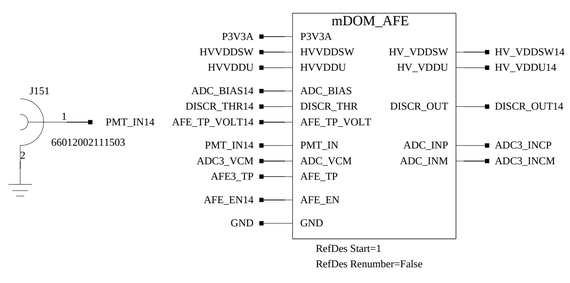

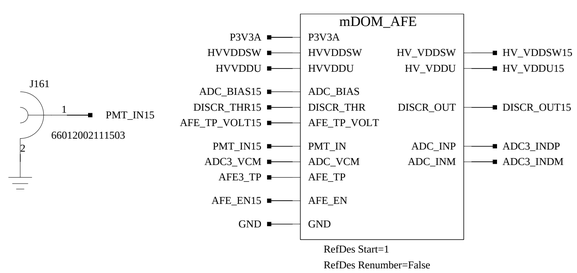

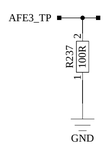

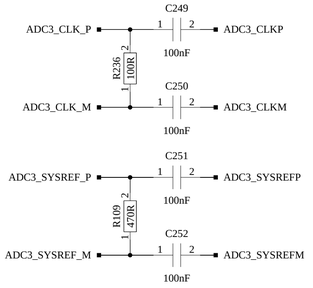

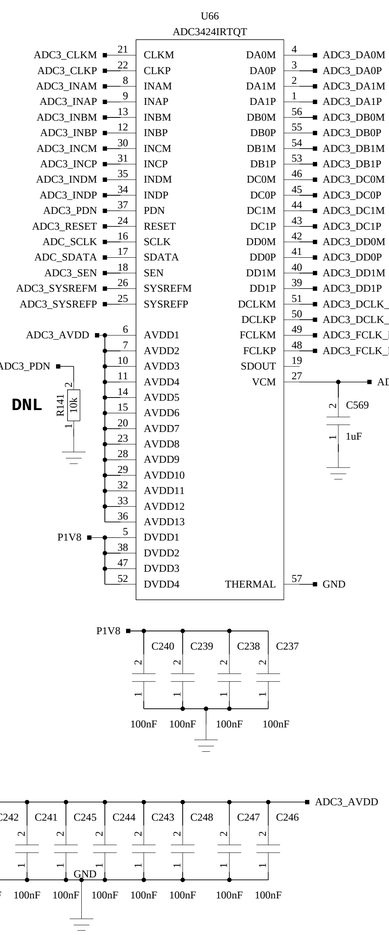

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Drawn by: Karl-Heinz Sulanke		Schematic: mDOM_mb_1	Sheet: 11_adc_23	
Checked by:		PCB name: mDOM_mb_1		
Description: AFE_8..15, ADC_2..3			PCB No: 9446-00	A3
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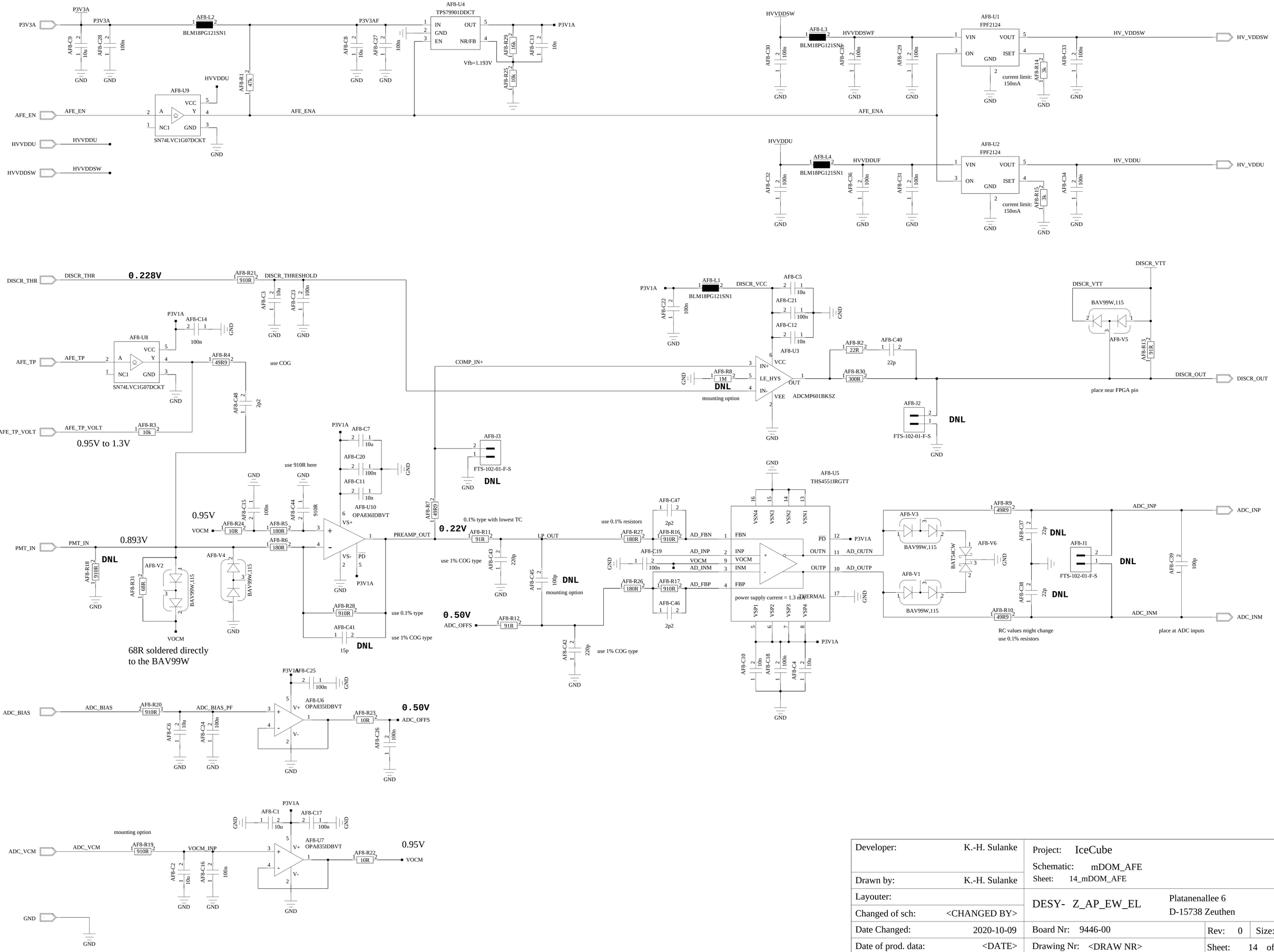

Developer:	K.-H. Sulanke	Project: IceCube	
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		Sheet: 14_mDOM_AFE	
Drawn by:	K.-H. Sulanke		
Layouter:		DESY- Z_AP_EW_EL	Platanenallee 6 D-15738 Zeuthen
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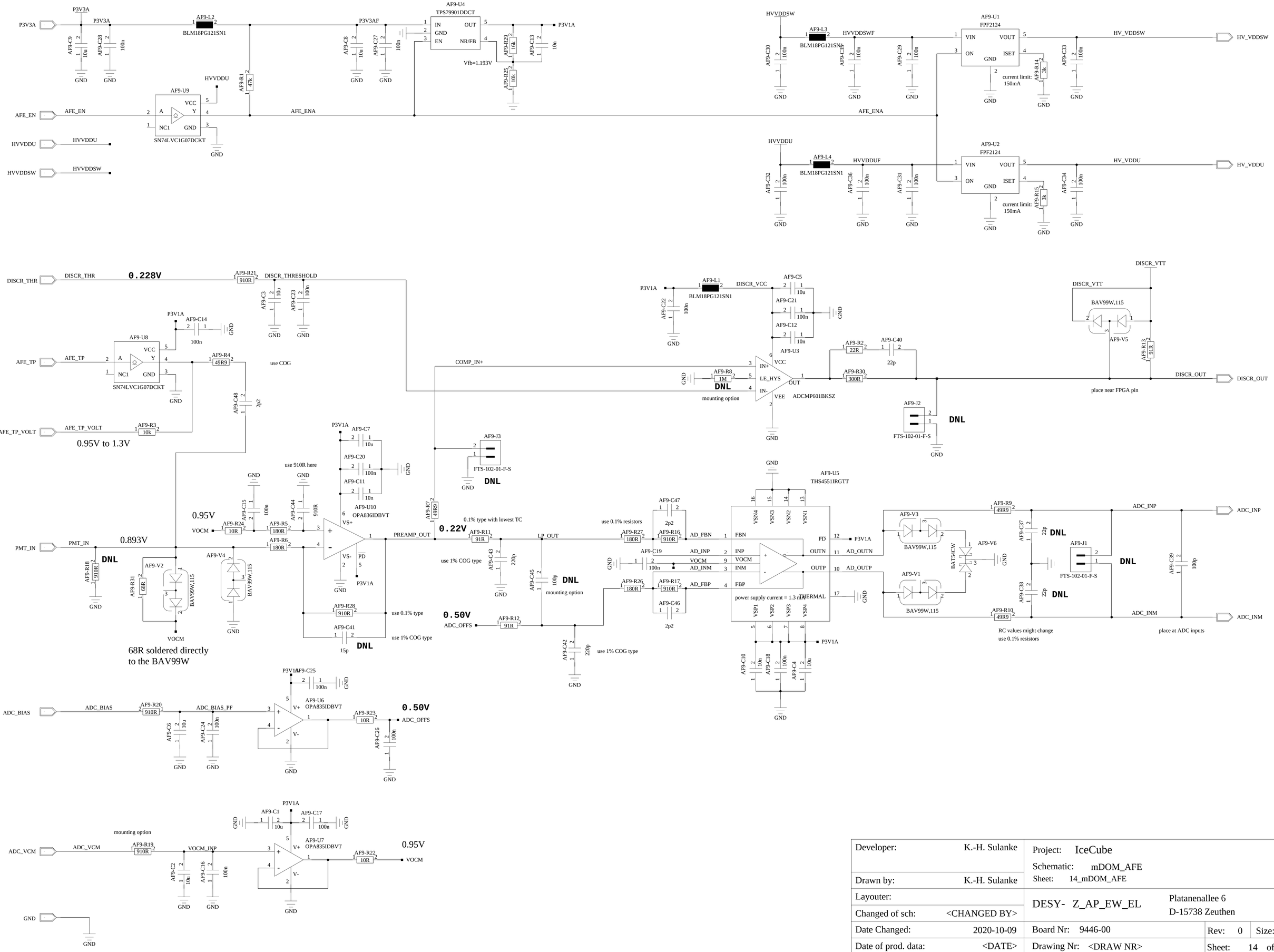
Schematic Property: Landscape, width 3392, height 2388



Developer:	K.-H. Sulanke	Project: IceCube	
		Schematic: mDOM_AFE	
Drawn by:	K.-H. Sulanke	Sheet: 14_mDOM_AFE	
Layouter:		DESY- Z_AP_EW_EL	Platanenallee 6 D-15738 Zeuthen
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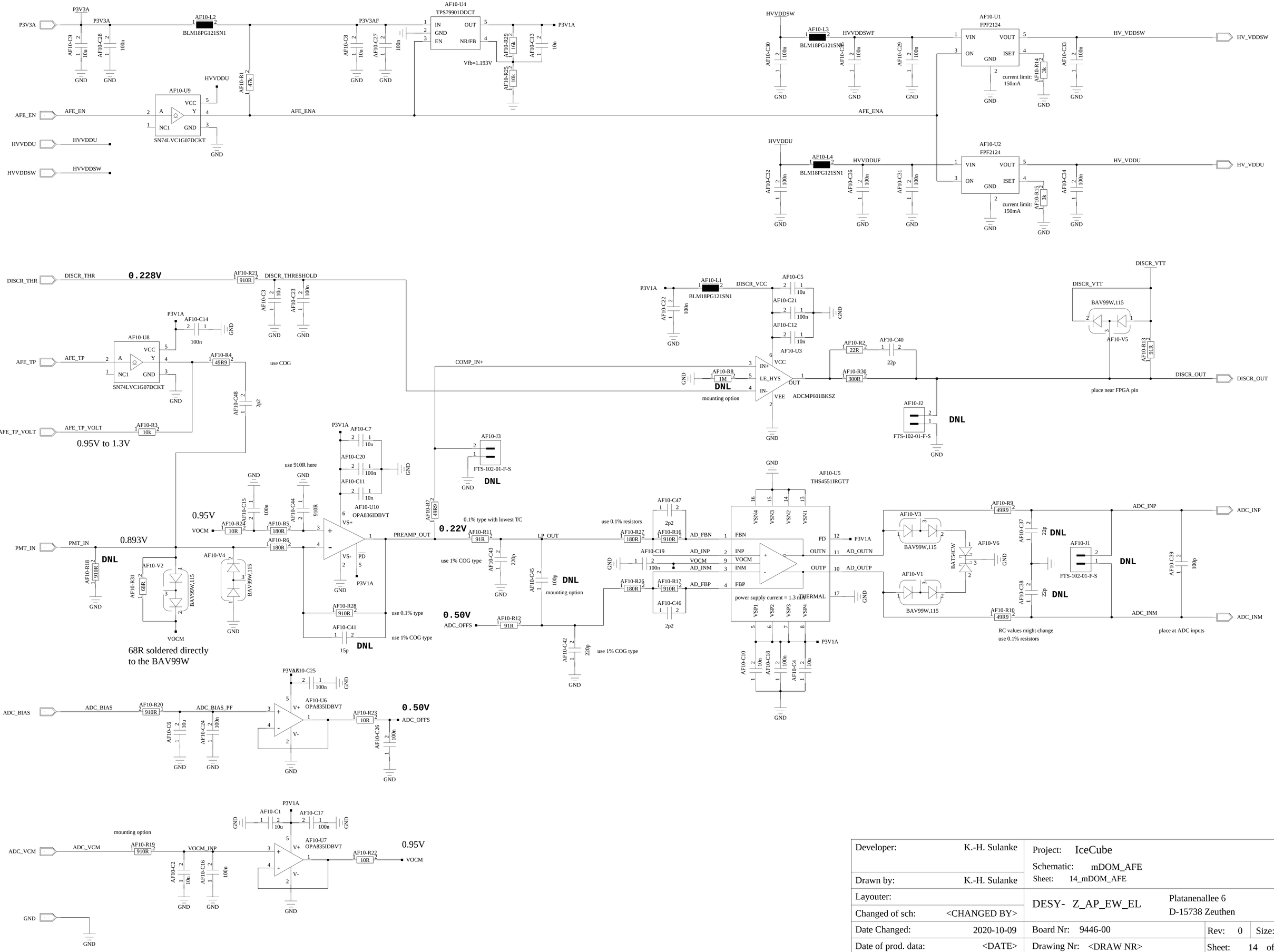

Developer:	K.-H. Sulanke	Project: IceCube Schematic: mDOM_AFE Sheet: 14_mDOM_AFE	
Drawn by:	K.-H. Sulanke		
Layouter:		DESY- Z_AP_EW_EL	Platanenallee 6 D-15738 Zeuthen
Changed of sch:	<CHANGED BY>		
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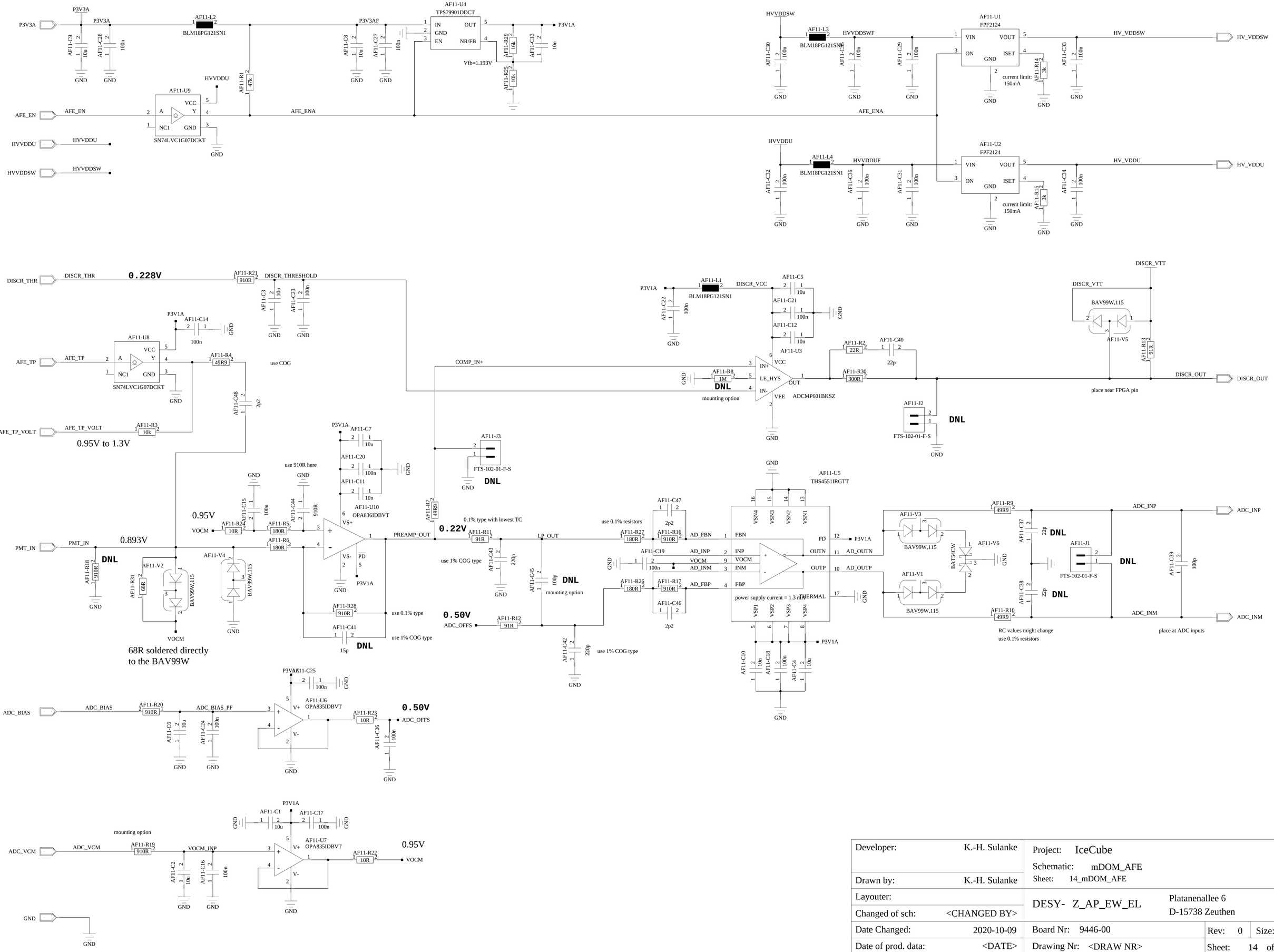
Schematic Property: Landscape, width 3392, height 2388



Developer: K.-H. Sulanke	Project: IceCube
	Schematic: mDOM_AFE
Drawn by: K.-H. Sulanke	Sheet: 14_mDOM_AFE
Layouter:	DESY- Z_AP_EW_EL
Changed of sch: <CHANGED BY>	Platanenallee 6 D-15738 Zeuthen
Date Changed: 2020-10-09	Board Nr: 9446-00 Rev: 0 Size: A3
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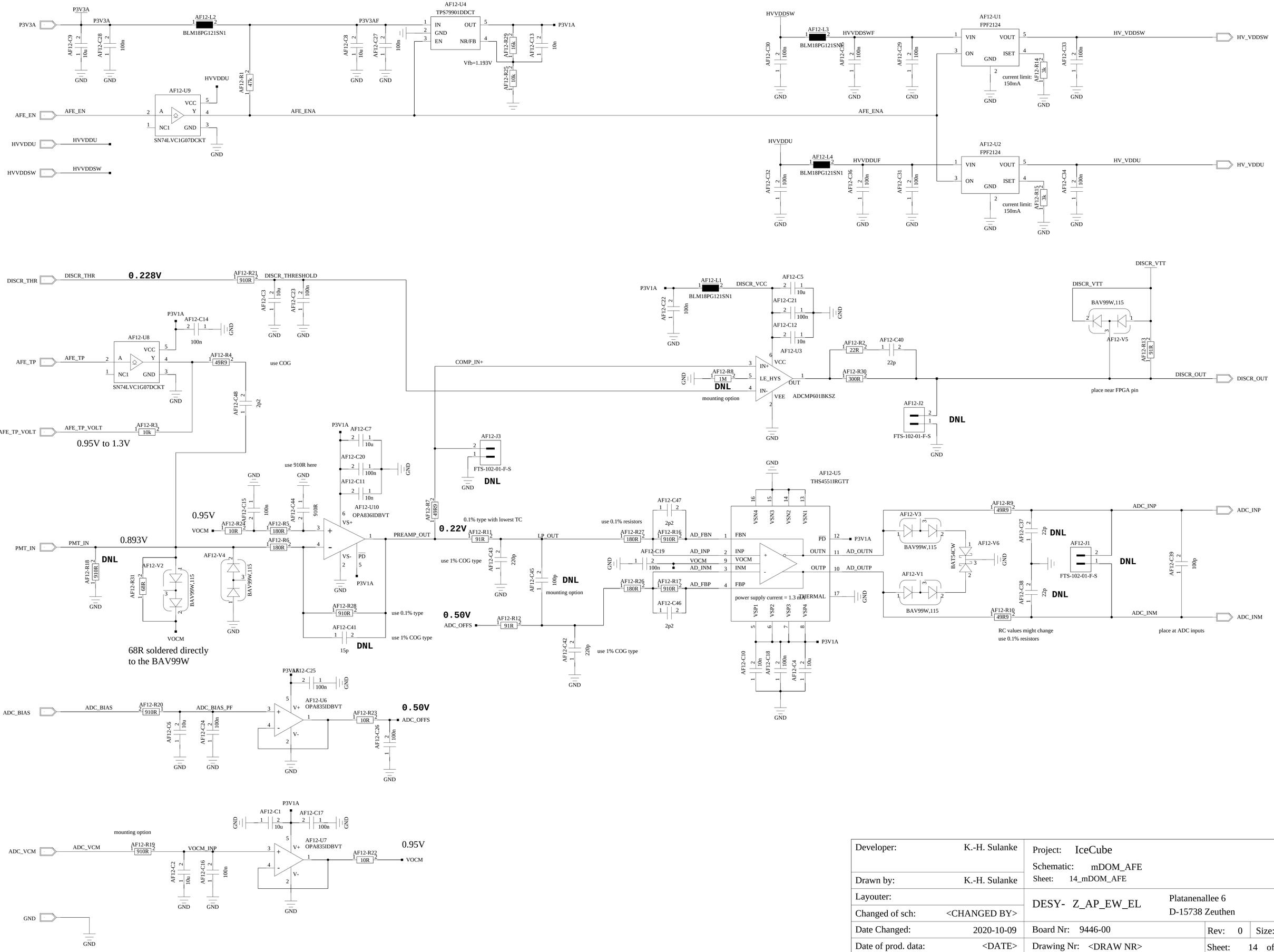
Schematic Property: Landscape, width 3392, height 2388



Developer: K.-H. Sulanke	Project: IceCube
	Schematic: mDOM_AFE
Drawn by: K.-H. Sulanke	Sheet: 14_mDOM_AFE
Layouter:	DESY- Z_AP_EW_EL — Platanenallee 6, D-15738 Zeuthen
Changed of sch: <CHANGED BY>	
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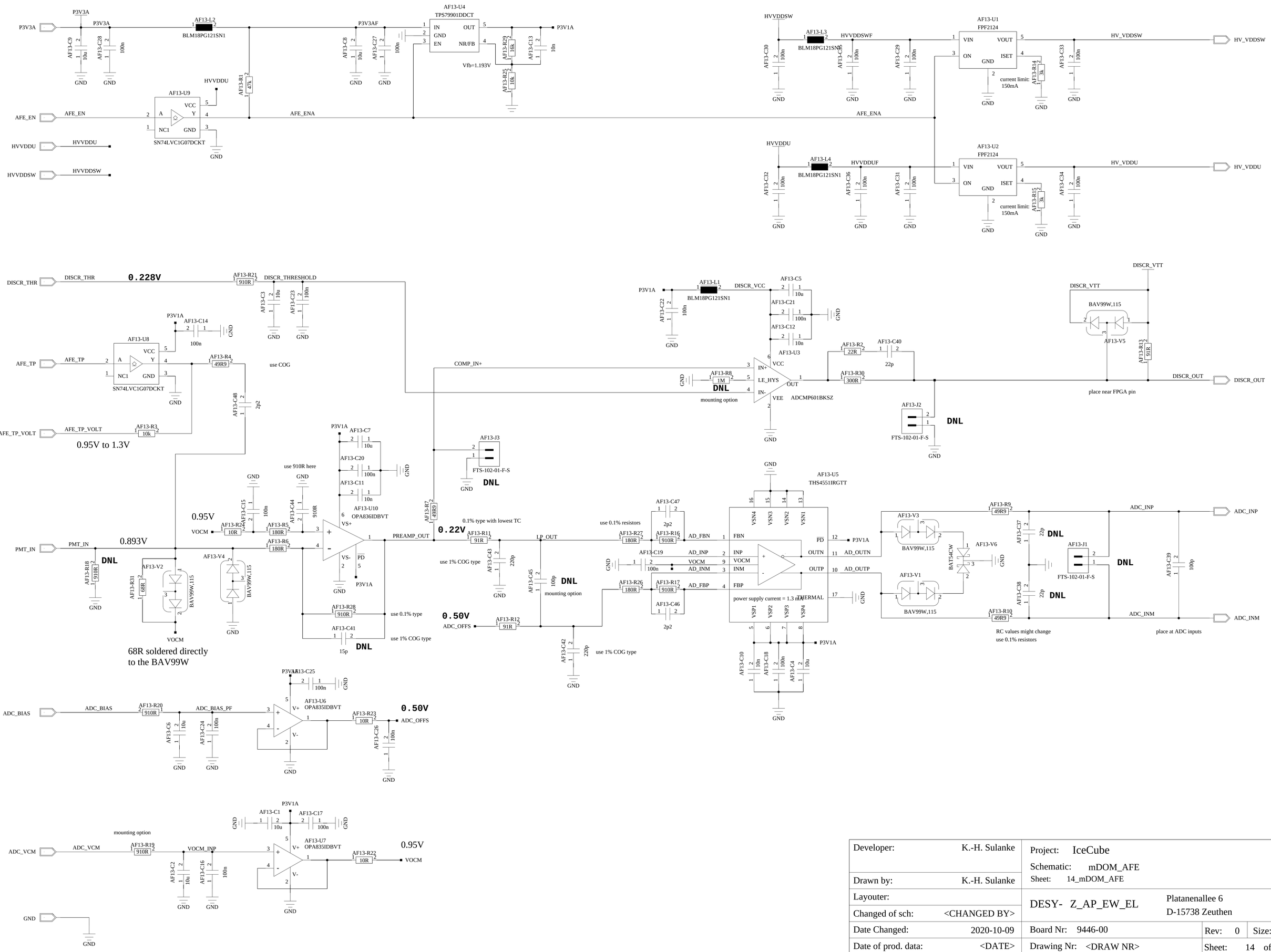

Developer: K.-H. Sulanke	Project: IceCube
	Schematic: mDOM_AFE
Drawn by: K.-H. Sulanke	Sheet: 14_mDOM_AFE
Layouter:	DESY- Z_AP_EW_EL — Platanenallee 6, D-15738 Zeuthen
Changed of sch: <CHANGED BY>	
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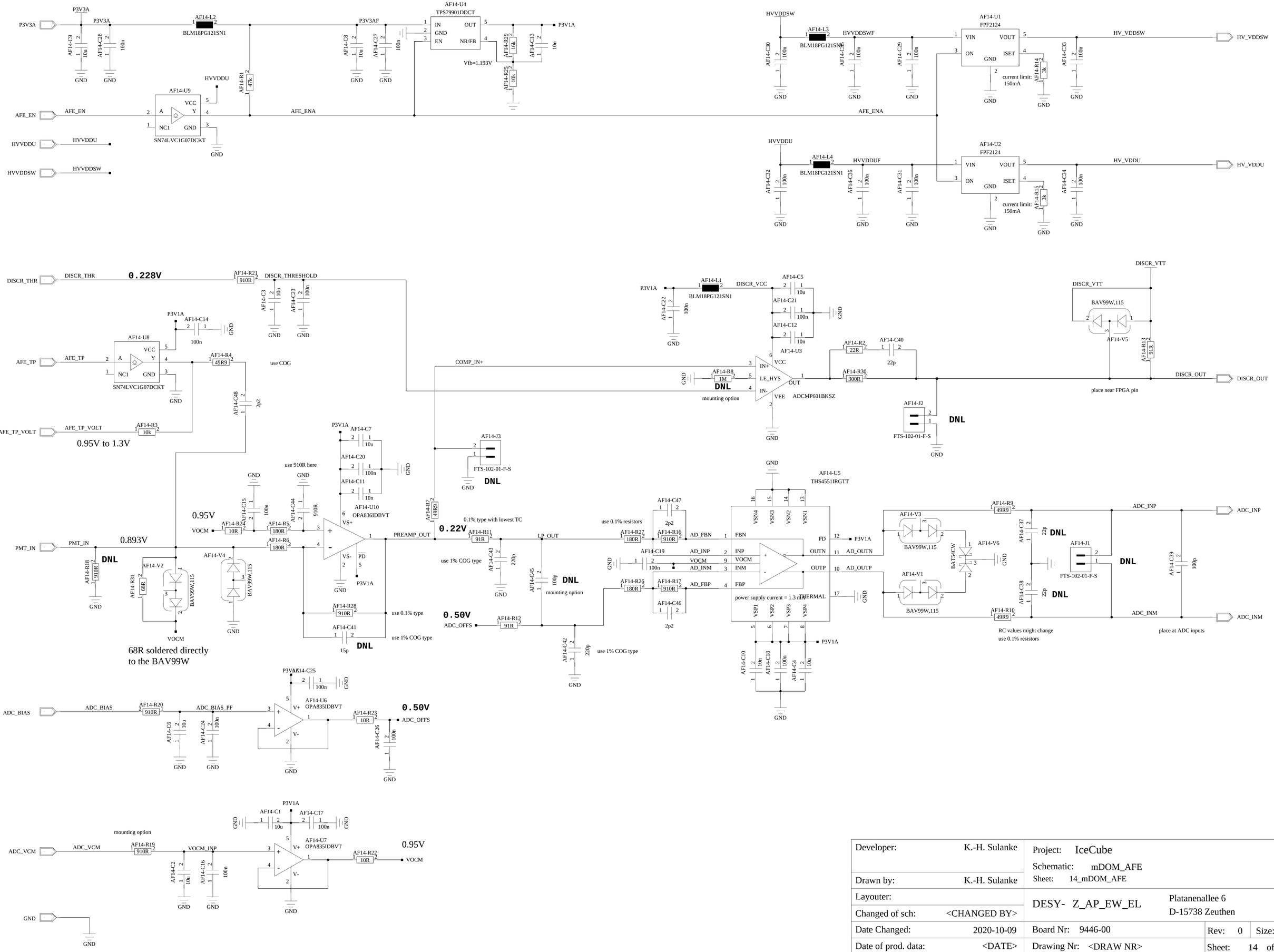

Developer:	K.-H. Sulanke	Project: IceCube Schematic: mDOM_AFE Sheet: 14_mDOM_AFE	
Drawn by:	K.-H. Sulanke		
Layouter:		DESY- Z_AP_EW_EL	Platanenallee 6 D-15738 Zeuthen
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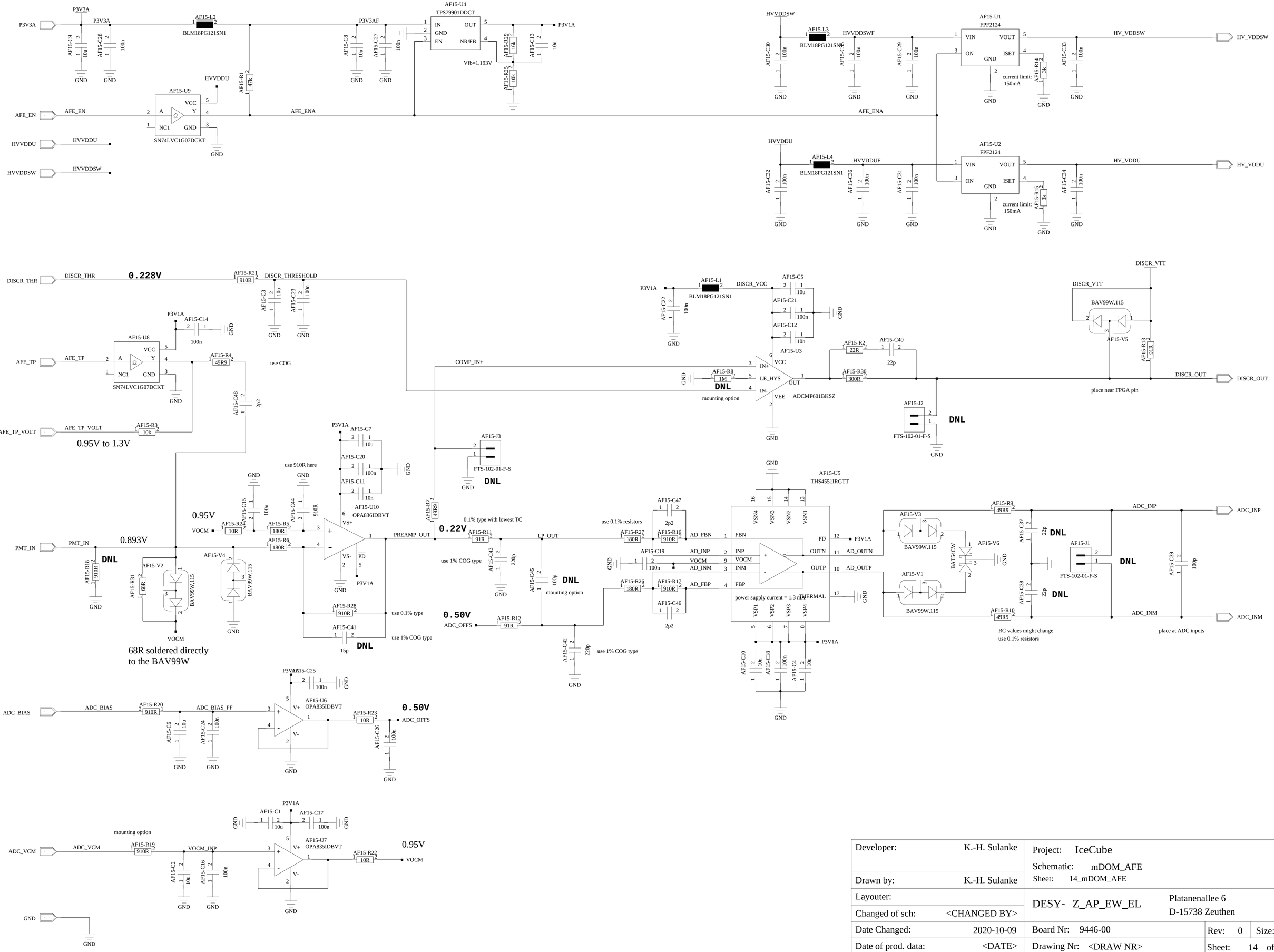
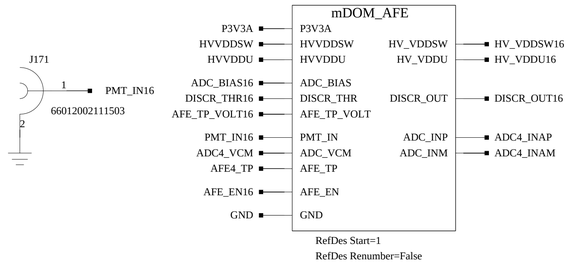
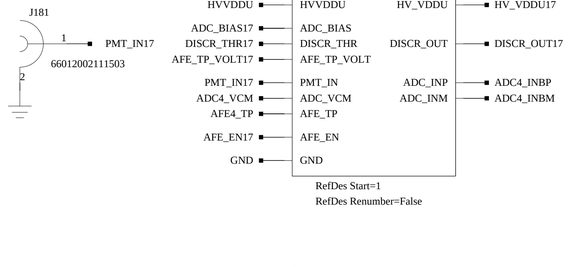
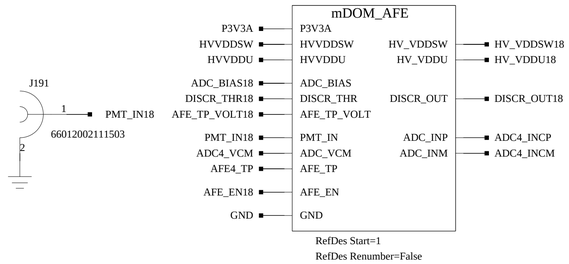
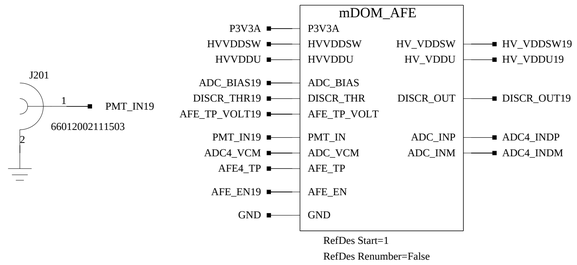


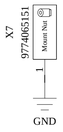
Schematic Property: Landscape, width 3392, height 2388

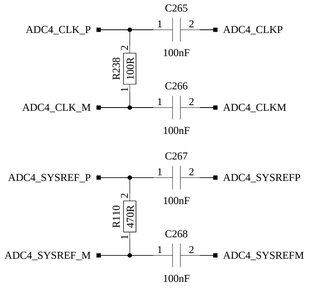


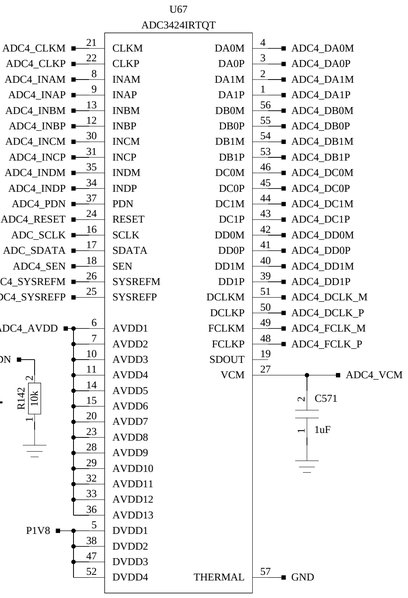


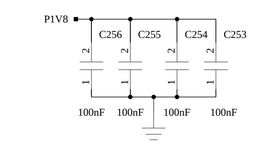


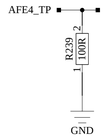


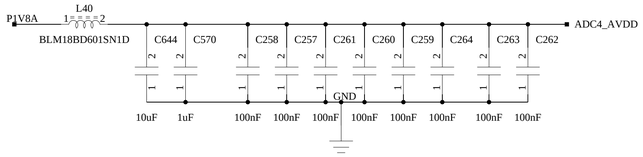


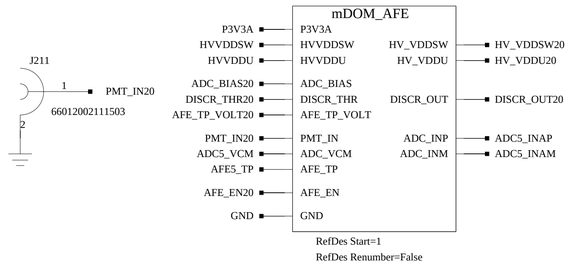


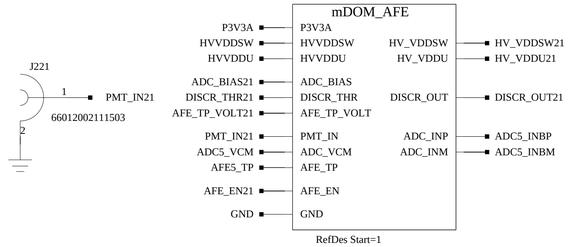


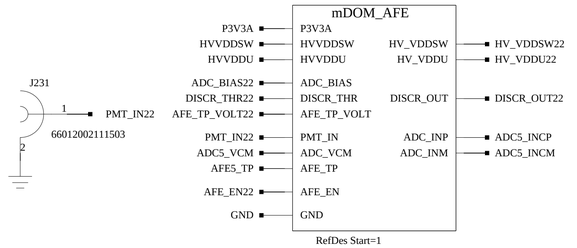


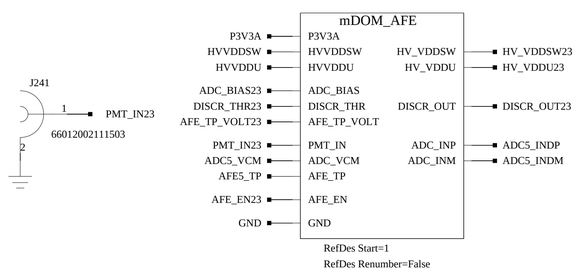


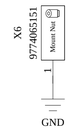


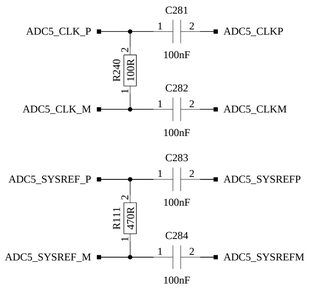


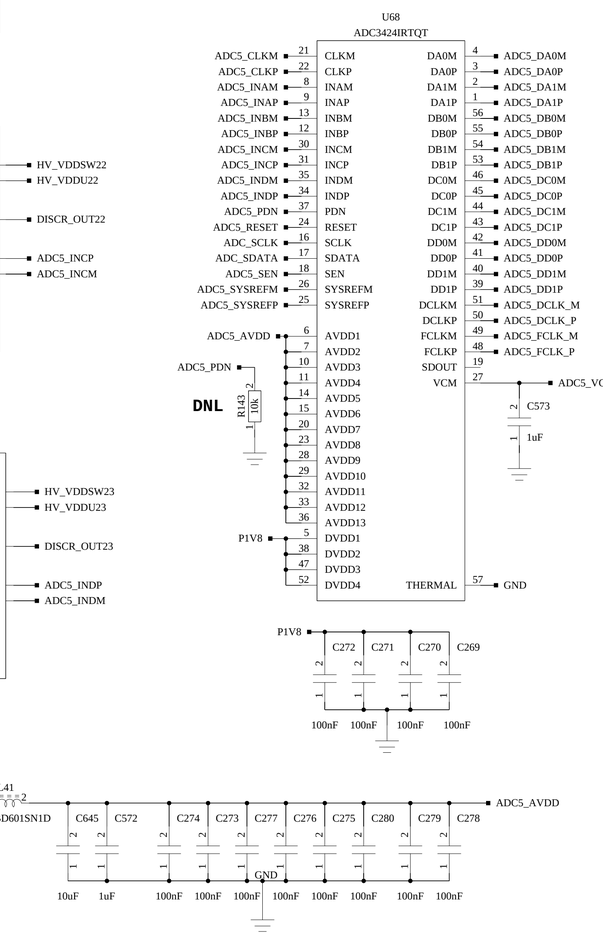


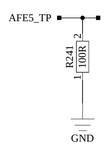


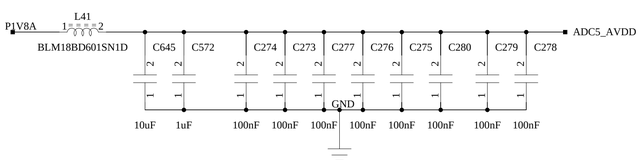












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Drawn by: Karl-Heinz Sulanke	Schematic: mDOM_mb_1	Sheet: 12_adc_45	
Checked by:	PCB name: mDOM_mb_1		
Description: AFE_16..23, ADC_4..5		PCB No: 9446-00	A3
Deutsches Elektronen-Synchrotron DESY, Platanenallee 6, 15738 Zeuthen DESY group:	Variant:	Located at:	
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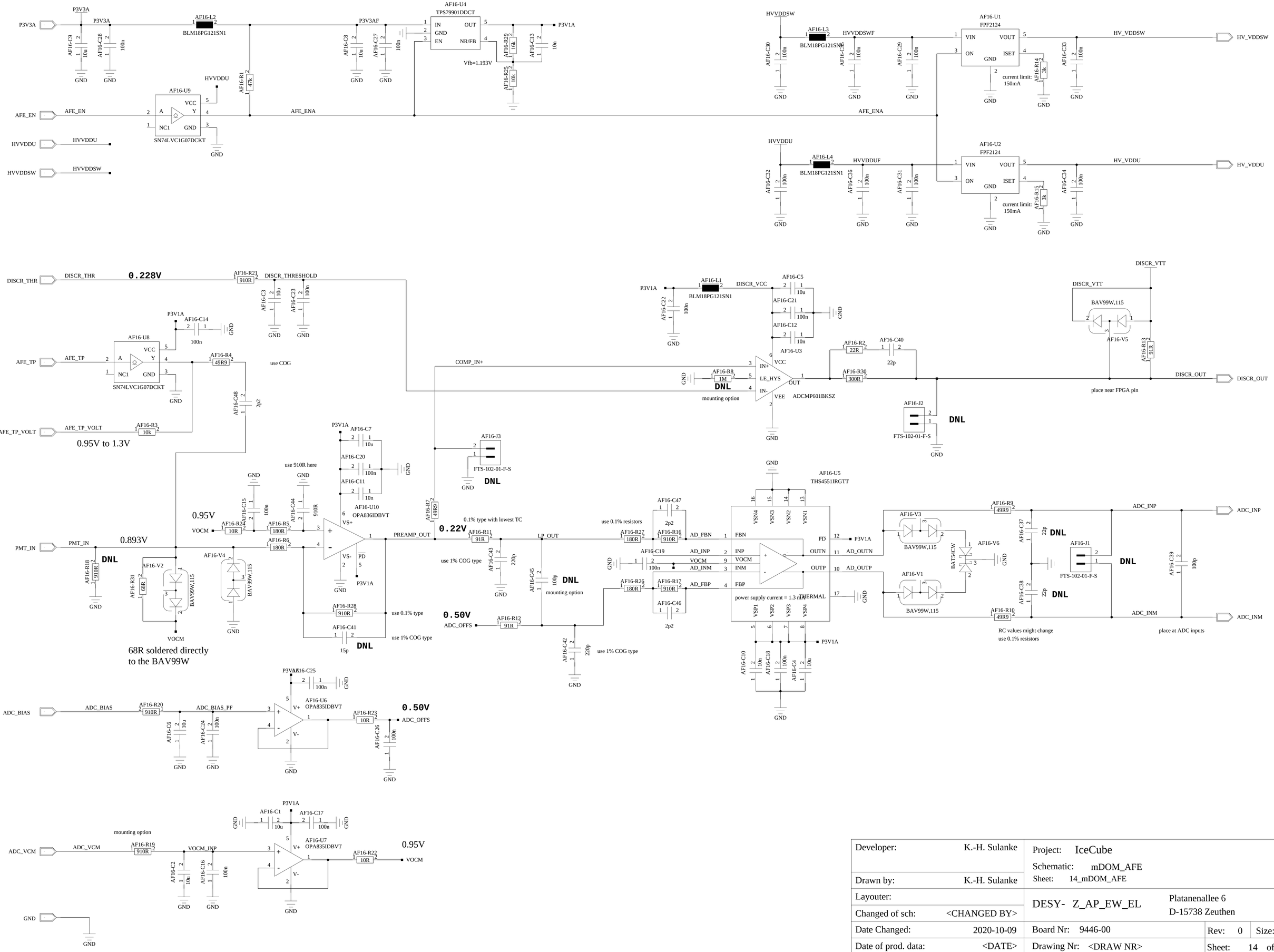

Developer:	K.-H. Sulanke	Project: IceCube	
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Drawn by:	K.-H. Sulanke	Sheet: 14_mDOM_AFE	
Layouter:		DESY- Z_AP_EW_EL	Platanenallee 6 D-15738 Zeuthen
Changed of sch:	<CHANGED BY>		
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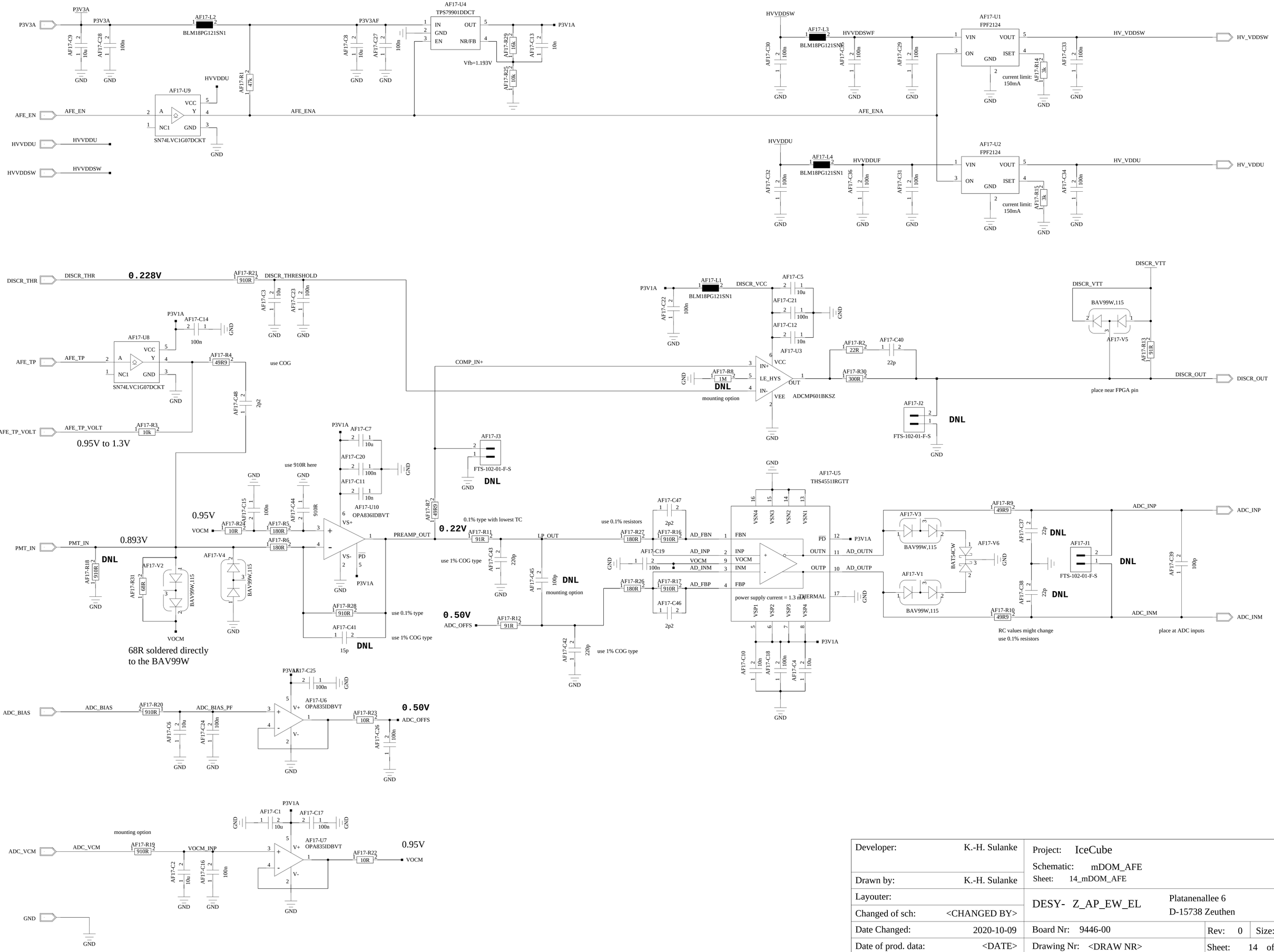

Developer:	K.-H. Sulanke	Project: IceCube	
		Schematic: mDOM_AFE	
Drawn by:	K.-H. Sulanke	Sheet: 14_mDOM_AFE	
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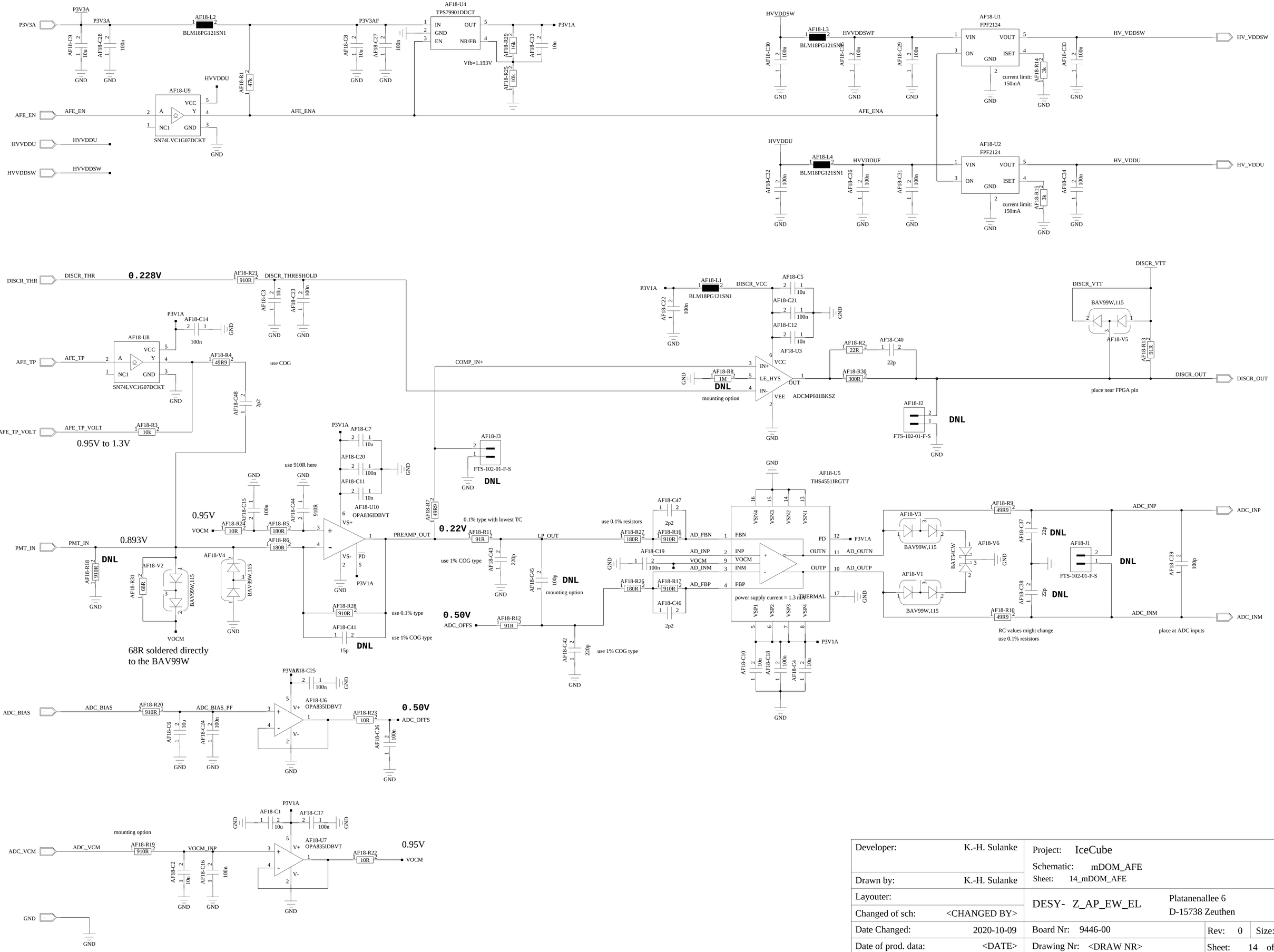

Developer: K.-H. Sulanke	Project: IceCube
	Schematic: mDOM_AFE
Drawn by: K.-H. Sulanke	Sheet: 14_mDOM_AFE
Layouter:	DESY- Z_AP_EW_EL
Changed of sch: <CHANGED BY>	Platanenallee 6 D-15738 Zeuthen
Date Changed: 2020-10-09	Board Nr: 9446-00 — Rev: 0 — Size: A3
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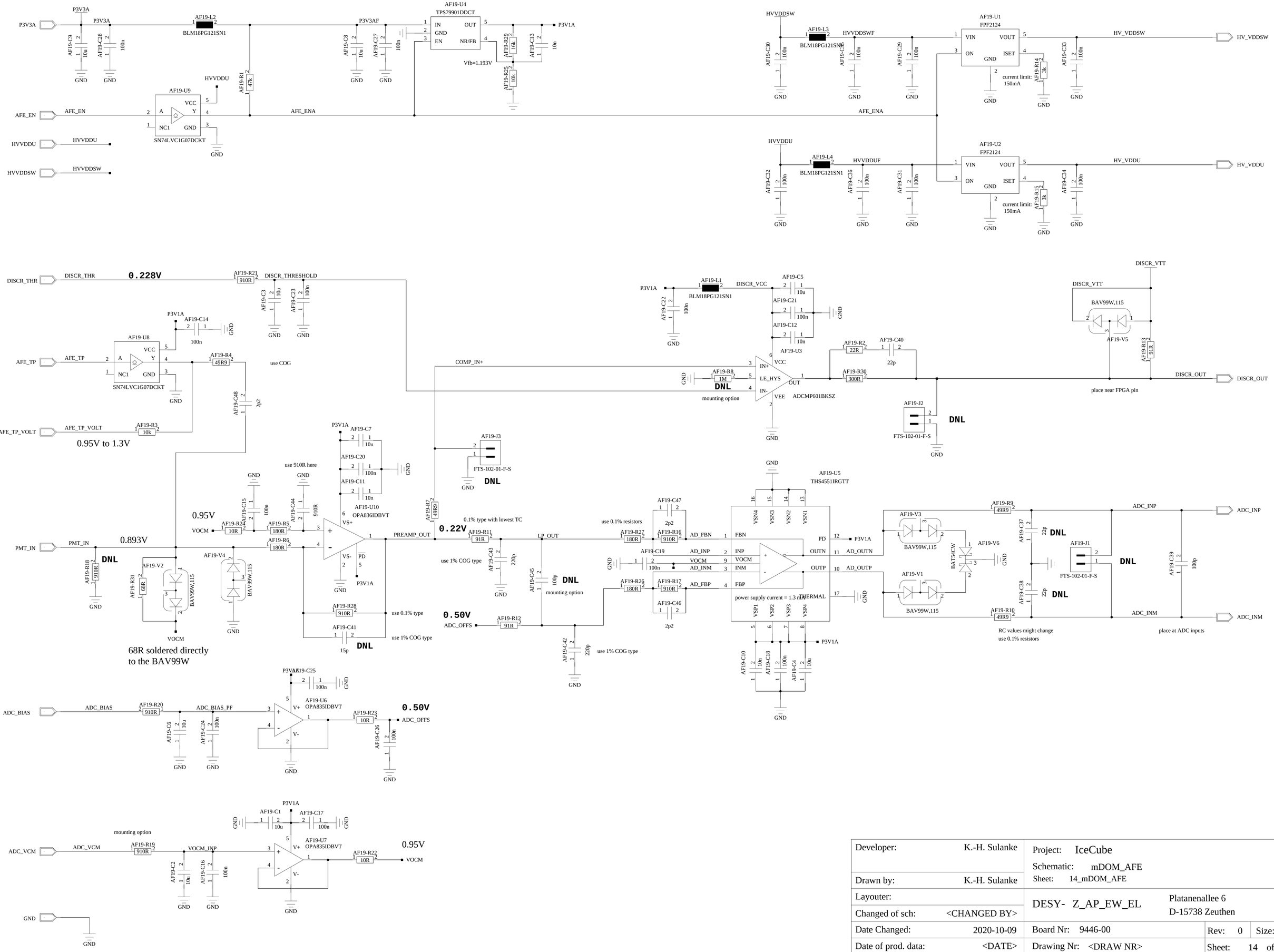

Developer: K.-H. Sulanke	Project: IceCube
	Schematic: mDOM_AFE
Drawn by: K.-H. Sulanke	Sheet: 14_mDOM_AFE
Layouter:	DESY- Z_AP_EW_EL — Platanenallee 6, D-15738 Zeuthen
Changed of sch: <CHANGED BY>	
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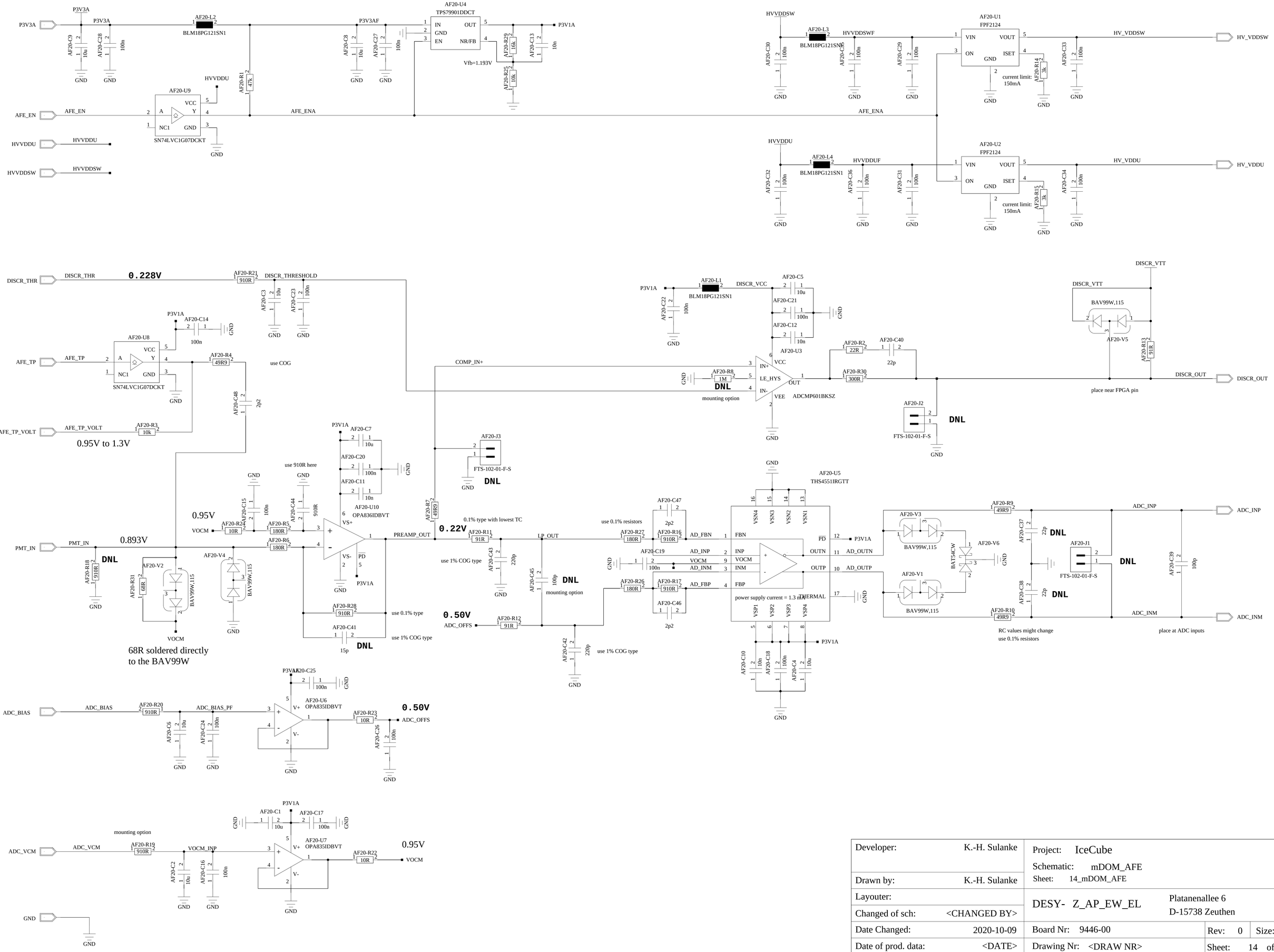
Date of prod. data: <DATE>	Drawing Nr: <DRAW NR> — Sheet: 14 of 14

Schematic Property: Landscape, width 3392, height 2388



Developer:	K.-H. Sulanke	Project: IceCube Schematic: mDOM_AFE Sheet: 14_mDOM_AFE	
Drawn by:	K.-H. Sulanke		
Layouter:		DESY- Z_AP_EW_EL	Platanenallee 6 D-15738 Zeuthen
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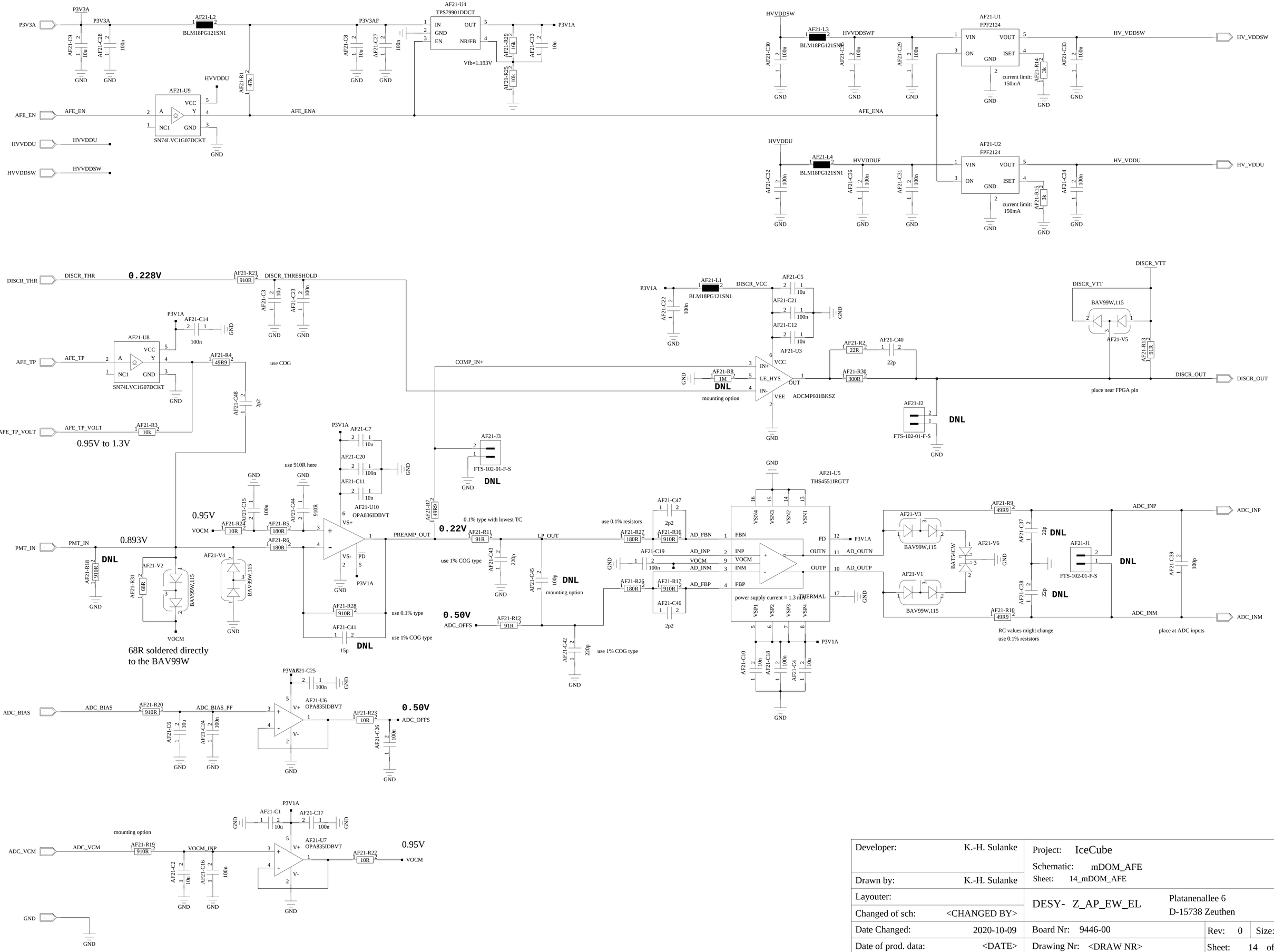

Developer:	K.-H. Sulanke	Project: IceCube	
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Drawn by:	K.-H. Sulanke	Sheet: 14_mDOM_AFE	
Layouter:		DESY- Z_AP_EW_EL	Platanenallee 6 D-15738 Zeuthen
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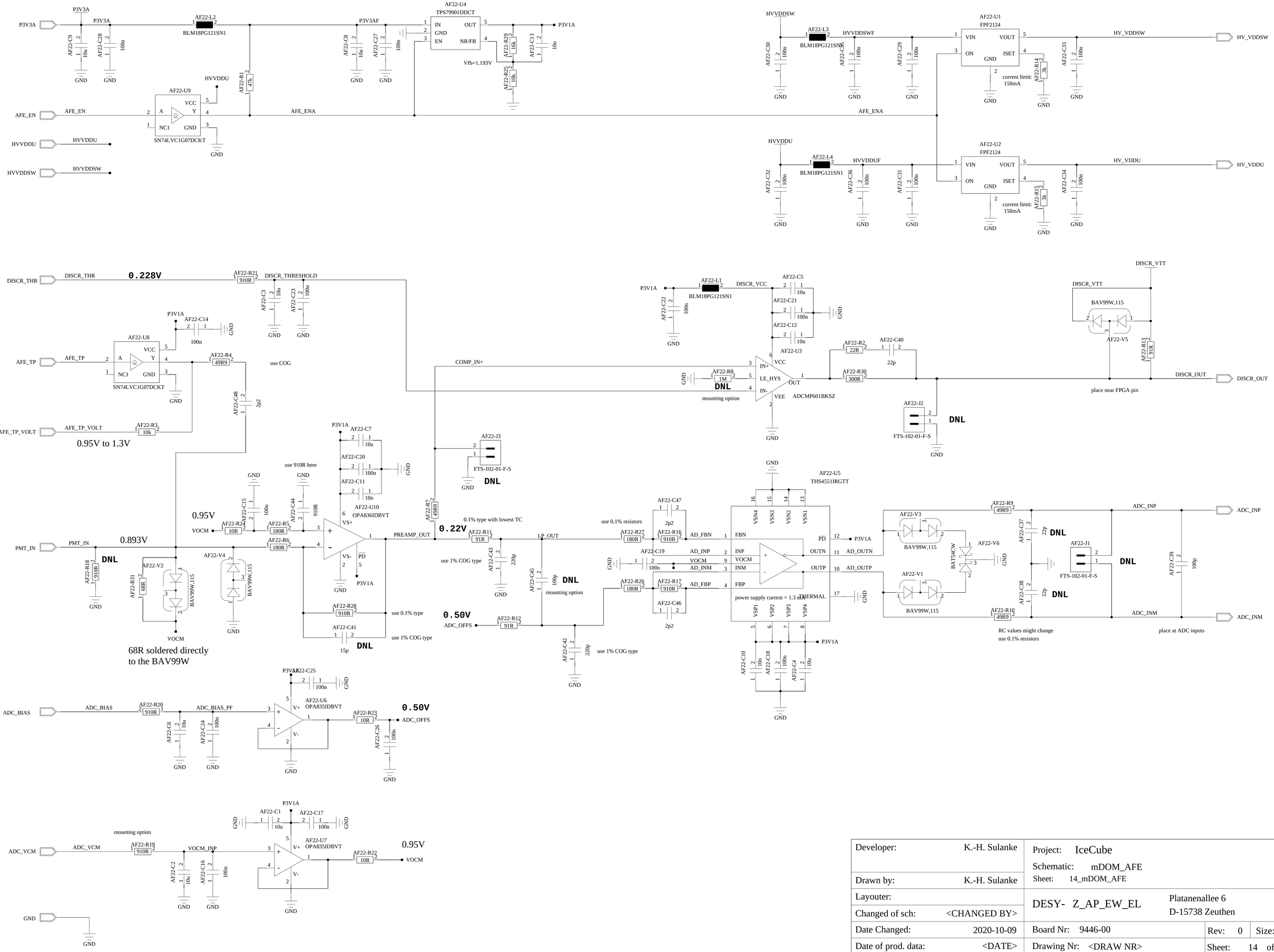

Developer:	K.-H. Sulanke	Project: IceCube	
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Drawn by:	K.-H. Sulanke	Sheet: 14_mDOM_AFE	
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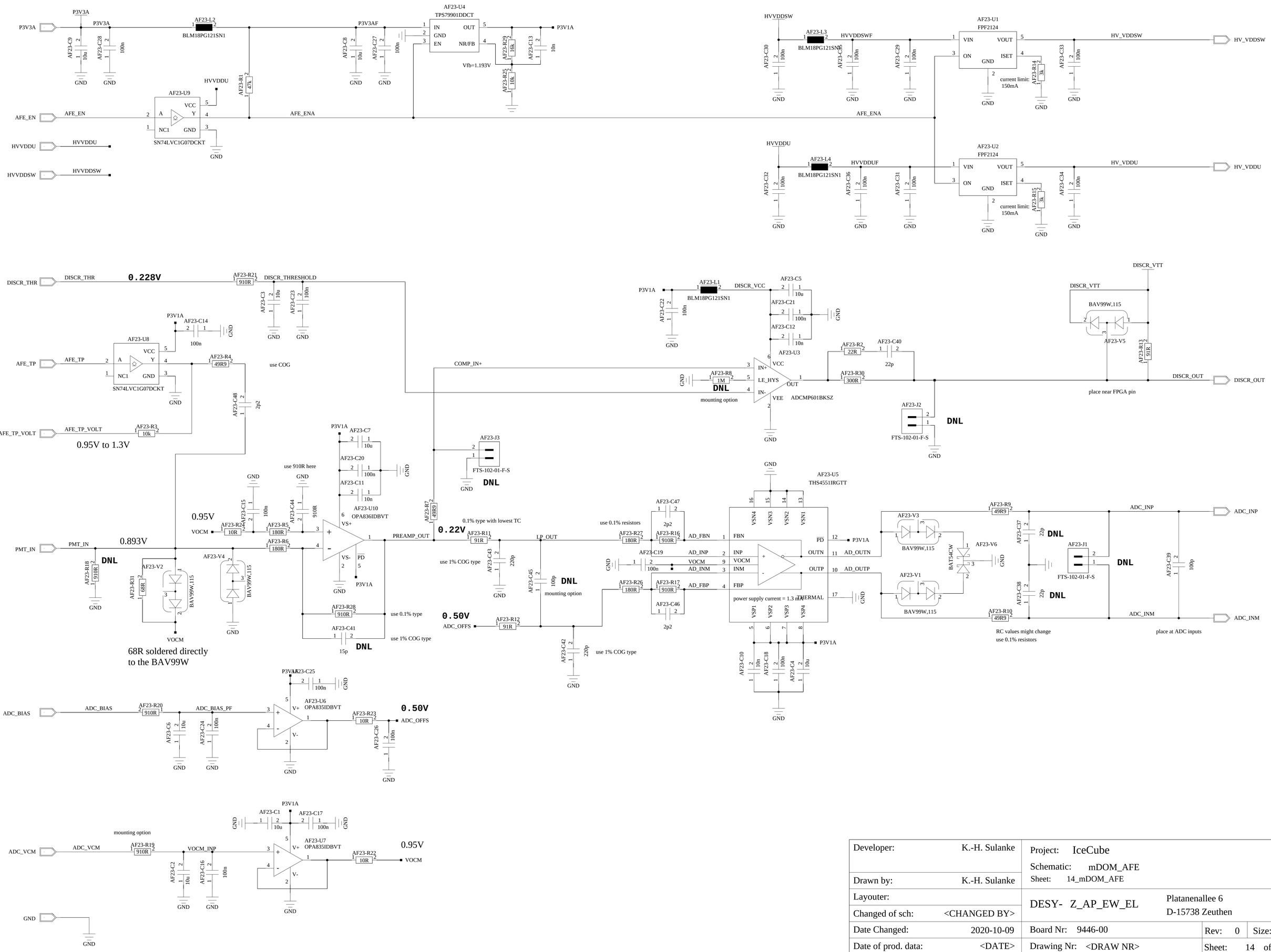

Developer: K.-H. Sulanke	Project: IceCube
	Schematic: mDOM_AFE
Drawn by: K.-H. Sulanke	Sheet: 14_mDOM_AFE
Layouter:	DESY- Z_AP_EW_EL — Platanenallee 6, D-15738 Zeuthen
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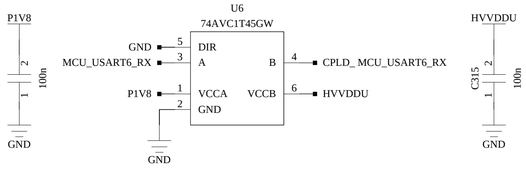

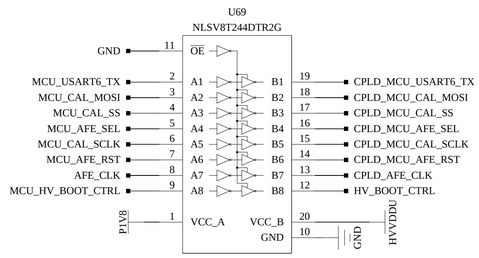

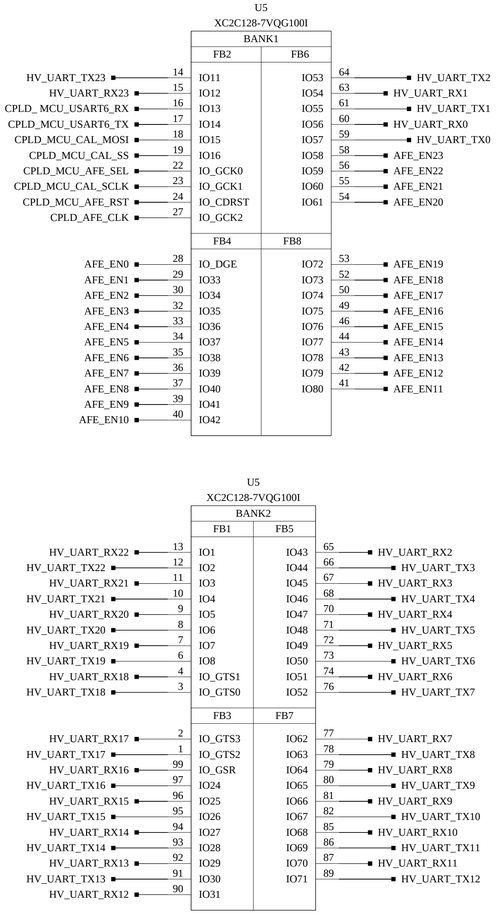

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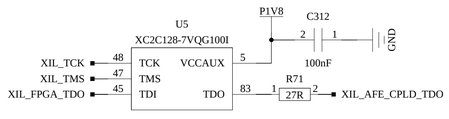
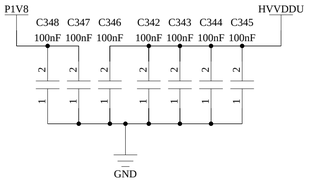
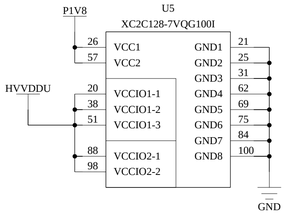
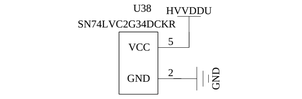
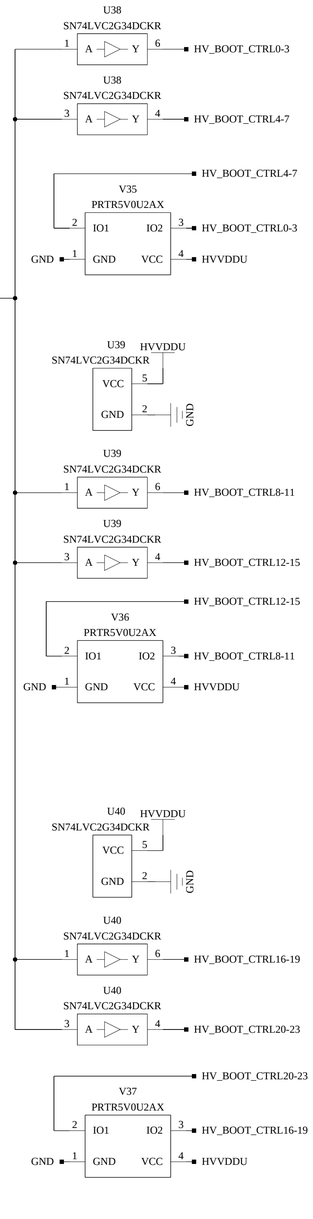


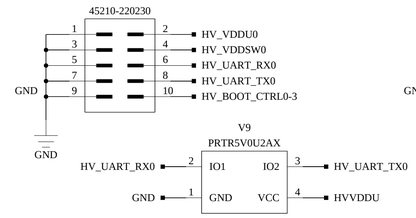


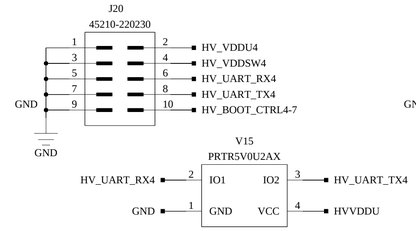


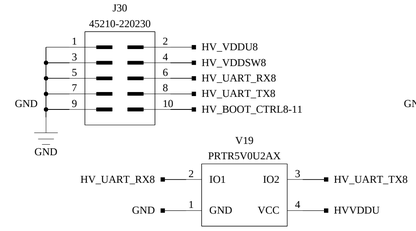


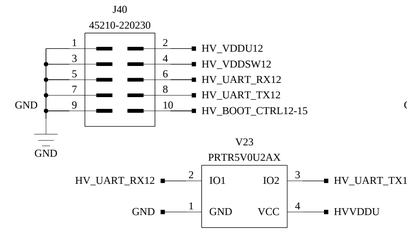


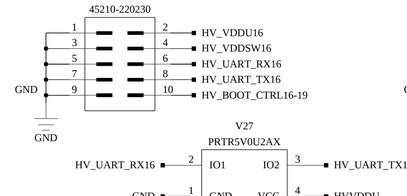
PMT base HV control

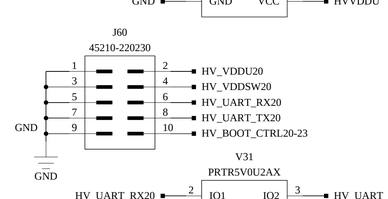












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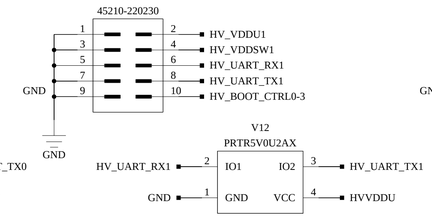

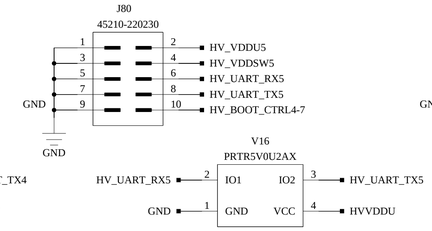

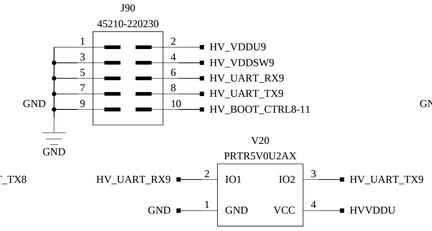

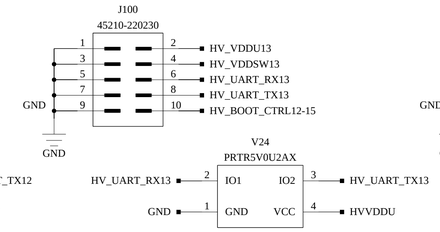

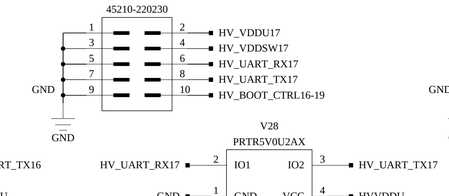

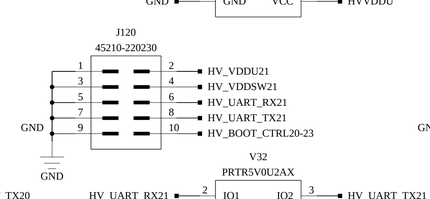

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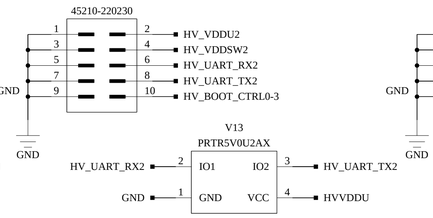
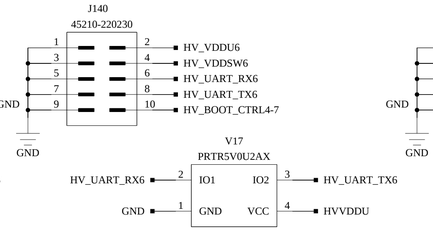
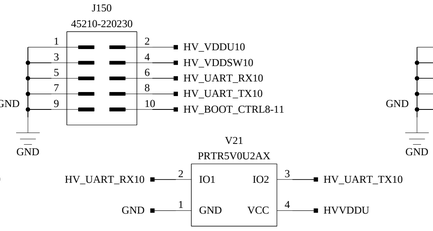
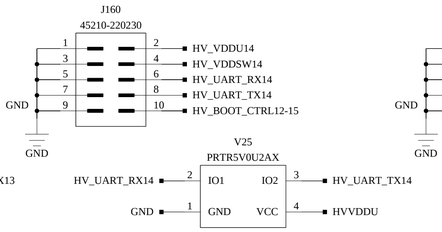
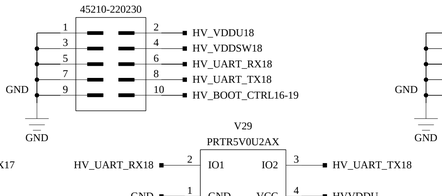
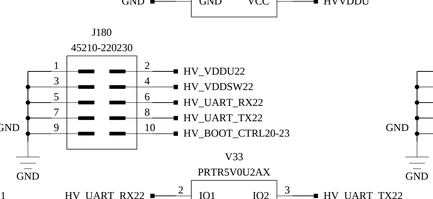




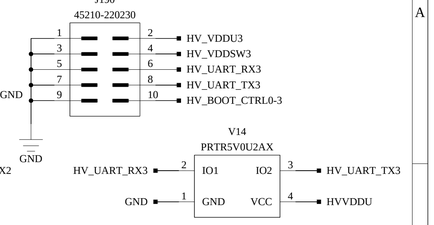


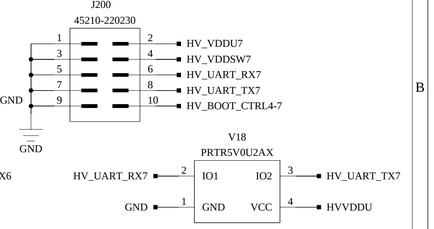


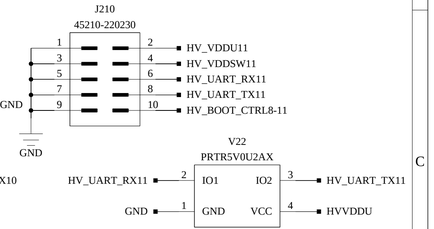


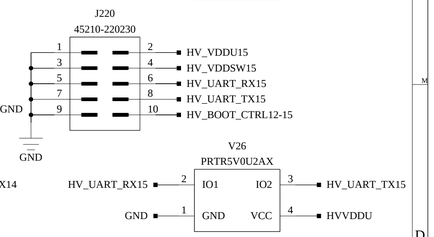


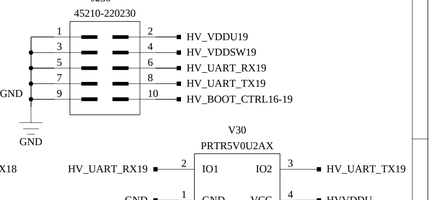
PMT base HV control

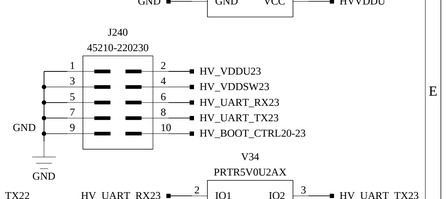












Developer: Karl-Heinz Sulanke		Project: IceCube	
Drawn by: Karl-Heinz Sulanke		Schematic: mDOM_mb_1	Sheet: 13_hv
Checked by:		PCB name: mDOM_mb_1	
Description: mDOM PMT-HV control, CPLD			PCB No: 9446-00 A3
Deutsches Elektronen-Synchrotron DESY, Platanenallee 6, 15738 Zeuthen DESY group:		Variant:	Located at:
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