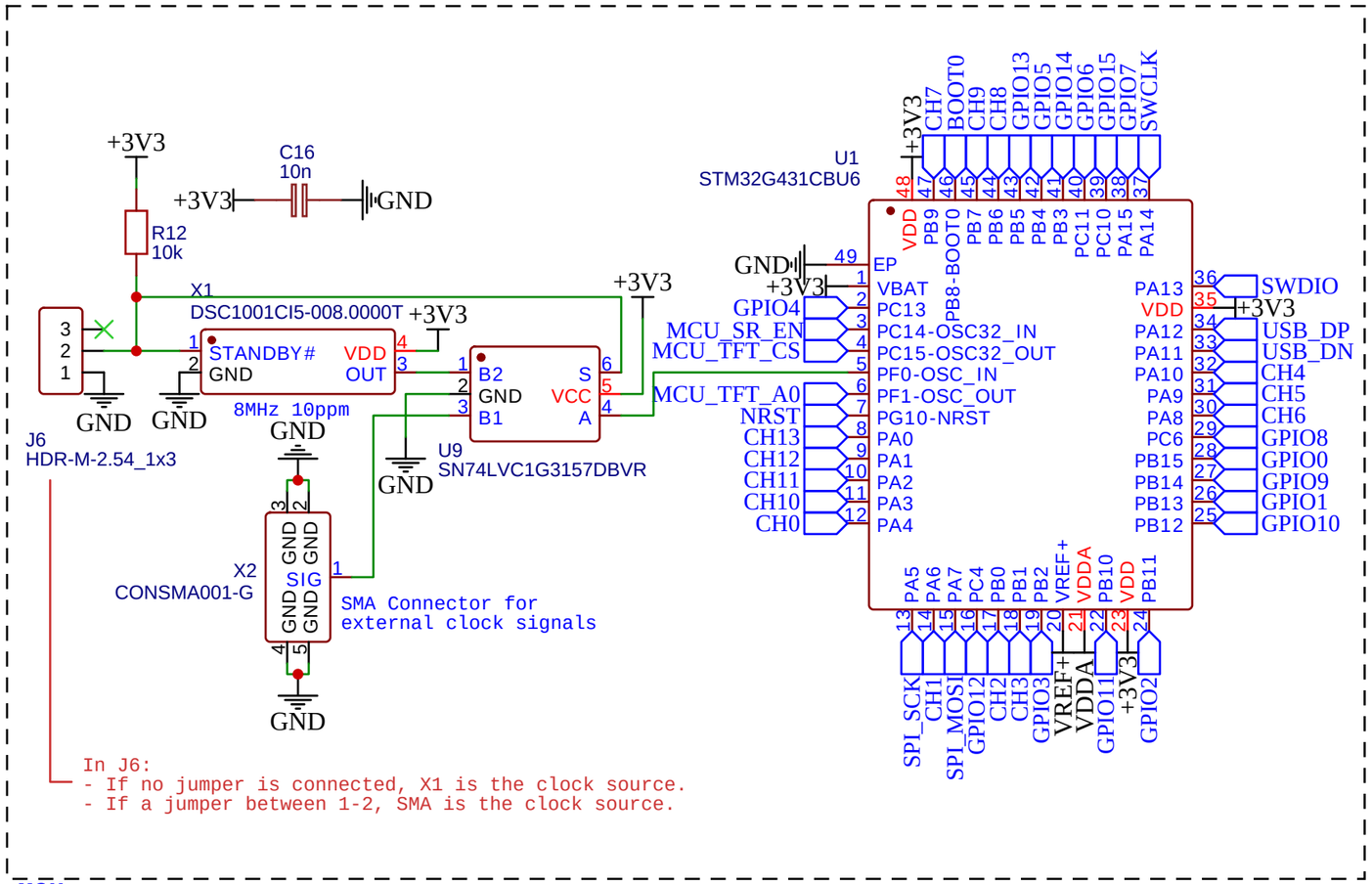
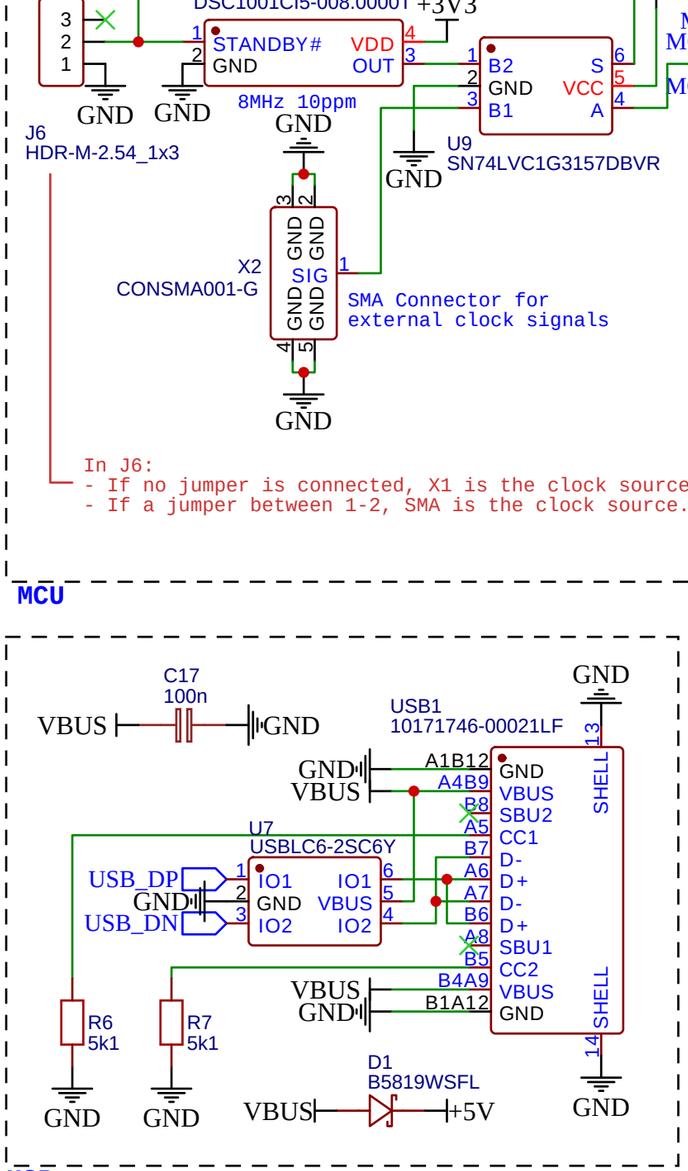
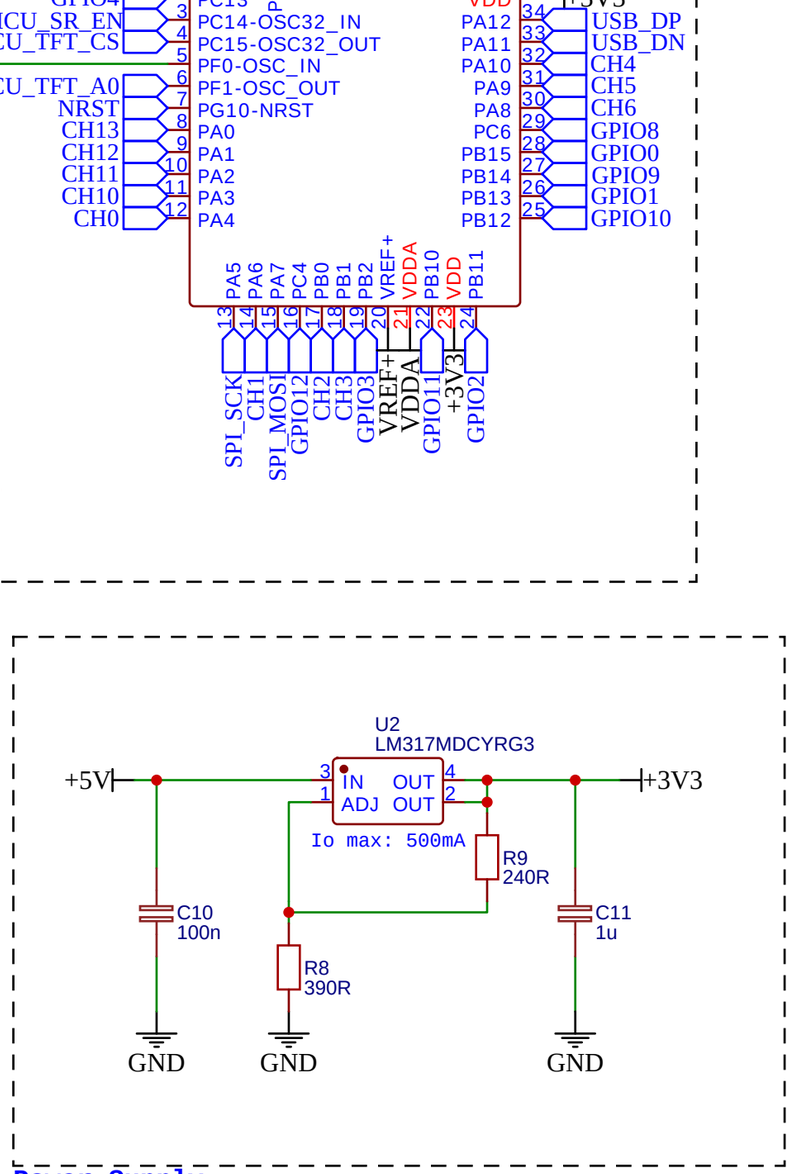


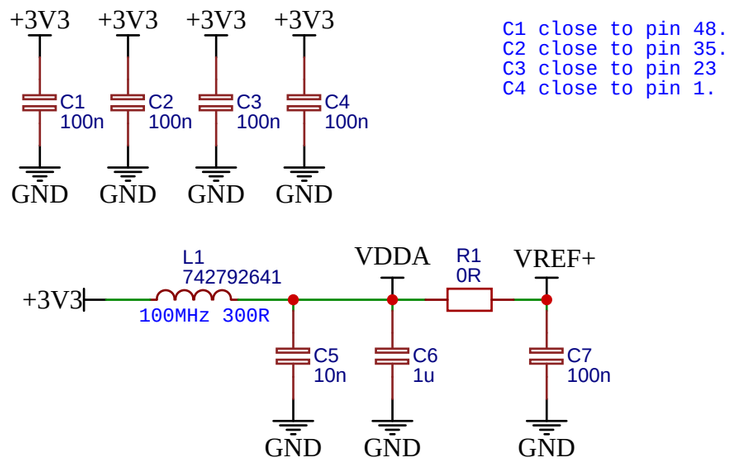
MCU



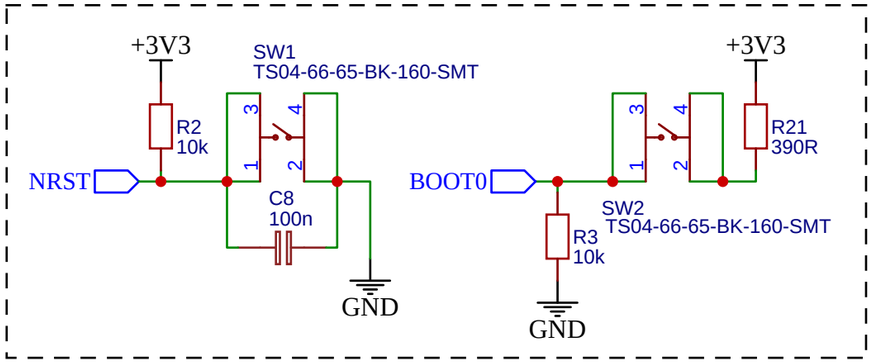
USB



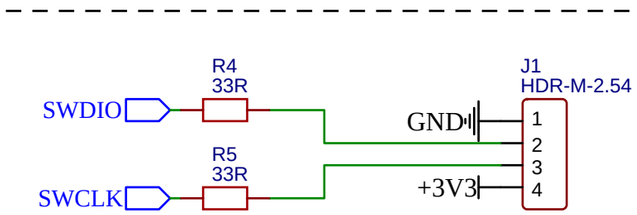
Power Supply



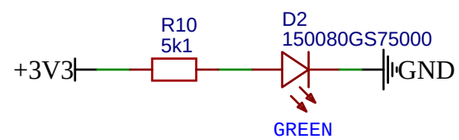
Decoupling Capacitors



Push buttons

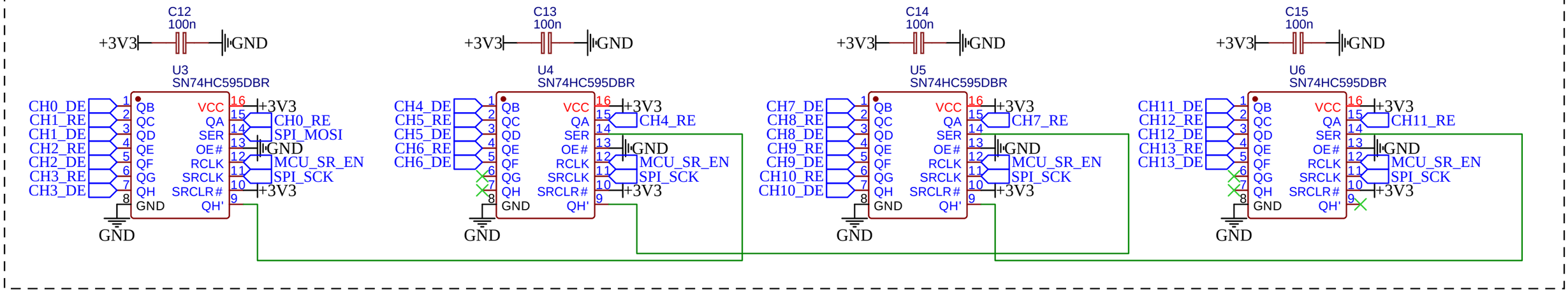


SWD (Software Debug)



Power On LED

TITLE: MCU STM32G431CBU6		REV: 1.0
MIDDS	Project: MIDDS	Sheet: 1/8
	Date: 2024-12-15 Drawn By: @dabecart	



Channel Mode selector

Used to generate the DEx/REx signals from the SPI channel of the MCU.

SP3T Bidirectional Analog Switch

Table 8-1. Function Table

IN2	IN1	COM TO NO, NO TO COM
L	L	OFF
L	H	COM = NO0
H	L	COM = NO1
H	H	COM = NO2

TS5A3359DCUR Truth Table

LVDS driver and receiver

MODE SELECTED	DE	$\overline{RE}$
DRIVER MODE	H	H
RECEIVER MODE	L	L
TRI-STATE MODE	L	H
FULL DUPLEX MODE	H	L

DS90LV019TMTCX Truth Table

Truth Table of MIDDS Channels

DE	RE	Mode
0	0	Off
0	1	TTL Input/Output
1	0	LVDS Input
1	1	LVDS Output

The names DE/RE have stuck from older versions of this circuit but they don't mean what its name would imply.

DE = LVDS/#Digital
RE = LVDS Driver/#Receiver

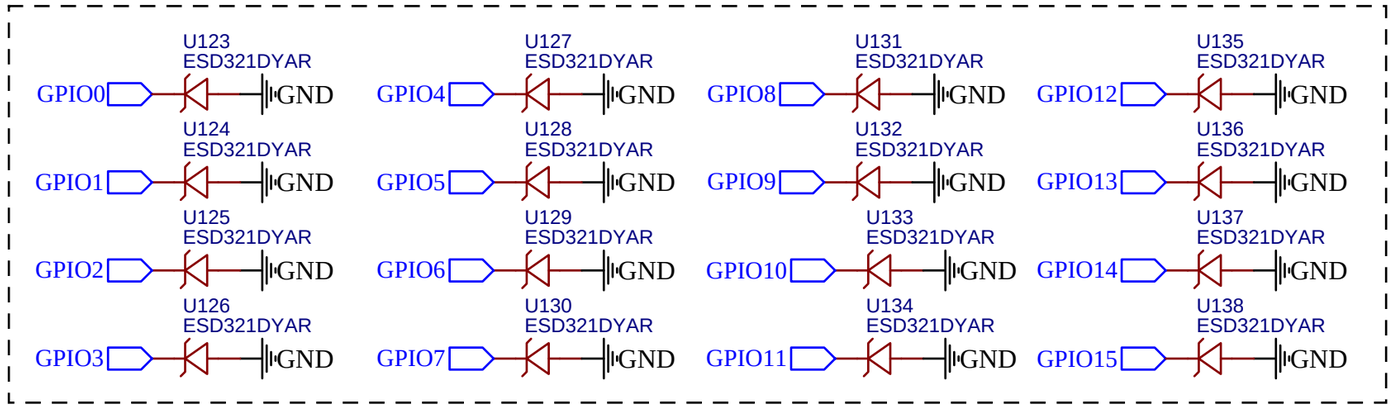
TITLE: Channel Control Signals

REV: 1.0

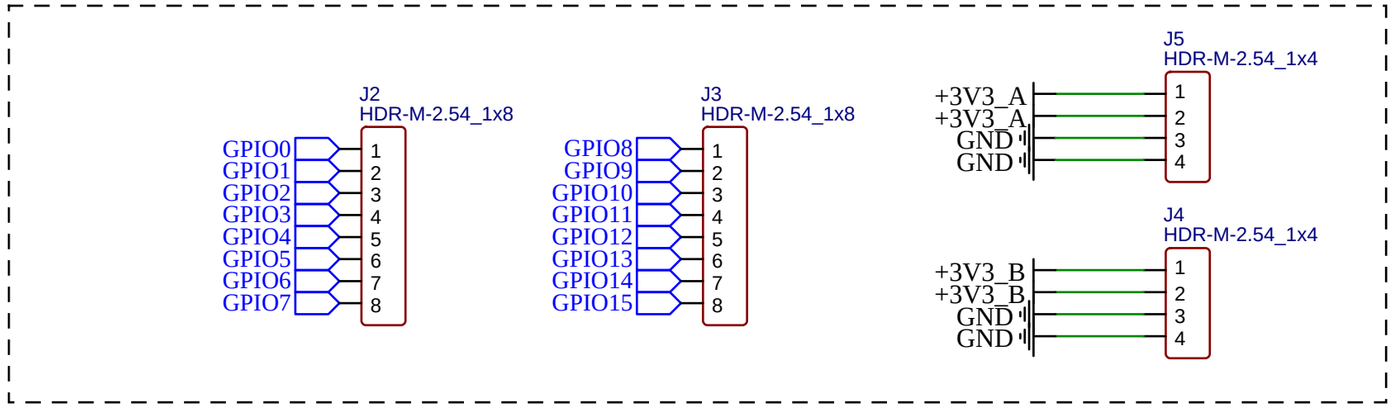
Project: MIDDS

Sheet: 2/8

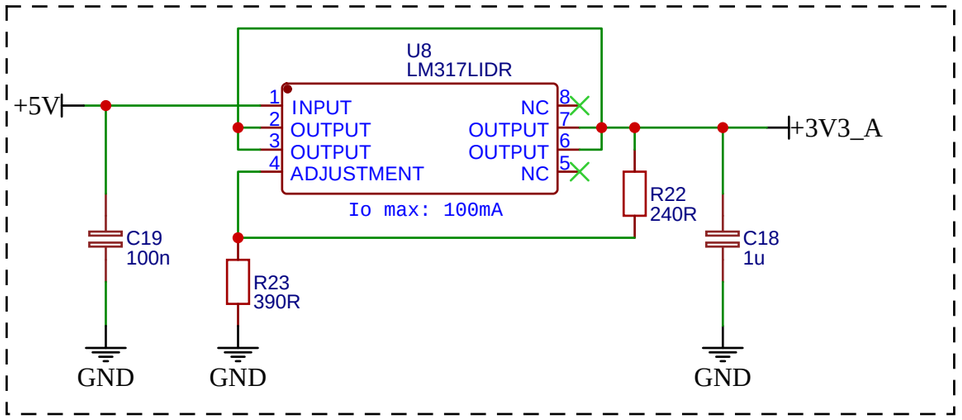
Date: 2024-12-15 Drawn By: @dabecart



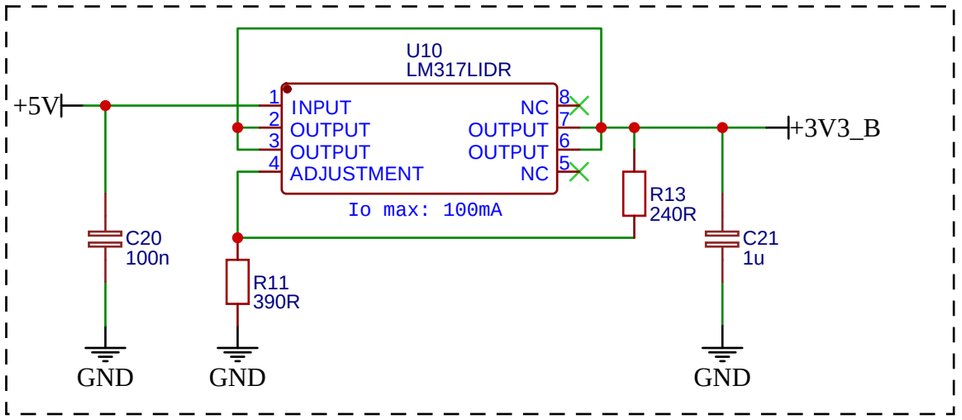
GPIO Protection TVS



GPIO Headers Connectors

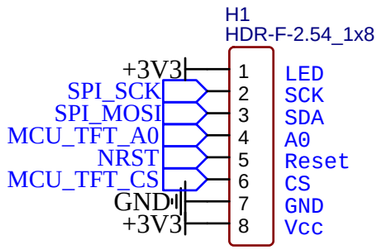


GPIO External Power Converter A



GPIO External Power Converter B

TITLE: Channel Connectors		REV: 1.0
MIDDS	Project: MIDDS	Sheet: 3/8
	Date: 2024-12-15 Drawn By: @dabecart	



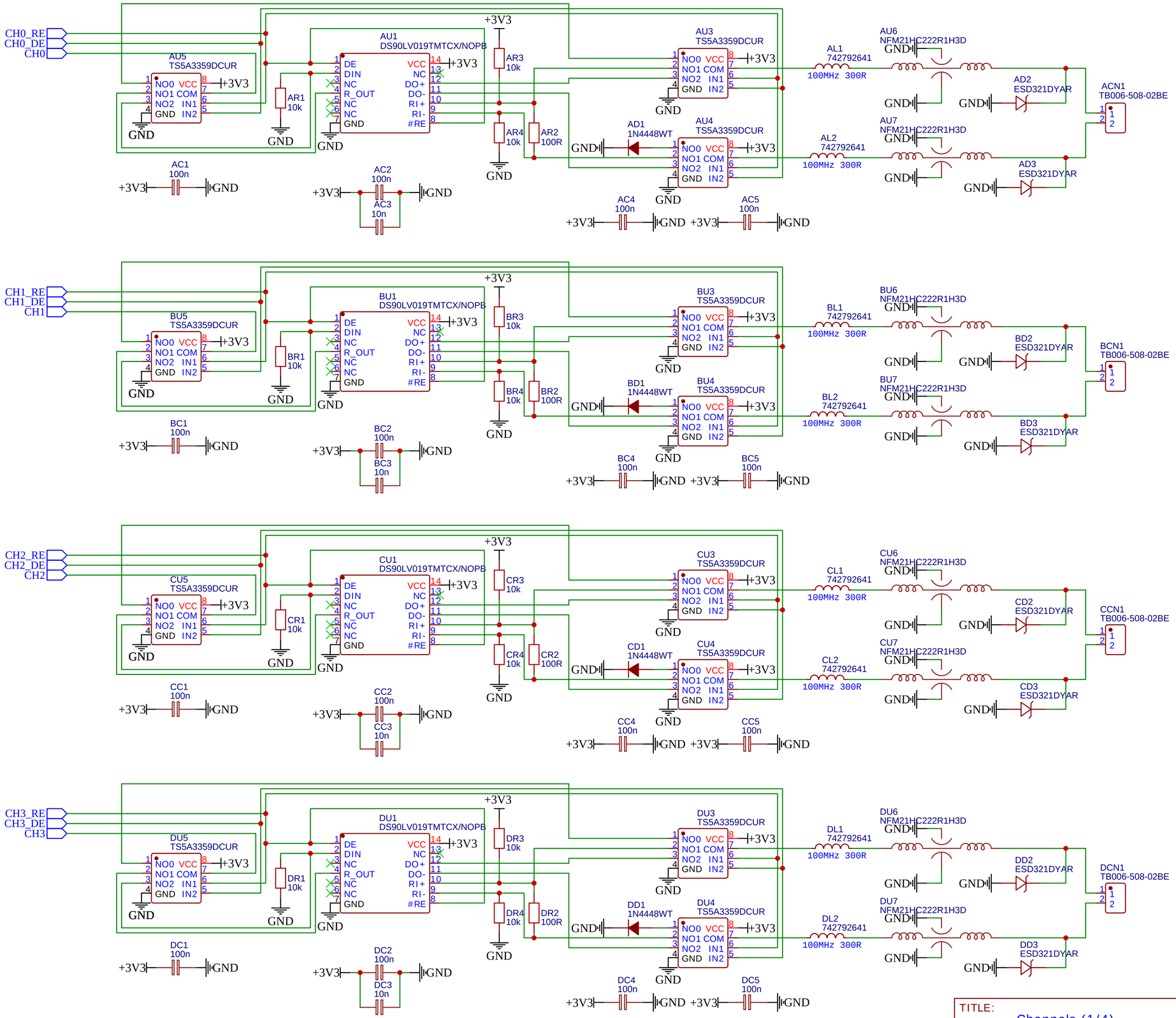
TITLE: TFT Screen Connection

REV: 1.0

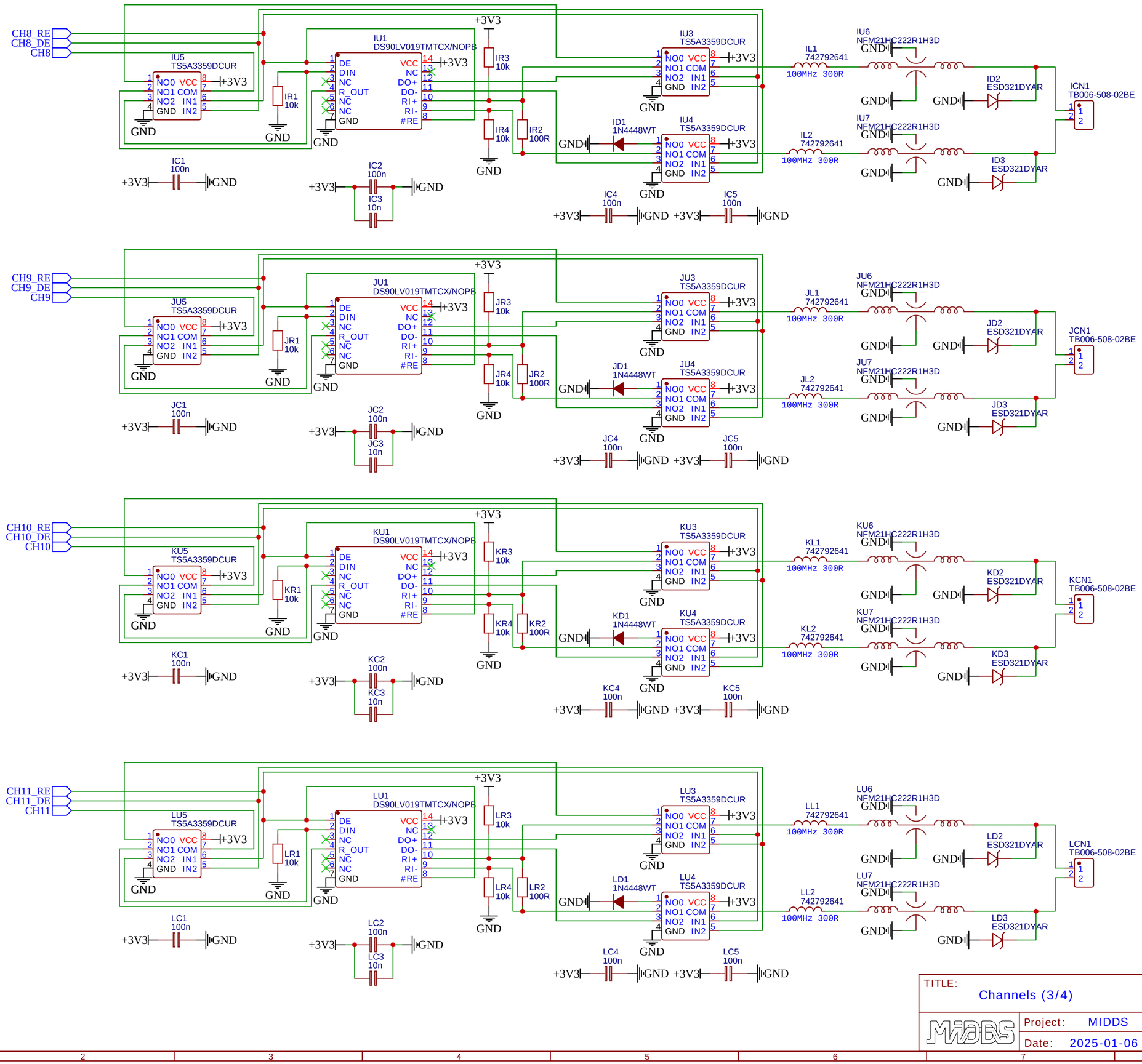
Project: MIDDS

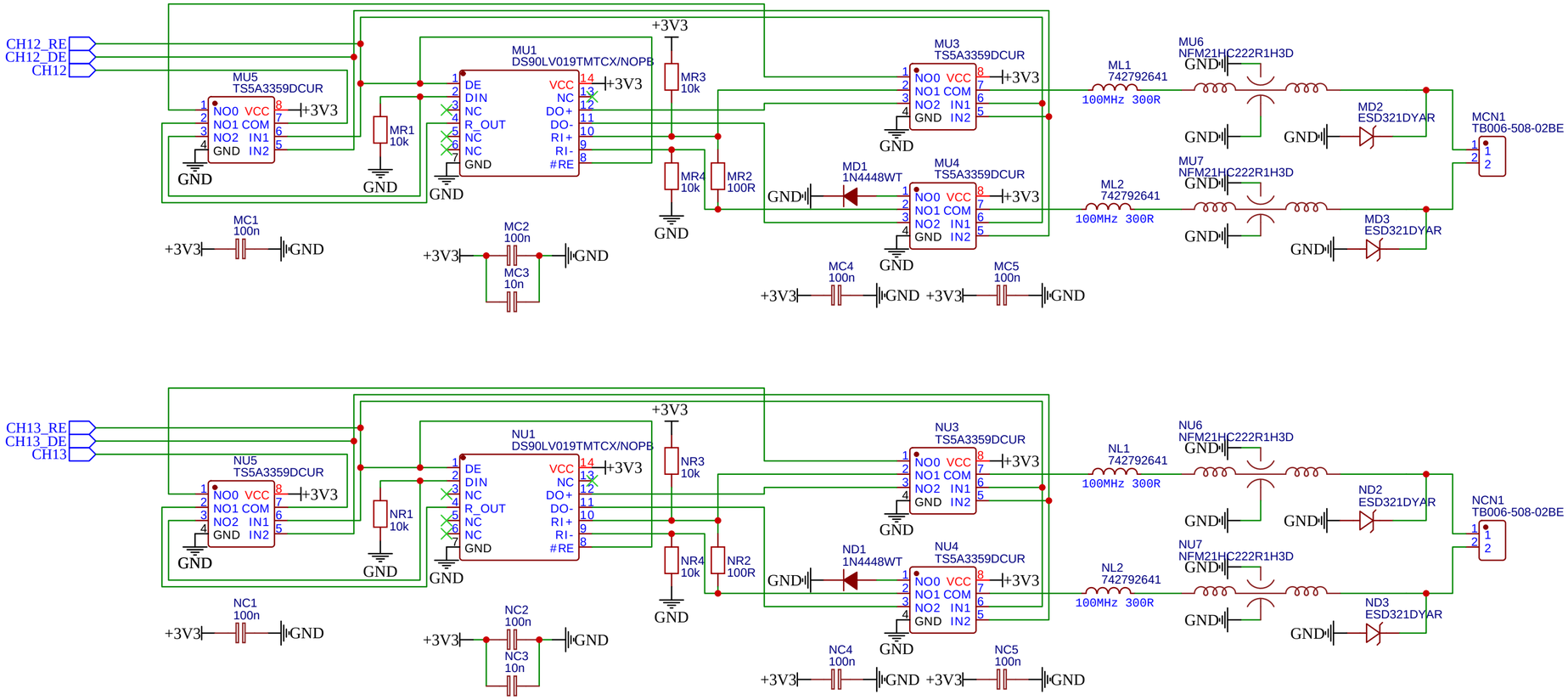
Sheet: 4/8

Date: 2024-12-15 Drawn By: @dabecart


CH0_RE
CH0_DE
CH0
AU5
TS5A3359DCUR
AR1
10k
AU1
DS90LV019TMTCX/NOPB
AR3
10k
AR4
10k
AR2
100R
AU3
TS5A3359DCUR
AU4
TS5A3359DCUR
AD1
1N4448WT
AL1
742792641
100MHz 300R
AL2
742792641
100MHz 300R
AU6
NFM21HC222R1H3D
AU7
NFM21HC222R1H3D
AD2
ESD321DYAR
AD3
ESD321DYAR
ACN1
TB006-508-02BE
AC1
100n
AC2
100n
AC3
10n
AC4
100n
AC5
100n
+3V3
GND
CH1_RE
CH1_DE
CH1
BU5
TS5A3359DCUR
BR1
10k
BU1
DS90LV019TMTCX/NOPB
BR3
10k
BR4
10k
BR2
100R
BU3
TS5A3359DCUR
BU4
TS5A3359DCUR
BD1
1N4448WT
BL1
742792641
100MHz 300R
BL2
742792641
100MHz 300R
BU6
NFM21HC222R1H3D
BU7
NFM21HC222R1H3D
BD2
ESD321DYAR
BD3
ESD321DYAR
BCN1
TB006-508-02BE
BC1
100n
BC2
100n
BC3
10n
BC4
100n
BC5
100n
CH2_RE
CH2_DE
CH2
CU5
TS5A3359DCUR
CR1
10k
CU1
DS90LV019TMTCX/NOPB
CR3
10k
CR4
10k
CR2
100R
CU3
TS5A3359DCUR
CU4
TS5A3359DCUR
CD1
1N4448WT
CL1
742792641
100MHz 300R
CL2
742792641
100MHz 300R
CU6
NFM21HC222R1H3D
CU7
NFM21HC222R1H3D
CD2
ESD321DYAR
CD3
ESD321DYAR
CCN1
TB006-508-02BE
CC1
100n
CC2
100n
CC3
10n
CC4
100n
CC5
100n
CH3_RE
CH3_DE
CH3
DU5
TS5A3359DCUR
DR1
10k
DU1
DS90LV019TMTCX/NOPB
DR3
10k
DR4
10k
DR2
100R
DU3
TS5A3359DCUR
DU4
TS5A3359DCUR
DD1
1N4448WT
DL1
742792641
100MHz 300R
DL2
742792641
100MHz 300R
DU6
NFM21HC222R1H3D
DU7
NFM21HC222R1H3D
DD2
ESD321DYAR
DD3
ESD321DYAR
DCN1
TB006-508-02BE
DC1
100n
DC2
100n
DC3
10n
DC4
100n
DC5
100n
TITLE:
Channels (1/4)
REV: 1.0
Project: MIDDS
Sheet: 5/8
Date: 2025-01-06
Drawn By: @dabecart

TITLE: Channels (2/4)	REV: 1.0
Project: MIDDS	Sheet: 6/8
Date: 2025-01-06 Drawn By: @dabecart	


CH8_RE
CH8_DE
CH8
IU5
TS5A3359DCUR
IU1
DS90LV019TMTCX/NOPB
IU3
TS5A3359DCUR
IU4
TS5A3359DCUR
IU6
NFM21HC222R1H3D
IU7
NFM21HC222R1H3D
IL1
742792641
100MHz 300R
IL2
742792641
100MHz 300R
ID1
1N4448WT
ID2
ESD321DYAR
ID3
ESD321DYAR
ICN1
TB006-508-02BE
IR1
10k
IR2
100R
IR3
10k
IR4
10k
IC1
100n
IC2
100n
IC3
10n
IC4
100n
IC5
100n
+3V3
GND
CH9_RE
CH9_DE
CH9
JU5
TS5A3359DCUR
JU1
DS90LV019TMTCX/NOPB
JU3
TS5A3359DCUR
JU4
TS5A3359DCUR
JU6
NFM21HC222R1H3D
JU7
NFM21HC222R1H3D
JL1
742792641
100MHz 300R
JL2
742792641
100MHz 300R
JD1
1N4448WT
JD2
ESD321DYAR
JD3
ESD321DYAR
JCN1
TB006-508-02BE
JR1
10k
JR2
100R
JR3
10k
JR4
10k
JC1
100n
JC2
100n
JC3
10n
JC4
100n
JC5
100n
CH10_RE
CH10_DE
CH10
KU5
TS5A3359DCUR
KU1
DS90LV019TMTCX/NOPB
KU3
TS5A3359DCUR
KU4
TS5A3359DCUR
KU6
NFM21HC222R1H3D
KU7
NFM21HC222R1H3D
KL1
742792641
100MHz 300R
KL2
742792641
100MHz 300R
KD1
1N4448WT
KD2
ESD321DYAR
KD3
ESD321DYAR
KCN1
TB006-508-02BE
KR1
10k
KR2
100R
KR3
10k
KR4
10k
KC1
100n
KC2
100n
KC3
10n
KC4
100n
KC5
100n
CH11_RE
CH11_DE
CH11
LU5
TS5A3359DCUR
LU1
DS90LV019TMTCX/NOPB
LU3
TS5A3359DCUR
LU4
TS5A3359DCUR
LU6
NFM21HC222R1H3D
LU7
NFM21HC222R1H3D
LL1
742792641
100MHz 300R
LL2
742792641
100MHz 300R
LD1
1N4448WT
LD2
ESD321DYAR
LD3
ESD321DYAR
LCN1
TB006-508-02BE
LR1
10k
LR2
100R
LR3
10k
LR4
10k
LC1
100n
LC2
100n
LC3
10n
LC4
100n
LC5
100n
TITLE:
Channels (3/4)
REV: 1.0
Project: MIDDS
Sheet: 7/8
Date: 2025-01-06
Drawn By: @dabecart



TITLE: Channels (4/4)		REV: 1.0
MIDDS	Project: MIDDS	Sheet: 8/8
	Date: 2025-01-06 Drawn By: @dabecart	