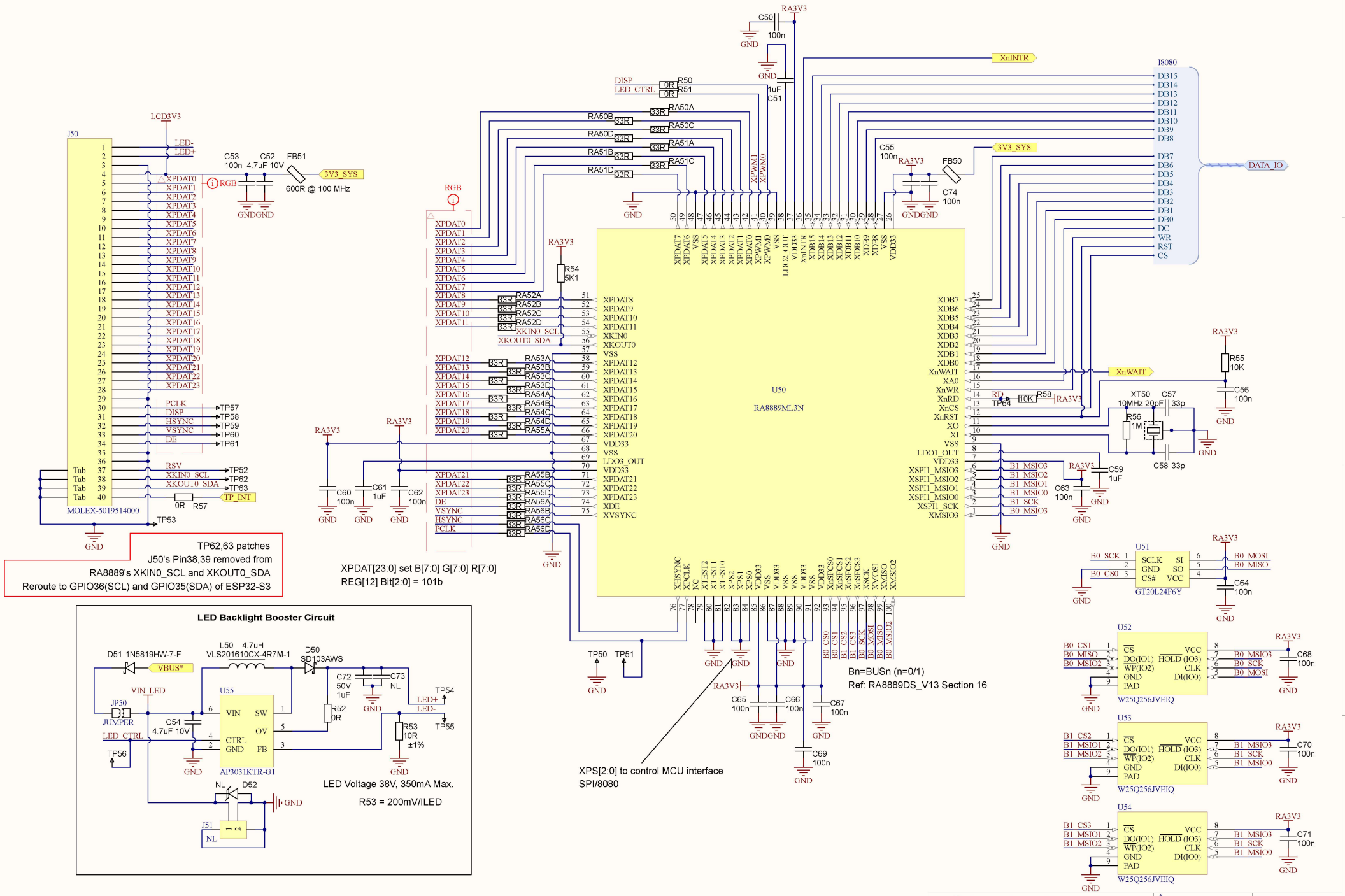
J50
MOLEX-5019514000
LCD3V3
LED-
LED+
C53 100n
C52 4.7uF 10V
FB51 600R @ 100 MHz
3V3_SYS
RGB
XPDAT0
XPDAT1
XPDAT2
XPDAT3
XPDAT4
XPDAT5
XPDAT6
XPDAT7
XPDAT8
XPDAT9
XPDAT10
XPDAT11
XPDAT12
XPDAT13
XPDAT14
XPDAT15
XPDAT16
XPDAT17
XPDAT18
XPDAT19
XPDAT20
XPDAT21
XPDAT22
XPDAT23
PCLK
DISP
HSYNC
VSYNC
DE
RSV
XKIN0_SCL
XKOUT0_SDA
TP_INT
TP53
TP57
TP58
TP59
TP60
TP61
TP52
TP62
TP63
0R R57
Tab
GND
TP62,63 patches
J50's Pin38,39 removed from
RA8889's XKIN0_SCL and XKOUT0_SDA
Reroute to GPIO36(SCL) and GPIO35(SDA) of ESP32-S3
RA3V3
C50 100n
1uF C51
XnINTR
DISP
LED CTRL
R50 0R
R51 0R
RA50A 33R
RA50B 33R
RA50C 33R
RA50D 33R
RA51A 33R
RA51B 33R
RA51C 33R
RA51D 33R
XPWM1
XPWM0
C55 100n
FB50
C74 100n
R54 5K1
RA52A 33R
RA52B 33R
RA52C 33R
RA52D 33R
RA53A 33R
RA53B 33R
RA53C 33R
RA53D 33R
RA54A 33R
RA54B 33R
RA54C 33R
RA54D 33R
RA55A 33R
RA55B 33R
RA55C 33R
RA55D 33R
RA56A 33R
RA56B 33R
RA56C 33R
RA56D 33R
C60 100n
C61 1uF
C62 100n
XPDAT[23:0] set B[7:0] G[7:0] R[7:0]
REG[12] Bit[2:0] = 101b
U50
RA8889ML3N
LDO2_OUT
LDO3_OUT
LDO1_OUT
XKIN0
XKOUT0
XVSYNC
XIISYNC
XPCLK
XTEST2
XTEST1
XTEST0
XPS2
XPS1
XPS0
XsESCS0
XsESCS1
XsESCS2
XsESCS3
XSCK
XMOSI
XMISO
XMSIO2
XMSIO3
XSPI1_SCK
XSPI1_MSIO0
XSPI1_MSIO1
XSPI1_MSIO2
XSPI1_MSIO3
XnWAIT
XA0
XnWR
XnRD
XnCS
XnRST
XO
XI
XDB7
XDB6
XDB5
XDB4
XDB3
XDB2
XDB1
XDB0
B1_MSIO3
B1_MSIO2
B1_MSIO1
B1_MSIO0
B1_SCK
B0_MSIO3
B0_CS0
B0_CS1
B0_CS2
B0_CS3
B0_SCK
B0_MOSI
B0_MISO
B0_MSIO2
TP50
TP51
C65 100n
C66 100n
C67 100n
C69 100n
Bn=BUSn (n=0/1)
Ref: RA8889DS_V13 Section 16
XPS[2:0] to control MCU interface
SPI/8080
I8080
DB15
DB14
DB13
DB12
DB11
DB10
DB9
DB8
DB7
DB6
DB5
DB4
DB3
DB2
DB1
DB0
DC
WR
RST
CS
DATA_IO
XnWAIT
R55 10K
C56 100n
RD
TP64
10K R58
XT50 10MHz 20pF
C57 33p
R56 1M
C58 33p
C59 1uF
C63 100n
U51
GT20L24F6Y
SCLK
SI
GND
SO
CS#
VCC
B0_SCK
B0_CS0
B0_MOSI
B0_MISO
C64 100n
U52
U53
U54
W25Q256JVEIQ
CS
DO(IO1)
HOLD (IO3)
WP(IO2)
CLK
DI(IO0)
PAD
B1_CS1
B1_MISO
B1_MSIO2
B1_CS2
B1_MSIO1
B1_CS3
B0_MSIO3
B0_SCK
B0_MOSI
B1_MSIO3
B1_SCK
B1_MSIO0
C68 100n
C70 100n
C71 100n
LED Backlight Booster Circuit
D51 1N5819HW-7-F
VBUS*
L50 4.7uH
VLS201610CX-4R7M-1
D50
SD103AWS
C72 50V 1uF
C73 NL
TP54
LED+
LED-
TP55
VIN_LED
JP50
JUMPER
LED_CTRL
TP56
C54 4.7uF 10V
U55
AP3031KTR-G1
VIN
SW
OV
CTRL
GND
FB
R52 0R
R53 10R ±1%
NL
D52
J51
LED Voltage 38V, 350mA Max.
R53 = 200mV/ILED
Title * RA8889 Graphic Controller
Size: A3
Number:*
Revision:*
Date: 9/7/2024
Time: 16:00:21
Sheet* of *
File: C:\Projects\HDMI_Shield_2024\Altium\ESP32S3_Zero_RGB\RA8889ML3N.SchDoc
Altium