



THEVA241A-SMA-FFC

Hardware Manual





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1. Overview

THEVA241A-SMA-FFC is a board equipped with THCV241A-P that converts maximum 1.5Gbps / lane MIPI® CSI-2 (or MIPI®) to V-by-One® HS.

This board can be connected to a V-by-One® HS receiver (THEVA242-SMA or THEVA236).

As shown here by this example connections.

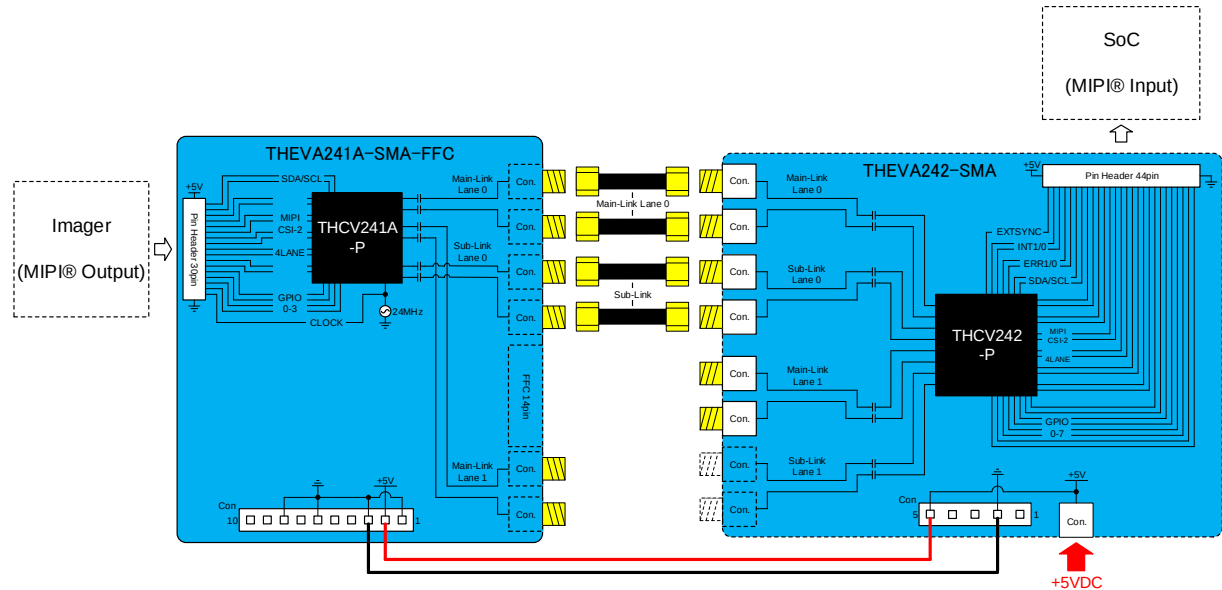


Figure 1 THEVA241A-SMA-FFC and THEVA242-SMA connection example

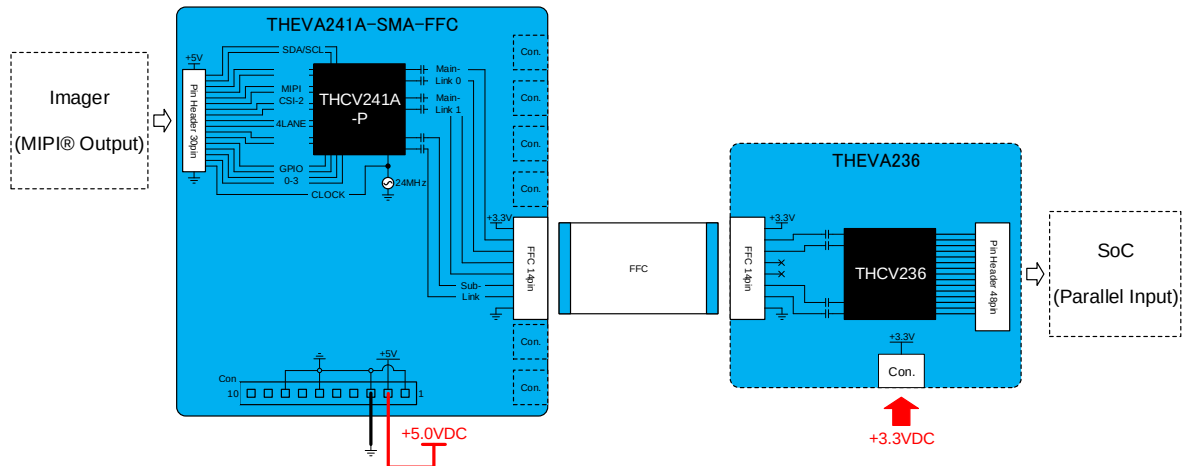


Figure 2 THEVA241A-SMA-FFC and THEVA236 connection example

2. Connection with V-by-One® HS receiver board (THEVA242-SMA)

Refer to the following figure for the THEVA241A-SMA-FFC and the THEVA242-SMA connections.

(It is possible to connect to THEVA236 with this method.)

The power supply (+ 5.0V) is supplied to JA1 of the THEVA242-SMA.

When power is supplied correctly, the green LED lights on both boards.

*The SMA-Connector, the Coaxial-cable, the DC-cable and the power supply should be prepared by users.

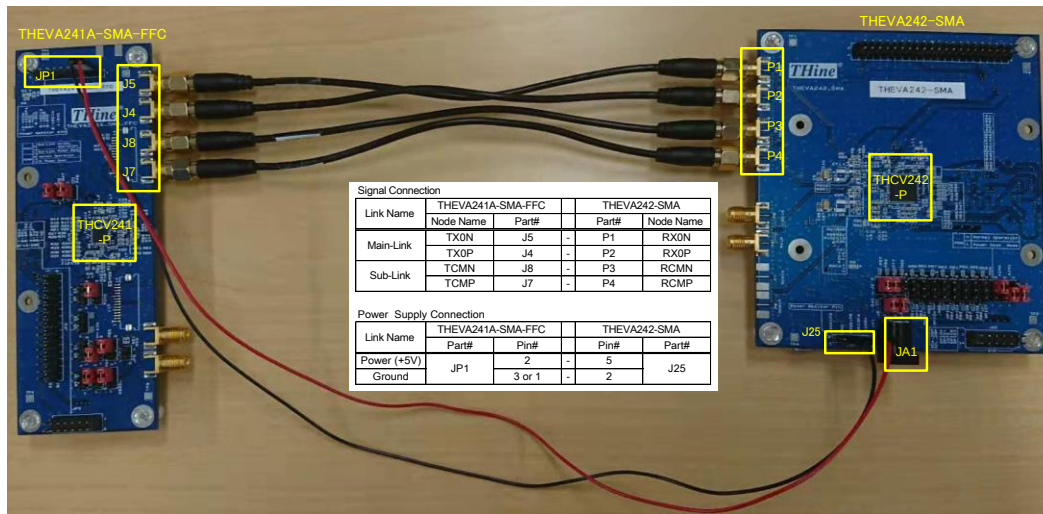


Figure 3 THEVA241A-SMA-FFC and THEVA242-SMA 1-lane connection

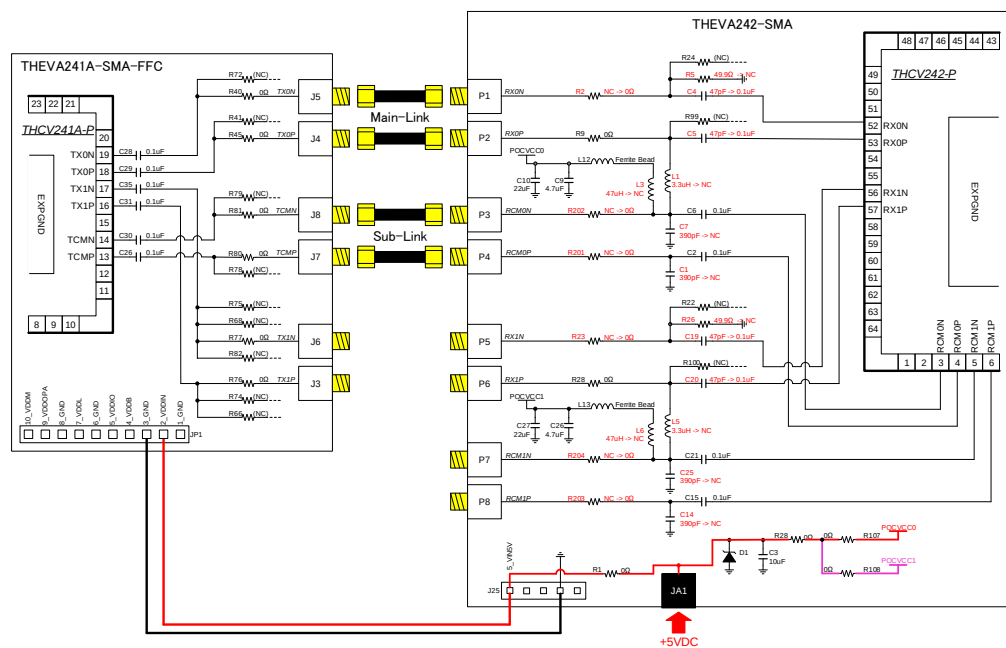


Figure 4 THEVA241A-SMA-FFC and THEVA242-SMA 1-lane connection

3. Connection with V-by-One® HS receiver board (THEVA236)

Connect JP9 of the THEVA241A-SMA-FFC and CON5 of the THEVA236 with FFC.

The power supply is supplied to each boards.

THEVA241A-SMA-FFC: supply +5.0V to JP1.

THEVA236: supply +3.3V to CON4.

When power is supplied correctly, the green LED lights on both boards.

*The FFC-cable, the DC-cable and the power supply should be prepared by users.

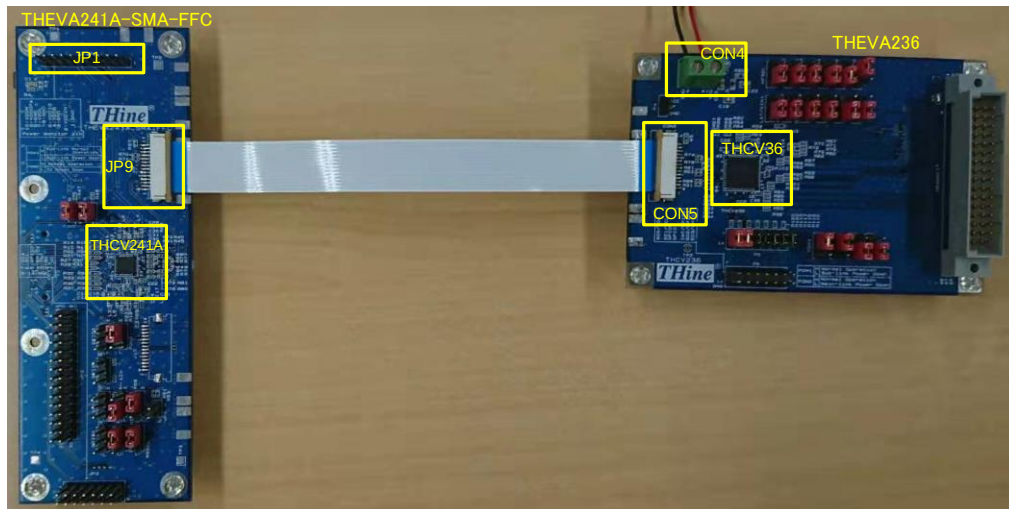


Figure 5 THEVA241A-SMA-FFC and THEVA236 connection

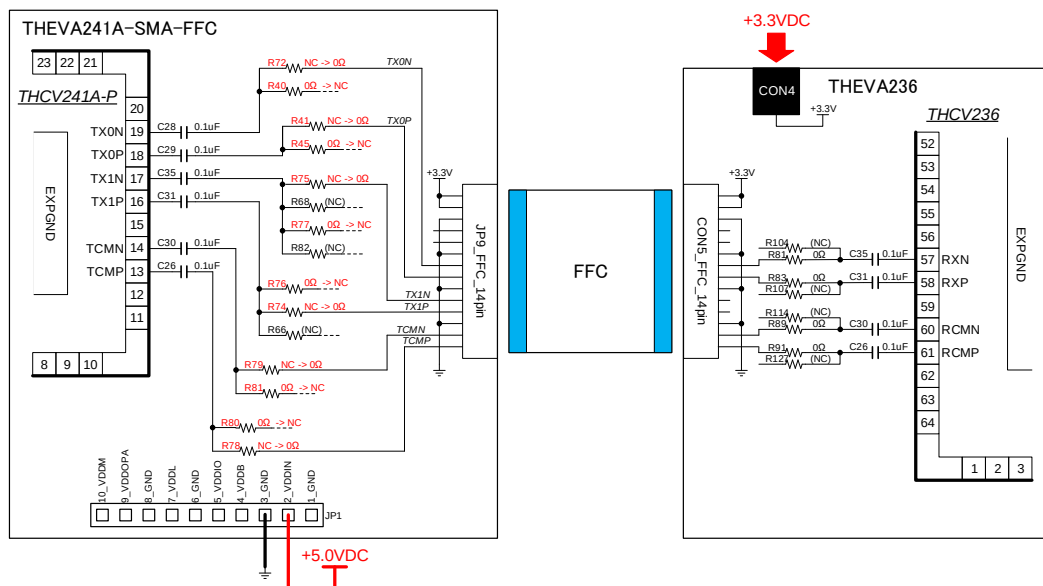


Figure 6 THEVA241A-SMA-FFC and THEVA236 connection

4. Note on connecting with THEVA236

When connecting THEVA241A-SMA-FFC and THEVA236, some parts need to be changed.

As shown here by this some parts.

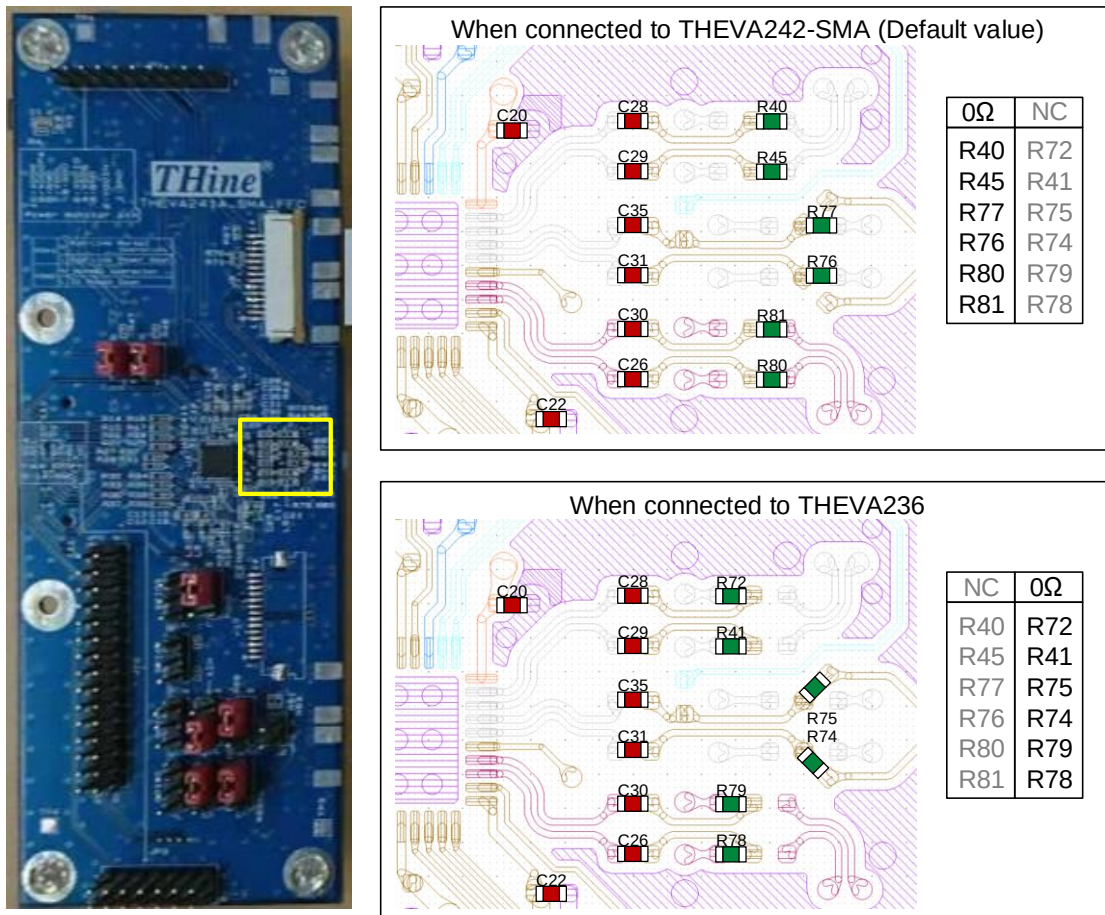


Figure 7 Changing parts of THEVA241A-SMA-FFC

5. Connection with THEVA241A-SMA-FFC and Imager by the MIPI®

JP2 pin-header can be used to connect THEVA241A-SMA-FFC and Imager.

(J2 on the bottom side can also be used connect Imager. See the schematic on page 9 for details.)

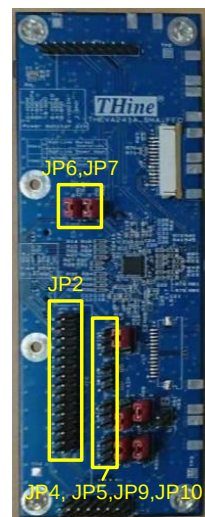
When connecting 2-wire serial (SDA and SCL) to Imager, the J6 and J7 shall be shorted respectively.

Set the GPIO (JP4, JP5, JP9, and JP10) to pull-up or pull-down as required.

The reference clock (CKI, CKO) uses a 24MHz oscillator.

If the Imager does not require an external reference clock, CKO need not be connected.

*The Jumper-Pin should be prepared by users.



Pin#	Pin Name	Type	Pin Name
1	CKO	O	Reference Clock Output
4	RD3P	MI	MIPI® differential data inputs lane3
6	RD3N	MI	
10	RD1P	MI	MIPI® differential data inputs lane1
12	RD1N	MI	
16	RCKP	MI	MIPI® differential clock inputs
18	RCKN	MI	
22	RD0P	MI	MIPI® differential data inputs lane0
24	RD0N	MI	
28	RD2P	MI	MIPI® differential data inputs lane2
30	RD2N	MI	
5	SCL	B	2-wire Serial Interface
7	SDA	B	
11	GPIO0	B	General Purpose Input/Output
13	GPIO1	B	
15	GPIO2	B	
17	GPIO3	B	
23,25,27,29	+5V	P	+5V Power Supply
2,3,8,9,14,19,20,21,26	GND	G	Ground

Figure 8 Connection with THEVA241A-SMA-FFC and Imager

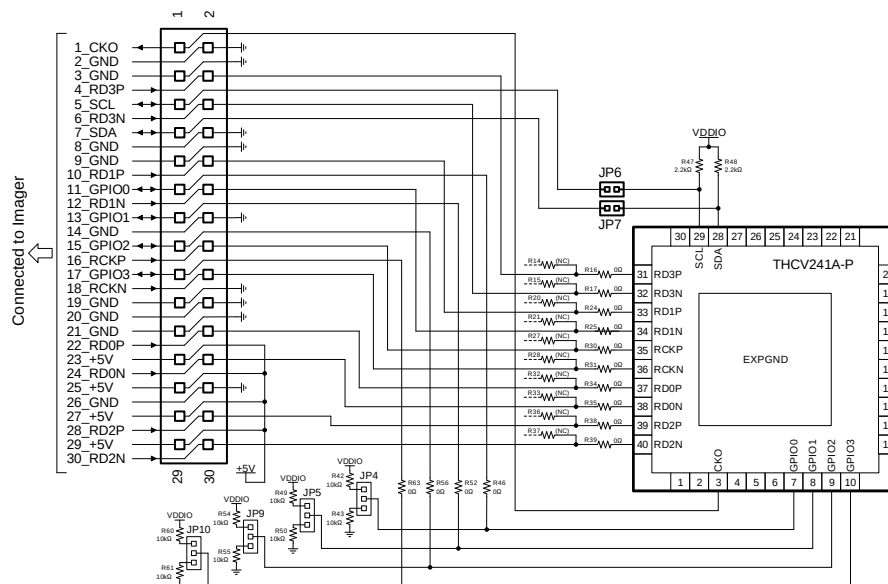
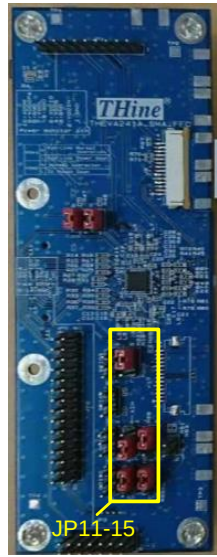


Figure9 Connection with THEVA241A-SMA-FFC and Imager

6. Pin setting of the THEVA241A-SMA-FFC

As shown here by the Pin-settings.

*The Jumper-Pin should be prepared by users.



Ports#	Node Name	Def.	Description
JP11	PDN0	High Low	Whole IC Power Down Low : Power Down High : Normal Operation
JP12	PDN1	High Low	Sub-Link Power Down Low : Sub-Link Power Down High : Sub-Link Normal Operation
JP13	AIN	High Low	Select Slave Address Low : 2-wire serial Address = 7'b000_1011 High : 2-wire serial Address = 7'b011_0100
JP14	MSSEL	High Low	Sub-Link Master/Slave Select. Low : Sub-Link Master side (inside 2-wire serial I/F is slave) High : Sub-Link Slave side (inside 2-wire serial I/F is master) Sub-Link Master is connected to HOST MCU.
JP15	LOCKN	High Low	LOCK detect input Negative polarity. If external LOCKN connection is used, it is supposed to be connected to Rx LOCKN with a 30kΩ pull-up resistor.

Figure 10 Pin setting of the THEVA241A-SMA-FFC

7. Monitor pins

The power supply (+ 5.0V) is supplied to JP1-#2 of the THEVA241A-SMA-FFC.

And, each power supply can be monitored by the J25 pin-header.

The 2-wire serial, the GPIO, and the INT signal can be monitored by the JP3 pin-header.

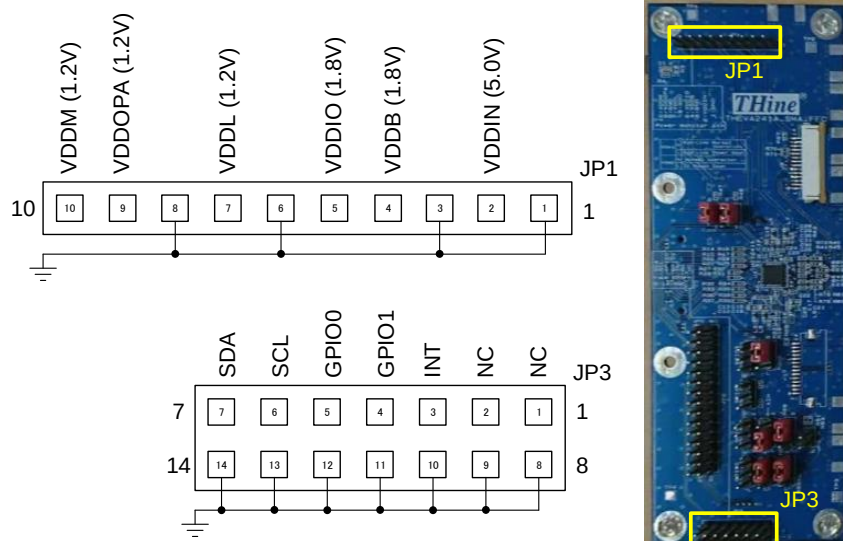
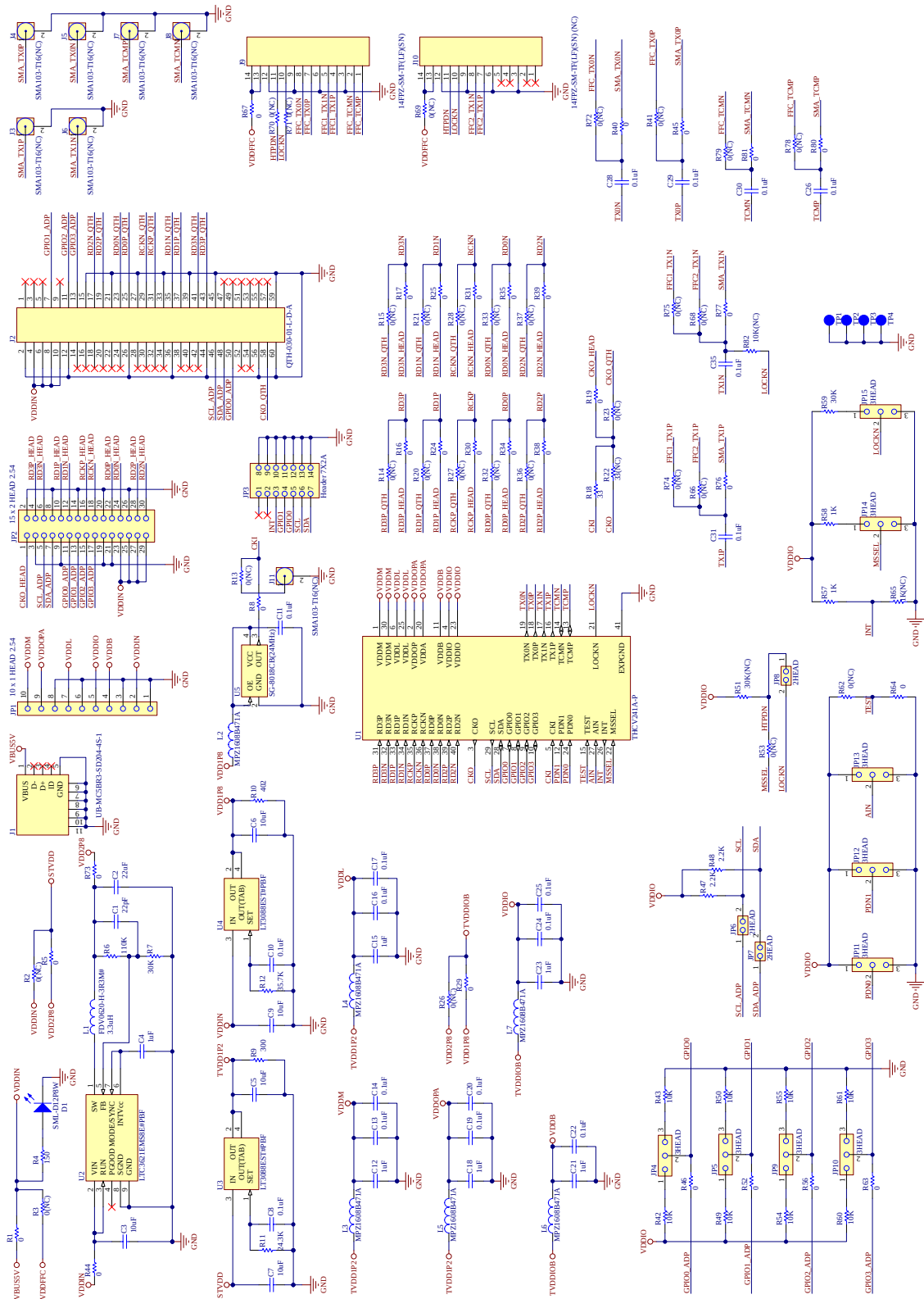


Figure 11 Monitor pin

8. THEVA241A-SMA-FFC Schematic



9. THEVA241A-SMA-FFC Bill of Material

Designator	Parts type	Quantity	Parts name	Specification	Value
C1	Capacitor	1	GRM1552C1H220JA01D	50V/1005	22pF
C2	Capacitor	1	GRT31CC81C226ME01L	16V/3216	22uF
C3, C5, C6, C7, C9	Capacitor	5	GRM188R61E106MA73D	16V/1608	10uF
C4, C12, C15, C18, C21, C23	Capacitor	6	GRM188B31E105KA75D	25V/1608	1uF
C8, C10, C11, C13, C14, C16, C17, C19, C20, C22, C24, C25, C26, C28, C29, C30, C31, C35	Capacitor	18	GRM155B31H104KE14D	50V/1005	0.1uF
D1	LED	1	SML-D12P8WT86	-	-
J1	USB 2.0 micro	1	UB-MC5BR3-SD204-4S-1-TBNMP	-	-
J2	Connector	1	QTH-030-01-L-D-A	-	-
* J3, J4, J5, J6, J7, J8, J11	SMA Connector	7	SMA103-T16	-	NC
J9	FFC Connector	1	14FPZ-SM-TF(LF)(SN)	-	-
* J10	FFC Connector	1	14FPZ-SM-TF(LF)(SN)	-	NC
JP1	Pin header	1	TCHM13-70-010S-803R	-	-
JP2	Pin header	1	TCHM23-70-030S-803R	-	-
JP3	Pin header	1	TCHM23-70-014S-803R	-	-
JP4, JP5, JP9, JP10, JP11, JP12, JP13, JP14, JP15	Pin header	9	TCHM13-70-003S-803R	-	-
JP6, JP7, JP8	Pin header	3	TCHM13-70-002S-803R	-	-
L1	Inductor	1	RLF7030T-3R3M4R1	-	3.3uH
L2, L3, L4, L5, L6, L7	Ferrite beads	6	MPZ1608B471ATA00	-	-
R1, R5, R8, R16, R17, R19, R24, R25, R29, R30, R31, R34, R35, R38, R39, R40, R44, R45, R46, R52, R56, R63, R64, R67, R73, R76, R77, R80, R81	Resistor	29	RK73Z1ETTP	1A/1005	0
* R2, R3, R13, R14, R15, R20, R21, R23, R26, R27, R28, R32, R33, R36, R37, R41, R53, R62, R66, R68, R69, R70, R71, R72, R74, R75, R78, R79	Resistor	28	RK73Z1ETTP	1A/1005	0(NC)
R4	Resistor	1	RK73H1ETTP1500F	0.1W/1005	150
R6	Resistor	1	RK73H1ETTP1103F	0.1W/1005	110K
R7, R59	Resistor	2	RK73H1ETTP3002F	0.1W/1005	30K
R9	Resistor	1	RK73H1ETTP3000F	0.1W/1005	300
R10	Resistor	1	RK73H1ETTP 4020F	0.1W/1005	402
R11	Resistor	1	RK73H1ETTP2432F	0.1W/1005	24.3K
R12	Resistor	1	RK73H1ETTP3572F	0.1W/1005	35.7K
R18	Resistor	1	RK73H1ETTP33R0F	0.1W/1005	33
* R22	Resistor	1	RK73B1ETTP330J	0.1W/1005	33(NC)
R42, R43, R49, R50, R54, R55, R60, R61	Resistor	8	RK73H1ETTP1002F	0.1W/1005	10K
R47, R48	Resistor	2	RK73H1ETTP2201F	0.1W/1005	2.2K
* R51	Resistor	1	RK73B1ETTP303J	0.1W/1005	30K(NC)
R57, R58	Resistor	2	RK73H1ETTP1001F	0.1W/1005	1K
* R65	Resistor	1	RK73B1ETTP102J	0.1W/1005	1K(NC)
* R82	Resistor	1	RK73B1ETTP103J	0.1W/1005	10K(NC)
* TP1, TP2, TP3, TP4	TP	4	2mmX2mm	-	NC
U1	THCV241A-P	1	THCV241A-P	See datasheet (QFN package)	-
U2	LTC3621EMS8E#PBF	1	LTC3621EMS8E#PBF	See datasheet (MS8E package)	-
U3, U4	LT3088EST#PBF	2	LT3088EST#PBF	See datasheet (ST package)	-
U5	SG-8018CB24.000000MHz TJHPA	1		See datasheet	24MHz

*Un-mount

10. Notices and requests

For the Material:

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