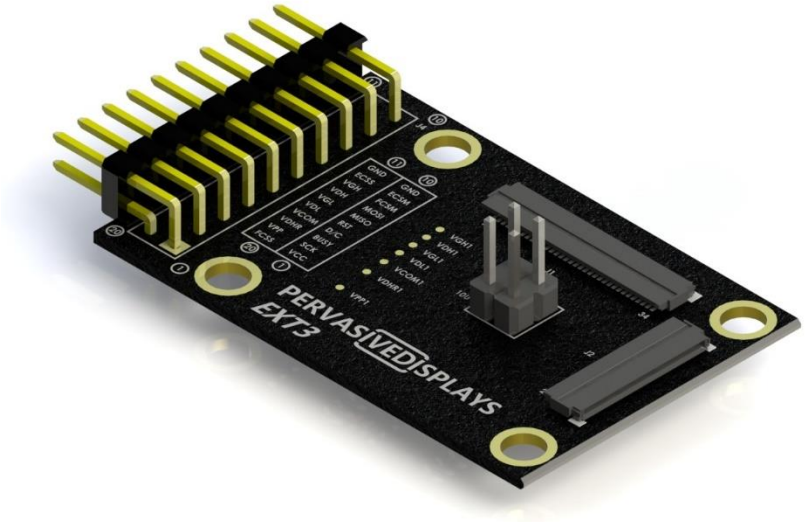
Reference Circuit of EXT3 board

Rev. **01** (Jan 2021)

Preface

This document includes the schematic, pin definition and BOM of the EXT3 board of Pervasive Displays Inc.



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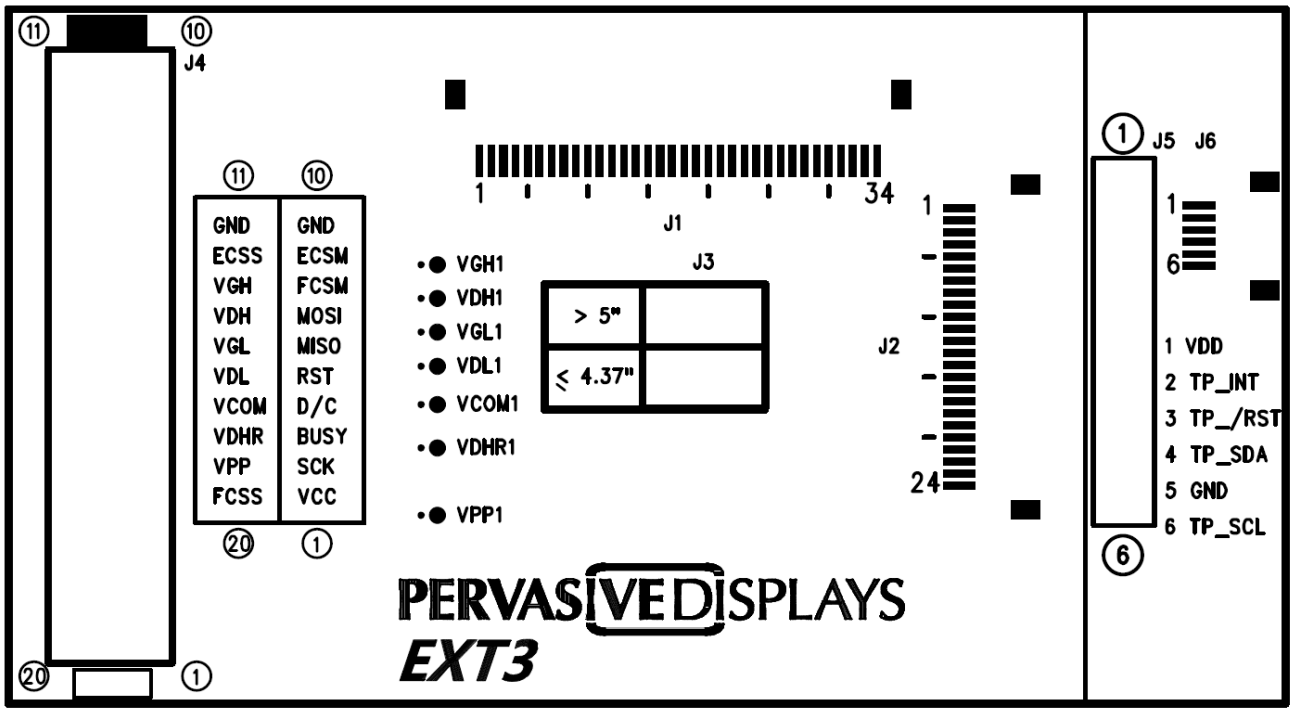
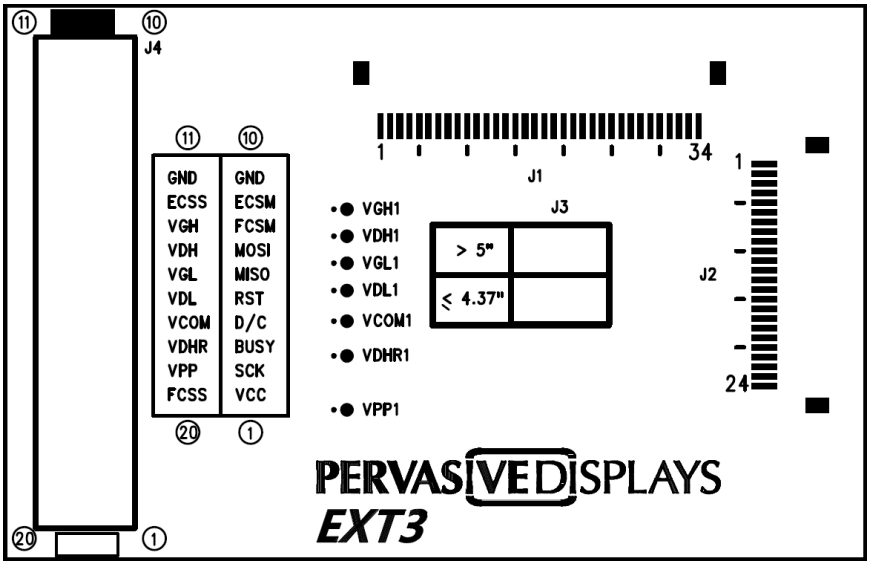
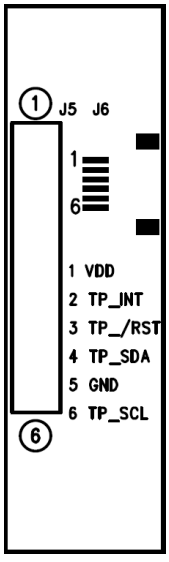
1. Reference Circuit

1.1 Board overview (Top)

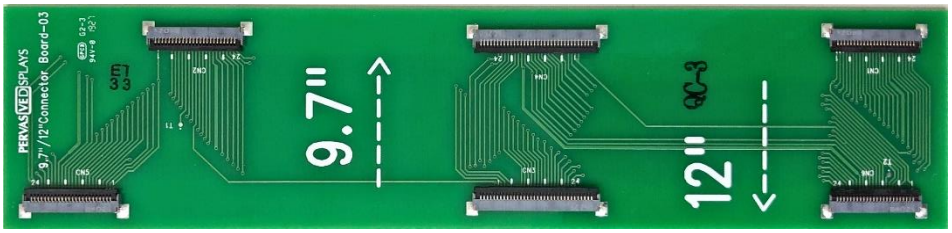


EXT3 board consists of two boards: EXT3 main board and EXT3 touch board. They are sold individually. You will get EXT3 main board only if you order our EXT3 kit.
The EXT3 touch board will be sold with a touch panel together.

EXT3 main board	EXT3 touch board
	

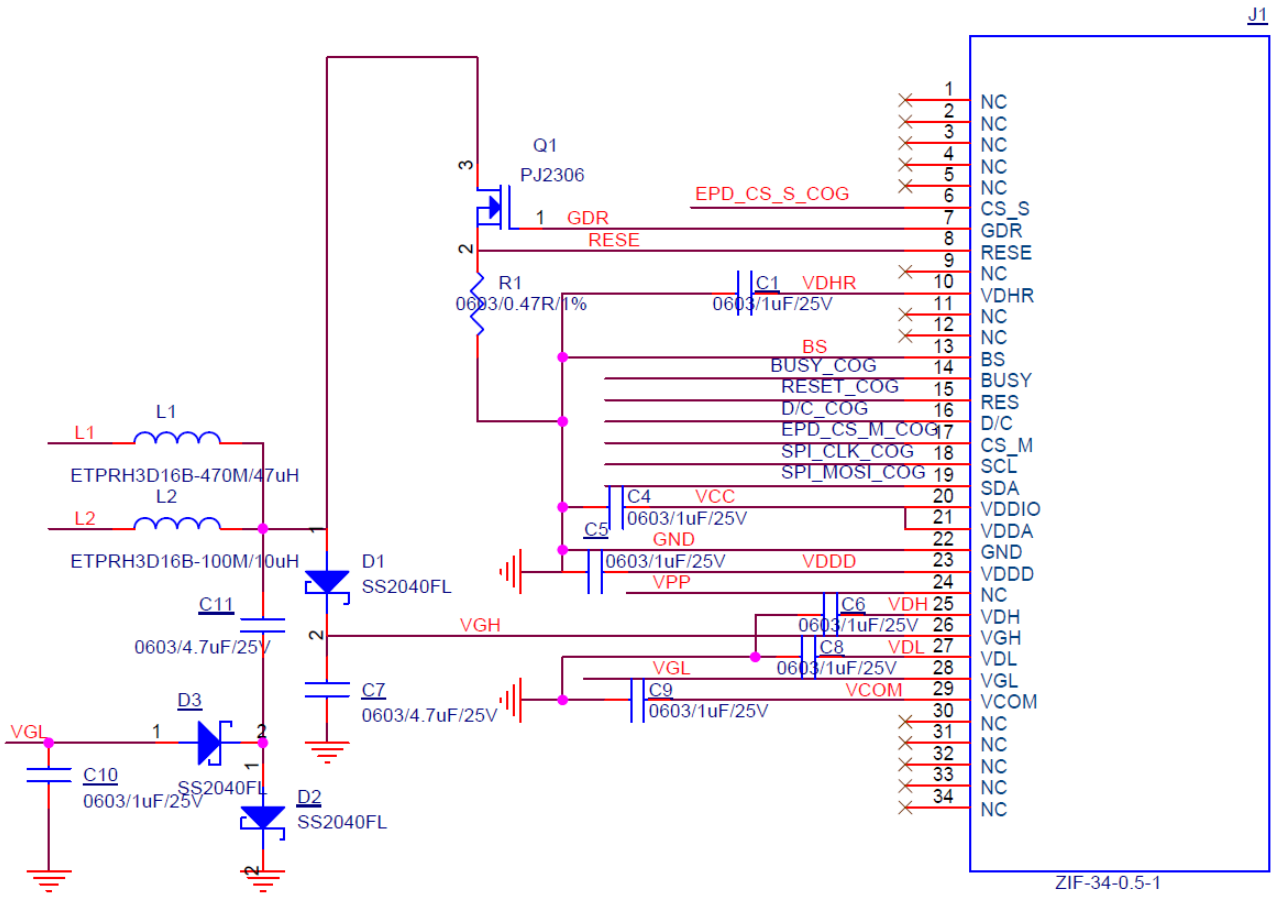
Connector	Description
J1	34 pins connector for connecting with a connector board (see section 1.2) for 9.7" or 12.2" EPD
J2	24 pins connector for connecting with from 1.54" to 7.4" EPD
J3	A jumper for switching between 10uH for 1.54" to 4.37" and 47uH for 5.65" above
J4	2 * 10 pinouts for 20 pins header
J5	6 pinouts for bridging with MCU to work with touch panel
J6	6 pins connector for connecting with the FPC of touch panel

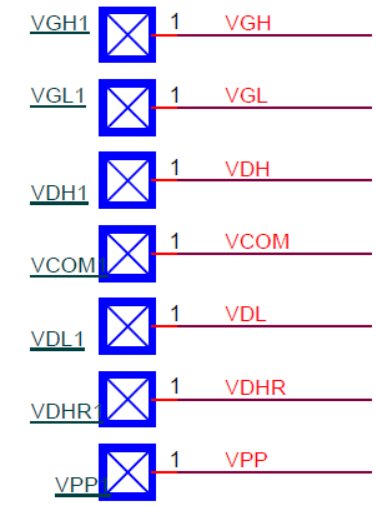
1.2 Connector board

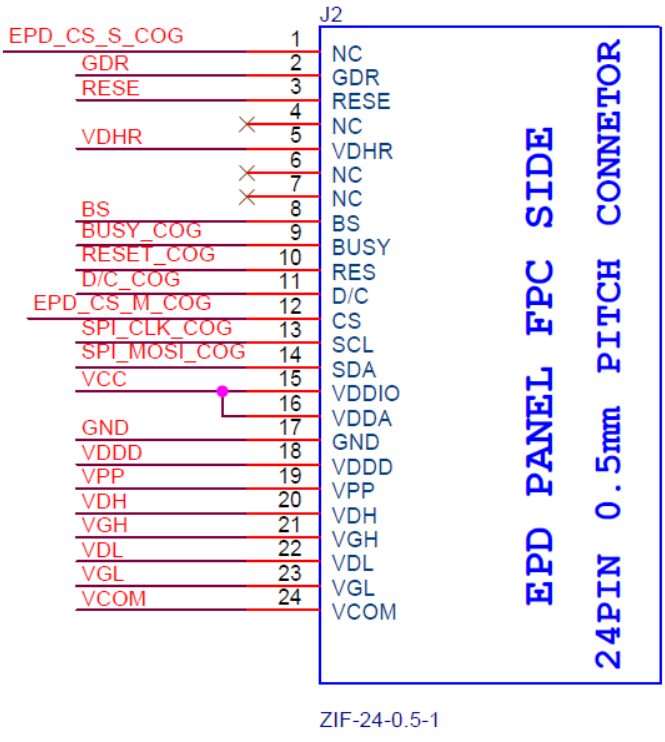
To 9.7" EPD	To J1	To 9.7" EPD
		
To 12.2" EPD	To J1	To 12.2" EPD

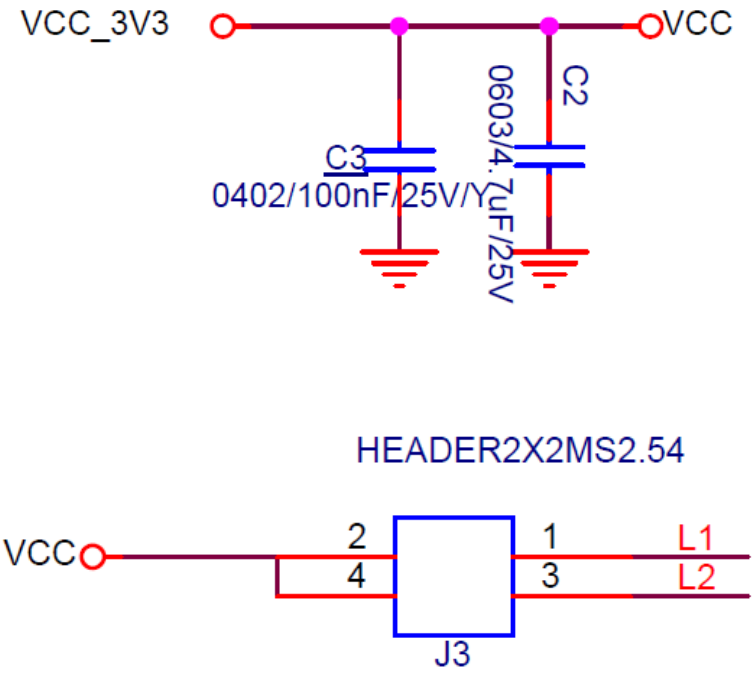
There is no component on this connector board. Connectors only.

1.3 J1 & J2 & J3 for EPD

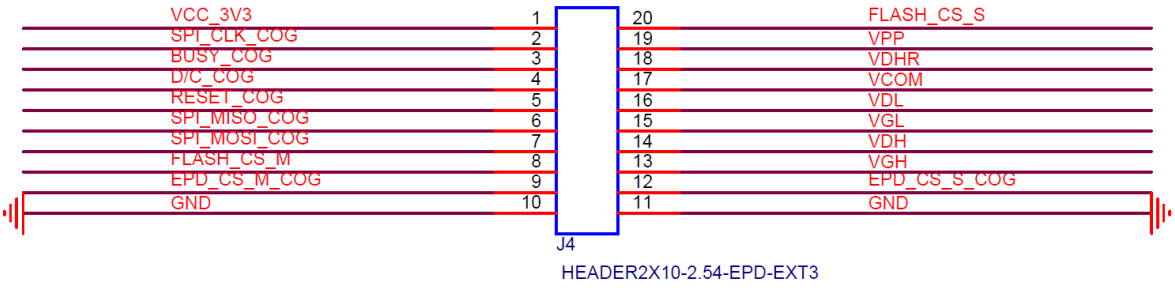


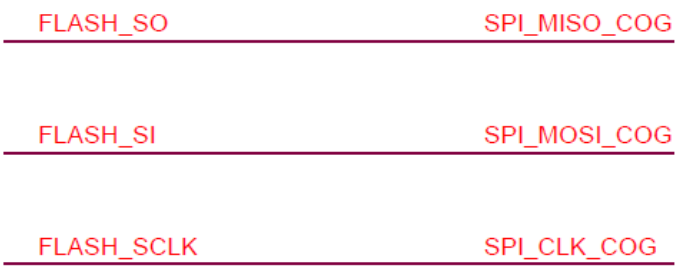




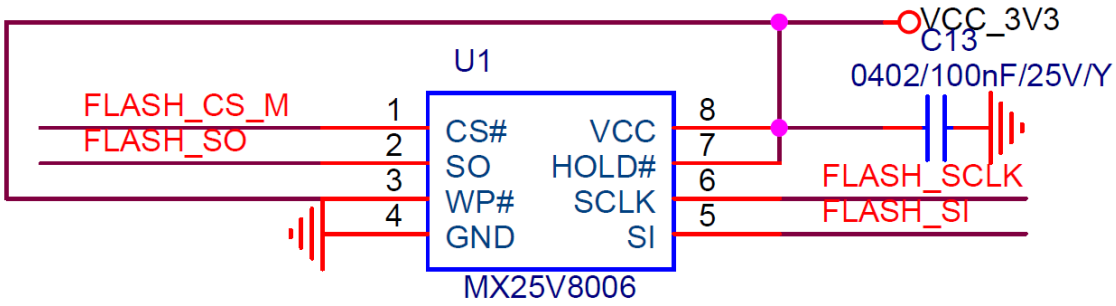


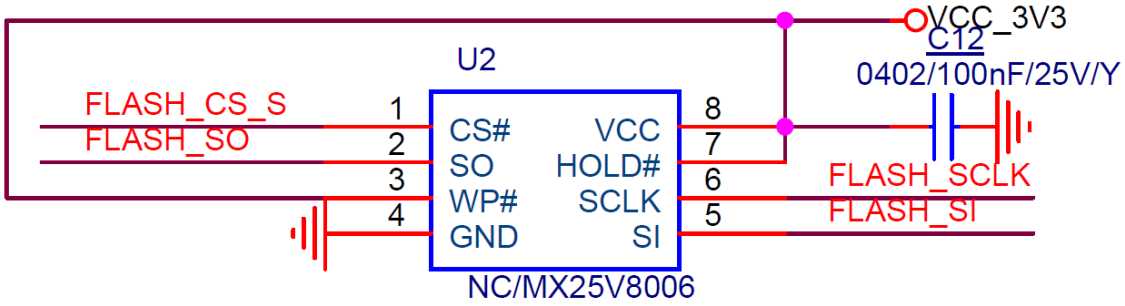
1.4 J4 for Header





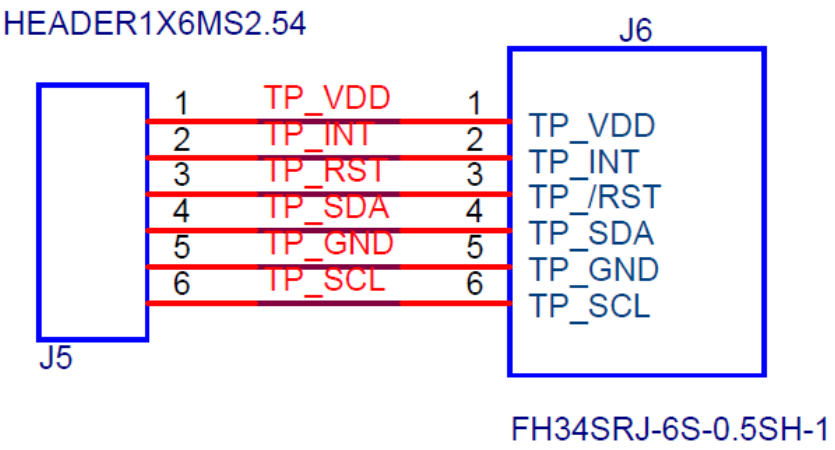
1.5 U1 & U2 for Serial Flash





Note: the U2 is not populated (NC). If you would like to use other memory chip (e.g. SRAM or FRAM or larger Flash), you could populate the chip on U2 and control by the FLASH_CS_S slave pin to work with this chip.

1.6 Touch board



Ignore the pinouts and silkscreen on touch board which is for reference only. It's pin-to-pin from J5 to J6 which means you can jumper wires to J5 matches the pinouts of FPC of touch panel.

1.7 J4 pin assignment

Pin #	Symbol	Description
1	VCC	VCC 3.3V
2	SCK	SPI CLK, serial communication clock input
3	BUSY	Busy state output pin L: EPD driver is busy, data/command is transforming H: host side can send command or data to EPD driver
4	D/C	Serial bus for controlling data or command L: command; H: data
5	RST	Reset signal input
6	MISO	SPI MISO, serial communication data output
7	MOSI	SPI MOSI, serial communication data input
8	FCSM	Master chip select pin of Flash (U1)
9	ECSM	Master chip select pin of EPD
10	GND	Ground
11	GND	Ground

12	ECSS	Slave chip select pin of EPD
13	VGH	Positive gate driving voltage
14	VDH	Positive source/data driving voltage
15	VGL	Negative gate driving voltage
16	VDL	Negative source/data driving voltage
17	VCOM	VCOM driving voltage
18	VDHR	Positive source/data driving voltage for red color
19	VPP	OTP programming voltage
20	FCSS	Slave chip select pin of Flash (U2)

1.8 J5 pin assignment

Pin #	Symbol	Description
1	VDD	Power supply
2	TP_INT	Interrupt, sensor data ready request
3	TP_RST	Reset, sensor system global reset
4	TP_SDA	Serial interface data line
5	GND	Ground
6	TP_SCL	Serial interface clock line

Ignore the pinouts and silkscreen on touch board which is for reference only. It's pin-to-pin from J5 to J6 which means you can jumper wires to J5 matches the pinouts of FPC of touch panel.

2. BOM

Item	Description	Vendor	Q'ty	Location	Remark
1	CAP 1uF 25V 0603 Y5V		7	C1, C4, C5, C6, C8, C9, C10	0603/1u/25V/Y
2	CAP 4.7uF 25V 0603 Y5V		3	C2, C7, C11	0603/4.7u/25V/Y
3	CAP 100nF 25V 0603 Y5V		3	C3, C12, C13	0603/100n/25V/Y
4	DIODE SS2040FL SOD-123FL	PANJIT	3	D1, D2, D3	SS2040FL
5	FPC connector, Dual contacts, Pitch=0.5mm, Number of Positions=34 (pins)	STARCONN or Hirose	1	J1	6702A34-000000-G2-R FH34SRJ-34S-0.5SH
6	FPC connector, Dual contacts, Pitch=0.5mm, Number of Positions=24 (pins)	STARCONN or Hirose	1	J2	6702A24-000000-G2-R FH34SRJ-24S-0.5SH
7	FPC connector, Dual contacts, Pitch=0.5mm, Number of Positions=6 (pins)	STARCONN or Hirose	1	J6	6702A06-000000-G2-R FH34SRJ-6S-0.5SH
8	Header.FH P2.54 DIP 2*10PIN.G		1	J4	
9	Header.FH P2.54 DIP 2*2PIN.G		1	J3	
10	IND 10uH ATNR4010100MT +-20% 0.8A H=0.9mm	ARLITECH	1	L2	ATNR40100100MT/10u
11	IND 47uH ATNR4047100MT +-20% 0.8A H=0.9mm	ARLITECH	1	L1	ATNR40470100MT/47u
12	MOSFET MCH3478 SOT-23 N-Channel 30V/2A	ON Semi.	1	Q1	MCH3478
13	RES 0.47 ohm 0603 1% 1/10W		1	R1	0603/0.47R/1%
14	MX25V8006EM1I-13G SOP-8 Flash memory		1	U1	MX25V8006EM1
15	PCB EXT3 board-v01		1	PCB/ EXT3 board-v01	EXT3 board-v01