

RTL8111B/8111C(P)/8111D/8101E/8102E circuit

Rev. 1.89

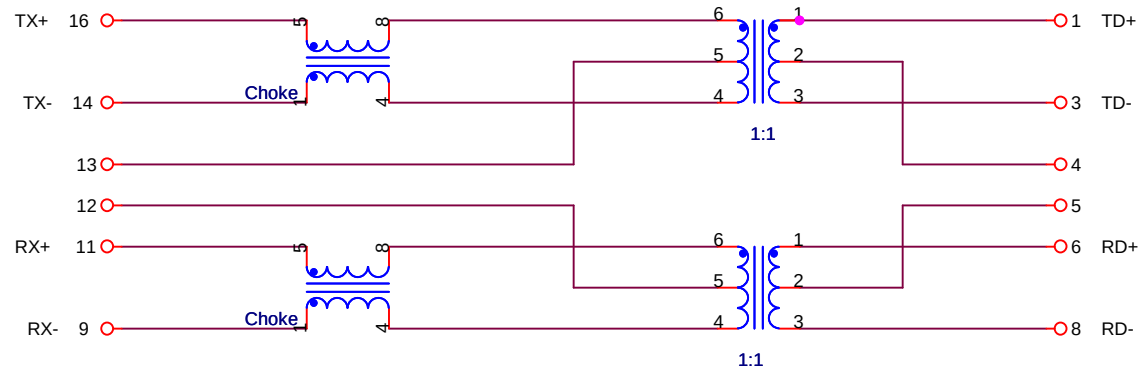
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H1251 Transformer Diagram

RJ45 side

IC side



Realtek Semiconductor Corp.

Title
RTL8111B/8111C(P)/8111D/8101E/8102E circuit: Transformer Diagram

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Change Notice from 1.2 to 1.3

- 1. Removed Boot ROM Interface
- 2. Change Pin Definition for RTL8111B (rename only)

Change Notice from 1.3 to 1.4

- 1. Removed C41, C42 and L6
- 2. Replace U12 with RJ45 connector CON1 and Transformer U6
- 3. Move C47 and C48 from Power page to RTL811B/8100E/8101E page
- 4. Correct typo C8 to C81 on Power page

Change Notice from 1.4 to 1.5

- 1. Replace L1, L2 with R31(0 ohm), R32(0 ohm)
- 2. Change the value of R21 to 2K for RTL8101E
- 3. Correct the comment made about RTL8101E application on power page. (Change Q2 to Q3)
- 4. Add R22(0 ohm) for RTL8111B test purpose.

Change Notice from 1.5 to 1.6

- 1. Add 8111C related circuit.
- 2. Remove C38(4.7uF), C60(1000pF/2KV).
- 3. Change the value of C18 from 10uF to 22uF
- 4. Remove 8100E related circuit

Change Notice from 1.6 to 1.7

- 1. Add comment about R86 in page 3(POWER).
- 2. Add 8111CP related circuit.
- 3. Add comment about the CLKREQB pin.
- 4. Add comment about RTL8111C(P)'s termination resistors and capacitors.
- 5. Implement two SMBus pins, SMCLK and SMDATA, for 8111CP application.
- 6. Change netlist name in pin41 from DVDD15 to DVDD15/TMS and add resistor R100(0 ohm). For 8111B/8101E/8111C application, pin 41 is a power pin so keep R100. For 8111CP application, pin41 is a JTAG pin so remove R100. (See Page 4)
- 7. Change 1.5V/1.8V/3.3V bead to 0 ohm resistor. Change bead L4, L5, L9, L10, L12, L11 to resistor 0 ohm R84, R85, R86, R87, R88 and R89. (Page 3 Power)
- 8. Remove oscillator related circuit(page 4).
- 9. Add an illustration page: Power& Surrounding-8111C(P).
- 10. Add V1.2 and R69 for the disabled switching regulator circuit.(Page 3)

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Change Notice from 1.7 to 1.81

1. Remove R85 and R67 0 ohm. (Page3)
2. Change C83 from 1uF to 0.1uF. (page 4)
3. Remove R92 and R97. (Page 4)
4. The input power to the switching regulator is changed from Vout33 to VDD33. (Page 4)
5. Add D1 zener diode to protect switching regulator. (Page 4)

Change Notice from 1.81 to 1.82

1. Add comment about R66 in 8111C(P) application. (Page 3)
2. Change R100 from 15K to 0 ohm. (Page 4)
3. Remove U1 and change Vout33 to VAUX33 (Page 3).
4. Remove D1 (Page 4 and Page 5).
5. Add important Note 1 and Note 2 to specified the L20, C18, C19, D1, C82 and C83 placement requirement and trace length and width. (Page 3 and Page 5).
6. Remove R90 and R95 and connect Pin5 to net FB12(Page 4).
7. Add U8, R110 and R111 to generate Ind_1.2V power source(Page 3).

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Title
RTL8111B/8111C(P)/8111D/8101E/8102E circuit: Change Note 2

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Change Notice from 1.82 to 1.83

1. Remove PCI-E interface page.
2. Remove C8, C15, U8, R84, R110, R111, C80 and C81(Page 2).
3. Remove R31 and R32 and change EGND to Gnd.(page 2 and page 3).
4. Remove Surrounding & Power-8111C page.

Change Notice from 1.83 to 1.84

1. Add BOM list for each IC.
2. Add ESD protection circuit(page 3).
3. Add Transformer H1251 diagram(page 4).
4. Add C91 (Page 3) for better EMI performance.
5. For 8102E, change C40 from 0.1uF to 4.7uF.

Change Notice from 1.84 to 1.85

1. Update BOM List(8101E,8102E,8111C,8111CP). Update Item 4 part number. Add R22 for 8101E and R22,C20,C21 for 8102E BOM list. Remove R96 in 8101E BOM list.
2. Add Decoupling capacitor comment (Page 2) for each IC.
3. Update 8101E's comment regarding R68,C47 and C48.(Page 3)
4. Add 8102E's Pin28 requirement comment.(Page 2)
5. Add R23 and R24 (2.2K ohm) for 8111CP SMDATA and SMCLK pin.
6. Update 8111CP BOM List(Item 18 ATC66 and Item 23).

Change Notice from 1.85 to 1.86

1. Remove R66 change to bead comment.(Page 2)
2. R93 should be reserved for Switching efficiency measurement.
3. Move R88 in front of FB12 for Switching efficiency measurement.
4. Add DSM reference circuit. (Page 5)
5. Add L20 selection criterion comment(Page 2).

Change Notice from 1.86 to 1.87

1. Add circuitry to support RTL8111DP.
2. Add R85 and R90 for RTL8111DP circuitry.
3. Change C39 and C40 to 1uF. (Page 2)

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Title RTL8111B/8111C(P)/8111D/8101E/8102E circuit: Change Note 3		
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Change Notice from 1.87 to 1.88

- 1. Update ESD Protection Array reference part to SRV05-4,TCT. (Page 3)

Change Notice from 1.88 to 1.89

- 1. Update RTL8111D Schematic

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Title RTL8111B/8111C(P)/8111D/8101E/8102E circuit: Change Note 4		
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RTL8101E BOM LIST

Item	Quantity	Reference	Part
1	1	CON1	RJ45
2	1	C3	1000pF/2KV
3	2	C6, C7	100nF
4	18	C9, C10, C11, C12, C16, C19 C20, C21, C25, C26, C27, C32 C33, C35, C48, C52 C62, C63	.1uF
5	2	C18, C24	22uF
6	3	C39, C40, C47	1uF
7	2	C51, C50	27pF
8	8	C55, C56, C61, C64, C85, C86, C87, C88	.01uF
9	2	D2, D1	LEDx2
10	1	R12	3.6K
11	4	R13, R14, R15, R16	49.9
12	1	R21	2K 1%
13	7	R22, R66, R70, R86 R87, R88, R98	0
14	1	R26	1K
15	1	R28	15K
16	4	R55, R56, R57, R58	510
17	4	R80, R81, R82, R83	75
18	1	U4	AT93C46A(3.3V)
19	1	U6	Pulse H1251
20	1	Y1	CRYSTAL 25MHz
21	1	U2	RTL IC

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Title RTL8111B/8111C(P)/8111D/8101E/8102E circuit: 8101E BOM		
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RTL8102E BOM LIST

Item	Quantity	Reference	Part
1	1	CON1	RJ45
2	1	C3	1000pF/2KV
3	2	C6, C7	100nF
4	15	C9, C10, C11, C12, C16, C19 C25, C26, C27, C32, C33, C35 C52, C62, C63	.1uF
5	2	C51, C50	27pF
6	6	C61, C64, C85, C86, C87, C88	.01uF
7	2	C39, C40	1uF
8	2	D2, D1	LEDx2
9	1	R12	3.6K
10	1	R21	2.49K 1%
11	6	R22, R86, R87, R88, R91, R98	0
12	1	R26	1K
13	1	R28	15K
14	4	R55, R56, R57, R58	510
15	4	R80, R81, R82, R83	75
16	1	U4	AT93C46A(3.3V)
17	1	U6	LFE8696-R
18	1	Y1	CRYSTAL 25MHz
19	1	U2	RTL IC

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Title
RTL8111B/8111C(P)/8111D/8101E/8102E circuit: 8102E BOM

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RTL8111B BOM LIST

Item	Quantity	Reference	Part
1	1	CON1	RJ45
2	1	C3	1000pF/2KV
3	2	C6, C7	100nF
4	26	C9, C10, C11, C12, C16, C17, .1uF C19, C20, C21, C22, C23, C25, C26, C27, C28, C29, C30, C31, C32, C33, C34, C35, C48, C52, C62, C63	
5	2	C18, C24	22uF
6	3	C39, C40, C47	1uF
7	2	C51, C50	27pF
8	6	C61, C64, C85, C86, C87, C88	.01uF
9	2	D2, D1	LEDx2
10	1	Q1	2SB1188
11	1	Q3	2SB1182
12	1	R12	3.6K
13	1	R21	2.49K 1%
14	6	R22, R66, R88, R96, R98, R100	0
15	1	R26	1K
16	1	R28	15K
17	4	R55, R56, R57, R58	510
18	4	R80, R81, R82, R83	75
19	1	U4	AT93C46A(3.3V)
20	1	U6	Pulse H5007
21	1	Y1	CRYSTAL 25MHz
22	1	U2	RTL IC

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Title RTL8111B/8111C(P)/8111D/8101E/8102E circuit: 8111B BOM		
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RTL8111C BOM LIST

Item	Quantity	Reference	Part
1	1	CON1	RJ45
2	1	C3	1000pF/2KV
3	2	C6, C7	100nF
4	21	C9, C10, C11, C12, C16, C17, C19, C21, C22, C23, C27, C28, C30, C32, C33, C34, C35, C52, C62, C63, C83	.1uF
5	2	C18, C82	22uF
6	2	C39, C40	1uF
7	2	C51, C50	27pF
8	7	C61, C64, C85, C86, C87, C88, C91	.01uF
9	2	D2, D1	LEDx2
10	1	L20	4.7uH
11	1	R12	3.6K
12	1	R21	2.49K 1%
13	7	R22, R66, R68, R88, R89, R91, R93	0
14	1	R26	1K
15	1	R28	15K
16	4	R55, R56, R57, R58	510
17	4	R80, R81, R82, R83	75
18	1	U4	AT93C46A(3.3V)
19	1	U6	Pulse H5007
20	1	Y1	CRYSTAL 25MHz
21	1	U2	RTL IC

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Title
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RTL8111CP BOM LIST

Item	Quantity	Reference	Part
1	1	CON1	RJ45
2	1	C3	1000pF/2KV
3	2	C6, C7	100nF
4	21	C9, C10, C11, C12, C16, C17, C19, C21, C22, C23, C27, C28, C30, C32, C33, C34, C35, C52, C62, C63, C83	.1uF
5	2	C18, C82	22uF
6	2	C39, C40	1uF
7	2	C51, C50	27pF
8	7	C61, C64, C85, C86, C87, C88, C91	.01uF
9	2	D2, D1	LEDx2
10	1	L20	4.7uH
11	1	R12	3.6K
12	1	R21	2.49K 1%
13	7	R22, R66, R68, R88, R89, R91, R93	0
14	1	R26	1K
15	1	R28	15K
16	4	R55, R56, R57, R58	510
17	4	R80, R81, R82, R83	75
18	1	U4	AT93C66A(3.3V)
19	1	U6	Pulse H5007
20	1	Y1	CRYSTAL 25MHz
21	1	U2	RTL IC
22	2	R23, R24	2.2K
23	1	R11	10K

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Title
RTL8111B/8111C(P)/8111D/8101E/8102E circuit: 8111CP BOM

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RTL8111D BOM LIST

Item	Quantity	Reference	Part
1	1	CON1	RJ45
2	1	C3	1000pF/2KV
3	2	C6, C7	100nF
4	21	C9, C10, C11, C12, C16, C17, C19, C21, C22, C23, C27, C28, C30, C32, C33, C34, C35, C52, C62, C63, C83	.1uF
5	2	C18, C82	22uF
6	2	C39, C40	1uF
7	2	C51, C50	27pF
8	7	C61, C64, C85, C86, C87, C88, C91	.01uF
9	2	D2, D1	LEDx2
10	1	L20	4.7uH
11	1	R12	3.6K
12	1	R21	2.49K 1%
13	7	R22, R66, R68, R88, R89, R91, R93	0
14	1	R26	1K
15	1	R28	15K
16	4	R55, R56, R57, R58	510
17	4	R80, R81, R82, R83	75
18	1	U4	AT93C46A(3.3V)
19	1	U6	Pulse H5007
20	1	Y1	CRYSTAL 25MHZ
21	1	U2	RTL IC

Realtek Semiconductor Corp.

Title
RTL8111B/8111C(P)/8111D/8101E/8102E circuit: 8111C BOM

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