![REALTEK]

REALTEK RTL8305S & RTL8305SB DESIGN NOTE

1. Introduction

This document describes the differences between the Realtek RTL8305S and RTL8305SB products. The RTL8305SB is an advanced version of the RTl8305S, so the ASIC design of the RTL8305SB is backward compatible to the RTL8305S. A system circuit can be designed to use the RTL8305S now, to be replaced by the RTL8305SB at a future date. This document describes the difference in system-level circuit design and pin definitions. It can also help understand how to create a design using both the RTL8305S and RTL8305SB in the same circuit board.

2. Schematic Differences

This section covers schematic differences between the two chips. Graphic representations are provided to exemplify the characteristics of the two designs.

| Item	RTL8305SB	RTL8305S	Note
1	2.5V and 3.3V dual power supply. 2.5V power is translated via a BJT transistor (2SB1197K).	3.3V single power supply.	Refer to figure 1
2	Support Autoxover function.	N/A	
3	Quad Transformer: H1164 compatible.	Quad Transformer: H1062 compatible.	
4	Single Transformer: H1012 compatible.	Single Transformer: H1102 compatible.	
5	N/A	Central tap of Transformer connect to 3.3V via a 0Ω resister.	Refer to figure 2
6	N/A	Central tap of Transformer connect to GND via a 0.1 µF capacitor.	Refer to figure 2
7	Central of impedance-match 50 Ω resisters connect to GND via a 0.1 µF capacitor.	N/A	Refer to figure 3
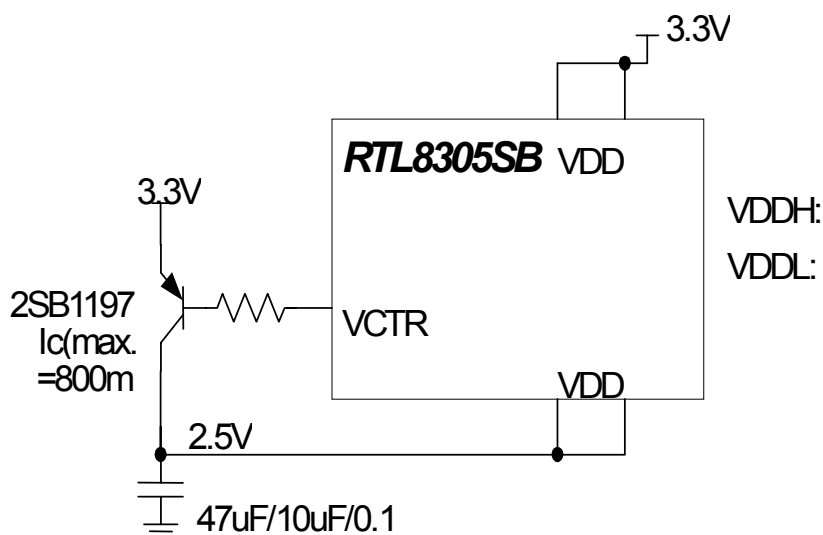
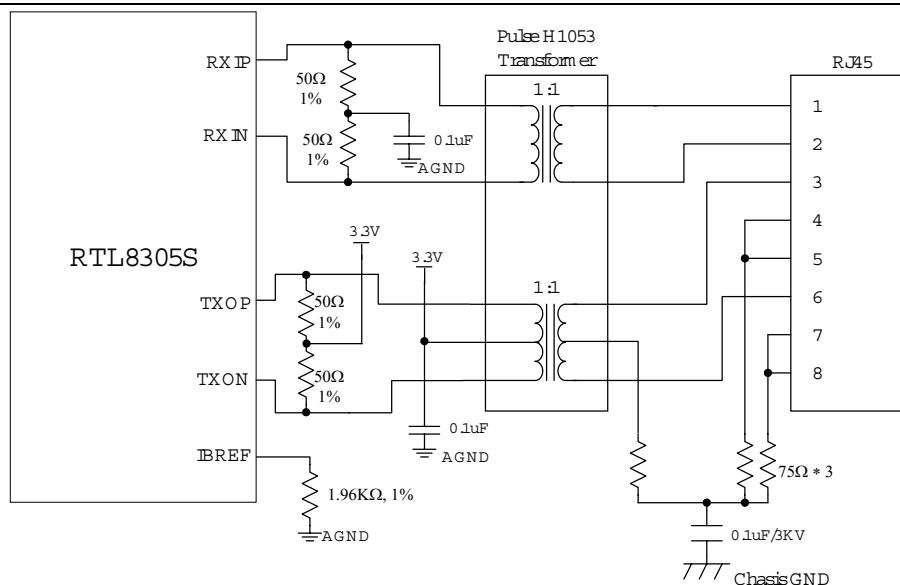*Figure 1: 2.5V Power Translated via a BJT Transistor*

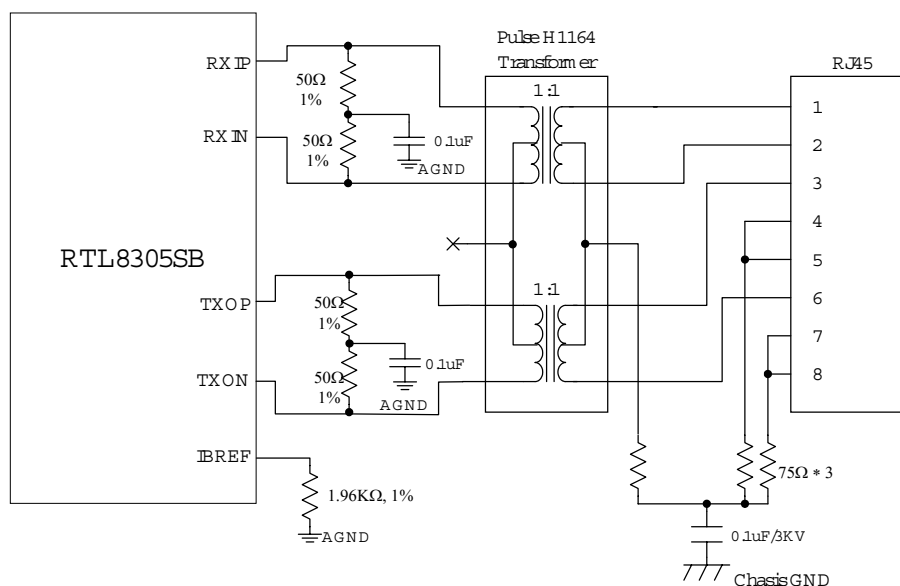*Figure 2: UTP Application Circuit for the RTL8305S*

Figure 3: UTP Application Circuit for the RTL8305SB

3. Pin Definitions

This section covers pin differences between the two chips.

PIN#	RTL8305B PIN NAME	RTL8305S PIN NAME	Note
1,	RGND,	RGND,	
2,	TGND,	TGND,	
3,	TXOP[0],	TXOP[0],	
4,	TXON[0],	TXON[0],	
5,	TVDD,	TVDD,	
6,	TVDD,	TVDD,	
7,	TXON[1],	TXON[1],	
8,	TXOP[1],	TXOP[1],	
9,	TGND,	TGND,	
10,	RGND,	RGND,	
11,	RXIP[1],	RXIP[1],	
12,	RXIN[1],	RXIN[1],	
13,	RVDD,	RVDD,	
14,	RVDD,	RVDD,	
15,	RXIN[2].	RXIN[2].	
16,	RXIP[2],	RXIP[2],	
17,	RGND,	RGND,	
18,	TGND,	TGND,	
19,	TXOP[2],	TXOP[2],	
20,	TXON[2],	TXON[2],	
21,	TVDD,	TVDD,	
22,	TVDD,	TVDD,	
23,	TXON[3],	TXON[3],	
24,	TXOP[3],	TXOP[3],	
25,	TGND,	TGND,	
26,	RGND,	RGND,	
27,	RXIP[3],	RXIP[3],	
28,	RXIN[3],	RXIN[3],	
29,	RVDD,	RVDD,	
30,	RVDD,	RVDD,	
31,	RXIN[4],	RXIN[4],	
32,	RXIP[4],	RXIP[4],	
33,	RGND,	RGND,	
34,	TGND,	TGND,	
35,	TXOP[4],	TXOP[4],	
36,	TXON[4],	TXON[4],	
37,	TVDD,	TVDD,	
38,	MVDD,	MVDD,	
39,	GND,	GND,	
40,	RESET#,	RESET#,	
41,	***RTT3,***	***TESTCLK,***	*Definition Change*
42,	***RTT2,***	***TESTDATA,***	*Definition Change*
43,	VDD,	VDD,	
44,	X1,	X1,	
45,	X2,	X2,	
46,	***P4FLCTRL/P4ENFC,***	***P4FLCTRL#,***	*Definition Inverse*
47,	***P4SPDSTA/P4SPD100,***	***P4SPDSTA#,***	*Definition Inverse*
48,	***P4DUPSTA/P4FULL,***	***P4DUPSTA#,***	*Definition Inverse*
49,	P4LNKSTA#,	P4LNKSTA#,	
50,	***MGND,***	***GND,***	*Definition Change*
51,	MTXC/PRXC,	MTXC/MRXC,	
52,	MTXEN/PRXDV,	MTXEN/MRXDV,	
53,	VDD,	VDD,	
54,	***MTXD[0]/PRXD[0]/LEDMODE[0],***	***MTXD[0]/MRXD[0],***	*Definition Change*

55,	*MTXD[1]/PRXD[1]/LEDMODE[1],*	*MTXD[1]/MRXD[1],*	*Definition Change*
56,	*MTXD[2]/PRXD[2]/P4IRTAG[0],*	*MTXD[2]/MRXD[2],*	*Definition Change*
57,	*MTXD[3]/PRXD[3]/P4IRTAG[1],*	*MTXD[3]/MRXD[3],*	*Definition Change*
58,	*MCOL/PCOL,*	*MCOL,*	*Name Change*
59,	*MRXC/PTXC,*	*MRXC/MTXC,*	*Name Change*
60,	*MRXDV/PTXEN,*	*MRXDV/MTXEN,*	*Name Change*
61,	*MRXD[0]/PTXD[0],*	*MRXD[0]/MTXD[0],*	*Name Change*
62,	VDD,	VDD,	
63,	*MRXD[1]/PTXD[1],*	*MRXD[1]/MTXD[1],*	*Name Change*
64,	*GND,*	*MGND,*	
65,	GND,	GND,	
66,	*MRXD[2]/PTXD[2],*	*MRXD[2]/MTXD[2],*	*Name Change*
67,	*MRXD[3]/PTXD[3],*	*MRXD[3]/MTXD[3],*	*Name Change*
68,	*SEL_MIIMAC#/DISDSPRI,*	*SEL_MIIMAC#,*	*Definition Change*
69,	RESERVED3,	RESERVED,	
70,	VDD,	VDD,	
71,	CK25MOUT,	CK25MOUT,	
72,	*RESERVED1,*	*NC,*	*Definition Change*
73,	*ENEEPROM,*	*NC,*	*Definition Change*
74,	*SCL_MDC,*	*NC,*	*Definition Change*
75,	*SDA_MDIO,*	*NC,*	*Definition Change*
76,	*GXENFC,*	*NWAYHALF#,*	*Definition Change*
77,	*GYENFC,*	*ENFCTRL,*	*Definition Change*
78,	*ENANEG_BKPRS,*	*ENBKPRS,*	*Definition Change*
79,	GND,	GND,	
80,	*DISBRDCTRL,*	*ENBRDCTRL,*	*Definition Inverse*
81,	*QWEIGHT[0],*	*NC,*	*Definition Change*
82,	*QWEIGHT[1],*	*NC,*	*Definition Change*
83,	*DISPORTPRI[0],*	*NC,*	*Definition Change*
84,	*DISPORTPRI[1],*	*NC,*	*Definition Change*
85,	*DISPORTPRI[2],*	*NC,*	*Definition Change*
86,	*DISPORTPRI[3],*	*NC,*	*Definition Change*
87,	VDD,	VDD,	
88,	*DISPORTPRI[4],*	*NC,*	*Definition Change*
89,	LED_BLNK_TIME,	LED_BLNK_TIME,	
90,	*EN_RST_BLNK,*	*DIS_RST_BLNK#,*	*Name Change*
91,	*LOOPLED#/DISTAGPRI,*	*ENP4LED,*	*Definition Change*
92,	*LED_ADD[0]/DISFCAUTOOFF,*	*NC,*	*Definition Change*
93,	*LED_ADD[1]/DISVLAN,*	*NC,*	*Definition Change*
94,	GND,	GND,	
95,	*LED_ADD[2]/SETGROUP,*	*NC,*	*Definition Change*
96,	*LED_ADD[3]/GXMODE,*	*NC,*	*Definition Change*
97,	P4MODE[1],	P4MODE[1],	
98,	P4MODE[0],	P4MODE[0],	
99,	*LED_ADD[4]/GYMODE,*	*NC,*	*Definition Change*
100,	VDD,	VDD,	
101,	*TEST#,*	*NC,*	*Definition Change*
102,	GND,	GND,	
103,	*LED_DUP[0]/P4ANEG,*	*LED_DUP[0],*	*Definition Change*
104,	*LED_ACT[0]/GXANEG,*	*LED_ACT[0],*	*Definition Change*
105,	*LED_SPD[0]/GYANEG,*	*LED_SPD[0],*	*Definition Change*
106,	VDD,	VDD,	
107,	*LED_DUP[1]/GXSPD100,*	*LED_DUP[1],*	*Definition Change*
108,	*LED_ACT[1]/GYSPD100,*	*LED_ACT[1],*	*Definition Change*
109,	*LED_SPD[1]/GXFULL,*	*LED_SPD[1],*	*Definition Change*
110,	*LED_DUP[2]/GYFULL,*	*LED_DUP[2],*	*Definition Change*
111,	*LED_ACT[2]/ENFORWARD,*	*LED_ACT[2],*	*Definition Change*
112,	GND,	GND,	
113,	*LED_SPD[2]/BCINDROP,*	*LED_SPD[2],*	*Definition Change*

114,	VDD,		VDD,	
115,	*LED_DUP[3]/MAX1536,*		*LED_DUP[3],*	*Definition Change*
116,	*LED_ACT[3]/RESERVED2,*		*LED_ACT[3],*	*Definition Change*
117,	*LED_SPD[3],/ENDEFER,*		*LED_SPD[3],*	*Definition Change*
118,	*LED_DUP[4]/48PASS1,*		*LED_DUP[4],*	*Definition Change*
119,	*LED_ACT[4]/DISARP,*		*LED_ACT[4],*	*Definition Change*
120,	*LED_SPD[4]/DISLEAKY,*		*LED_SPD[4],*	*Definition Change*
121,	*VCTRL,*		*TEST#,*	*Definition Change*
122,	*AGND,*		*GND,*	*Definition Change*
123,	AGND,		AGND,	
124,	IBREF,		IBREF,	
125,	*RVDD,*		*AVDD,*	*Definition Change*
126,	*AVDD,*		*RVDD,*	*Definition Change*
127,	RXIN[0],		RXIN[0],	
128	RXIP[0]		RXIP[0]	