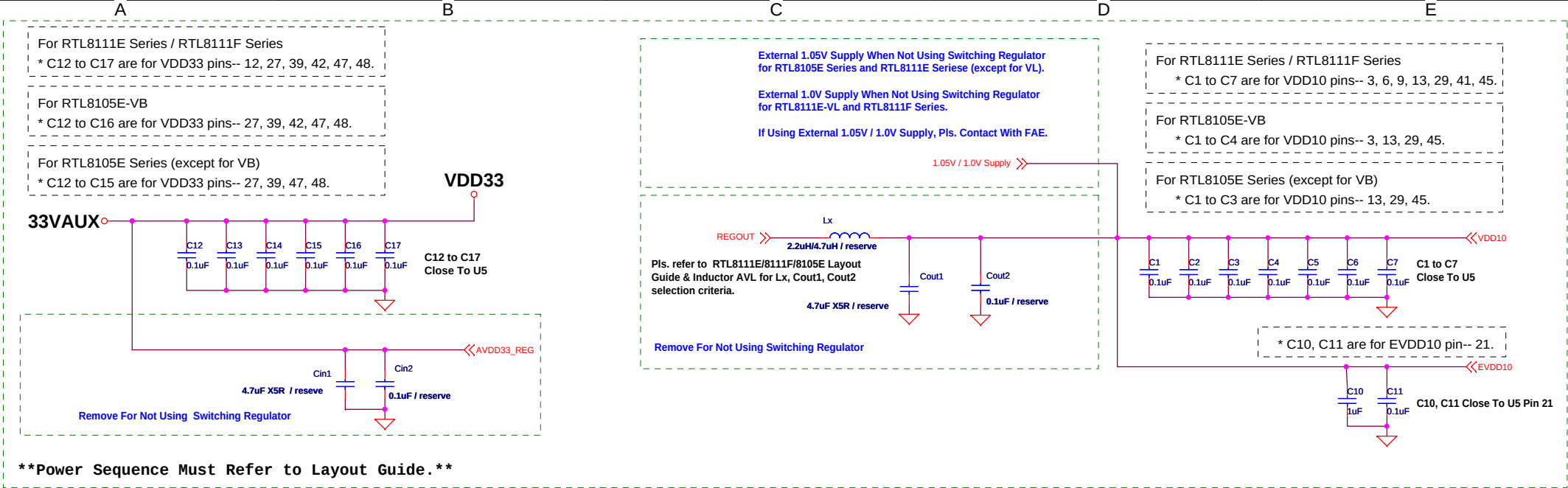


RTL8111E/RTL8111F/RTL8105E 48 Pin
Reference Schematic V115

PAGE	INDEX
1.	Title Page
2.	POWER
3.	CONTROLLER
4.	Reserved Component
5.	Optional Function
6.	R-BOM
7.	Change Notes



3.3V and 1.05V / 1.0V Power-Supply Configurations

	1.05V / 1.0V source	Lx	Cout1,2	Cin1,2	R23 / reserve	R24 / reserve
8111E Series/8111F Series/8105E Series	SWR	O	O	O	O	X
8105E Series (except for VB)	LDO	X	X	X	X	O
8111E Series/8111F Series/8105E-VB	External	X	X	X	X	O
8105E Series (except for VB)	External	X	X	X	O	X

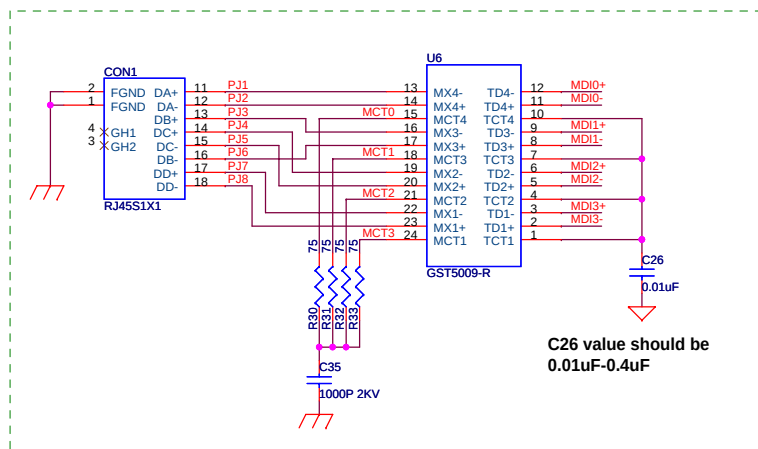
Note:

1. R23, R24 are reserved for the convenience of changing the 1.05V / 1.0V supply source between SWR/LDO mode and external supply. No design change of PCB model is needed with these 2 resistors reserved.
2. Please refer to the table above when using different 1.05V / 1.0V supply source.

If only one 1.05V / 1.0V supply source is selected for one PCB model, i.e. no other choices are reserved:

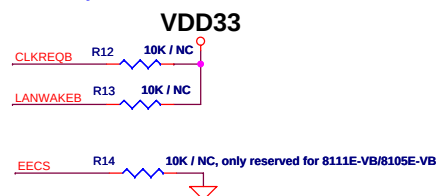
1. R23, and R24 are not necessary.
2. Just make a path of short to replace the use of R23/R24 on the table.
3. SWR mode only (8111E series / 8111F series / 8105E series):
 - (1) R23 => short ENSWREG to VDD33.
 - (2) R24 => not necessary.
4. LDO mode only (8105E series, except for VB):
 - (1) R24 => short ENSWREG to GND
 - (2) R23 => not necessary.
5. External supply only (8111E series / 8111F series / 8105E-VB):
 - (1) R24 => short ENSWREG to GND
 - (2) R23 => not necessary.
6. External supply only (8105E Series, except for VB):
 - (1) R23 => short ENSWREG to VDD33.
 - (2) R24 => not necessary.

Connector



Pull-up resistors

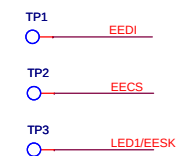
R12, R13 could be saved through sharing the pull-up resistors which might be possibly existed on the motherboard already.



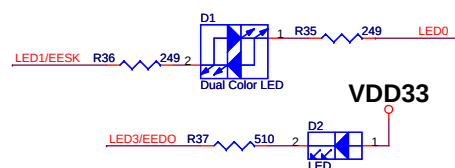
Note: 10K ohm close to Host side

Test Point

Three test points reserved for the convinience of debug



LED



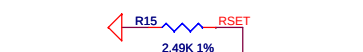
Support R>= 249 ohm Resister For Single Color LED.

Support R>= 125 ohm Resister For Dual Color LED.

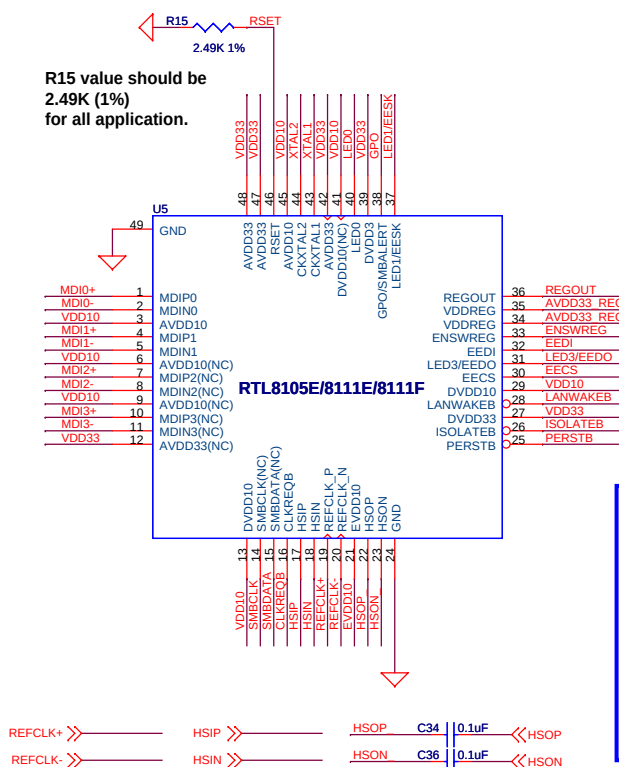
Only support LED0+LED1 / LED0+LED3 Dual Color LED Combinations when using EEPROM

Refer to the page of "Reserved Components" for more optional LED configurations.

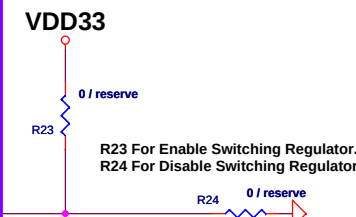
Controller



**R15 value should be
2.49K (1%)
for all application.**



Refer to the page of "Power" for more detailed configuration of R23 and R24 when using different 1.05V / 1.0V supply source.



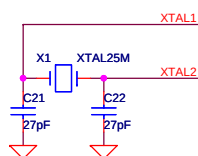
VCC33 (Main Power)



Either the VCC33 is connected to Main Power or chipset/bios GPO, the pull-low resistor R27 can be NC only when Main Power or chipset/bios GPO can accurately drive the isolateB pin to a voltage level $< 0.8V$ at the system state S1/S3/S4/S5.

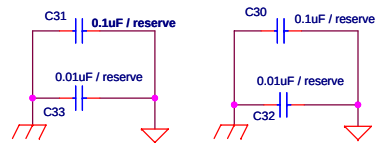
Oppositely, if the isolateB pin can not be well controlled to the voltage level < 0.8V by any component on PCB at S1/S3/S4/S5, the pull-low resistor R27 is needed to make sure the LAN chip is well isolated.

XTAL



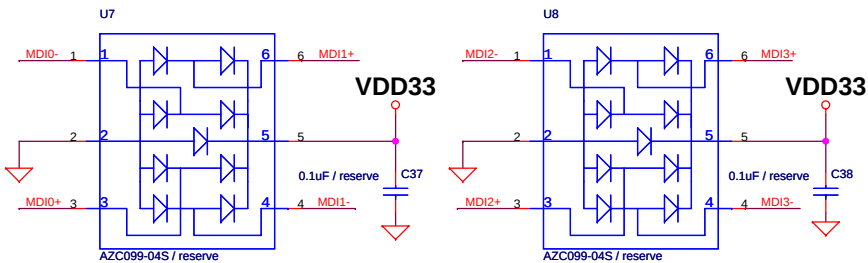
Refer to the page of "Reserved Components" for Using External Clock Source.

Reserved for Noise Isolation



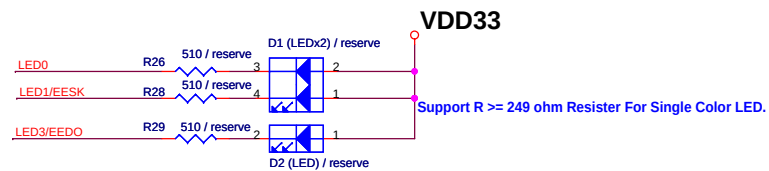
C30, C31, C32, C33 Reserved for Noise Isolation between Chassis GND and System GND (optional)

Reserved for TVS Components

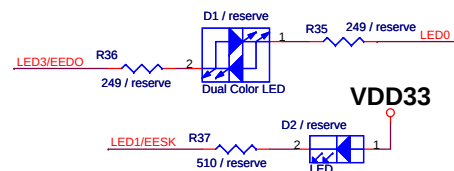


U7, U8 and C37, C38 Reserved for Surge and Cable ESD (optional)

Optional LED Configurations



R26, R28, R29 and D1, D2 Reserved for only Single Color LED Configuration (optional)



Support R>= 249 ohm Resistor For Single Color LED.

Support R>= 125 ohm Resistor For Dual Color LED.

Only support LED0+LED1 / LED0+LED3 Dual Color LED Combinations when using EEPROM

R35, R36, R37 and D1, D2 Reserved for Single Color + Dual Color LED Configuration (optional)

Reserved for Using External Clock Source



R34, R38 Reserved for Using External Clock Source (optional)

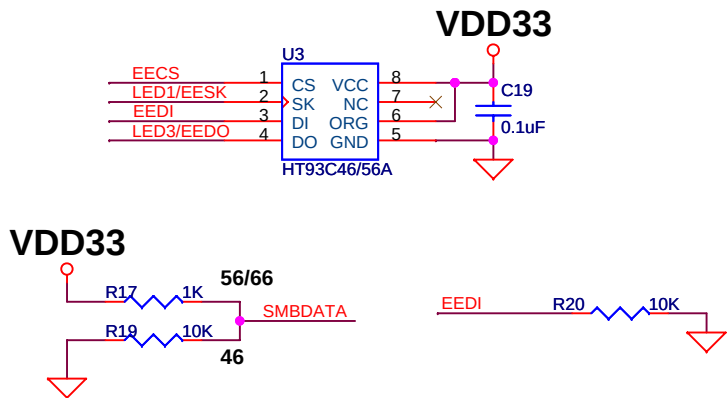
Pin44- XTAL2 is External Clock Input Pin.
Pin43- XTAL1 must be floating when using external clock source.

R38 is needed when using external clock source.

Realtek Semiconductor Corp.		
No.2, Industry E. Rd. IX, Science-Based Industrial Park, Hsinchu, Taiwan 300		
Title		
RTL8111E/RTL8111F/RTL8105E Reference Schematic: Reserved Components		
Size	Document Number	Rev
A3	RTL8111E/RTL8111F/RTL8105E Reference Schematic	
Date:	Friday, November 18, 2011	Sheet 4 of 7

For RTL8111E Series and RTL8111F Series with EEPROM / ASF Function (2 Options)

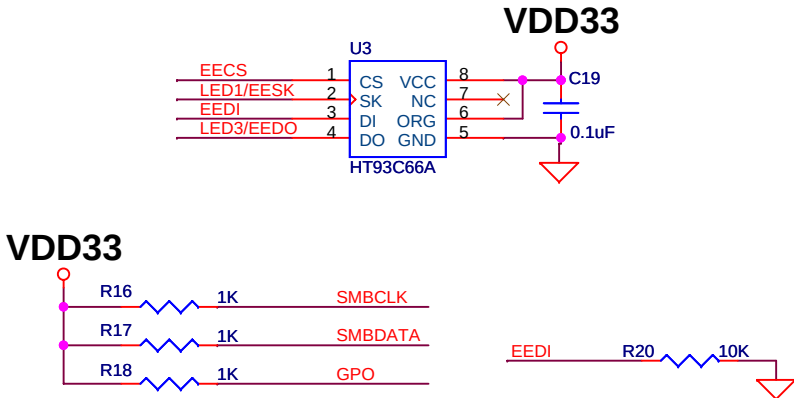
Using EEPROM without ASF function



1. All components in this block will be needed only if an EEPROM is used without ASF function.
Using R17 For 93C56/66
Using R19 For 93C46

Note: For RTL8111E-VL and RTL8111F, R17 must be 1K.

Using EEPROM(93C66) with ASF function

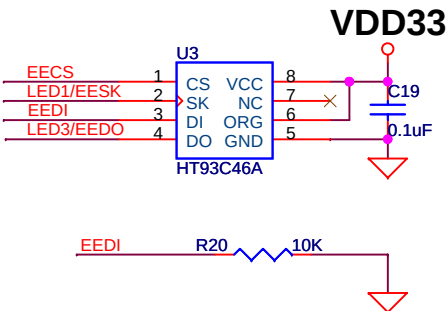


2. All components in this block will be needed only if an EEPROM of 93C66 is used with ASF function.

Note: This block is also for RTL8111E-VC using EEPROM_Less with ASF function.

For RTL8105E Series EEPROM Function (1 Option)

Using EEPROM (93C46)



1. All components in this block will be needed only if an EEPROM of 93C46 is used.

SMBCLK
SMBDATA
GPO
EEDI
EECS
LED1/EESK
LED3/EEDO

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Title		
RTL8111E/8111F/8105E Reference Schematic: Optional Function		
Size	Document Number	Rev
A4	RTL8111E/8111F/8105E Reference Schematic	
Date:	Friday, November 18, 2011	Sheet 5 of 7

Bill Of Materials July 29,2011 17:26:17

Item	Quantity	Reference	Part
1	1	CON1	RJ45S1X1
2	18	C1,Cout2,Cin2,C2,C3,C4, C5,C6,C7,C11,C12,C13,C14, C15,C16,C17,C34,C36	0.1uF
3	2	Cout1, Cin1	4.7uF X5R
4	1	C10	1uF
5	2	C21,C22	27pF
6	1	C26	0.01uF
7	1	C35	1000P 2KV
8	1	D1	Dual Color LED
9	1	D2	LED
10	1	Lx	2.2uH/4.7uH
11	1	R15	2.49K 1%
12	1	R25	1K
13	4	R30, R31, R32, R33	75
14	2	R35, R36	249
15	1	R37	510
16	1	U5	RTL8105E/8111E/8111F
17	1	U6	GST5009-R
18	1	X1	XTAL25M

Note:

1. This is an R-BOM example of RTL8111F series, which only the efuse is used without ASF function.
2. The R-BOM here is calculated with the SWR mode for 1.05V / 1.0V supply only, and no circuit reserved for selecting external-supply source.

Realtek Semiconductor Corp.		
No.2, Industry E. Rd. IX, Science-Based Industrial Park, Hsinchu, Taiwan 300		
Title RTL8111E/8111F/8105E Reference Schematic: R-BOM		
Size	Document Number RTL8111E/8111F/8105E Reference Schematic	Rev
Date:	Friday, November 18, 2011	Sheet 6 of 7

Change Notice from 1.00 to 1.01

1. C17 rename to Cin1, C18 rename to Cin2. C8 rename to Cout1, C9 rename to Cout2, L1 rename to Lx to align with SWR Layout Guide (Page 2.)
2. Add supported resistor values for Dual Color LED, supported combinations when using EEPROM (Page 3.)
3. Add R38 for external clock circuit. (Page 3.)

Change Notice from 1.01 to 1.02

1. Update Pin name(Pin3, Pin47) For RTL8105E.(Page 3.)
2. Update Capacitor Description For RTL8105E and RTL8111E. (Page 2.)
3. Modify Center tap Schematic for Power Optimization. Center tap short and coconnector 1uF to GND.(Page 3.)
4. Add RTL8105E Optional Function Schematic.(Page 4.)

Change Notice from 1.02 to 1.03

1. Modify Efuse Autoload Schematic, SMBDATA Pull Down. (Page 4.)

Change Notice from 1.03 to 1.04

1. Remove TWSI Schematic. (Page 3 & 4.)
2. Remove TWSI Share Pin Name. (Page 3 & 4.)
3. Add Note For Lanwakeb & Clkreqb.(Page 3.)
4. Add Note For Function Option for Using Efuse/BIOS Patch. (Page 4.)

Change Notice from 1.04 to 1.05

1. Add Resistor For SMB Bus.(Page 3.)
2. Add C26 Value Note.(Page 3.)
3. Add SWR Power Sequence Note.(Page2.)

Change Notice from 1.05 to 1.06

1. Modify Power Mode Table. (Page 2.)
2. Remove C4, C16 For RTL8105E-VC. (Page 2.)
3. Modify Lx Value and Update Note. (Page 2.)
4. Modify C26 Value Note. (Page 3.)

Change Notice from 1.06 to 1.07

1. Remove XTAL14.318M from XTAL Circuit. (Page 3.)

Change Notice from 1.07 to 1.08

1. Modify R17 Value. (Page 3 & 4.)
2. Add note for RTL8111E-VL and RTL8111E-VC (Page 4.)
3. Remove R11 for RTL8105E-VC. (Page 4.)

Change Notice from 1.08 to 1.09

1. Modify Note For RTL8105E Series. (Page 2.)
2. Modify Note For RTL8105E Series EEPROM / Efuse Function. (Page 4.)

Change Notice from 1.09 to 1.10

1. Add Note For RTL8111F Series.
2. Modify Note For External Power Supply When Not Using Switching Regulator (Page 2.)

Change Notice from 1.10 to 1.11

1. Add Reserved Resistor When Using External Clock For RTL8105E Series (Page 3.)

Change Notice from 1.11 to 1.12

1. Add Page "Reserved Components" (Page 4) and move all optional components to this page.
2. Add page "R-BOM", which is an example of R-BOM list.
3. Remove the block of Efuse-only (without ASF function) in page "Optional Function" for 8111E/8111F/8105E series.

Change Notice from 1.12 to 1.13

1. Add R20, EEDI Pull Down, For RTL8105E Series EEPROM Function. (Page 5.)

Change Notice from 1.13 to 1.14

1. Add Test Point of the Controller (Page 3)
2. Remove the reserved resistor R3 in power-supply configurations.

Change Notice from 1.14 to 1.15

1. Add a description in page "Controller" to describe when the pull-low resistors R27 of isolateB pin can be NC.

Realtek Semiconductor Corp.		
No.2, Industry E. Rd. IX, Science-Based Industrial Park, Hsinchu, Taiwan 300		
Title RTL8111E/8111F/8105E Reference Schematic: Change Notes		
Size	Document Number RTL8111E/8111F/8105E Reference Schematic	Rev
Date:	Friday, November 18, 2011	Sheet 7 of 7