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裕太微电子
Motorcomm

YT9218N SAMPLE DELIVERY INSTRUCTIONS

VERSION 0.1

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Revision History

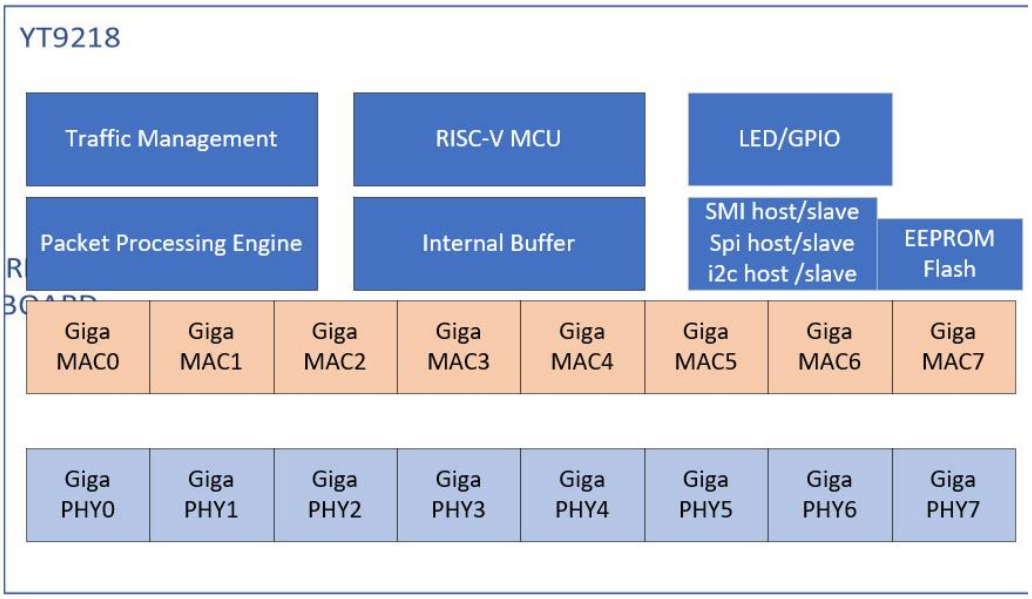
Revision	Release Date	Summary
0.1	2023.07.08	First edition.

Catalogue

1. Basic Function

YT9218N is high-performance 8-port Gigabit Ethernet switch.It integrates eight PHY ports support 1000Base-T/100Base-TX/10Base-Te.

Supports SMI/IIC/SPI interfaces and EEPROM or FLASH for functional configuration.



2. Hardware

YT9218N can replace RTL8370N-VB,precautions for hardware replacement are as follow:

Power supply

YT9218N： AVDDH/DVDDIO supply 3.3V from external power.
DVDDL/AVDDL/PLLVDDL_0/PLLVDDL_1 supply 1.1V from external power.

RTL8370N-VB: AVDDH/DVDDIO supply 3.3V from external power.
DVDDL/AVDDL/PLLVDDL_0/PLLVDDL_1 supply 1.1V from external power.

Power on strapping

Reserved pin.

Pin67	Pull up 4.7K resistance to DVDDIO.
Pin68	
Pin79	

Define switch core ID, ID = {SWITCH_ID_1,SWITCH_ID_0}
YT9218N has this feature and RTL8370N-VB does not.

Pin93	SWITCH_ID_1
Pin87	SWITCH_ID_0

EEPROM_mod, pin80. Both YT9218N and RTL8370N-VB have this feature.

Pull UP	EEPROM Size greater than 16Kbits
Pull Down	EEPROM Size less than or equal to 16Kbits

En_pwrlight, pin83. Both YT9218N and RTL8370N-VB have this feature.

Pull UP	Enable Power on Light
Pull Down	Disable Power on Light

Dis_mcu, pin85. Both YT9218N and RTL8370N-VB have this feature.

Pull UP	Disable Embedded MCU
Pull Down	Enable Embedded MCU

Disautoload, pin86. Both YT9218N and RTL8370N-VB have this feature.

Pull UP	Disable EEPROM/FLASH autoload
Pull Down	Enable EEPROM/FLASH autoload

MID29, pin89. Both YT9218N and RTL8370N-VB have this feature.

Pull UP	MII Management Interface PHY ID is 29(0x1d)
Pull Down	MII Management Interface PHY ID is 0

En_phy, pin91. Both YT9218N and RTL8370N-VB have this feature.

Pull UP	Enable Embedded PHY
Pull Down	Disable Embedded PHY

Define smi_sel, Selection = {SMI_SEL_1,SMI_SEL_0}

Both YT9218N and RTL8370N-VB have this feature,but when smi_sel value is 2'b11, YT9218N is YT IIC mode,RTL8370N-VB is RTL IIC mode.

Pin88	SMI_SEL_1
Pin94	SMI_SEL_0

EN_EEE, pin90. Both YT9218N and RTL8370N-VB have this feature.

Pull UP	Enable 802.3az EEE.
Pull Down	Disable 802.3az EEE.

Dis_lpd, pin72. YT9218N has this feature and RTL8370N-VB does not.

Pull UP	Disable Loop detection function.
Pull Down	Enable Loop detection function.

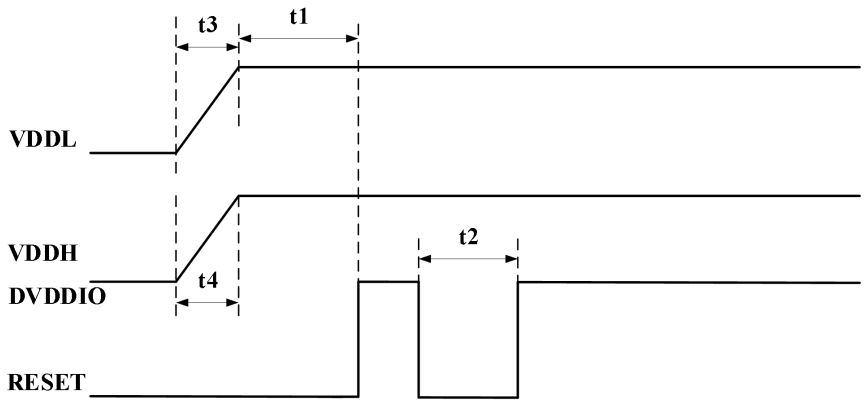
Dis_led,pin75. YT9218N has this feature and RTL8370N-VB does not.

Pull UP	Disable LED function when powered on.
Pull Down	Enable LED function when powered on.

En_flash,pin84. Both YT9218N and RTL8370N-VB have this feature.

Pull UP	Enable FLASH interface.
Pull Down	Disable FLASH interface.

Power on sequence



Parameter	SYM	Description/Condition	Type	Min	Typical	Max	Units
Reset Delay Time	t1	The duration from 'all power steady' to the reset signal released to high.	I	0	-	-	ms
Reset Low Time	t2	The duration of reset signal remaining low time before issuing a reset to the YT9218N.	I	10	-	-	ms
VDDL Power Rise Time	t3	VDDL power rise time.(10%-90%)	I	0.5	-	-	ms
VDDH Power Rise Time	t4	VDDH power rise time.(10%-90%)	I	0.5	-	-	ms

Others

1. The main functions compared with RTL8370N-VB are as follow:

P/N	YT9218N	RTL8370N-VB
Product modality	8*GPHY	8*GPHY
GE PHY	8 ports	8 ports
LUT	4K	4K
Jumbo	9K	9K
LED	Parallel&Serial	Parallel&Serial
CSD	support	support
EEE	support	support
Green	support	support
Flow Control	support	support
Micro Processor	RISC -V	8051
Process	55nm	NA
Package	LQFP 128	LQFP 128

2. YT9218N E-PAD is 7.15mmX6.55mm, RTL8370MB E-PAD is 6.60mmX6.60mm. Direct replacement does not affect usage.

3. YT9218N pin65 has the function of dying gasp by resistance partial voltage. RTL8370N-VB pin65 is GPIO.

3. Power Consumption Information

YT9218N:

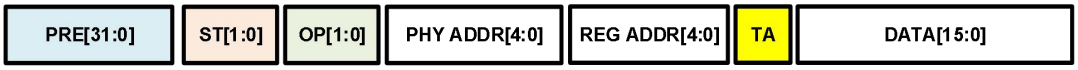
YT9218N Test Board	Port 0-7	3.3V (mA)	1.1V (mA)	Power Consumption (mW)
Reset	NA	38.7	25.3	155.54
Link Down （Phy Sleep)	NA	98.2	198.6	542.52
Link Down	NA	172	249	841.5
8*UTP Link 10M	10M	186	177	808.5
8*UTP Link 100M	100M	216	282.5	1023.55
8*UTP Link 1000M	1000M	511.9	908.3	2688.4
8*UTP Link and Traffic	1000M	504	1002	2765.4

RTL8370N-VB,no detailed data description is provided in this Datasheet.

4. Software

SMI Slave：

The form is as follow.



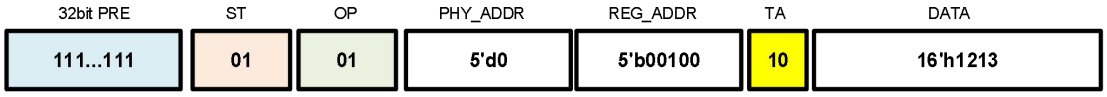
PRE	32’b1
ST	2’b01
OP	Write:2’b01 Read:2’b10
PHY ADDR[4:0]	When mid29 = 0, PHY ADDR = 0 When mid29 = 1, PHY ADDR = 29
REG ADDR	[4] : 1‘b0 [3:2] : Switch ID [1] : ADDR/DATA, 0: ADDR, 1: DATA [0] : W/R, 0:W,1:R
TA	2’b10
DATA	**FRAME0**: [15:0] : PADDR[31:16] **FRAME1**: [15:0] : PADDR [15:0] **FRAME2**: [15:0] : DATA [31:16] **FRAME3**: [15:0] : DATA[15:0]

Example MDIO frame of access register.

MID29=0,Write Switch 1, PADDR: 0x1213_3434,DATA: 0x9876_5432

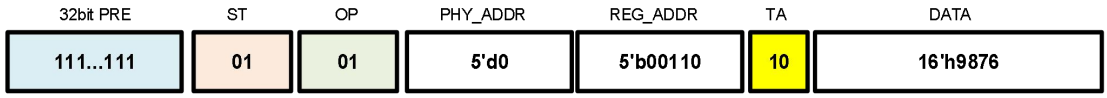
Using Clause 22 frame format, we need to send 4 MDIO frame:

a) Write the high word of 32 bit address

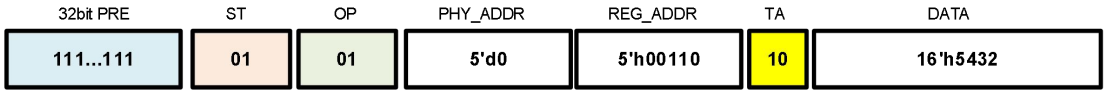


b) Write the low word of 32 bit address

c) Write the high word of 32 bit data



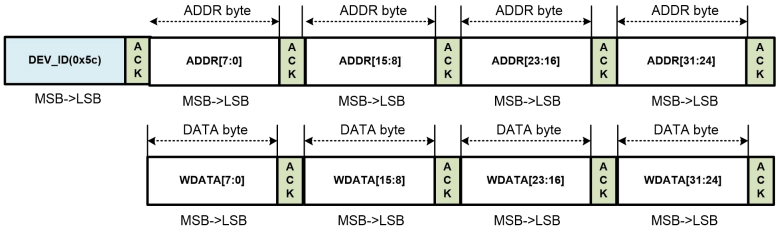
d) Write the low word of 32 bit data



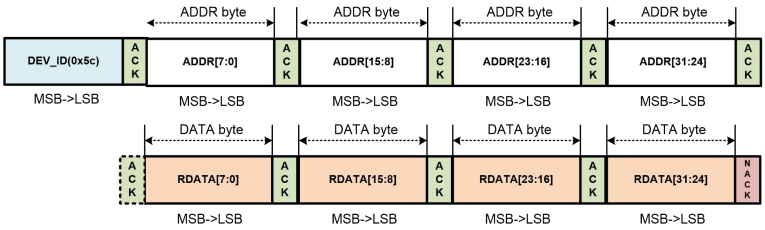
IIC Slave：

The 7-bit address of IIC slave is 0x5c (YT9218N IIC address:0x5c).

The write operation frame format show below :



The read operation frame format show below:



5. Thermal Resistance Information

YT9218N

Package	Type	LQFP-128L
	Dimension	14X20mm
	Thickness	1.4mm
PCB	PCB Dimension	114x76mm
	PCB Thickness	1.6mm

Power	2.76W
Test Board	4L
Control Condition	Air Flow=0m/s

Thermal	θJa	θJb	θJc	ψJt	ψJb
25℃	21.31	9.76	8.70	0.22	9.58

6. Known Problem Specification

Nothing.