S17+ maintenance guide

Version date: 2019-11-25

File category: maintenance proposal

Contents of this book: It mainly describes how to troubleshoot various faults of the S17+ operation board, and how to use test fixtures for accurate positioning.

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1. Maintenance platform/tool preparation requirements

ATA

1 , Platform requirements: electrostatic skin repair workbench (workbench needs to be grounded), Anti-static bracelet and grounding.

2 , Equipment requirements: constant temperature soldering iron (350 degrees-380 degrees), The pointed soldering tip is used for soldering small patches such as chip resistors and capacitors; the hot air gun and BG

Chip/BGA disassembly and welding; multimeter, welded steel needle and heat-shrinkable sleeve, convenient for measurement; Oscilloscope (Agilent Fluke recommended)

3 , Test tool requirements: APW9+ power supply and power adapter cable, used for computing board power supply; 2.1040 control board test fixture.

4 , Maintenance auxiliary materials/tool requirements: low temperature solder paste Alpha OM550, flux, washing water plus absolute alcohol; washing water is used to clean up the solder res

Leftover; thermal paste, used to apply on the chip/heat sink after repair (some models need to use thermal paste) ; Tin planting steel net, ball planting steel net, tin suction line,

Tin ball (the ball diameter is recommended to be 0.4mm); When replacing a new chip, you need to tin the chip pins and the BSM face value before soldering to the computing board.

5 , Common maintenance spare material requirements: 0402 resistance (0R, 33R, 1K, 4.7K,) ; 0201 resistance (0R), 0402 capacitor (0.1uf, 1uf).

2. Job requirements

1. The maintenance personnel must have certain electronic knowledge, more than one year of maintenance experience, and be proficient in BGA/QFN/LGA package soldering technology.

2. After repairing, the arithmetic board must be tested for more than two times and it is OK before it can pass!

3. Pay attention to the operation method when replacing the chip. After replacing any accessories, there is no obvious deformation of the PCB board. Check the replacement parts and the surrounding parts for open-circuit and short-circuit problems.

4. Check whether the tools and fixtures can work normally, determine the maintenance station to test software parameters, test fixture versions, etc.

5. In the test of repairing and replacing the chip, the chip needs to be tested first, and then the function test is performed after the pass. The function test must ensure that the double-sided he

Connect OK and the cooling fan is at full speed. When using the chassis to dissipate heat, 2 arithmetic boards must be put in at the same time to form an air duct. The single-sided test of production should also ensure that the air duct is formed (important)

6. Two fans are assisted to dissipate heat when measuring signals, and the fans maintain full speed.

7. The steel sheet windshield on the front and back of the computing board is 21V. Keep the maintenance table clean and insulated during the measurement and maintenance process to avoid short circuit during the maintenance process.

8. To replace the new chip, you need to print the solder paste on the pins and the BSM surface to ensure that the chip is pre-soldered and then soldered to the PCBA for repair.

9. All fixtures on the repair end use Repair_Mode mode and use the config configuration file tested in non-scanning mode. After the test pass, the production side will streamline from the test first; the sales back-end will be installed normally (installed at the same level). The test configuration file can be obtained by consulting TE.

3. Jig making and matters needing attention

The supporting fixture of the jig should satisfy the heat dissipation of the computing board and be convenient for measuring the signal

1. Test fixture.

2. Use the test fixture SD card brush program to update the FPGA of the control board, unzip it and copy it to the SD card, insert the card into the fixture card slot; power on

Wait for about 1 minute for the control panel indicator to double flash 3 times before the update is complete.

SD_S17+_zhiju 2019/11/18 17:19 WinRAR 压缩文件

Figure 3-1

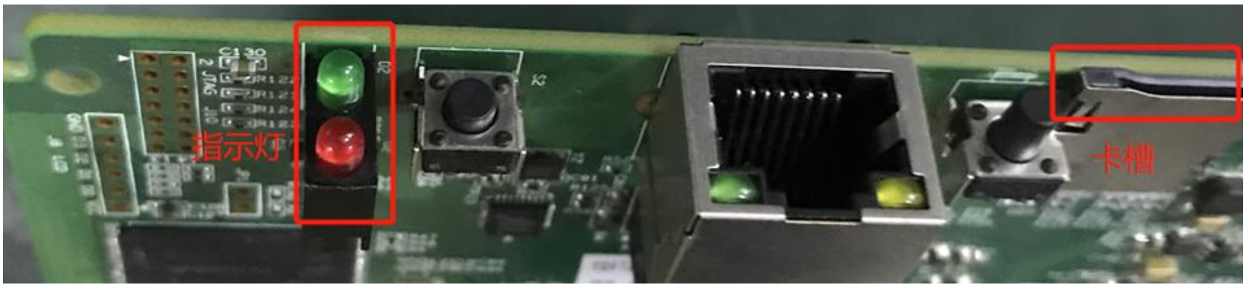


Figure 3-2

3. The test SD card is made according to the requirements, the single-sided heat sink uses the file before brushing to make the SD card; the double-sided heat sink uses the file after brushing

Made.

刷胶后	2019/11/18 17:12	文件夹
刷胶前	2019/11/21 12:08	文件夹

Figure 3-3

4. The use of double-sided testing on the production side requires a matching scan code gun and serial port tools. For details, see the test process document.

5. The sales back-end and the outsourcing maintenance end do not need to use the scan code method (the fixture SD card configuration file needs to be changed, and the requirements can be

Test the config configuration file for the fixture).

ATA

Fourth, the principle overview

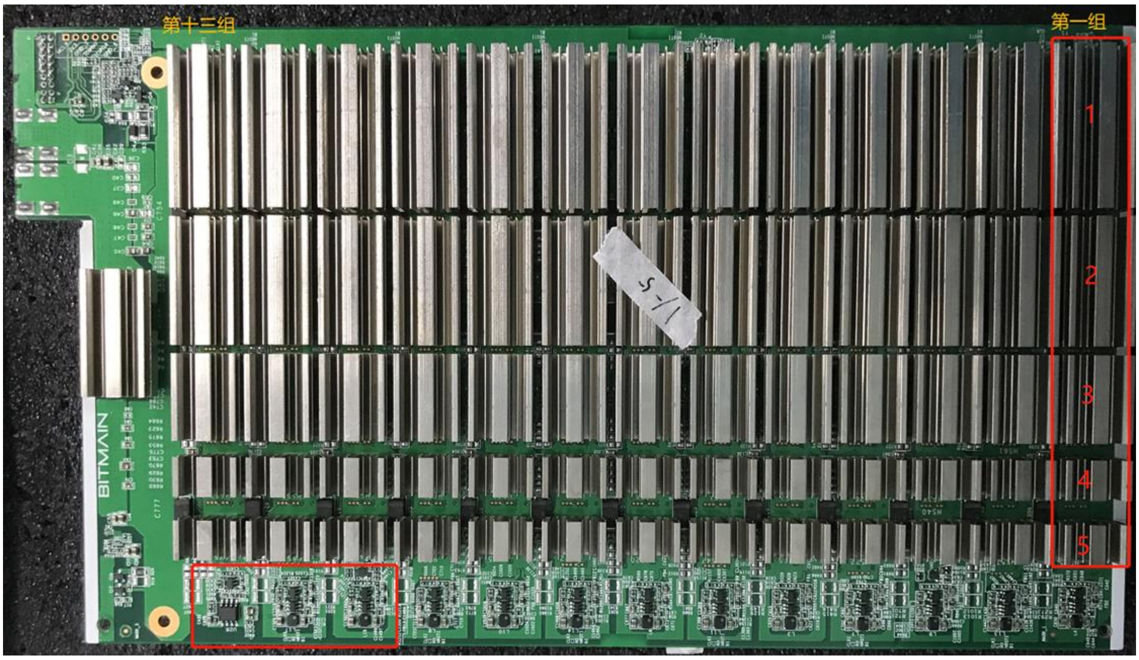
1. Working structure of S17+ arithmetic board:

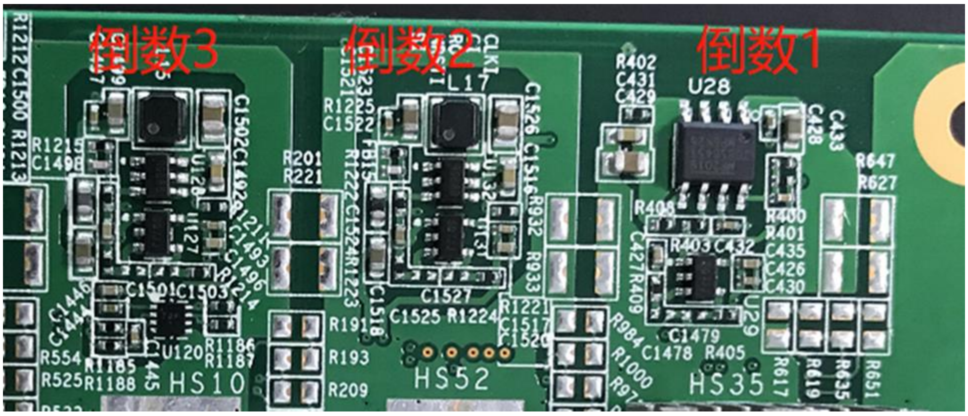
The arithmetic board is composed of 65 BM1397 chips, divided into 13 groups, each group is composed of 5 ICs; the BM1397 chip used in the S17+ arithmetic board works

The voltage is 1.5V; the last 24.5V output from the boost circuit U6 is used to supply 1.8V to the LDO, and the last two and three groups are supplied to DCDC from 24.5V

The power supply outputs 1.8V, and the other groups are divided by 21V to provide 1.8V through DCDC. All 0.8V is provided by the 1.8V of this domain through the LDO output. Such as

As shown in Figure 4-1:





Pic 4-1

2. S17+ arithmetic board boost circuit:

The boost is powered by the power supply from 21V to 24.5V, as shown in Figure 4-2:

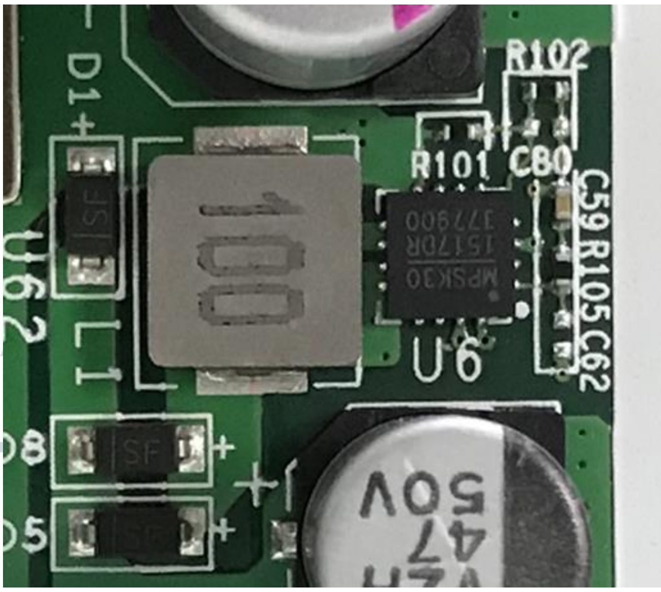


Figure 4-2

3. S17+ chip signal trend:

3.1. CLK (XIN) signal flow direction: generated by Y1 25M crystal oscillator, transmitted from chip 01 to chip 65; during operation, the voltage is 1.45-1.65V (oscilloscope) multimeter measures about 0.7-0.9V.

3.2. TX (CI, CO) signal flow direction: from IO port 7 pin (3.3V) into the level conversion IC After U2, from chip 01 to chip 65 Chip transmission; the voltage is 0V when the IO line is not inserted, and the voltage is 1.8V during operation.

3.3. RX (RI, RO) signal flow direction: from chip No. 65 to chip No. 01, return to the 8th pin of the signal cable terminal via U1 and return to the control board; When the IO signal is not inserted, the voltage is 0.3V, and the voltage is 1.8V during calculation.

3.4. BO (BI, BO) signal flow direction: from chip 01 to chip 65; the multimeter measures 0V.

3.5. RST signal flow direction: enter from pin 3 of IO port, and then transmit from chip 01 to chip 65; no IO signal is inserted, 0V in standby mode, operation

Calculated as 1.8V.

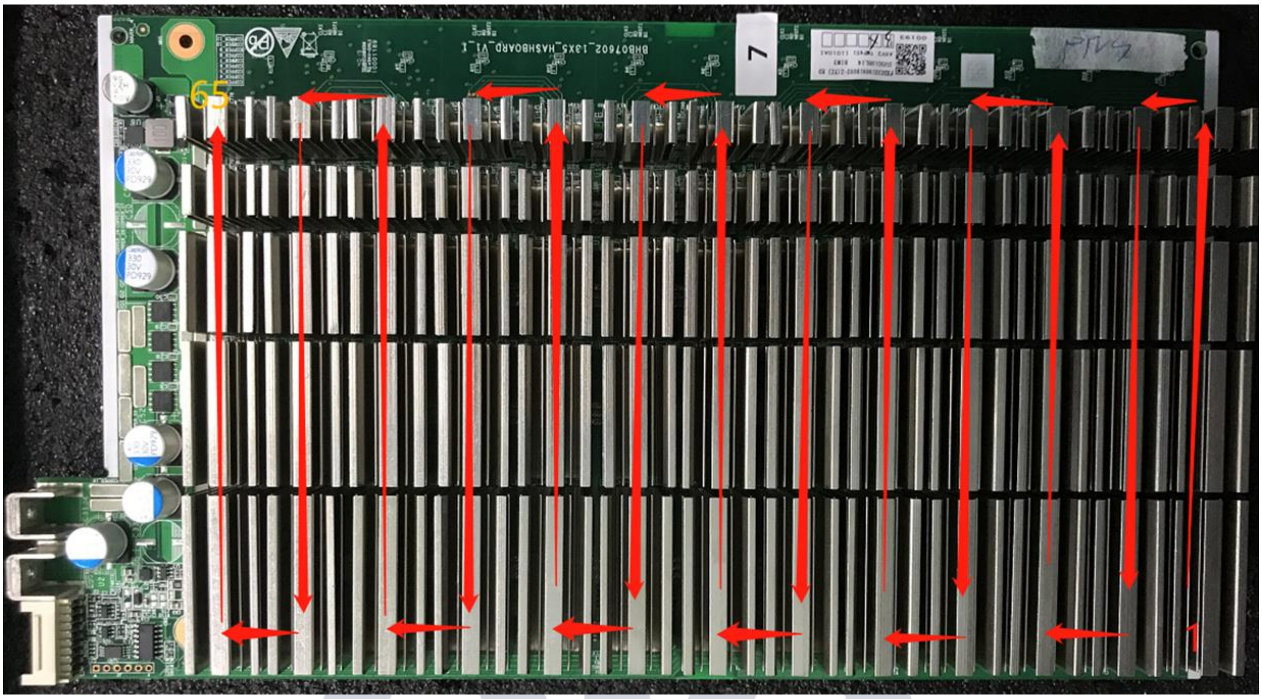

65
BHB07602_13X5_HASHBOARD_V1_1
7
1

Figure 4-3

4. Whole machine architecture:

The whole machine is mainly composed of 3 computing boards, 1 control board, APW9+ power supply, and 4 cooling fans, as shown in Figure 4-4:

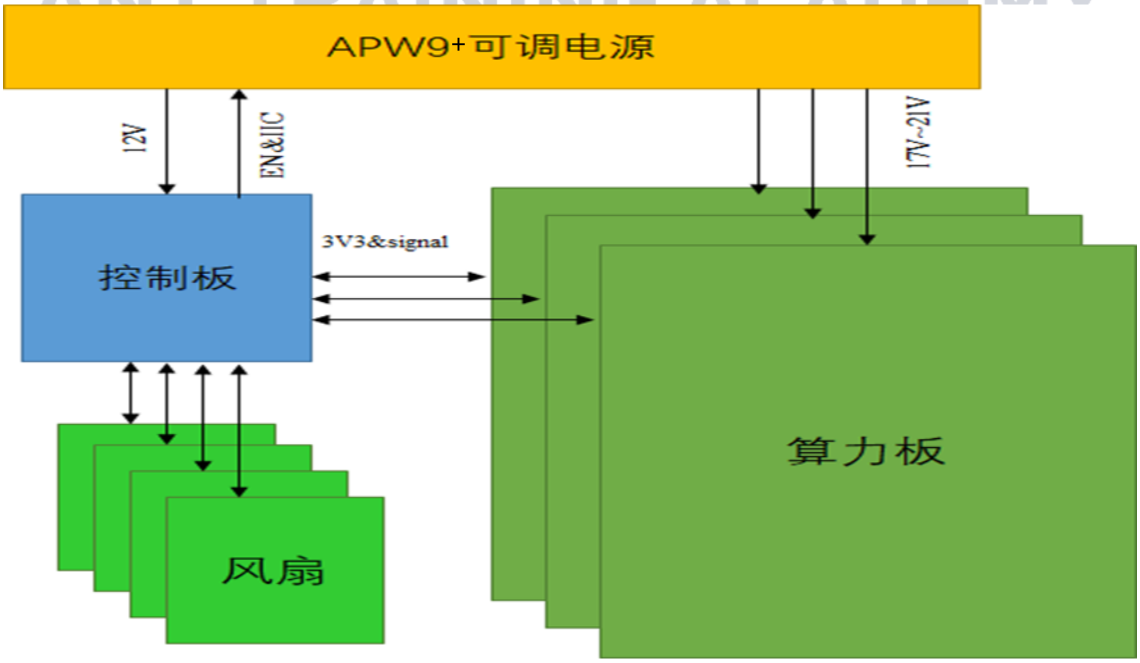

APW9+可调电源
12V
EN&IIC
17V~21V
控制板
3V3&signal
算力板
风扇

Figure 4-4

Five, common bad phenomena and troubleshooting steps of the operation board

1. Phenomenon: The single board test detection chip is 0 (PT1/PT2 stations)

The first step is to check the power output first, please check the circled part in Figure 5-1.

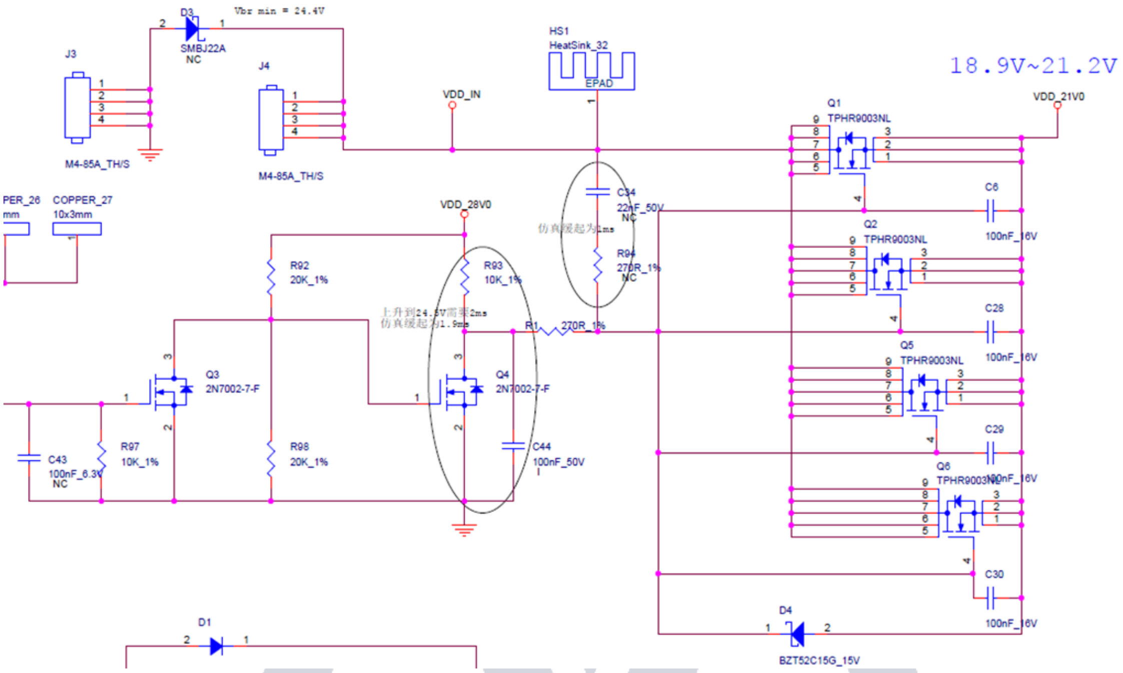

D3
Vbr min = 24.4V
2
1
SMBJ22A
NC
J3
1
2
3
4
M4-85A_TH/S
J4
1
2
3
4
M4-85A_TH/S
VDD_IN
HS1
HeatSink_32
EPAD
1
18.9V~21.2V
VDD_21V0
PER_26
mm
COPPER_27
10x3mm
VDD_28V0
C34
22nF_50V
NC
仿真缓起为1ms
R94
270R_1%
NC
R92
20K_1%
R93
10K_1%
上升到24.5V需要2ms
仿真缓起为1.9ms
R1
270R_1%
Q3
2N7002-7-F
Q4
2N7002-7-F
C43
100nF_6.3V
NC
R97
10K_1%
R98
20K_1%
C44
100nF_50V
Q1
TPHR9003NL
Q2
TPHR9003NL
Q5
TPHR9003NL
Q6
TPHR9003NL
C6
100nF_16V
C28
100nF_16V
C29
100nF_16V
C30
100nF_16V
D4
BZT52C15G_15V
D1

Figure 5-1

The second step is to check the voltage output in the voltage domain

The voltage of each voltage domain is about 1.6V. If 21V has power supply, there is usually a domain voltage. The output of the power terminal of the computing board is measured first, and w

Resistance between pins 1, 4 and 8) . If there is 21V power supply but no domain voltage, continue to investigate.

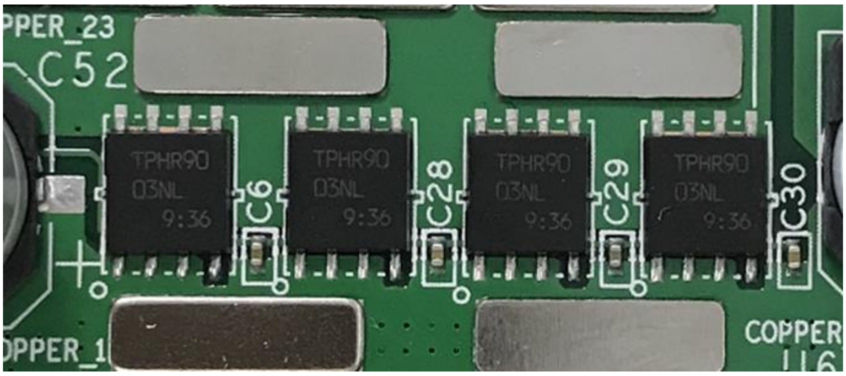

PPER_23
C52
TPHR90
03NL
9:36
C6
C28
C29
C30
OPPER_1
COPPER

Figure 5-2

The third step is to check the PIC circuit

Measure whether there is output on the second pin of U3, the voltage is about 3.2V, if yes, please continue to troubleshoot the problem, if there is no 3.3V, please check the fixture cable and

The connection status of the arithmetic board is OK, and reprogram the PIC.

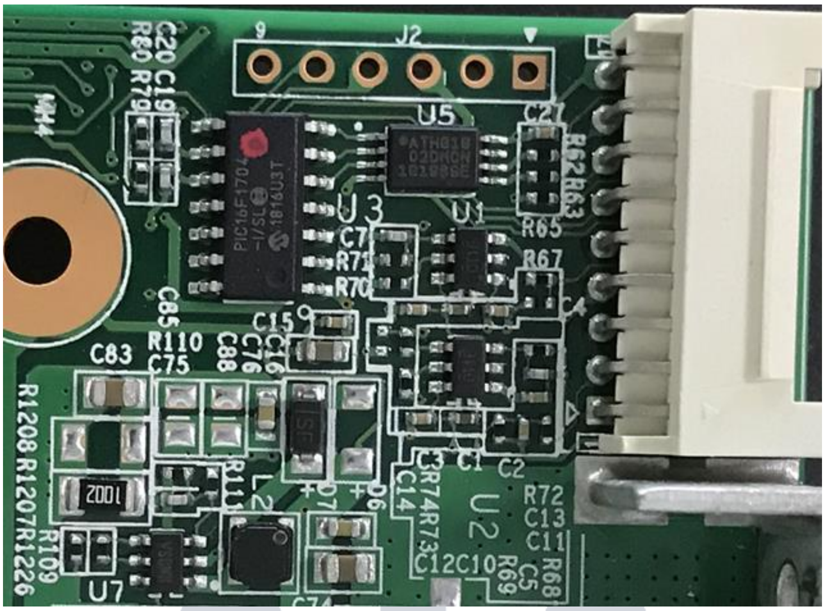

J2
9
U5
U3
U1
U2
U7
PIC16F1704 -I/SL
C20 C19
R80 R79
C27
R62 R63
R65
R67
C7
R71
R70
C85
C15
C83
R110
C75
C76
C16
C88
R1208 R1207 R1226
R109
R111
2001
D7
D6
C3 C1 C2
C14
R74 R73
R72 C13 C11
C12 C10 R69 C5 R68
C4

Figure 5-3

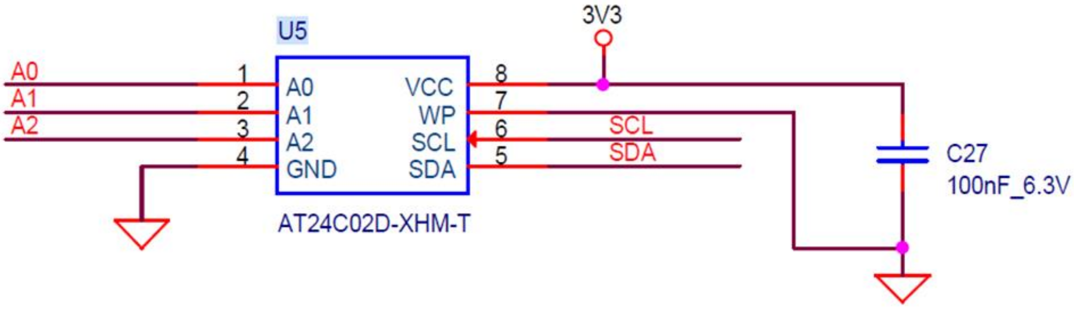

U5
3V3
A0
A1
A2
1
2
3
4
A0
A1
A2
GND
VCC
WP
SCL
SDA
8
7
6
5
SCL
SDA
C27
100nF_6.3V
AT24C02D-XHM-T

Figure 5-4

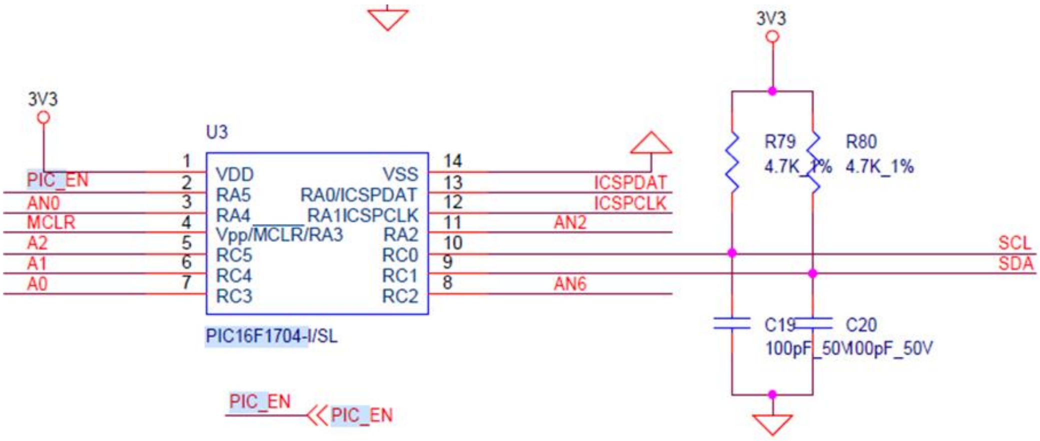

3V3
U3
PIC_EN
AN0
MCLR
A2
A1
A0
1
2
3
4
5
6
7
VDD
RA5
RA4
Vpp/MCLR/RA3
RC5
RC4
RC3
VSS
RA0/ICSPDAT
RA1ICSPCLK
RA2
RC0
RC1
RC2
14
13
12
11
10
9
8
ICSPDAT
ICSPCLK
AN2
AN6
PIC16F1704-I/SL
PIC_EN
PIC_EN
3V3
R79
4.7K_1%
R80
4.7K_1%
SCL
SDA
C19
100pF_50V
C20
100pF_50V

Figure 5-5

PIC programming steps:

1. PIC program programming on the arithmetic board.

Program: 20190908-PIC1704-BHB07602-0x88.hex

Download the burning tool: PICkit3, pin 1 of the PICkit3 cable corresponds to pin 1 of J3 on the PCB, and you need to connect pins 1, 2, 3, 4, 5, and 6.

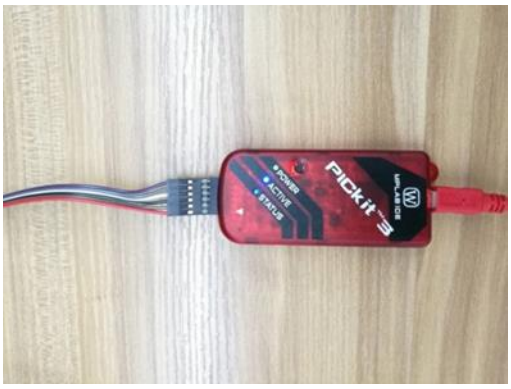

PICkit 3
MPLAB ICD
POWER
ACTIVE
STATUS

Figure 5-6

2. Burning software:

ATA

Open MPLAB IPE, select device: PIC16F1704, click power to select the power supply mode, then click operate, the first step: select file to find the .HEX file to be burned, the second step: click connect to connect normally, the third step: click the program button , Click verifiy after completion, it prompts that the verification is completed to prove that the programming is successful.

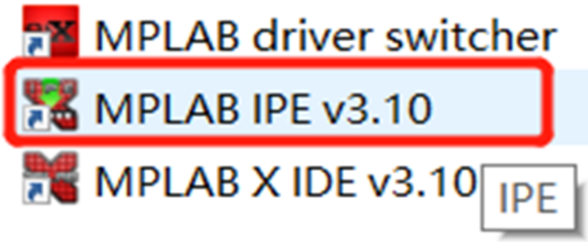
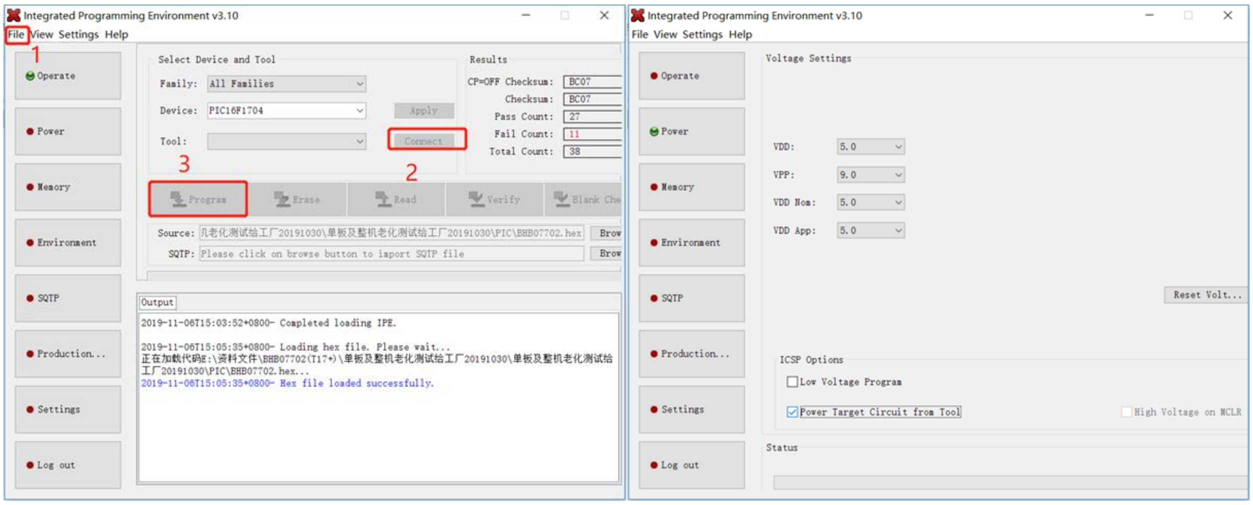

MPLAB driver switcher
MPLAB IPE v3.10
MPLAB X IDE v3.10
IPE

Figure 5-7


Integrated Programming Environment v3.10
File View Settings Help
1
Operate
Power
Memory
Environment
SQTP
Production...
Settings
Log out
Select Device and Tool
Results
Apply
Connect
2
3
Program
Erase
Read
Verify
Blank Che
Brow
Brow
Output

Family: All Families
Device: PIC16F1704
Tool:
CP=OFF Checksum: BC07
Checksum: BC07
Pass Count: 27
Fail Count: 11
Total Count: 38
Source: 几老化测试给工厂20191030\单板及整机老化测试给工厂20191030\PIC\BHB07702.hex
SQTP: Please click on browse button to import SQTP file

```
2019-11-06T15:03:52+0800- Completed loading IPE.

2019-11-06T15:05:35+0800- Loading hex file. Please wait...
正在加载代码E:\资料文件\BHB07702(T17+)\单板及整机老化测试给工厂20191030\单板及整机老化测试给
工厂20191030\PIC\BHB07702.hex...
2019-11-06T15:05:35+0800- Hex file loaded successfully.
```

Integrated Programming Environment v3.10
File View Settings Help
Operate
Power
Memory
Environment
SQTP
Production...
Settings
Log out
Voltage Settings
Reset Volt...
ICSP Options
Status

VDD: 5.0
VPP: 9.0
VDD Nom: 5.0
VDD App: 5.0
☐ Low Voltage Program
☑ Power Target Circuit from Tool
☐ High Voltage on MCLR

Figure 5-8

The fourth step is to check the output of the boost circuit

Test D5/D8 in Figure 5-9 can measure a voltage of 23-24.5V.

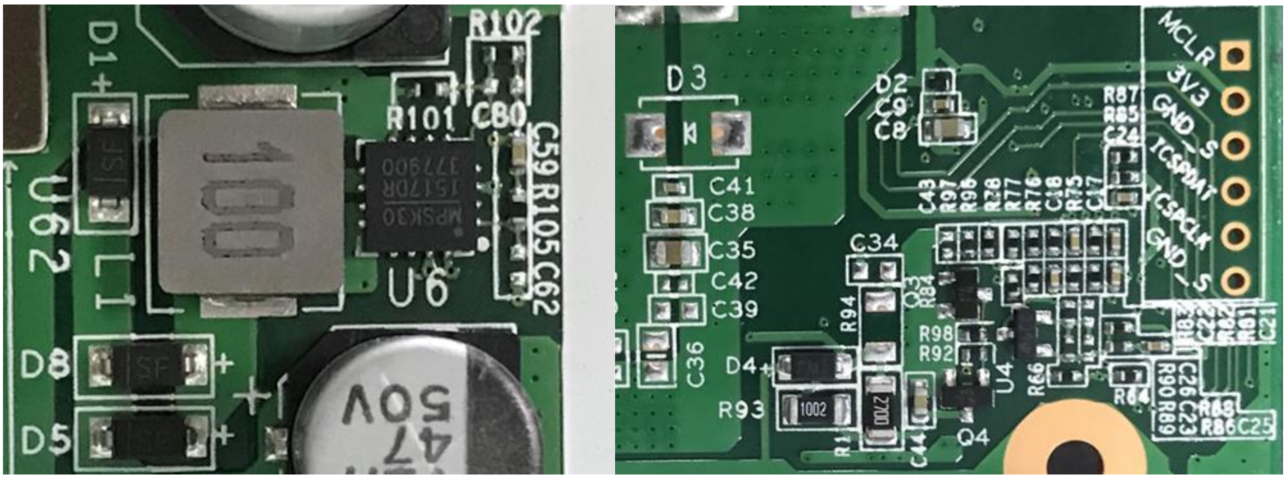

D1
U62
L1
100
D8
D5
U6
R101
C80
R102
C59
R105
C62
50V
47
D3
C41
C38
C35
C42
C39
C36
D4
R93
C34
D2
C9
C8
R94
Q3
R84
R98
R92
U4
R66
Q4
C44
MCLR
3V3
GND_S
TCSPDAT
TCSPCLK
GND_S
R87
R85
C24
C43
R97
R96
R78
R77
R76
C18
R75
C17
R64

Figure 5-9

The fifth step, check the output of each group of LDO 1.8V or PLL 0.8V

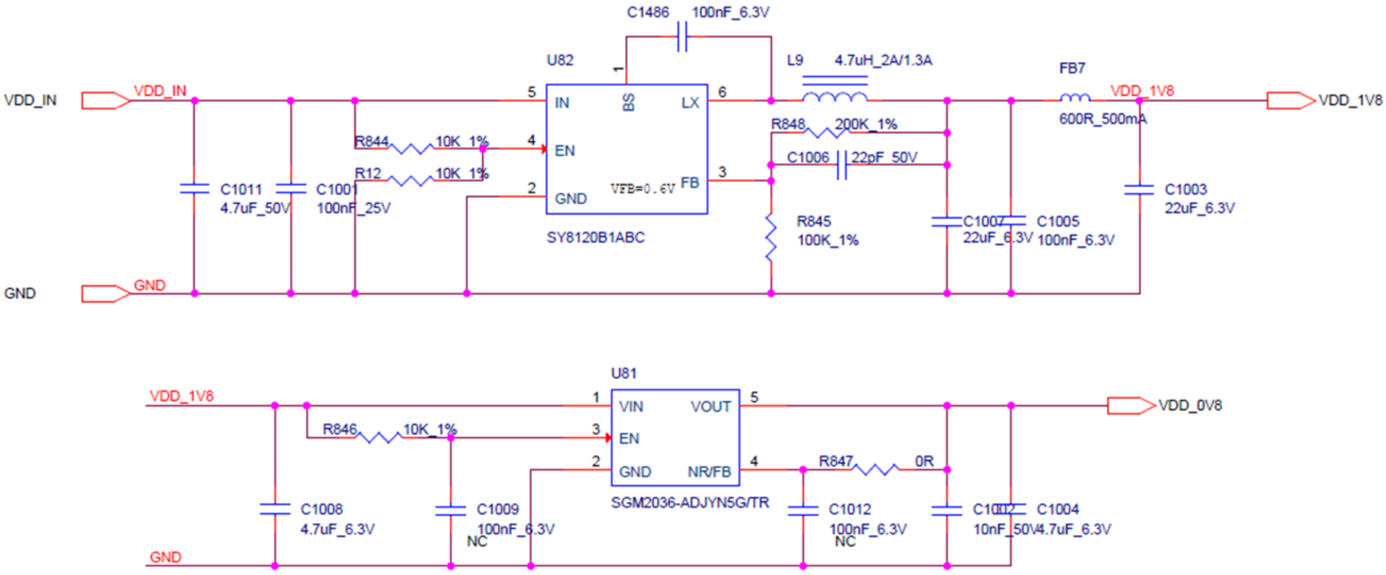

C1486
100nF_6.3V
U82
L9
4.7uH_2A/1.3A
FB7
VDD_IN
VDD_IN
IN
BS
LX
EN
GND
FB
VFB=0.6V
SY8120B1ABC
R844
10K_1%
R12
10K_1%
C1011
4.7uF_50V
C1001
100nF_25V
R848
200K_1%
C1006
22pF_50V
R845
100K_1%
C1007
22uF_6.3V
C1005
100nF_6.3V
VDD_1V8
600R_500mA
C1003
22uF_6.3V
VDD_1V8
GND
GND
1
2
3
4
5
6
U81
VDD_1V8
VIN
VOUT
EN
GND
NR/FB
R846
10K_1%
C1008
4.7uF_6.3V
C1009
100nF_6.3V
NC
SGM2036-ADJYN5G/TR
R847
0R
C1012
100nF_6.3V
NC
C1002
10nF_50V
C1004
4.7uF_6.3V
VDD_0V8
GND
1
2
3
4
5

Figure 5-10

The sixth step, check the chip signal output (CLK/CI/RI/BO/RST)

The voltage value range described by the reference signal trend, if the measurement encounters a large deviation of the voltage value, it can be compared with the measured value of the adja

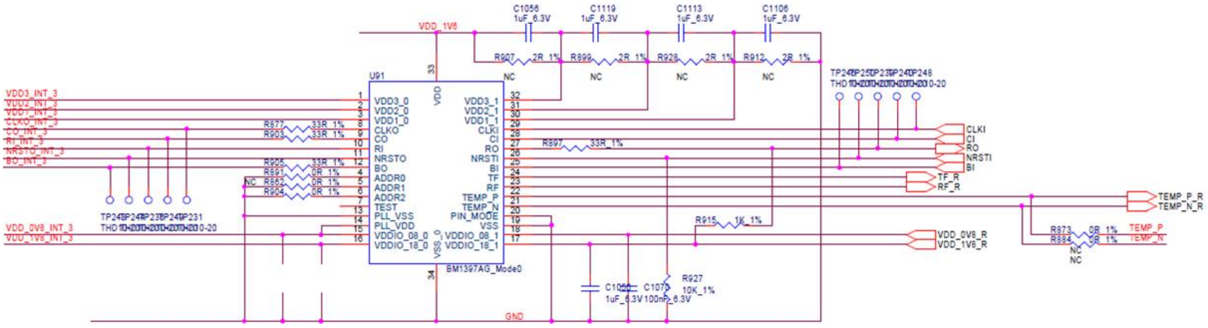

U91
BM1397AG_Mode0
VDD_1V8
GND
C1056 1uF_6.3V
C1119 1uF_6.3V
C1113 1uF_6.3V
C1106 1uF_6.3V
R907 2R_1%
R899 2R_1%
R928 2R_1%
R912 3R_1%
NC
R877 33R_1%
R903 33R_1%
R905 33R_1%
R891 0R_1%
R882 0R_1%
R904 0R_1%
R897 33R_1%
R915 1K_1%
R927 10K_1%
R873 0R_1%
R884 0R_1%
TEMP_P
TEMP_N
TEMP_P_R
TEMP_N_R
CLKI
CI
RO
NRSTI
BI
TF_R
RF_R
VDD_0V8_R
VDD_1V8_R
VDD3_INT_3
VDD2_INT_3
VDD1_INT_3
CLKO_INT_3
CO_INT_3
RI_INT_3
NRSTO_INT_3
BO_INT_3
VDD_0V8_INT_3
VDD_1V8_INT_3

Figure 5-11

Assuming that the output voltage of the signal pin of the chip is normal, the chip is still incomplete. For example, if 64 chips are detected, you can short-circuit the RO pull-up resistor

Check the way of R639. If 64 chips can be detected after short-circuiting, it means that the 1-64 chips should be normal. At this time, the 65th chip can be checked.

question. If you short-circuit the test and read 63, then go forward to troubleshoot; it is recommended to use the dichotomy to troubleshoot, that is, from the middle (the 32nd troubleshooter)

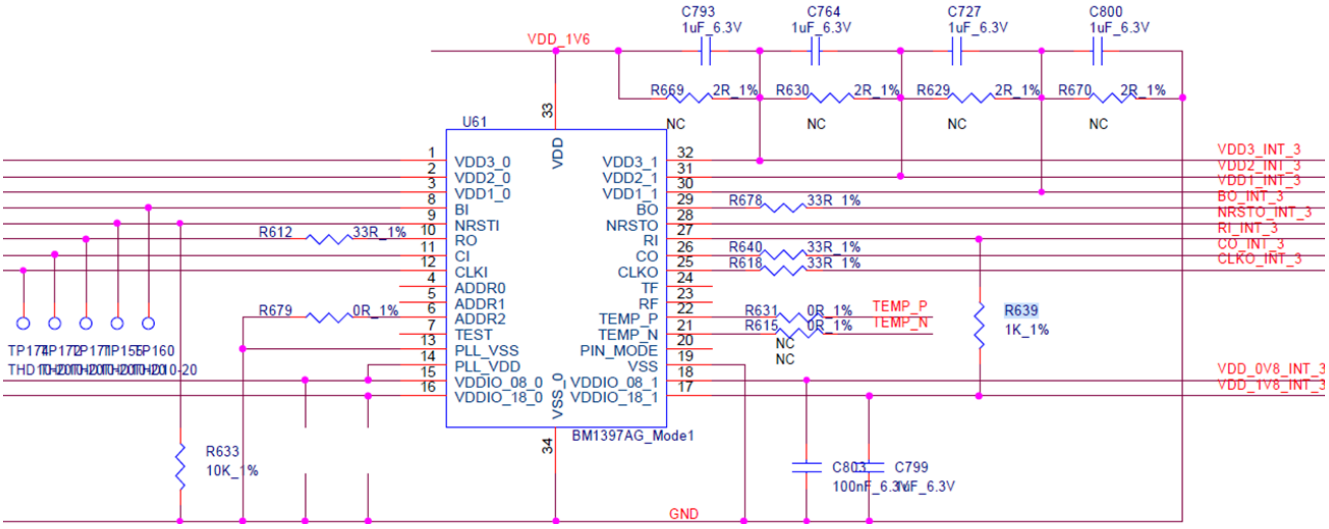

U61
BM1397AG_Mode1
VDD_1V6
GND
C793 1uF_6.3V
C764 1uF_6.3V
C727 1uF_6.3V
C800 1uF_6.3V
R669 2R_1%
R630 2R_1%
R629 2R_1%
R670 2R_1%
NC
R612 33R_1%
R679 0R_1%
R678 33R_1%
R640 33R_1%
R618 33R_1%
R631 0R_1%
R615 0R_1%
TEMP_P
TEMP_N
R639 1K_1%
R633 10K_1%
C803 100nF_6.3V
C799 1uF_6.3V
VDD3_0
VDD2_0
VDD1_0
BI
NRSTI
RO
CI
CLKI
ADDR0
ADDR1
ADDR2
TEST
PLL_VSS
PLL_VDD
VDDIO_08_0
VDDIO_18_0
VDD3_1
VDD2_1
VDD1_1
BO
NRSTO
RI
CO
CLKO
TF
RF
TEMP_P
TEMP_N
PIN_MODE
VSS
VDDIO_08_1
VDDIO_18_1
VDD
VSS_0
VDD3_INT_3
VDD2_INT_3
VDD1_INT_3
BO_INT_3
NRSTO_INT_3
RI_INT_3
CO_INT_3
CLKO_INT_3
VDD_0V8_INT_3
VDD_1V8_INT_3

Figure 5-12

Check the comparison table one as shown:

Table I

Only short-circuit the following electrical Hinder	troubleshooting chip number	Symptom	Only short the following power Hinder	Check the chip number	Symptom
R322	U21	1 can be found ASIC	R376	U27	33 can be found ASIC
R302	U20	2 can be found ASIC	R357	U23	34 can be found ASIC
R304	U22	3 can be found ASIC	R1139	U24	35 can be found ASIC
R285	U18	4 can be found ASIC	R1083	U108	36 can be found ASIC

R1067	U19	5 can be found ASIC	R1137	U105	37 can be found ASIC
R1011	U103	6 can be found ASIC	R1126	U106	38 can be found ASIC
R1065	U100	7 can be found ASIC	R1133	U107	39 can be found ASIC
R1054	U101	8 can be found ASIC	R826	U104	40 can be found ASIC
R1061	U102	9 can be found ASIC	R822	U75	41 can be found ASIC
R754	U99	10 can be found ASIC	R802	U74	42 can be found ASIC
R750	U70	11 can be found ASIC	R804	U76	43 can be found ASIC
R730	U69	12 can be found ASIC	R785	U72	44 can be found ASIC
R732	U71	13 can be found ASIC	R541	U73	45 can be found ASIC
R713	U67	14 can be found ASIC	R485	U40	46 can be found ASIC
R469	U68	15 can be found ASIC	R539	U37	47 can be found ASIC
R413	U35	16 can be found ASIC	R528	U38	48 can be found ASIC
R467	U32	17 can be found ASIC	R535	U39	49 can be found ASIC
R456	U33	18 can be found ASIC	R254	U36	50 can be found ASIC
R463	U34	19 can be found ASIC	R250	U16	51 can be found ASIC
R182	U31	20 can be found ASIC	R230	U15	52 can be found ASIC
R178	U11	21 can be found ASIC	R232	U17	53 can be found ASIC
R158	U10	22 can be found ASIC	R213	U13	54 can be found ASIC
R160	U12	23 can be found ASIC	R987	U14	55 can be found ASIC
R141	U8	24 can be found ASIC	R931	U96	56 can be found ASIC
R915	U9	25 can be found ASIC	R985	U93	57 can be found ASIC

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R859	U91	26 can be found ASIC	R974	U94	58 can be found ASIC
R913	U88	27 can be found ASIC	R981	U95	59 can be found ASIC
R902	U89	28 can be found ASIC	R680	U92	60 can be found ASIC
R909	U90	29 can be found ASIC	R676	U64	61 can be found ASIC
R398	U87	30 can be found ASIC	R656	U63	62 can be found ASIC
R394	U26	31 can be found ASIC	R658	U65	63 can be found ASIC
R374	U25	32 can be found ASIC	R639	U61	64 can be found ASIC

2. Phenomenon: Incomplete single board detection chip (PT1/PT2 stations)

Check the related signals (CLK/CI/RI/BO/RST) of the chip before and after the error position, and locate the bad position according to the IC whose signal is abnormal.

Refer to the signal trend and voltage value range for maintenance.

3. Phenomenon: Single board Pattern NG, that is, the nonce data is incomplete (PT2 station)

The serial port is connected to the computer, and the computer reads the test log; according to the result displayed by the log, it is determined that the chip position that is insufficient is retur

sheet.

4. Phenomenon: Test reading temperature is abnormal (PT2 station)

Check the temperature sensor power supply VDD and the connection between the temperature sensor and the chip (TEMP_P; TEMP_N), and check the welding quality of the corresponding tem

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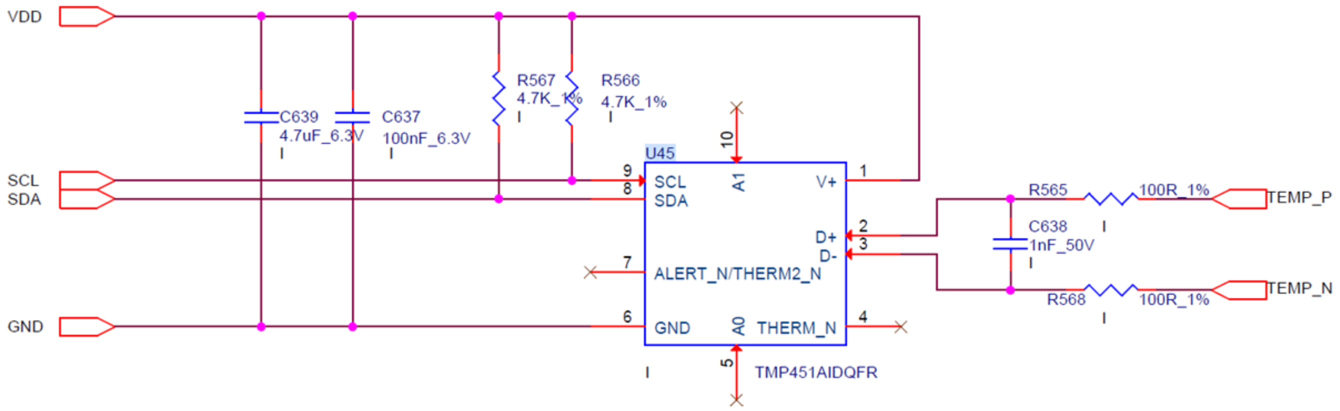

VDD
SCL
SDA
GND
C639
4.7uF_6.3V
C637
100nF_6.3V
R567
4.7K_1%
R566
4.7K_1%
U45
SCL
SDA
A1
V+
D+
D-
ALERT_N/THERM2_N
GND
A0
THERM_N
TMP451AIDQFR
10
9
8
1
2
3
7
6
4
5
R565
100R_1%
C638
1nF_50V
R568
100R_1%
TEMP_P
TEMP_N

Figure 5-13

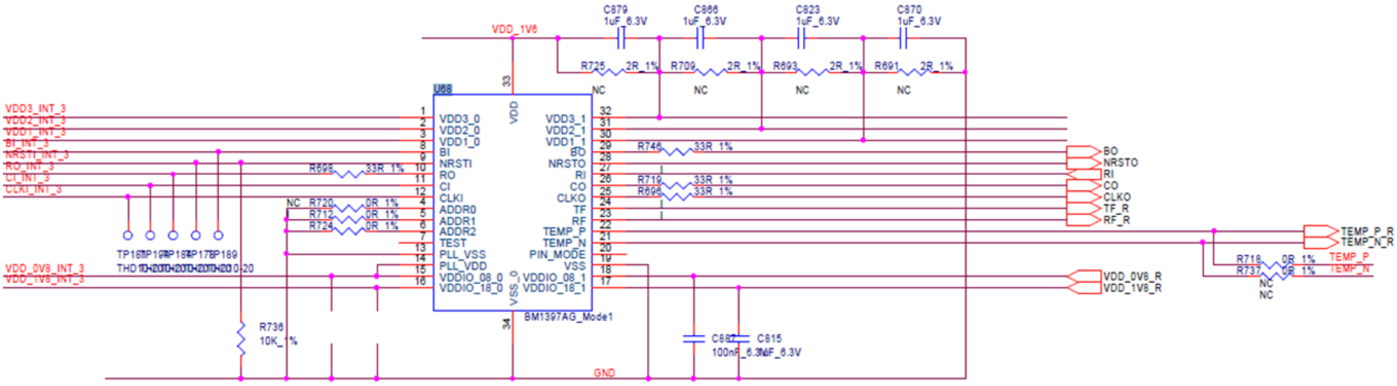

VDD_1V6
C879 1uF_6.3V
C866 1uF_6.3V
C823 1uF_6.3V
C870 1uF_6.3V
R725 2R_1%
R709 2R_1%
R693 2R_1%
R691 2R_1%
NC
U68
VDD3_INT_3
VDD2_INT_3
VDD1_INT_3
BI_INT_3
NRSTI_INT_3
RO_INT_3
CI_INT_3
CLKI_INT_3
VDD_0V8_INT_3
VDD_1V8_INT_3
R698 33R_1%
R720 0R_1%
R712 0R_1%
R724 0R_1%
VDD3_0
VDD2_0
VDD1_0
BI
NRSTI
RO
CI
CLKI
ADDR0
ADDR1
ADDR2
TEST
PLL_VSS
PLL_VDD
VDDIO_08_0
VDDIO_18_0
VDD
VSS_0
VDD3_1
VDD2_1
VDD1_1
BO
NRSTO
RI
CO
CLKO
TF
RF
TEMP_P
TEMP_N
PIN_MODE
VSS
VDDIO_08_1
VDDIO_18_1
BM1397AG_Mode1
R746 33R_1%
R719 33R_1%
R696 33R_1%
BO
NRSTO
RI
CO
CLKO
TF_R
RF_R
TEMP_P_R
TEMP_N_R
R718 0R_1%
R737 0R_1%
TEMP_P
TEMP_N
VDD_0V8_R
VDD_1V8_R
C887 100nF_6.3V
C815 1uF_6.3V
R736 10K_1%
GND

Figure 5-14

Check the welding quality of the heat sink on the front/rear side of the chip connected to the temperature sensor. If the heat sink is not well welded, it will affect the temperature difference.

Sixth, the control board problem causes the following problems

1. The whole machine does not run

The first step is to check whether the voltages at several voltage output points are normal. If 3.3V is short-circuited, you can disconnect U8 first. If it is still short-circuited, you can unplug the CP

For other voltage abnormalities, generally replace the corresponding converter IC.

The second step, if the voltage is normal, please check the welding status of the DDR/CPU (X-RAY inspection on the production side).

The third step is to try to update the flash program with SD card.

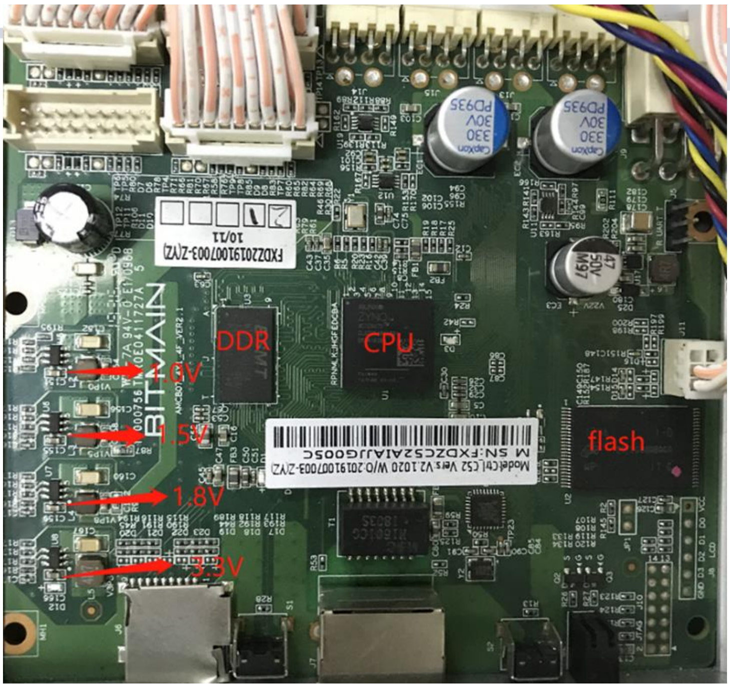

DDR
CPU
flash
1.0V
1.5V
1.8V
3.3V

Figure 5-15

2. The whole machine cannot find the IP

Probably, the IP cannot be found due to abnormal operation, please refer to the first point of investigation.

Check the appearance and welding of the network port, network transformer T1, and CPU.

3. The whole machine cannot be upgraded

Check the appearance and welding of the network port, network transformer T1, and CPU.

4. The whole machine fails to read the arithmetic board or has fewer links

A, check the cable connection status.

B. Check the parts of the control board corresponding to the chain.

C. Check the wave soldering quality of the plug-in pins and the resistance around the plug-in interface.

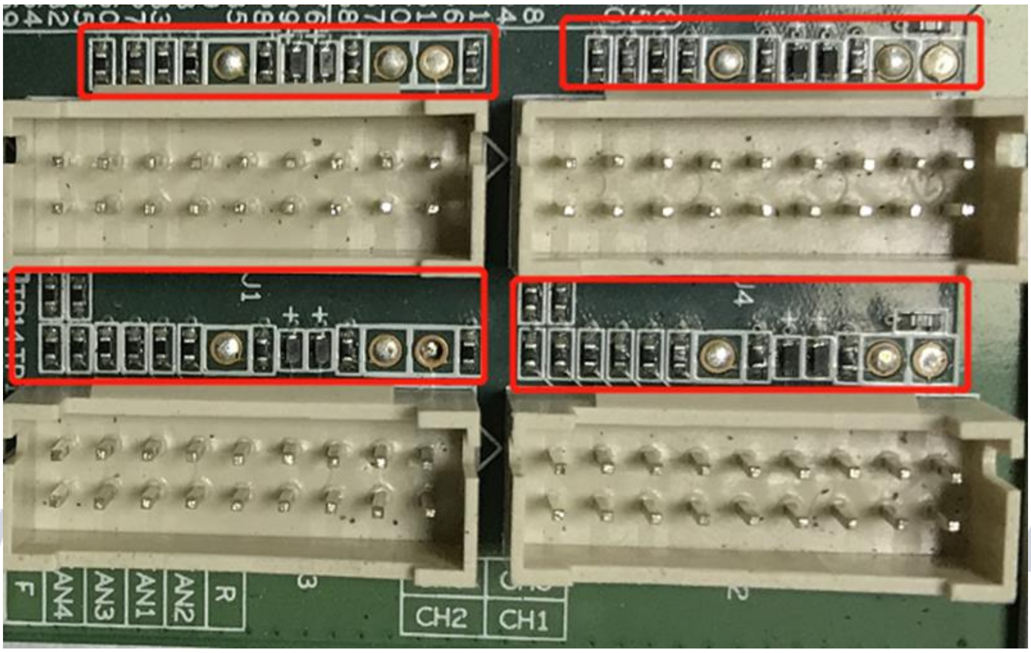


Figure 6-2

Seven, the failure phenomenon of the whole machine

1. Initial test of the whole machine

Refer to the test process document, the general problems are assembly process problems and control board process problems.

Common phenomena: IP cannot be detected, the number of fans is abnormal, and the chain is abnormal.

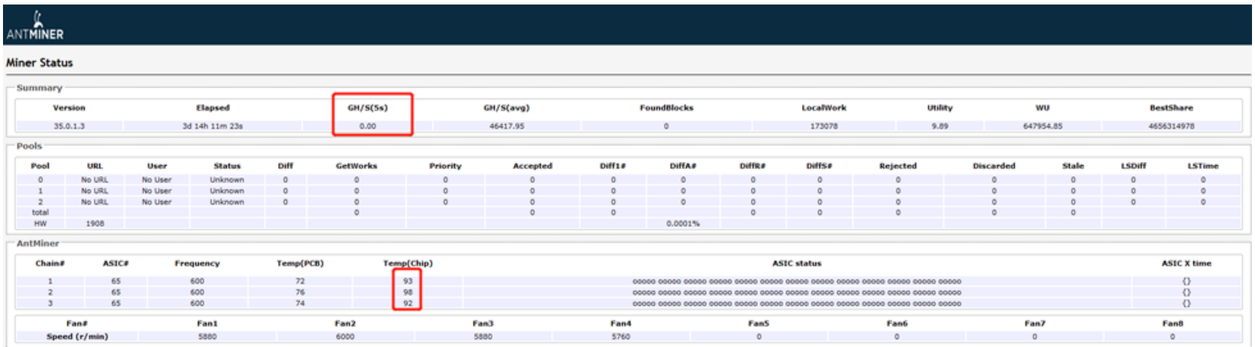
2. The aging of the whole machine and the operation section of the mine

Aging computing power is low: check the computing power deviation of the corresponding computing board to see if there is a large computing power difference, and take out the computing

Test maintenance. Check whether the network is interrupted and the average computing power is low.

Large aging temperature difference: check the aging environment; check the welding quality of the heat sink of the computing board for the board with high temperature.

Aging machine protection: generally over-temperature protection, please control the aging environment temperature to be less than 40 degrees Celsius.



Miner Status

Summary

Version	Elapsed	GH/S(5s)	GH/S(avg)	FoundBlocks	LocalWork	Utility	WU	BestShare
35.0.1.3	3d 14h 11m 23s	0.00	46417.95	0	173078	9.89	647954.85	4656314978

Pools

Pool	URL	User	Status	Diff	GetWorks	Priority	Accepted	Diff1#	DiffA#	DiffR#	DiffS#	Rejected	Discarded	Stale	LSDiff	LSTime
0	No URL	No User	Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0
1	No URL	No User	Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0
2	No URL	No User	Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0
total					0		0	0		0	0	0	0	0		
HW	1908								0.0001%							

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Chain#	ASIC#	Frequency	Temp(PCB)	Temp(Chip)	ASIC status	ASIC X time
1	65	600	72	93	00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000	{}
2	65	600	76	98	00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000	{}
3	65	600	74	92	00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000	{}

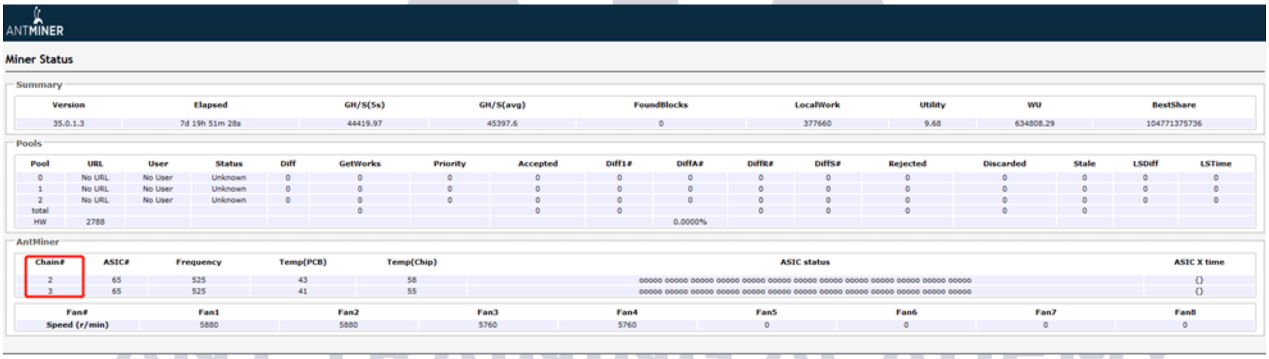
Fan#	Fan1	Fan2	Fan3	Fan4	Fan5	Fan6	Fan7	Fan8
Speed (r/min)	5880	6000	5880	5760	0	0	0	0

Figure 7-1

Less chain:

One of the chains cannot be detected, disassemble the machine and test the corresponding arithmetic board; if it is determined that the arithmetic board is faulty, repair the arithmetic board a

If the board fails, repair the control board.



Miner Status

Summary

Version	Elapsed	GH/S(5s)	GH/S(avg)	FoundBlocks	LocalWork	Utility	WU	BestShare
35.0.1.3	7d 19h 51m 28s	44419.97	45397.6	0	377660	9.68	634808.29	104771375736

Pools

Pool	URL	User	Status	Diff	GetWorks	Priority	Accepted	Diff1#	DiffA#	DiffR#	DiffS#	Rejected	Discarded	Stale	LSDiff	LSTime
0	No URL	No User	Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0
1	No URL	No User	Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0
2	No URL	No User	Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0
total					0		0	0		0	0	0	0	0		
HW	2788								0.0000%							

AntMiner

Chain#	ASIC#	Frequency	Temp(PCB)	Temp(Chip)	ASIC status	ASIC X time
2	65	525	43	58	00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000	{}
3	65	525	41	55	00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000 00000	{}

Fan#	Fan1	Fan2	Fan3	Fan4	Fan5	Fan6	Fan7	Fan8
Speed (r/min)	5880	5880	5760	5760	0	0	0	0

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Figure 7-2

4. After-sales maintenance

Refer to the above troubleshooting steps for each station. Please communicate with the after-sales engineer for the relevant test procedures and test fixtures. You can use them after repairs.

Test PT2 in non-scan code mode.

8. Other matters needing attention

Maintenance flow chart

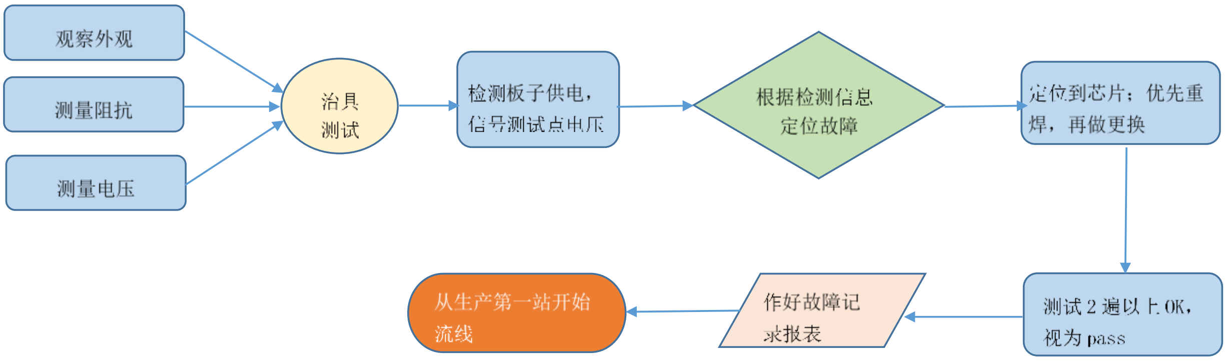

Figure 8-1 Maintenance flowchart

●phenomenon, it must be dealt with first. Routine inspection: First of all, visually inspect the computer board to be repaired to observe whether there is PCB deformation or scorching. If there is any

Reason; whether there are obvious burnt marks of parts, parts impact offset or missing parts, etc.; secondly, after the visual inspection is no problem, the impedance of each voltage domain ca

Perform a test to detect whether there is a short circuit or an open circuit. If found, it must be dealt with first. Again, check whether there are voltages in each domain

Around 1.5v.

●circuit when the power is turned on) After the routine test is no problem (Generally, the short-circuit test of the routine test is necessary, so as not to burn the chip or other materials due to the short ,

The test fixture can be used for chip detection, and the positioning can be judged according to the test result of the test fixture.

● According to the displayed results of the test fixture inspection, starting from near the faulty chip, inspect the chip test points (CO/NRST/RO/XIN/BI) and

VDD0V8, VDD1V8 and other voltages.

●(According to the signal flow direction, except for the RX signal, the reverse transmission (65 to 1 chip), several of the signals CLK CO BO RST are forward transmission

65), find the abnormal fault point through the power supply sequence.

● When locating the faulty chip, the chip needs to be welded again. The method is to add flux around the chip (preferably no-clean flux), then insert the core

When the solder joints of the chip pins are heated to a dissolved state, the chip pins and the pads are urged to run-in again, and the tin is collected. In order to achieve the effect of tinning agai

After re-soldering, the fault remains the same, and the chip can be replaced directly.

●replacing the accessories After repairing the arithmetic board, when testing the fixture, you must pass more than two passes before it can be judged as a good product. For the first time, after

After that, wait for the arithmetic board to cool down, use the test fixture to test the pass, and then set it aside for cooling. The second time, wait a few minutes for the arithmetic board to be c

After that, test again.

●number, defect reason After the operation board is repaired and OK. Relevant maintenance/analysis records are required (requirements of maintenance report: date, SN, PCB version, tag

Attribution of cause, bad liability, etc.). To prepare for feedback back to production, after-sales, and R&D.

●aging. After recording, install it into a complete machine for regular

●test station should be inspected) Good products repaired on the production side should be streamlined from the first station of production (at least the appearance and the PT1/PT2

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