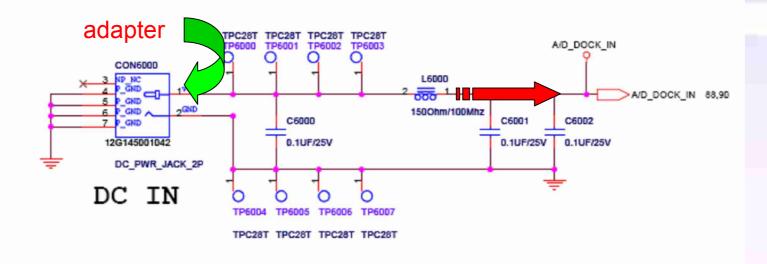


1.电源进入(adapter)

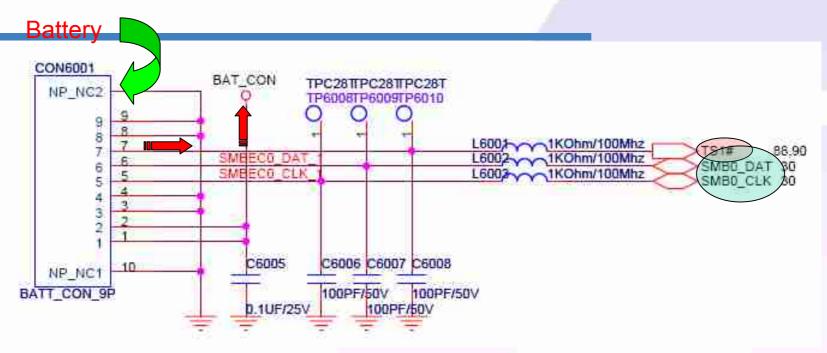


当adapter插入时产生A/D_DOCK_IN(19V)





1.电源进入(Battery)



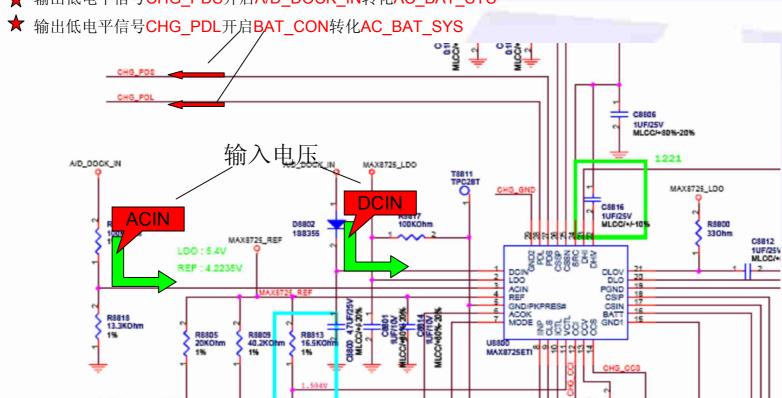
- ★ 当Battery插入时产生BAT_CON.(16.8V)
- ★ TS1# 侦测电池插入.此信号为高电平,当插入电池时为低电位.
- ★ SMB0_DAT SMB0_CLK 这两个信号主要是侦测电池电量





POWER_CHARGER

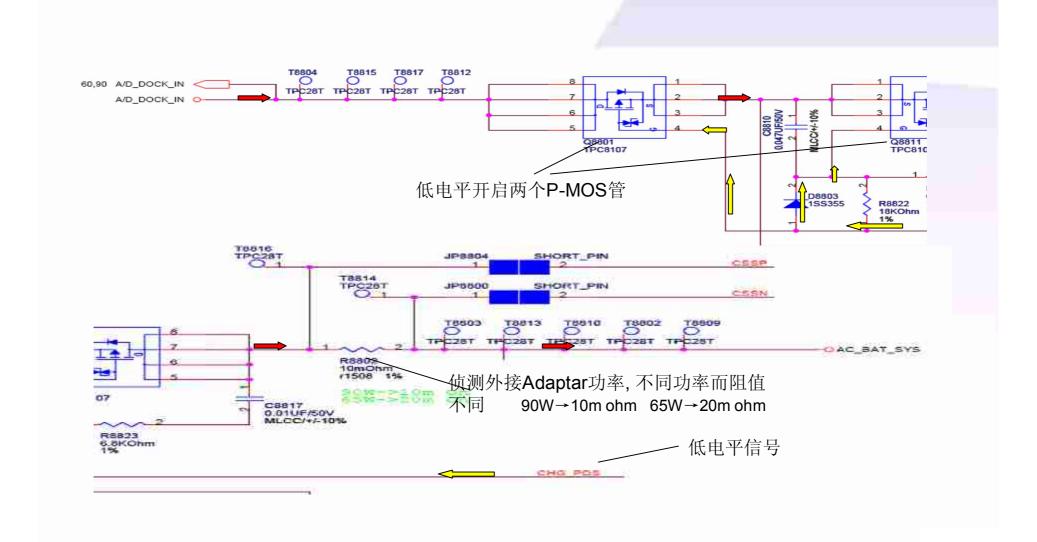
★ 输出低电平信号CHG_PDS开启A/D_DOCK_IN转化AC_BAT_SYS







POWER PATH A/D_DOCK_IN-AC_BAT_SYS

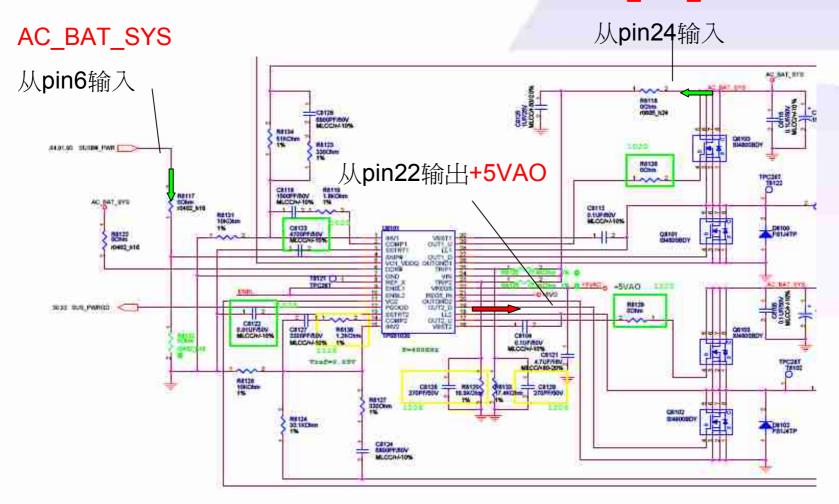






+5VAO

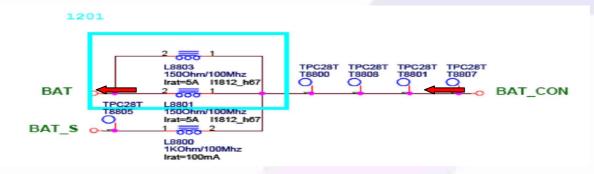
AC_BAT_SYS



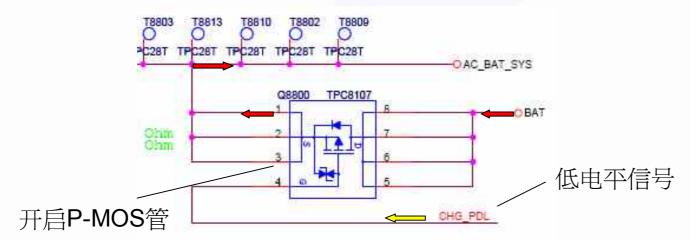




BAT_CON-AC_BAT_SYS

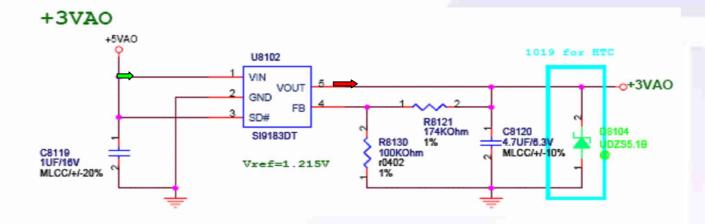


BAT_CON经过滤波电感产生BAT





+3VAO

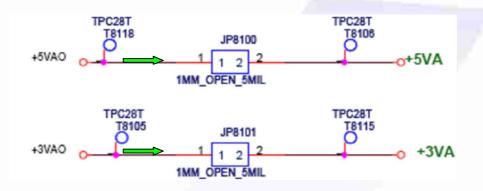


- ★ 这是一个线性稳压芯片,+5VAO从pin1输入,在pin3做一个shut_down#信号,从pin5输出+3VAO
- ★ 反馈回路:+3VAO经过电阻R8121,R8130分压反馈给 U8102 pin4,使芯片pin5输出一个稳定的+3V
- ★ 反馈电压Vref= 100KΩx 3V=1.094V





+5VA +3VA

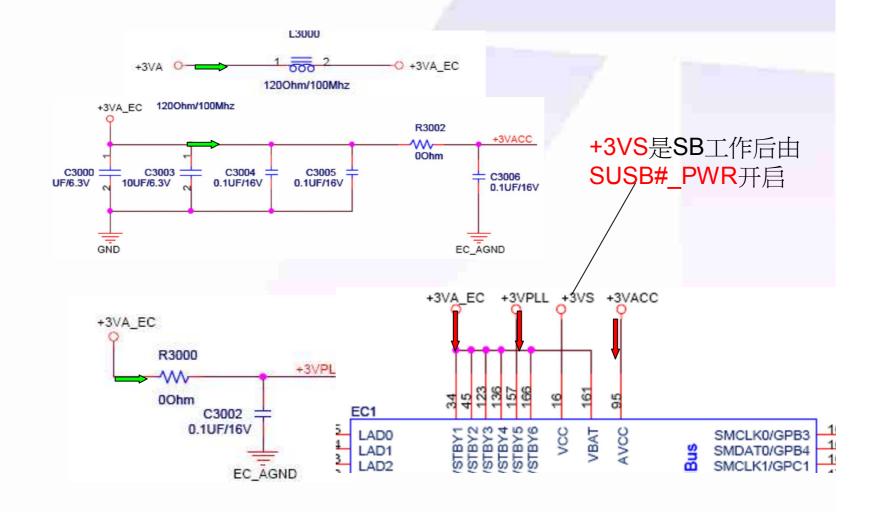


- ★ +5VAO经过隔离点产生+5VA
- ★ +3VAO经过隔离点产生+3VA
 - +3VA主要用于EC工作电压
- ★ 隔离点的作用:以目前做法主要用于Debug,当某一电压有问题时,有时维修人员较难去区分是前级线路未输出电压或是前级已经输出但被后级线路将电压拉掉,此时隔离点用烙铁挑开,再去量测前级线路是否有输出,若无输出则先往前级线路寻找,反之往后级线路寻找





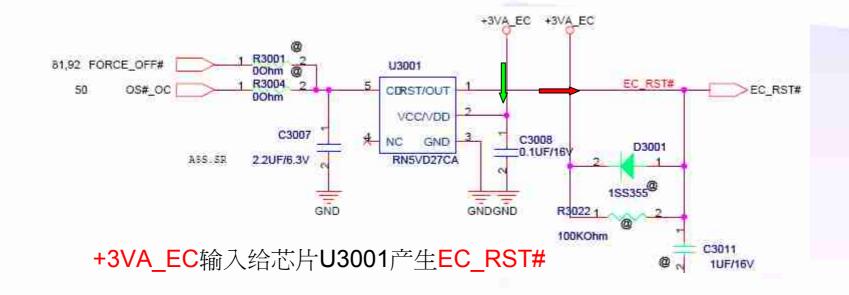
EC-工作电压







EC-RESET

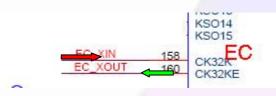




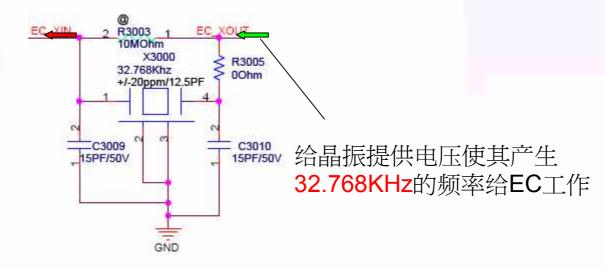




EC-CLOCK



当EC接收到工作电压后就开始从pin160发出EC_XOUT





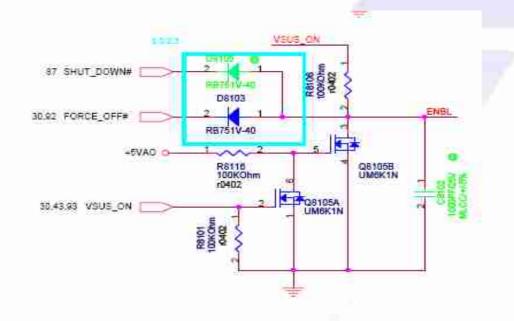
VSUS_ON



- ★ 当EC工作正常后会产生VSUS_ON高电平信号 VSUS_ON将作为后面开启电压的Enable信号
- ★ VSUS_ON理论上是EC产生,但是它要与BIOS进行正确的AD交换后才会产生.



VSUS_ON→ENBL

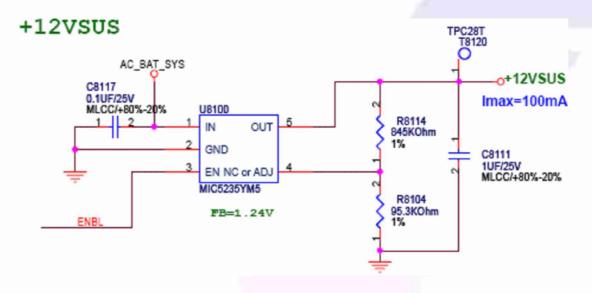


- ★ VSUS_ON是高电平导通Q8105A使Q8105B关闭,VSUS_ON经过电阻 R8106产生ENBL信号
- ★ FORCE_OFF#是强制关机信号当为低电平时D8103导通拉底 VSUS_ON,使其无法开启后面电压.(FORE_OFF#产生)





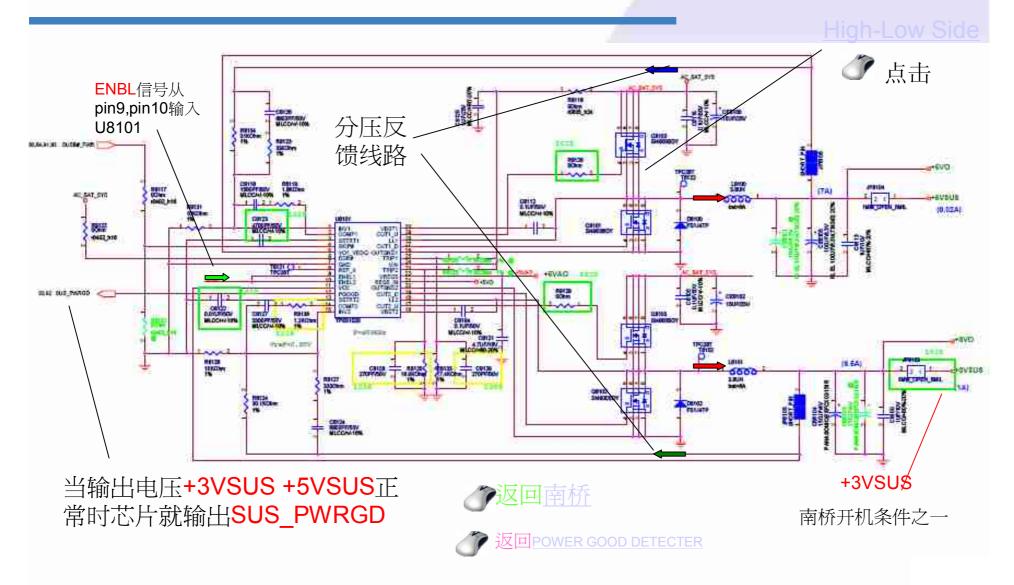
+12VSUS



- ★ 这是一个线性稳压芯片AC_BAT_SYS从pin1输入,从pin5输出 +12VSUS
- ★ 反馈回路:+12VSUS经过电阻R8114,R8104分压反馈给U8100 pin4, 使芯片pin5输出一个稳定的+12V
- 文馈电压 $Vfb = \frac{95.3K\Omega}{95.3K\Omega + 845K\Omega} \times 12V = 1.21V$



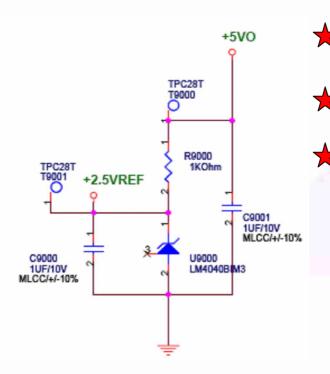
SUS_PWRGD







2.5VREF

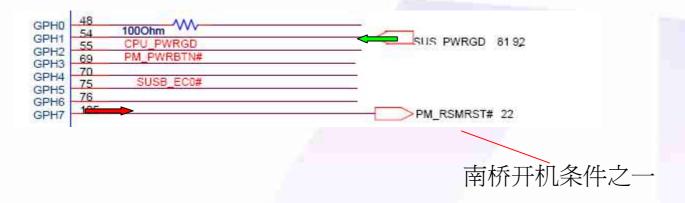


★ +5VO经过电阻R9000和稳压二极管 U9000产生+2.5VREF

电阻R9000的作用:①分压,②限流

★ 稳压二极管的工作原理:利用二极管的 反向击穿特性,在端处会产生一个稳定 的电压(+2.5VREF),常作为参考电压;稳 压二极管电流越大则稳压效果越好,但 电流过大超过额定功率则会使二极管损 坏,所以必须串连一个电阻(R9000)做限 流作用.

PM_RSMRST



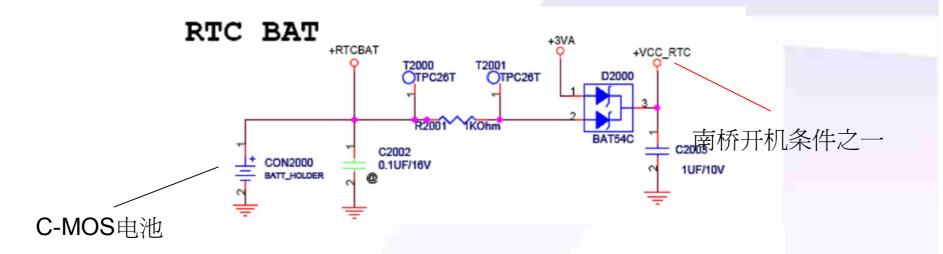
当EC pin54接收到SUS_PWRGD后从pin105发出PM_RSMRST#







+VCC_RTC



- ★ +RTCBAT经过电阻R2001经过D2000产生+VCC_RTC
- ★ D2000的作用:相当是一个比较器,当有电源工作时则+VCC_RTC由+3VA 来提供.没有则由C-MOS电池提供
- ★ 电阻R2001的作用:侦测电流大小,便于计算电池寿命 电池使用年数=电池总容量/流经电阻R2001的电流/24小时/365天
- ★ +VCC_RTC的作用:①用于南桥CLOCK起振电压(南桥作开机条件)

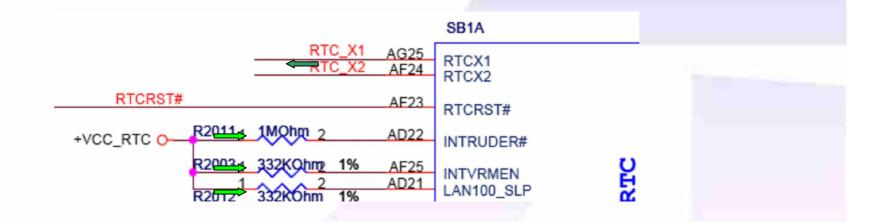








SB-CLOCK

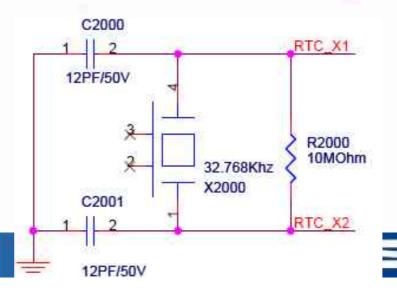


★ +VCC_RTC经过三个电阻输入给南桥,则输出RTC-X1,RTC_X2给晶振

X2000产生32.768KHz的频率 反馈给南桥

★ RTC_RST:复位C-MOS信息.

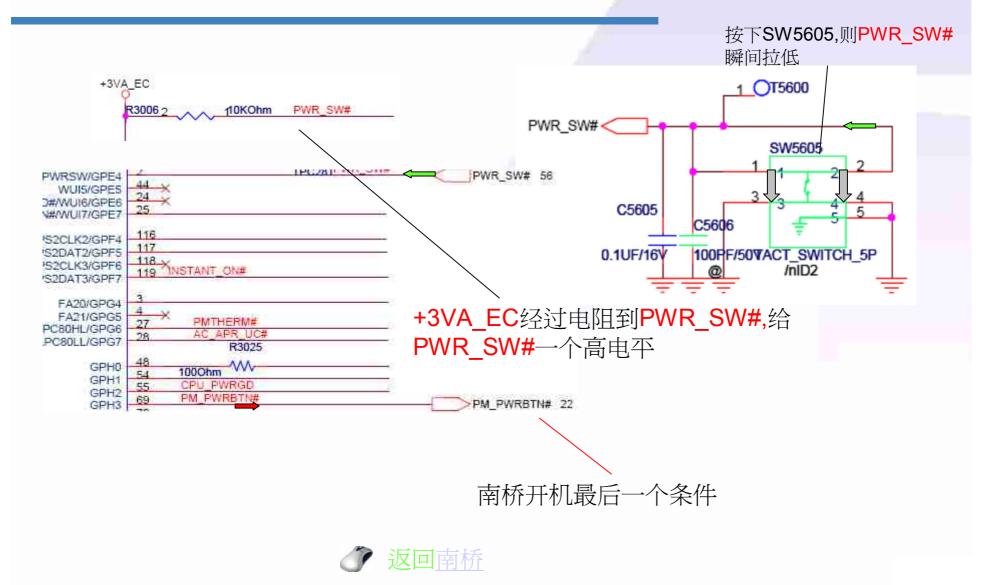






ProTek MQC.

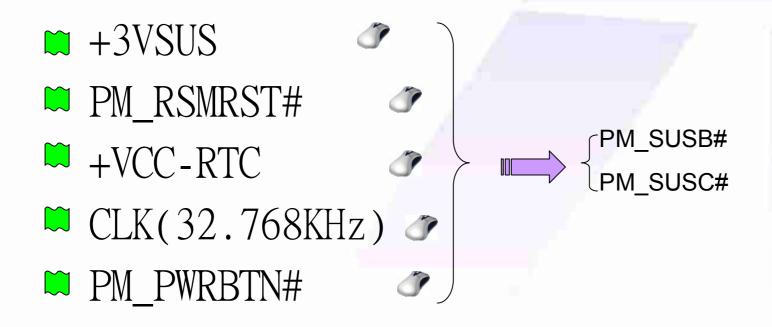
PM_PWRBTN#







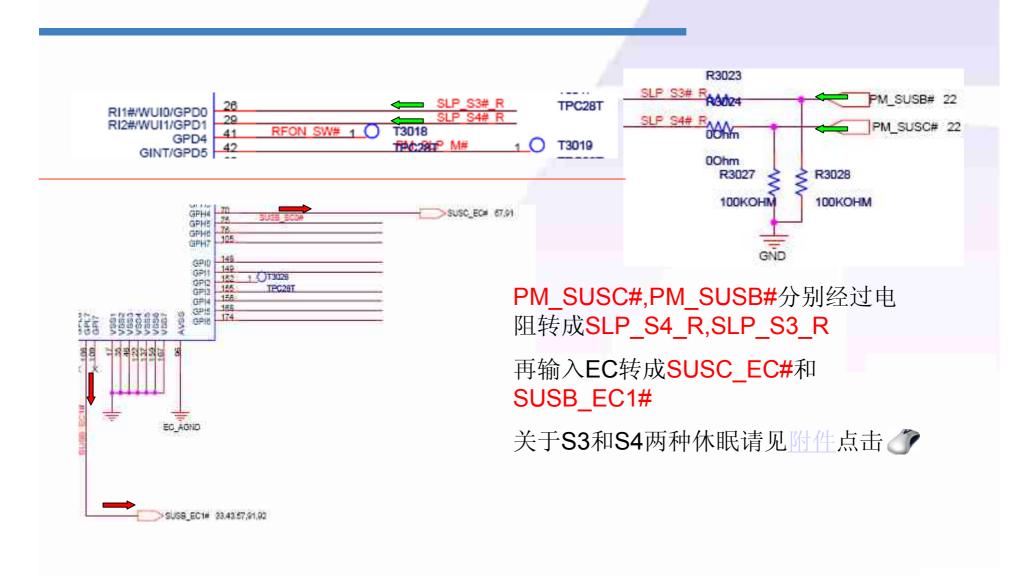
南桥开机条件



- ★ 南桥满足上面5个条件后开始工作发出PM_SUSB#,PM_SUSC#
- ★ PM_SUSC#比PM_SUSB#,先出来



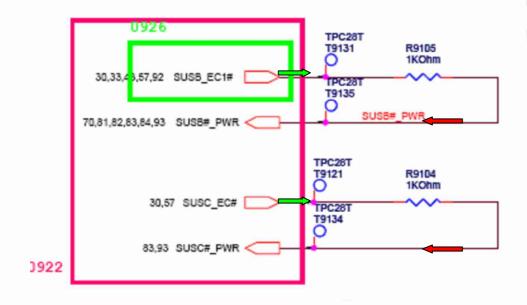
SUSC_EC# SUSB_EC1#







SUSC#_PWR SUSB#PWR

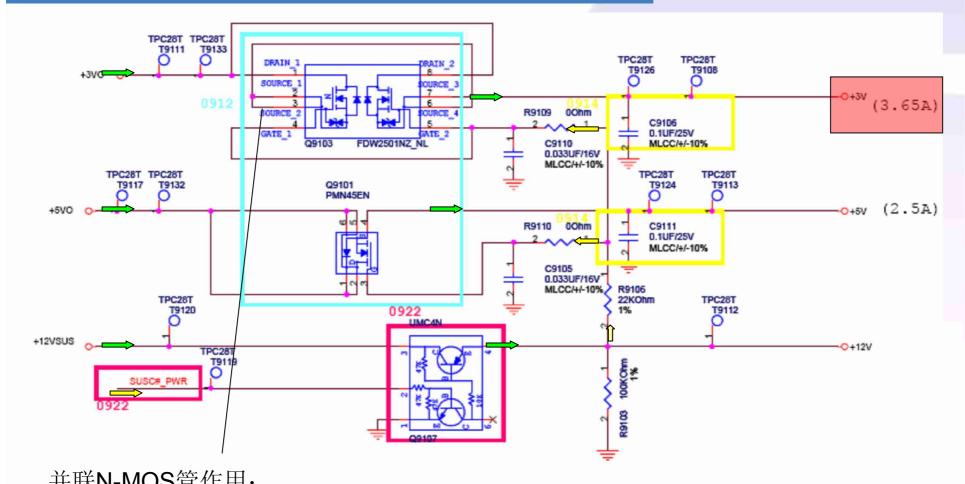


- ★ SUSB_EC1#经过电阻R9105转换成SUSB#_PWR(开启+?VS)
- ★ SUSC_EC经过电阻R9104转换成SUSC#_PWR (开启+?V)
- ★ 这两个信号主要做后面电压开启和Enable信号





+12V +5V +3V



并联N-MOS管作用:

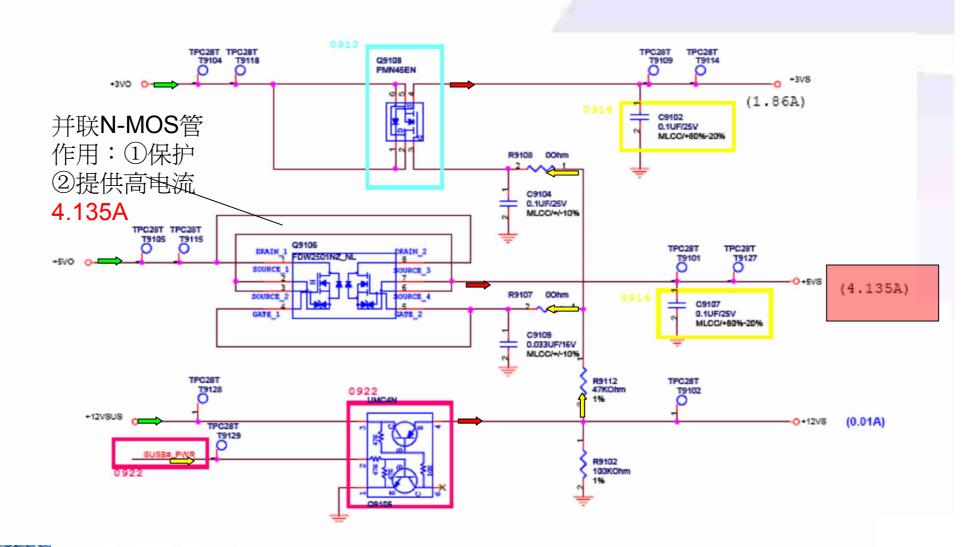
①保护②提供高电流

3.65A





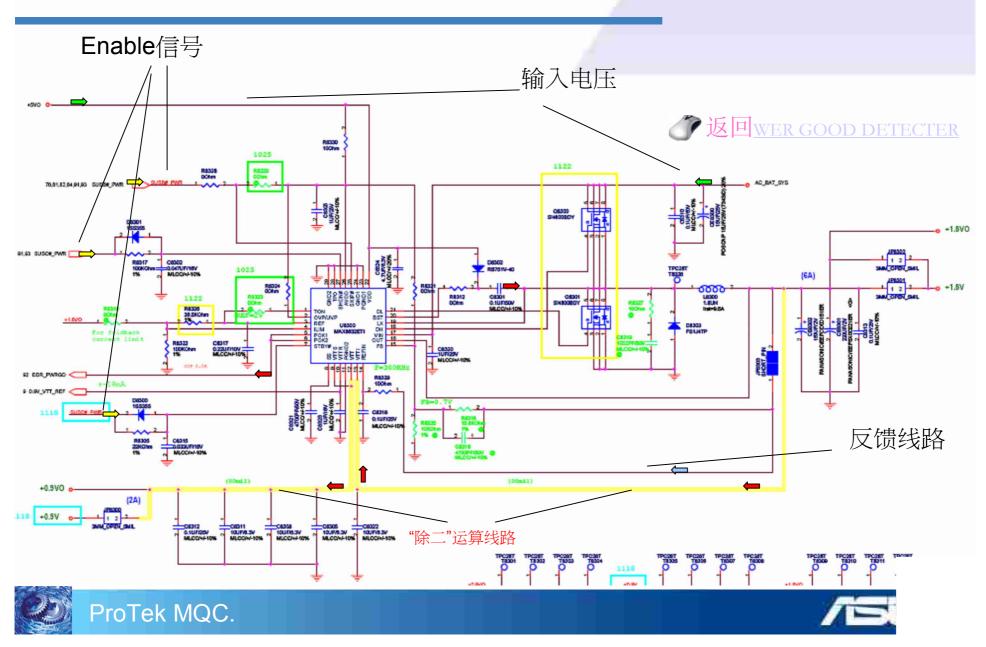
+12VS +5VS +3VS



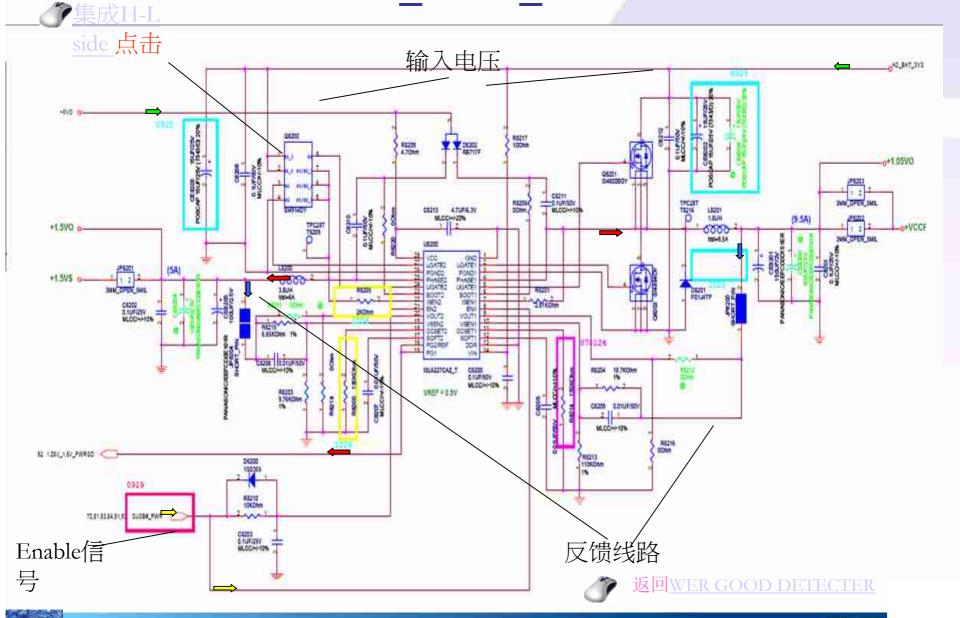




DDR_PWRGD



1.05V_1.5V_PWRGD

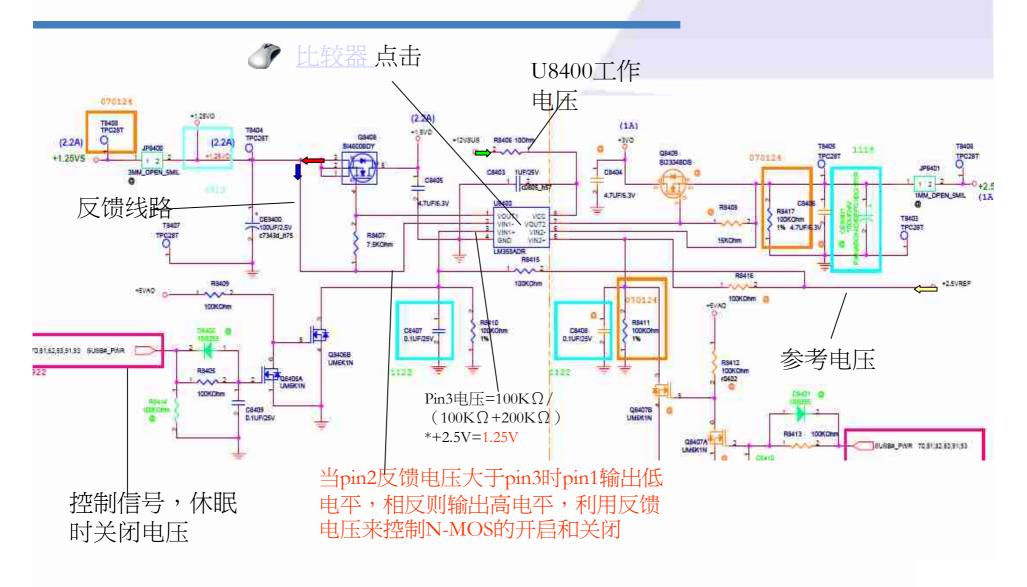








+1.25VS

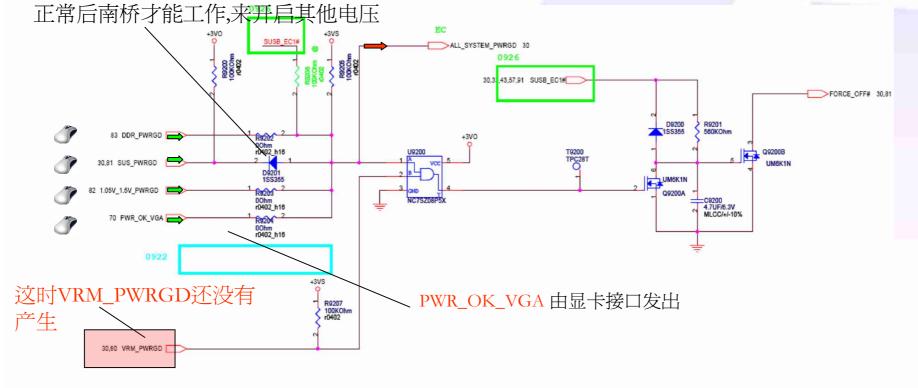






ALL_SYSTEM_PWRGD

二极管在这里的作用:保护SUS_PWRGD,当其他PWRGD有问题时不会拉低SUS_PWRGD,因为只有SUS_PWRGD工作

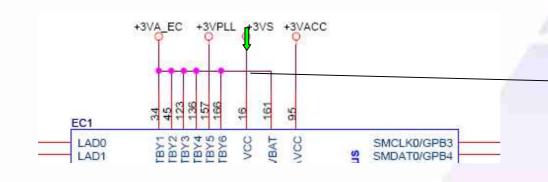


这里是个保护电路,上面四个PWRGD为高电平,才会有ALL_SYSTEM_PWR. 发送到EC

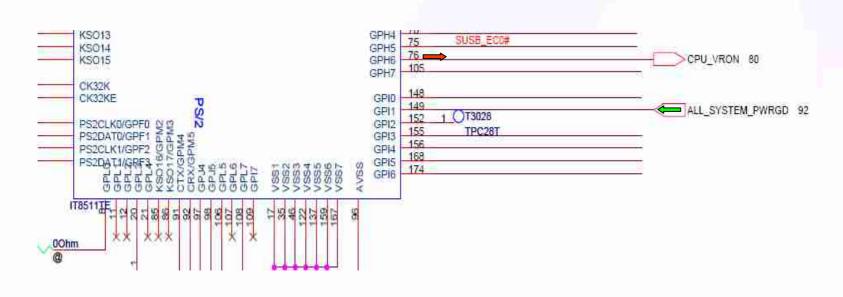




CPU_VRON

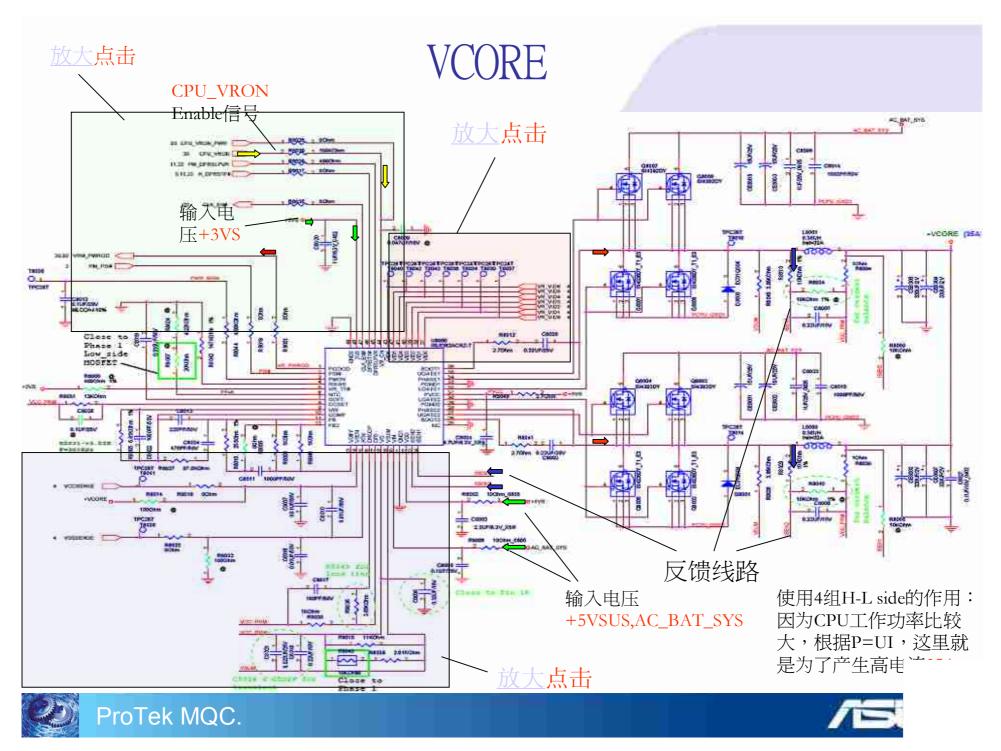


输入电压+3VS,其他电压是已-经输入了的,+3VS是南桥工作后才产生的.

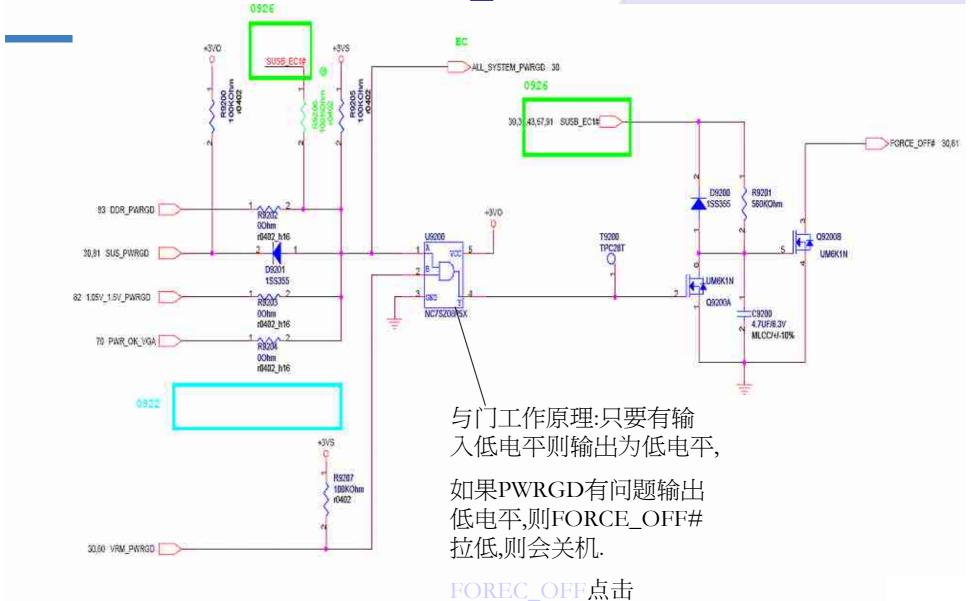








FORCE_OFF#

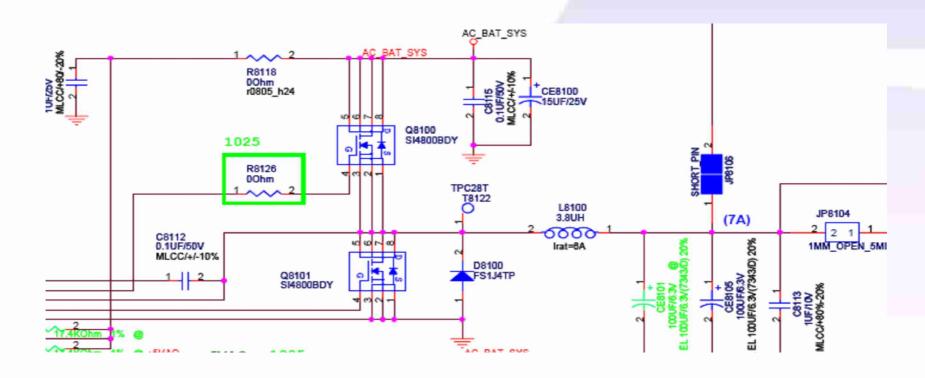








附:High-Low Side



- ★ 原理:芯片先给High Side的栅极一个高电平,使其打开电压下来,同时给Low Side的栅极一个低电平使其关闭,产生电压经过电感给电容充电,当电压过高时,则High-Low Side相反工作使电压拉低,维持一个稳定的电压输出.
- ★ 特点:提高电流,稳定电压









附:休眠方式

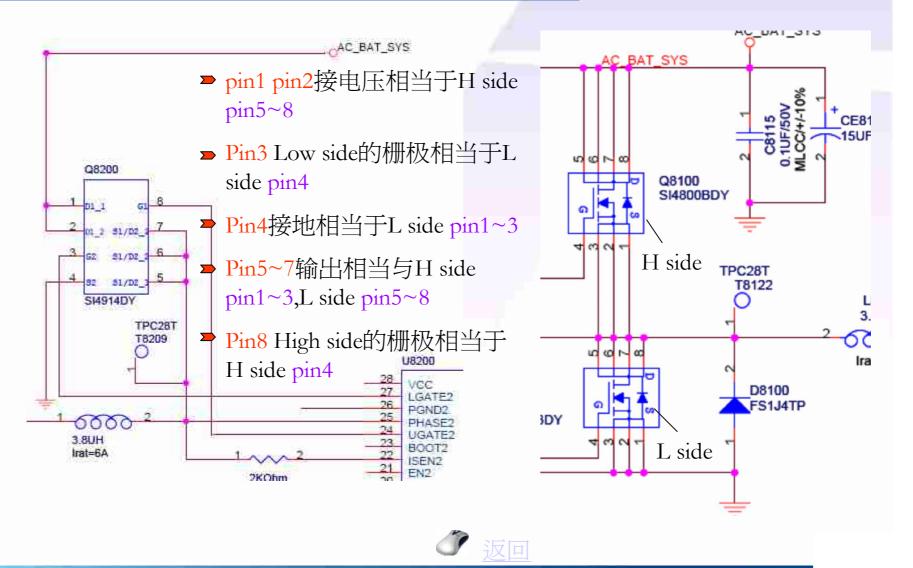
- ★ S3休眠动作流程:利用键盘(FN+F1)→EC,透过LPC_AD[0..3]发送到南桥,南桥将SUSB#拉低,SUSB#所控制的电源全部拉低,(SUSC#控制电源还在)开始进行休眠
- ★ S4休眠动作流程:在WINDOWS状态下按开始菜单,再选择休眠,HDD通过 传输信号线到南桥,南桥再把SUSB#和SUSC#拉低,SUSB#,SUSC#控制 的电压全部拉低,开始进行休眠
- ★ 休眠后唤醒(不分S3或S4)可分为两种(1)由键盘按任一键经EC发 KBCRSM KBCRSM 透过切换线路将PM_PWRBTN# 拉LO 发送到南桥 南桥将SUSB# 或SUSB#&SUSC 发高, SUSB# SUSC# 将后续电压开启 完成唤醒动作
 - (2)由PWR_SW#透过切换线路将PM_PWRBTN# 拉LO 发送到南桥,南桥将SUSB# 或SUSB#&SUSC 发高,SUSB# SUSC# 将后续电压开启,完成唤醒动作







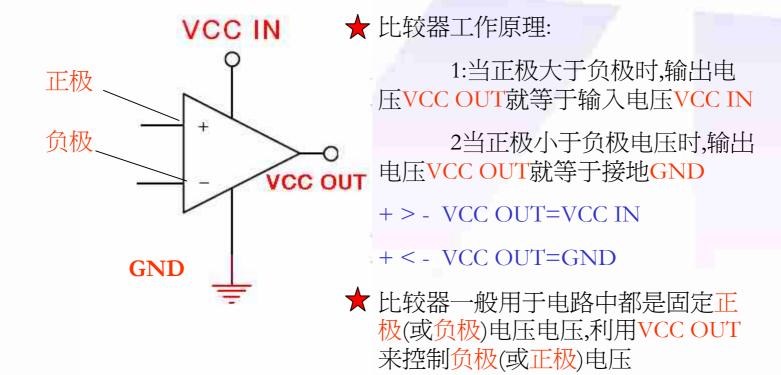
附:集成High-Low Side







附:比较器

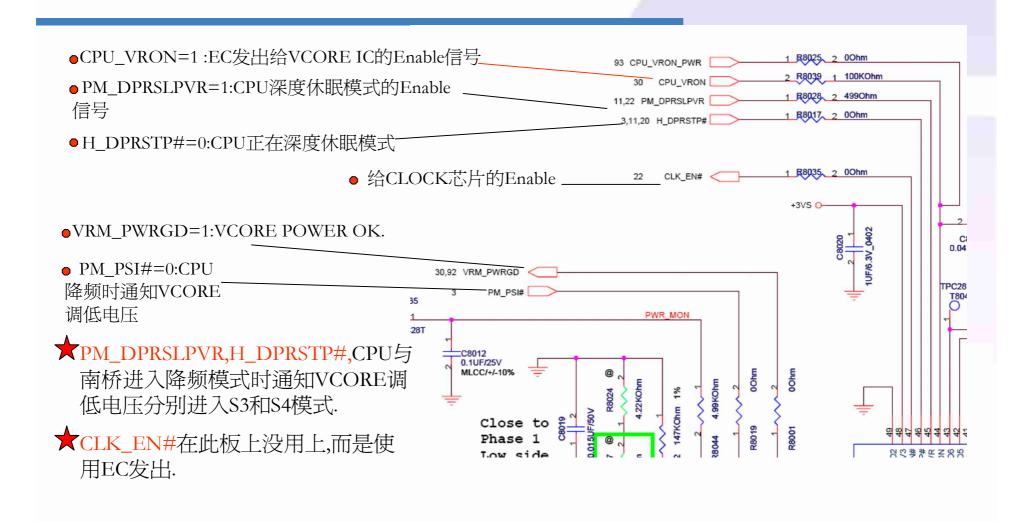








附: VCORE IC-放大1











附: VCORE IC-放大2



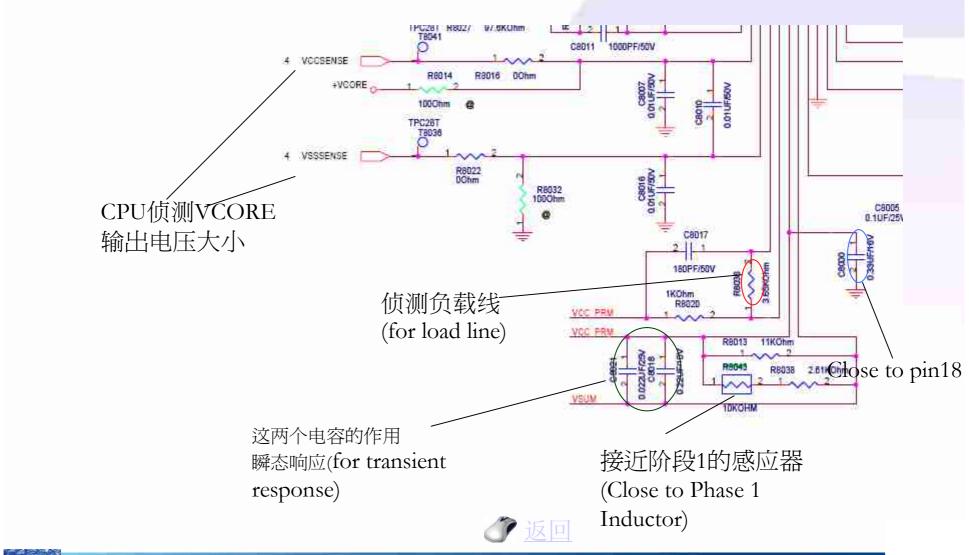








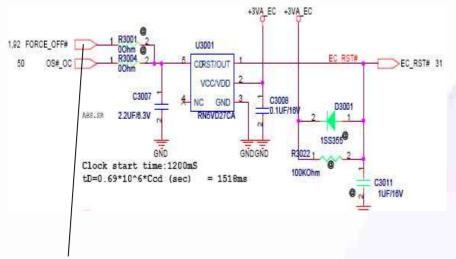
附: VCORE IC-放大3







附:FORCE_OFF#关机原理



FORCE_OFF#为低电平时,控制 U3001工作,而无法发出 EC_RST#,使得EC不工作,而导 致关机,但在此处电阻R3001没上,而是利用右图控制关机.

FORCE_OFF#为低电平时,则 ENBL信号经过D8103而导通拉低, 使得ENBL无法开启 +3VSUS,+5VSUS,+12VSUS,而导致 关机

电阻R8106作用:ENBL拉低后,保护 EC损坏







附:PWR_OK_VGA

