盛群半導體股份有限公司
HOLTEK SEMICONDUCTOR INC.

HOLTEK

HOLTEK OTP 燒錄器操作規範
HOLTEK OTP 烧录器操作规范
HOLTEK OTP Programmer Guidelines

1. 在容易跳電及電力不穩的廠房，必須在燒錄器所使用之電源加裝 UPS 以防止跳電與電源不穩所產生的燒錄不良。
    在容易跳电及电力不稳的厂房，必须在烧录器所使用之电源加装 UPS 以防止跳电与电源不稳所产生的烧录不良。

    To prevent erroneous programming, a UPS should be installed in situations where power outages may occur or where the supply voltage is not stable.

2. 燒錄 IC 旁一定要放置測試治具並以整批燒錄千分之一間隔抽檢以防制燒錄機故障時導致整批燒錄不良。整批燒錄百分之一間隔抽檢作整機測試。
    烧录 IC 旁一定要放置测试治具并以整批烧录千分之一间隔抽检以防制刻录机故障时导致整批烧录不良。整批烧录百分之一间隔抽检作整机测试。

    A test station should be provided next to the programmed OTP devices and for every 1,000 devices, one device should be checked to eliminate the possibility of a whole batch of OTP devices being incorrectly programmed. One device in a hundred should be taken to test the programmer.

3. 每批燒錄前一定要作首件檢查，必由技術人員操作燒錄器前 100PCS 才能轉交給受訓過之作業人員。並將其他會誤觸之按鍵遮罩避免產生誤操作。
    每批烧录前一定要作首件检查，必由技术人员操作烧录器前 100PCS 才能转交给受训过之作业人员。并将其它会误触之按键屏蔽避免产生误操作。

    Before the batch of OTP devices is programmed an initial check must be conducted using 100 OTP devices to ensure that they can be correctly programmed before allowing programming by the operating personnel. Additionally, any switches which could be inadvertently pressed should be covered to prevent incorrect operation.

4. 建立燒錄風險控管流程，即當批累計燒錄不良超過 1%即應通知品管單位或生技單位瞭解不良原因，更要通報燒錄器廠商及代理商以獲得最新版本資訊及檢討不良發生原因。
    當批燒錄不良超過 2%即已進入緊急狀態，除了通知燒錄器廠商與代理商並同時要求通報原廠。當批燒錄不良超過 3%即必須停止燒錄處置以免損失繼續擴大。
    建立烧录风险控管流程，即当批累计烧录不良超过 1%即应通知品管单位或生技单位了解不良原因，更要通报烧录器厂商及代理商以获得最新版本信息及检讨不良发生原因。
    当批烧录不良超过 2%即已进入紧急状态，除了通知烧录器厂商与代理商并同时要求通报原厂。当批烧录不良超过 3%即必须停止烧录处置以免损失继续扩大。

    Establish a risk control flow system to inform the QC department when the accumulated programming failure rate exceeds 1%. The manufacturer should be contacted to understand the reason why. The programmer manufacturer and device agent should also be informed to obtain the latest information regarding the reasons for failure.

    If the failure rate for the batch exceeds 2% then an emergency situation exists. In addition to informing the programmer manufacturer and the IC agent, the device manufacturer should also be contacted. If the failure rate for the batch exceeds 3% then programming should cease to reduce large scale losses.

5. 若發生燒錄不良的情況時,勿立即將 IC 丟棄,請重新將 IC 放置妥當,多試燒幾次,以防止燒錄腳座接觸不良及老化現象引致燒錄不良。

   若发生烧录不良的情况时,勿立即将 IC 丢弃,请重新将 IC 放置妥当,多试烧几次,以防止烧录脚座接触不良及老化现象引致烧录不良。

   If a failure occurs do not immediately discard the device. First attempt to reprogram the device several times to eliminate the possibility of programming errors due to poor pin contact or ageing phenomenon.

6. NG 品應當依不良品分批管理並加注原代碼之產品機型/燒錄選項/燒錄機台及檢查碼,以利日後不良品分析及追蹤。

   NG 品应当依不良品分批管理并加注原代码之产品机型/烧录选项/刻录机台及检查码,以利日后不良品分析及追踪。

   To assist with future failure analysis and tracing, a record of the batch, product type, programming options, programming station and check code should be noted.

7. 一定要分時記錄燒錄數量與不良率作為燒錄之品質與人員素質控管,經由風險控管的燒錄工程才能免于人員素質控管與監督不易等人為因素。

   一定要分时记录烧录数量与不良率作为烧录之质量与人员素质控管,经由风险控管的烧录工程才能免于人员素质控管与监督不易等人为因素。

   Take note of the programmed quantity and failure rate in order to record the programming quality and operating personnel performance to avoid errors due to human factors.

8. 應當向燒錄器廠商索取燒錄器使用與保養之注意事項。

   应当向烧录器厂商索取烧录器使用与保养之注意事项。

   Obtain information from the programmer manufacturer on usage and maintenance.

9. 燒錄座應在燒錄比率升高至 1%時檢查、擦拭或更換。

   烧录座应在烧录比率升高至 1%时检查、擦拭或更换。

   When the programming failure rate exceeds 1%, the programmer should be inspected and cleaned or replaced.

10. 燒錄人員應穿戴靜電環。

    烧录人员应穿戴静电环。

    Operators must wear anti-static bands.

11. 燒錄製具的探針最好有長短區別. 長短依序應該為 VSS > VDD > 其他 Pin 避免 I/O 比 VDD 快時而導致燒錄失敗或 IC Fail, 如此可大為提高燒錄良率.

    烧录制具的探针最好有长短区别. 长短依序应该为 VSS > VDD > 其它 Pin 避免 I/O 比 VDD 快时而导致烧录失败或 IC Fail, 如此可大为提高烧录良率.

    The programmer probes should have different lengths. The connected pins, in order of decreasing probe length should be VSS > VDD > Other pins. In this way the failure rate can be minimised.

12. 燒錄器(或 HT-ICE)的通訊連接線金屬框架(如附圖四)應確實接大地,且該接地點應預先以儀器量測確定接地條件優良。

烧录器(或 HT-ICE)的通讯连接线金属框架(如附图四)应确实接大地，且该接地点应预先以仪器量测确定接地条件优良。

The metal frame of the programmer or HT-ICE should be connected to ground as shown in Fig. 4. This ground line should be checked for integrity using suitable instrumentation.

13. 如委外燒錄必須與委託廠商訂定委託燒錄合約書依本建議書控管燒錄不良比率與記錄。

如委外烧录必须与委托厂商订定委托烧录合约书依本建议书控管烧录不良比率与记录。

If device programming is contracted out it is necessary to contractually agree to follow this programming guide and record the device failure rate.

OTP DICE (CHIP ON BOARD) 燒錄操作及注意事項：
OTP DICE (CHIP ON BOARD) Programming Guidelines:

1. IC 打線時，要預留燒錄所使用的 11 根引腳(如果 IC 有 OSC3 Pin 則爲 12 根引腳)，引腳接線圖請參考後面燒寫連線說明，並且 PCB 板上 LAYOUT 的線不要過長,燒錄時不要外加元器件，以免引入外界干擾。

    IC 打线时，要预留烧录所使用的 11 根引脚(如果 IC 有 OSC3 Pin 则为 12 根引脚)，引脚接线图请参考后面烧写联机说明,并且 PCB 板上 LAYOUT 的线不要过长,烧录时不要外加元器件，以免引入外界干扰。

    When bonding the dice, 11 pins (or 12 pins if the device contains an OSC3 pin) are reserved on the device for programming. For the wiring diagram please refer to the following description. The connected track on the PCB should not be over long, and also when programming no external components should be connected to the programmer to avoid external interference.

2. 如製作燒錄模具，注意模具與燒錄器連接的導線不要超過 15cm。

    如制作烧录模具，注意模具与烧录器连接的导线不要超过 15cm。

    If a programming fixture is constructed then the cable from the PCB to the writer should be less than 15 cm.

3. 避免在高溫、高濕、灰塵多的環境操作或者存放燒錄器，DICE 燒錄模具應在燒錄比率升高至 1%時檢查、擦拭或更換。

    避免在高温、高湿、灰尘多的环境操作或者存放烧录器，DICE 烧录模具应在烧录比率升高至 1%时检查、擦拭或更换。

    High temperature, high humidity and dusty operating and storage environments should be avoided for the Writer. The DICE programming module will need to be inspected, cleaned or replaced if the programming failure rate exceeds 1%.

4. 燒錄不良的COB如果尙未封膠,可用紫外線擦除器擦除90分鐘,擦除完後要檢查打線和 PCB,如果沒有問題可以重新燒錄,這樣才能保証 Dice 燒錄的良率。

    烧录不良的COB如果尚未封胶,可用紫外线擦除器擦除90分钟,擦除完后要检查打线和 PCB,如果没有问题可以重新烧录,这样才能保证 Dice 烧录的良率。

    If the Dice are not are not coated, their memory contents can be erased using an Ultra-violet light eraser for 90 minutes. After erasing, the wire connections should be checked along with the PCB, if there is no problem then the device can be reprogrammed. In this way the Dice yield level can be maintained.

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HOLTEK IC ESD/EOS 防護注意事項
HOLTEK IC ESD/EOS 防護注意事項
HOLTEK IC ESD/EOS Protection Notes

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封裝片操作注意事項：
封裝片操作注意事項：
Packaging handling notes

1. 操作人員應配戴靜電環（以帶接地線的靜電環爲佳）。
   操作人員应配戴静电环（以带接地线的静电环为佳）。
   The operator should wear an anti-static band – a band with a ground lead should be used.

2. 操作人員應避免配戴膠質或絲質等易產生靜電之手套。
   操作人员应避免配戴胶质或丝质等易产生静电之手套。
   The operator should avoid wearing static generating synthetic or silk gloves.

3. 操作操作中，指尖應儘量避免觸碰 IC 管腳。
   操作操作中，指尖应尽量避免触碰 IC 管脚。
   During handling, the operator's fingertips should be prevented from touching the IC conducting pins.

4. 操作所處平臺應可靠接地。
   操作所处平台应可靠接地。
   The operating platform should be reliably grounded.

5. 操作環境應保持適當濕度。
   操作环境应保持适当湿度。
   The operating environment should be kept at an appropriate humidity level.

封裝片焊接/上板測試操作注意事項：
封裝片焊接/上板測試操作注意事項：
Package soldering/circuit board testing operation

1. 焊槍等焊接工具應可靠接地，防止漏電擊穿 IC。
   焊枪等焊接工具应可靠接地，防止漏电击穿 IC。
   The soldering tools should be reliably grounded to prevent ESD damage to the IC.

2. 測試操作中，指尖應儘量避免觸碰 PCBA。
   测试操作中，指尖应尽量避免触碰 PCBA。
   During test operations, the operator's fingertips should be prevented from touching the PCB.

3. 測試平臺應可靠接地。
   测试平台应可靠接地。
   The testing platform should be reliably grounded.

4. 測試電源應穩定，避免出現電流浪湧或電壓超載。

    測试电源应稳定，避免出现电流浪涌或电压超载。

    The power supply used for testing should be stable to prevent current surges or high voltage overloads.

5. 測試環境應保持整潔，避免金屬碎屑等異物落入 PCBA 引起 IC 短路。

    测试环境应保持整洁，避免金属碎屑等异物落入 PCBA 引起 IC 短路。

    The test environment should remain tidy to prevent metallic and other foreign matter coming into contact with the PCB and creating IC short circuits.

為了提高燒錄的良率，請客戶注意以下幾點建議：
为了提高烧录的良率，请客户注意以下几点建议：
To obtain higher programming yield, the following suggestions should be noted:

1. 請客戶注意燒錄晶片時，儘量避免外部訊號如手機訊號的干擾,以及用手碰觸 IC 和燒錄系統的干擾等。
   请客户注意烧录芯片时，尽量避免外部讯号如手机讯号的干扰,以及用手碰触 IC 和烧录系统的干扰等。
   During programming, care should be taken to avoid sources of external noise such as those from cellular phone signals or from hand contact.

2. 晶片燒寫量超過 10Kpcs 時，請用酒精擦拭 handywriter/HT-Writer 上 40pins 的 texttool，避免氧化造成燒錄不良。
   芯片烧写量超过 10Kpcs 时，请用酒精擦拭 handywriter/HT-Writer 上 40pins 的 texttool，避免氧化造成烧录不良。
   When the device programming quantity surpasses 10Kpcs, alcohol should be used to clean the 40-pin Textool in the Handywriter/HT-Writer to prevent pin oxidisation of the pins causing programming failures.

3. 如果連續燒寫不良率偏高，請代理商立即建議客戶將燒寫器送回 HOLTEK 檢修，查證是否燒寫器的問題。
   如果连续烧写不良率偏高，请代理商立即建议客户将烧写器送回 HOLTEK 检修，查证是否烧写器的问题。
   If the failure rate continues to be high, then it is recommended that the programmer is returned to the agent where it will be sent to HOLTEK for inspection.

4. 凡是 OTP 的用戶都必須確實執行以上幾款約定。才不致發生人為或設備所造成巨大的損失。
   凡是 OTP 的用户都必须确实执行以上几款约定。才不致发生人为或设备所造成巨大的损失。
   OTP users must carry out the above procedures to prevent large scale losses to devices due to operators or equipment.