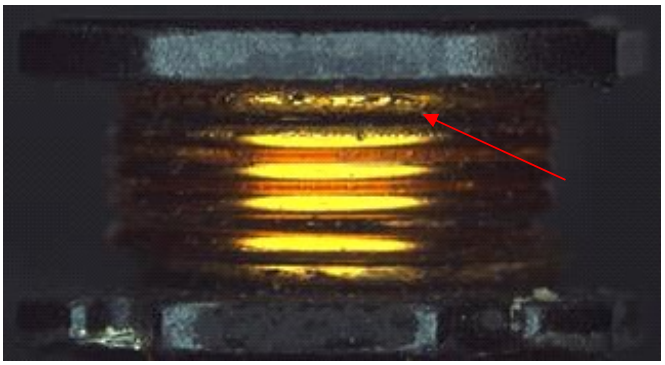
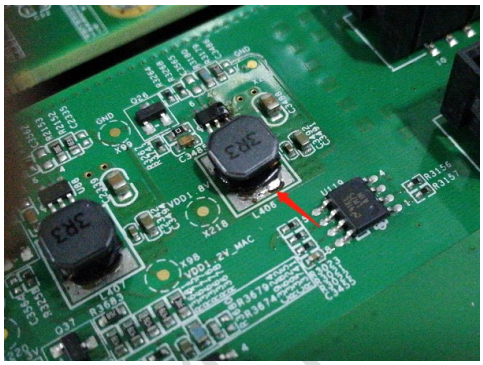
1 电感失效分析——返修引入超过器件规格的热应力

生产出现 12 例 3R3 电感异常导致电源芯片烧毁问题，其中已分析的失效样品失效现象是靠近印字面的漆包线漆膜受热融化，且在跟踪分析时发现个别板子电感被返修过，详见下图。





2 问题闭环

1）制定电感返修方案：返修电感热风枪拆下后更换新的电感，更换新电感需预热并管控烙铁温度；

电感供应商推荐的返修方案：

8.2 Iron Soldering Profile

△ Iron soldering power: Max. 30W

△ Pre-heating: 150℃/60sec.

△ Soldering Tip temperature: 350℃ Max.

△ Soldering time: 3sec. Max.

△ Solder paste: Sn/3.0Ag/0.5Cu

△ Max.1 times for iron soldering

Please refer to **Fig. 8.2**.

[Note: Take care not to apply the tip of the soldering iron to the terminal electrodes.]

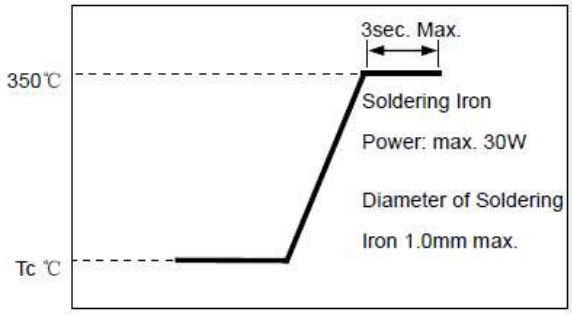


Fig. 8.2.

8.3 Recommended Soldering Technologies

Heat Gun Profile

△ Soldering tip temperature: 350℃ Max.

△ Hot air time: <5sec (over 5sec may cause wiring inductor short)

△ When repairing or reworking the component near inductors, take over-heat protection for Inductors

2）解决电感位偏问题，降低返修率：

经调查，该 3R3 电感在生产制造中经常出现位偏问题，通过观察该料焊盘发现其共面性较差，因此需要选用共面性好的物料替代以降低电感位偏问题。

结论：B 料焊盘共面性要优于 A 料，具体对比见下图。

异常热应力导致漆膜融化图片：