[Causes/processes involved/keys to judgment]

The defect is caused by a warped board, a dull counterbore bit, a wrong bit selection or a mistake in fixing the bit (Counterbore machining process)

## 6-4-2 穴位置ズレ/孔位的偏移 / Displaced hole position

【特徴】穴の中心が部分的にズレている状態の欠陥

【特征】孔的中心局部偏移的缺陷。

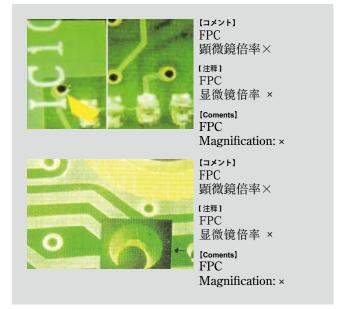
[Characteristics] The centers of some holes are displaced.

【原因・判断ポイント・発生工程】重ね穴明け時の 基板の反りや異物介在、ドリル先端の食いつき滑り などにより出来たもの(穴明け工程)

【原因、判断要点、发生工序】叠板钻孔时板件翘曲、 或者夹杂杂物、抑或钻尖被咬住打滑等所引起的(钻 孔工序)。

## [Causes/processes involved/keys to judgment]

The defect is caused by warped boards, presence of foreign objects in drilling stack or slippage of the drill tip on the board surface (Hole drilling process)



## 6-4-3 穴曲がり/孔的弯曲/Leaned hole

【特徴】穴の中心軸が部分的に湾曲している状態の 欠陥

【特征】孔中心轴的局部弯曲的缺陷。

**[Characteristics]** The axis of a hole is leaned.

【原因・判断ポイント・発生工程】穴明け条件の不 適や、基板の反りなどにより出来たもの(穴明け工 程)

【原因、判断要点、发生工序】钻孔条件不合适、或 者板件翘曲等所造成的(钻孔工序)。

## [Causes/processes involved/keys to judgment]

The defect is caused by improper drilling conditions or warped boards (Hole drilling process)



穴位置がズレ且つあな の形状が楕円になって いる 顕微鏡倍率×

孔位偏移且孔的形状为 椭圆形 显微镜倍率×

[Coments] Hole position is displaced and hole shape is oval. Magnification: ×



【コメント】 顕微鏡倍率×

显微镜倍率×

[Coments] Magnification: ×