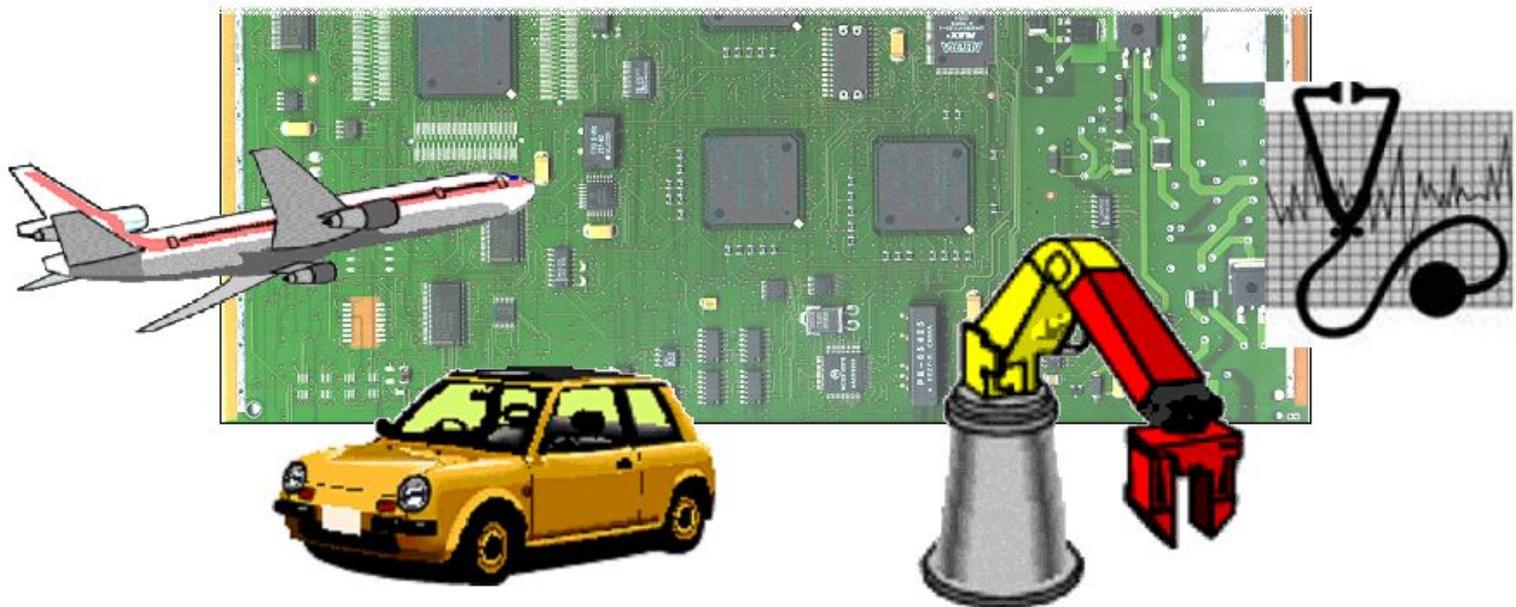
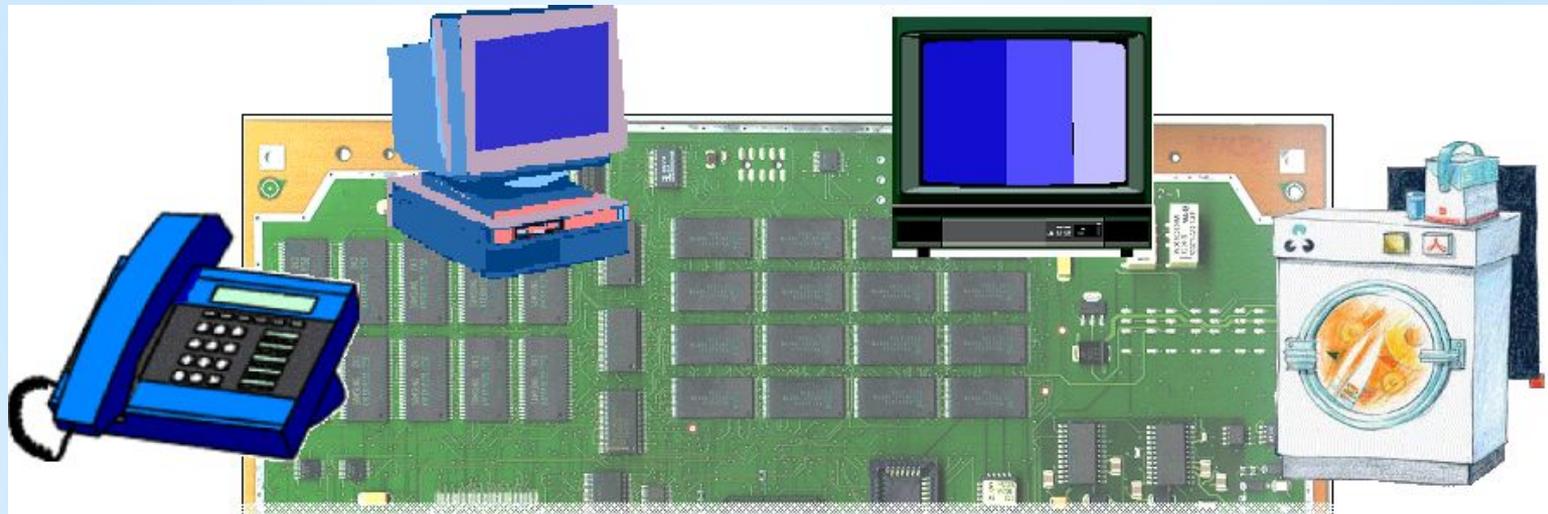
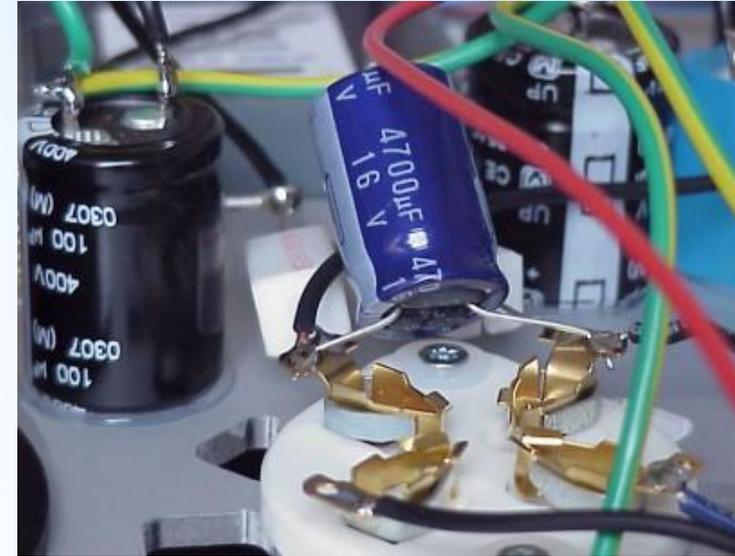
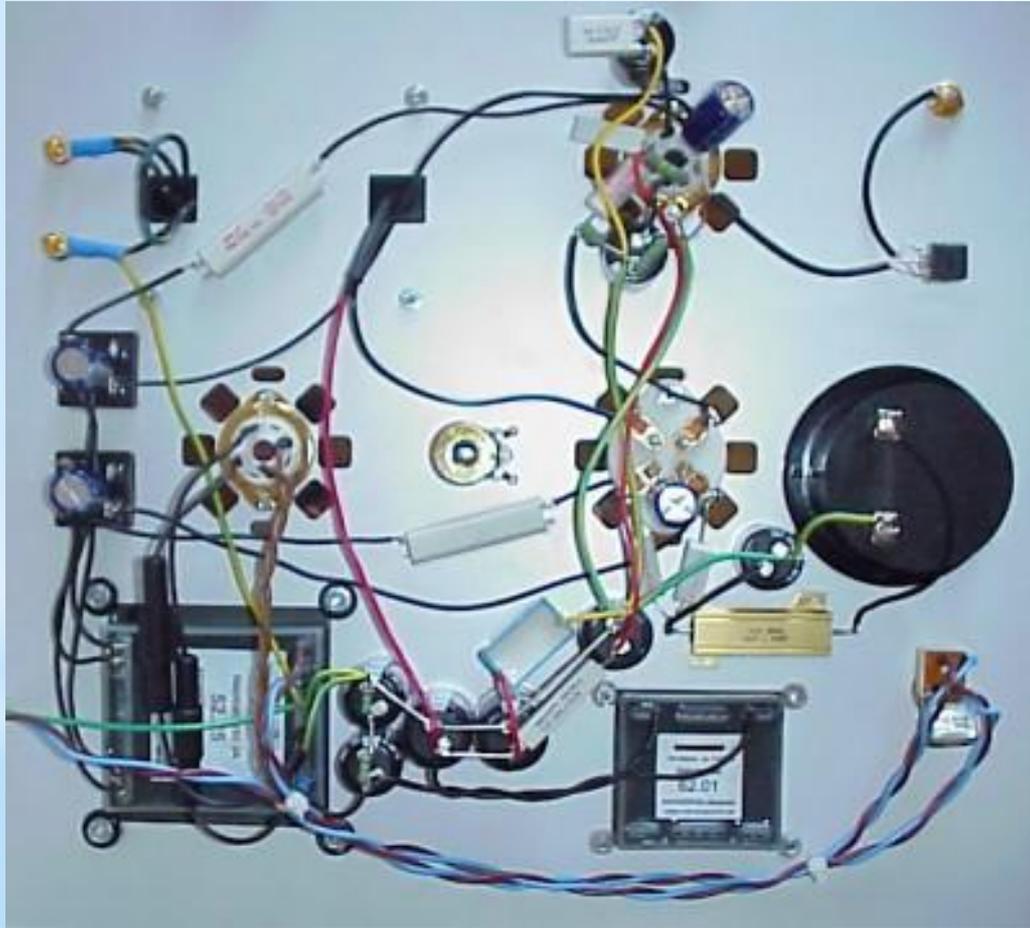


ЭЛЕКТРОНИКА РОССИИ ИСТОРИЯ И СОВРЕМЕННОСТЬ

- Профессор ГУАП, д.т.н. ЛАРИН В.П.
- КАФЕДРА КОНСТРУИРОВАНИЯ И ТЕХНОЛОГИЙ ЭЛЕКТРОННЫХ И ЛАЗЕРНЫХ СРЕДСТВ

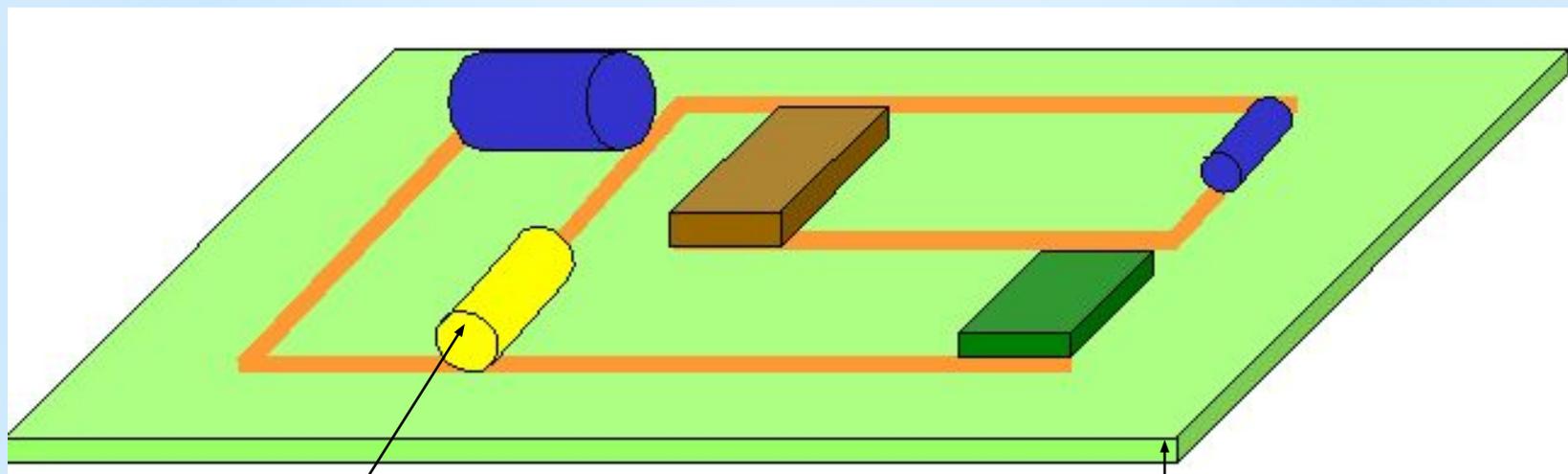




* Что было



* И это было



Электронные
компоненты

Печатные
платы

* Теперь

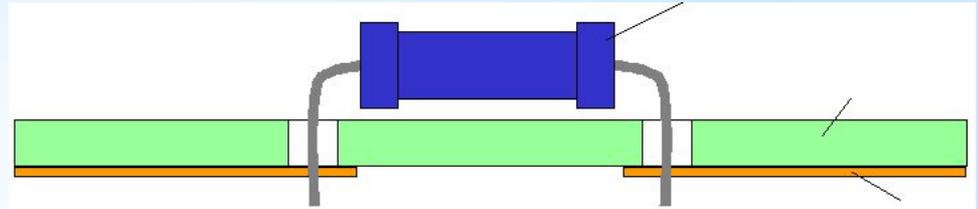
* Первые печатные платы

* Портативный радиоприемник

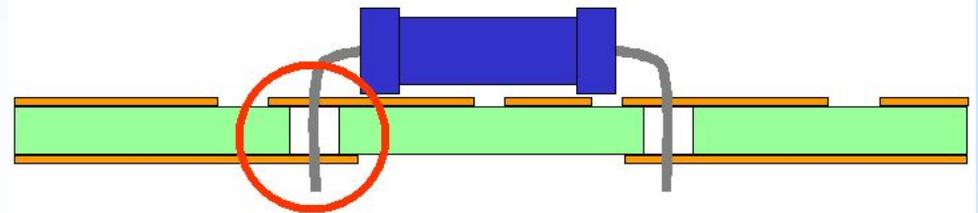


* Эволюция

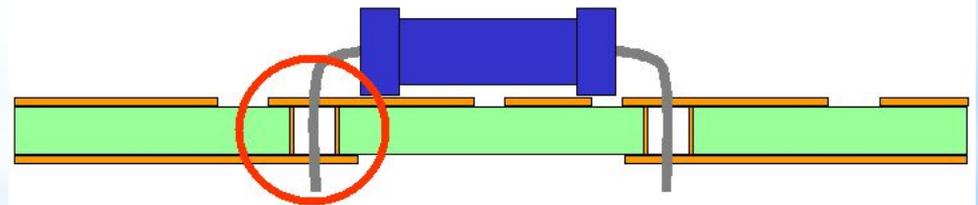
* Односторонние
платы



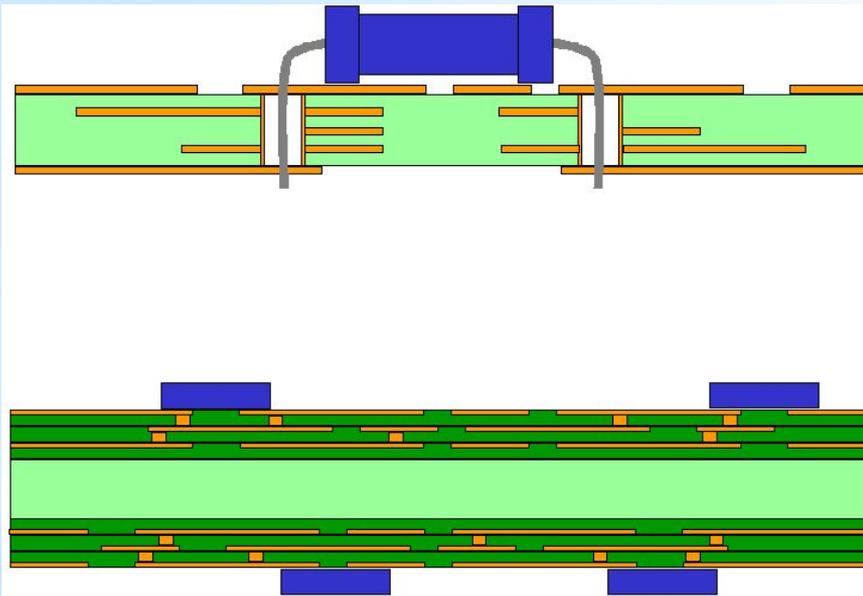
* Двусторонние платы



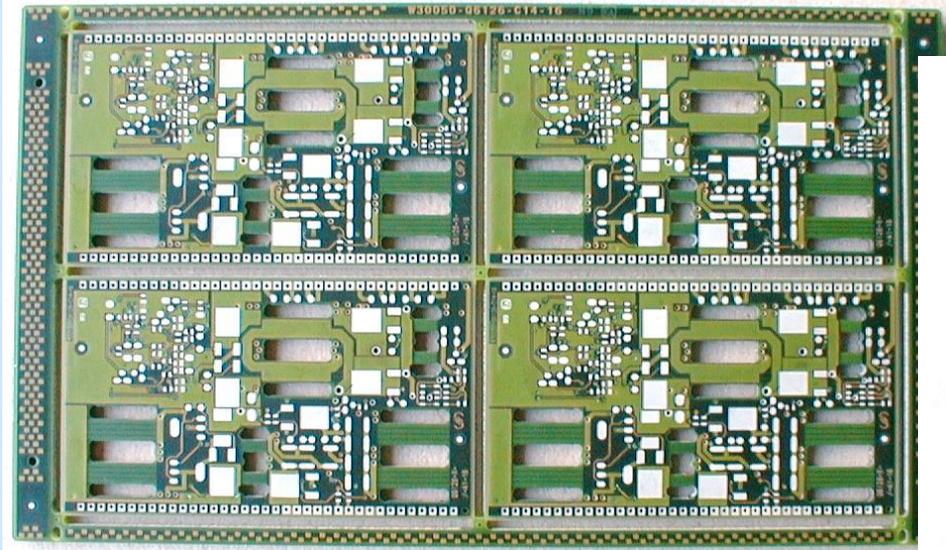
* Двусторонние платы
с металлизацией
отверстий



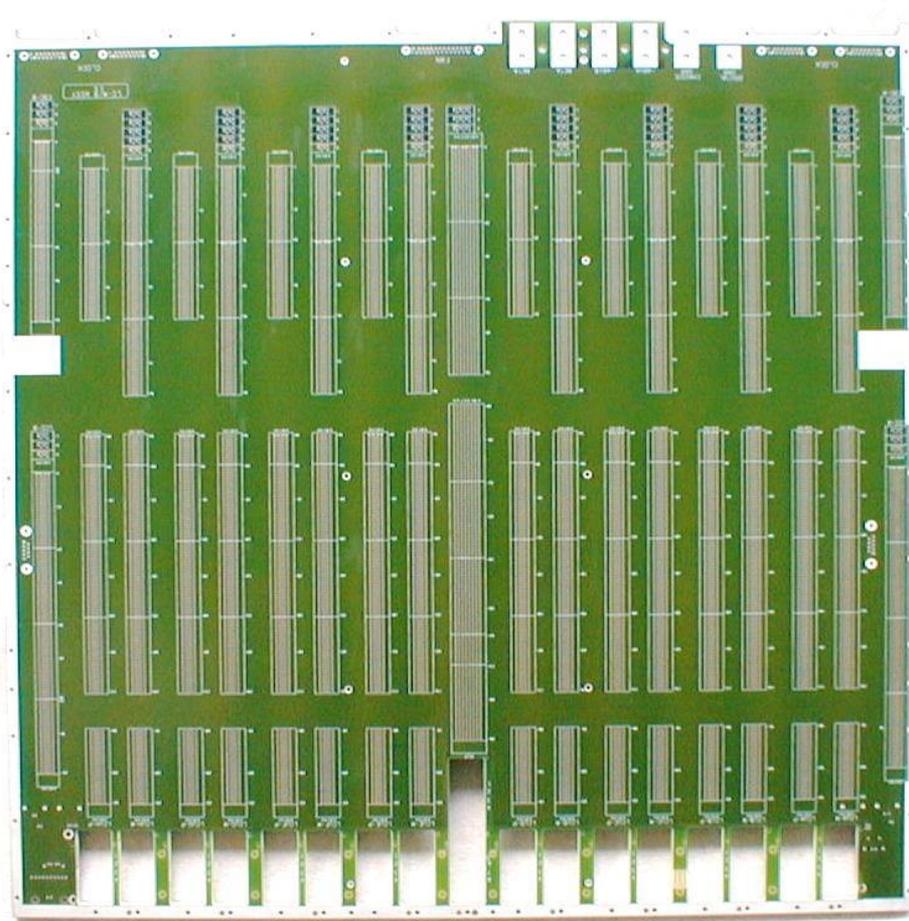
* Многослойные платы

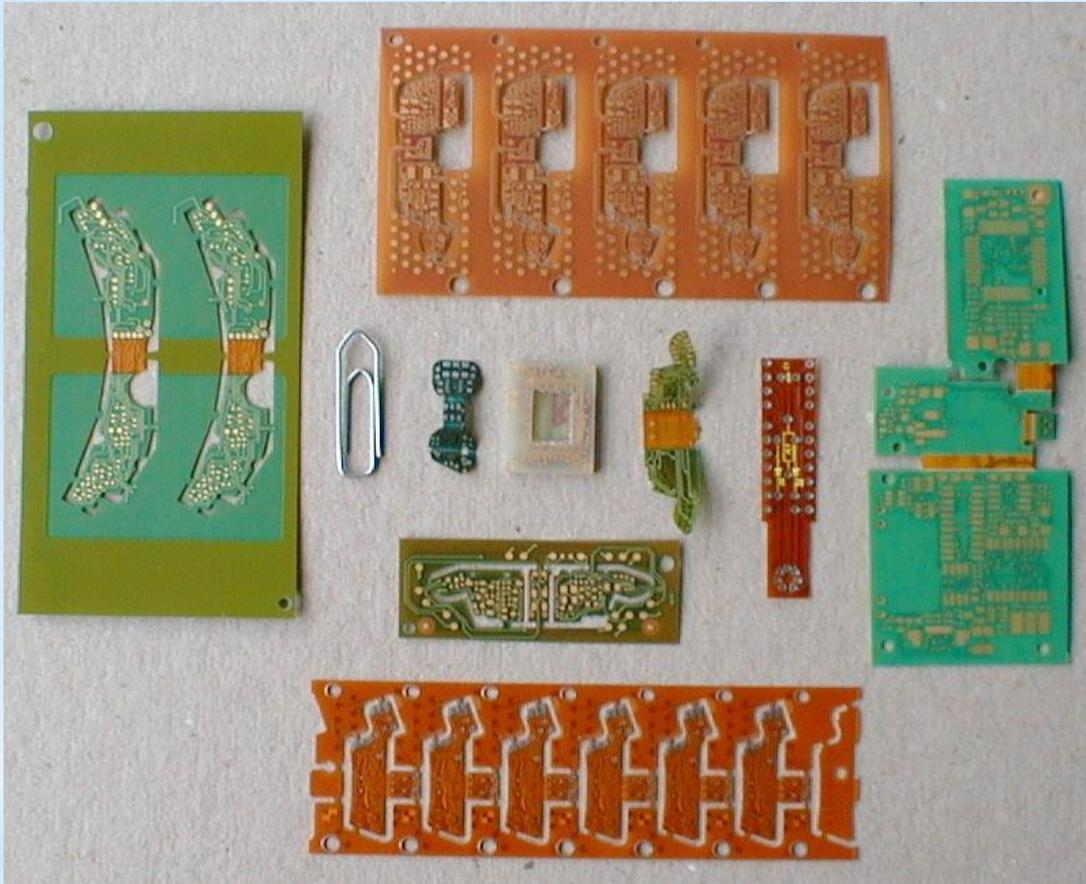


- * МПП с металлизацией сквозных отверстий
- * МПП с послойным наращиванием

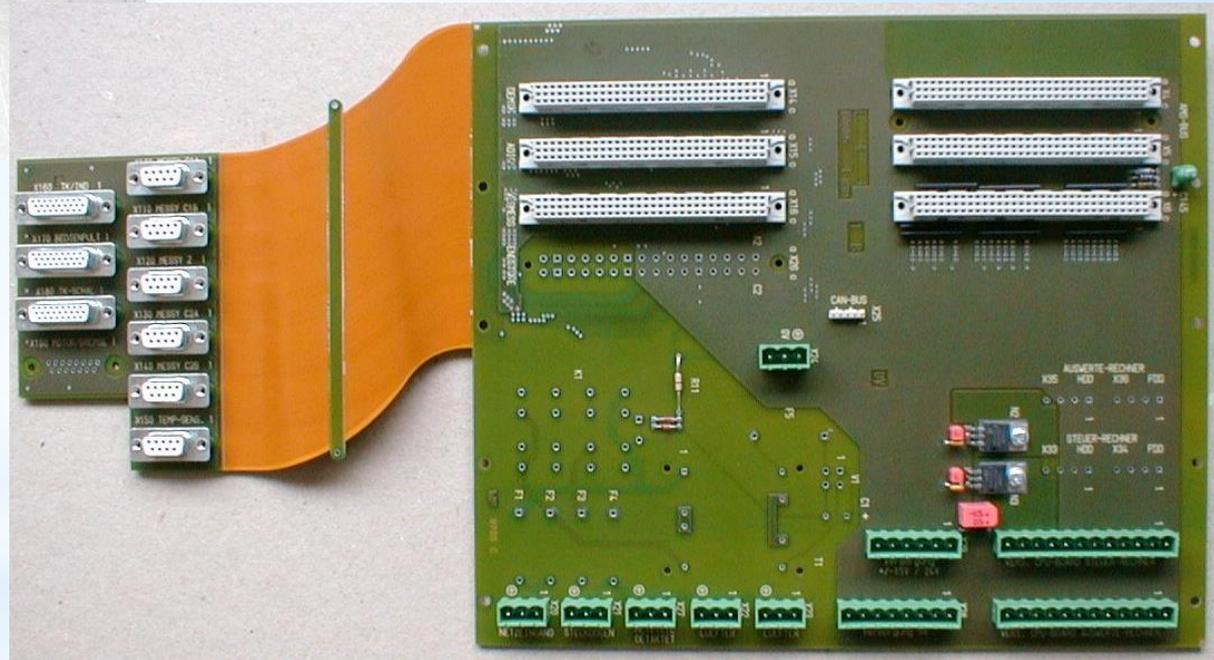
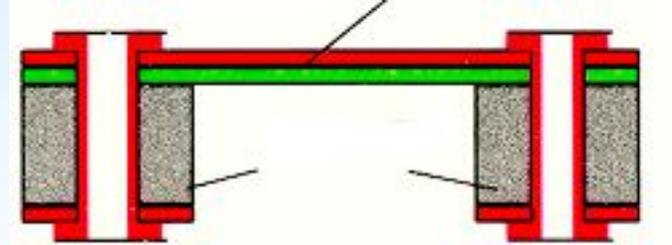
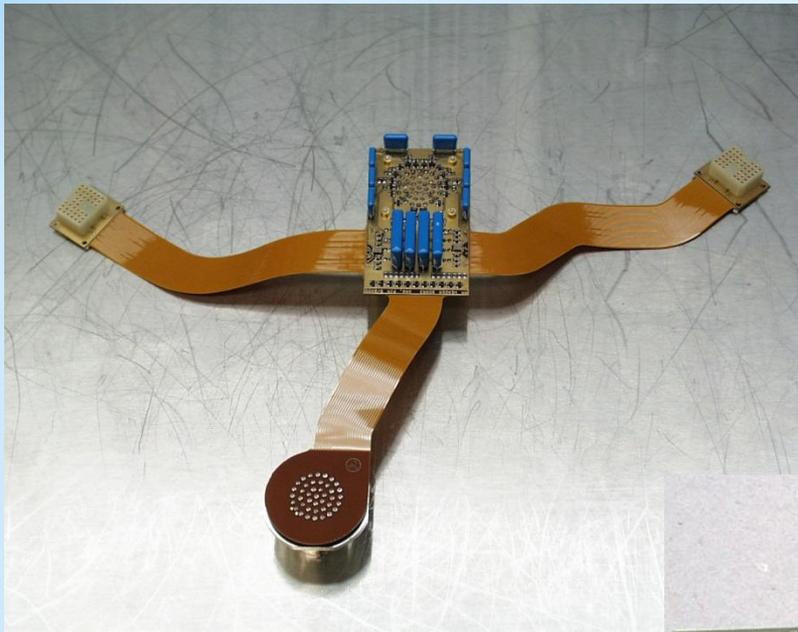


Платы контроллеров



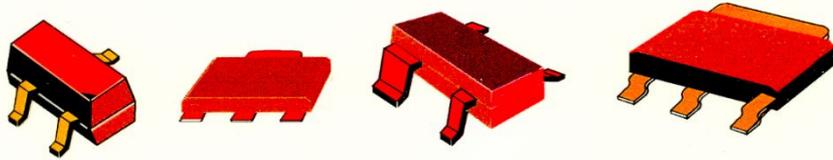


* Гибкие и гибко-жесткие платы



* Электронные компоненты

SMD - Bauelemente (Auswahl)

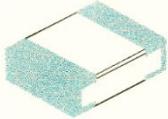


SOT 23

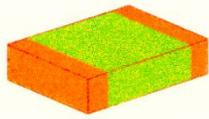
SOT 89

SOT 143

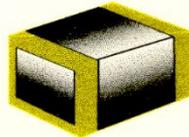
SOT 223



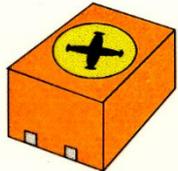
Chip Resistor



Ceramic Capacity



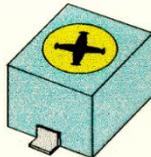
Molded Inductor



Molded Potentiometer



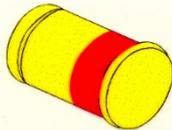
Trimmer Capacity



Molded Potentiometer



MELF Resistor

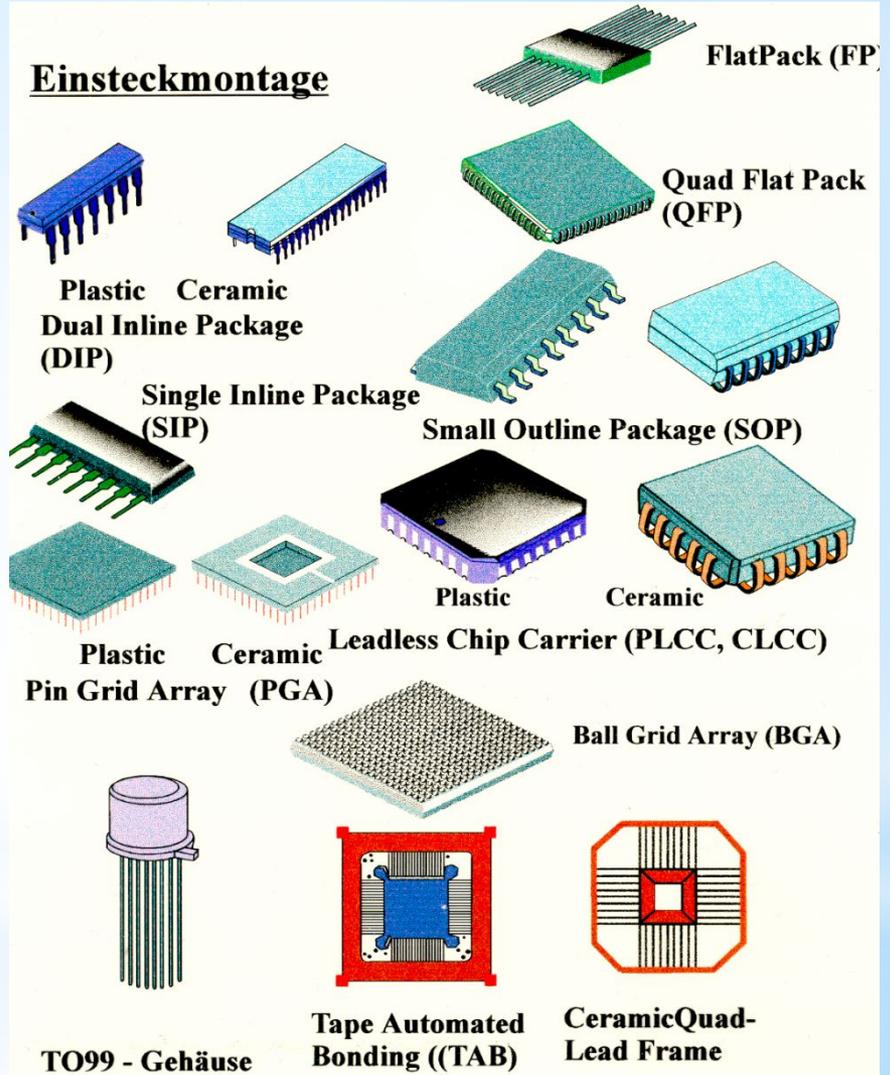


MELF Diode



Chip LED

Einsteckmontage



FlatPack (FP)

Quad Flat Pack (QFP)

Plastic Dual Inline Package (DIP)

Ceramic Single Inline Package (SIP)

Small Outline Package (SOP)

Plastic Pin Grid Array (PGA)

Ceramic

Leadless Chip Carrier (PLCC, CLCC)

Plastic Ceramic

Ceramic

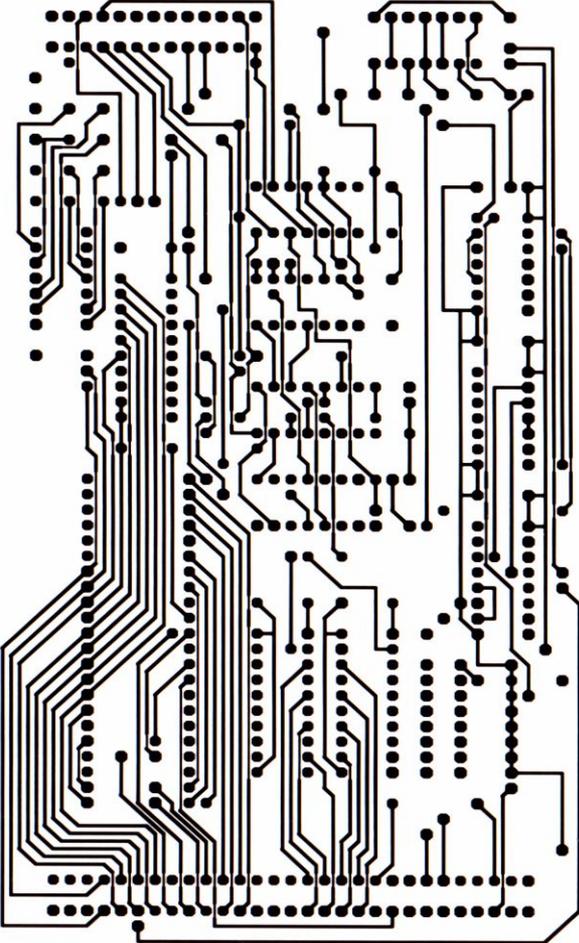
Ball Grid Array (BGA)

TO99 - Gehäuse

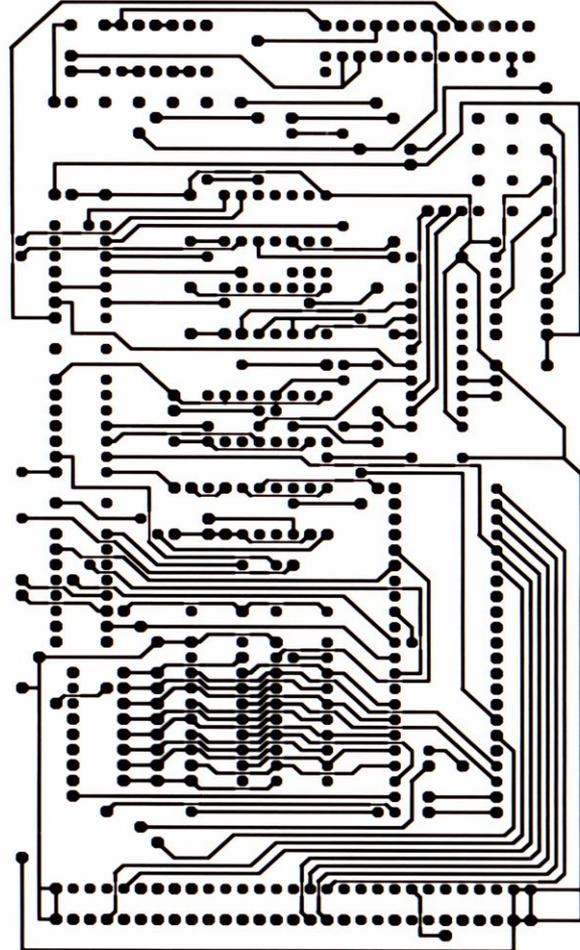
Tape Automated Bonding ((TAB)

Ceramic Quad-Lead Frame

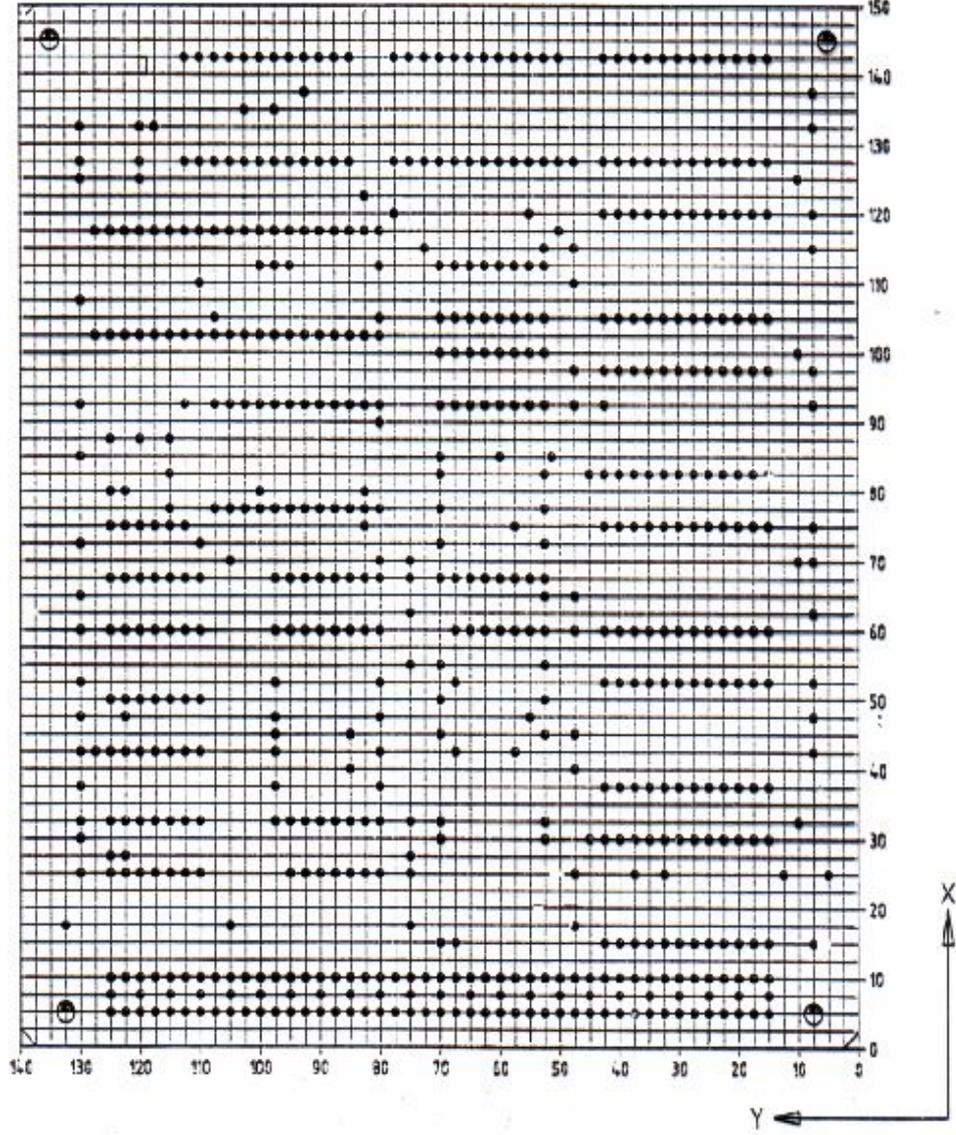
WU.012-4-B.B.0



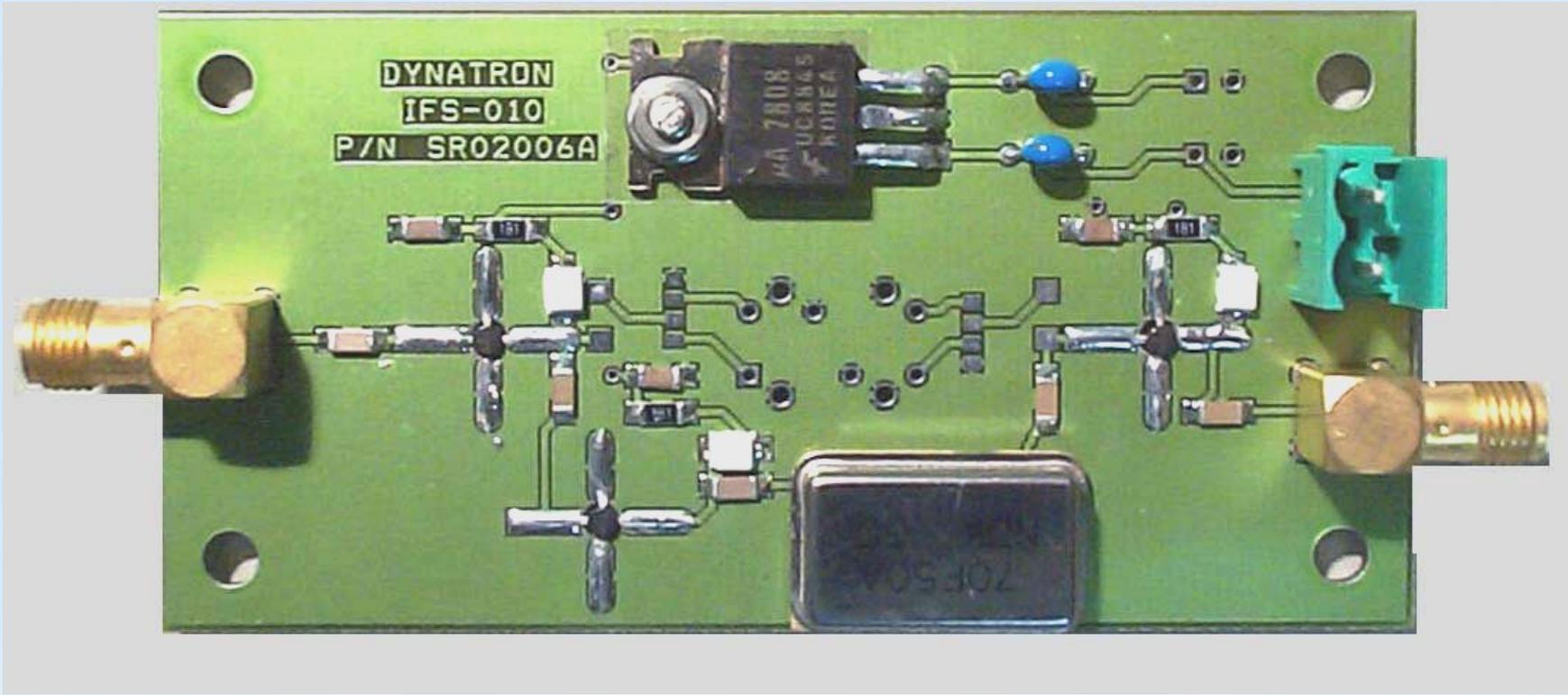
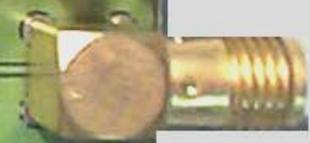
012-4-B.L.0

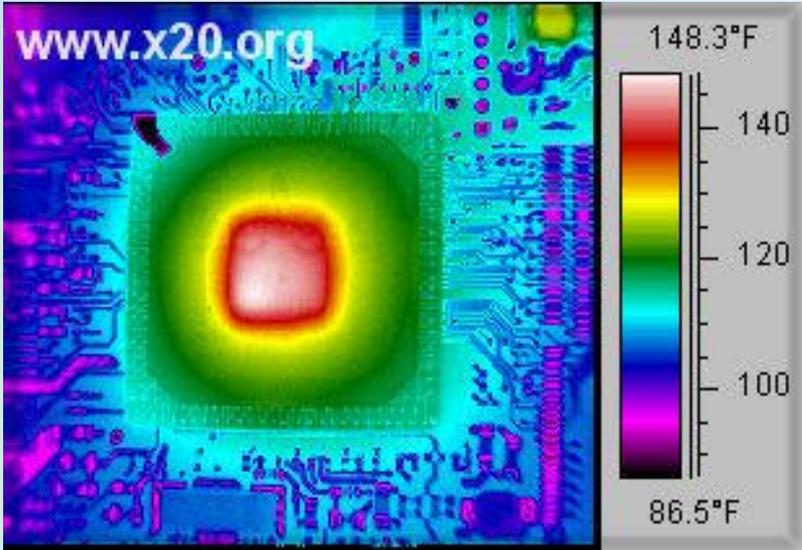


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DYNATRON
IFS-010
P/N SR02006A





=64°C

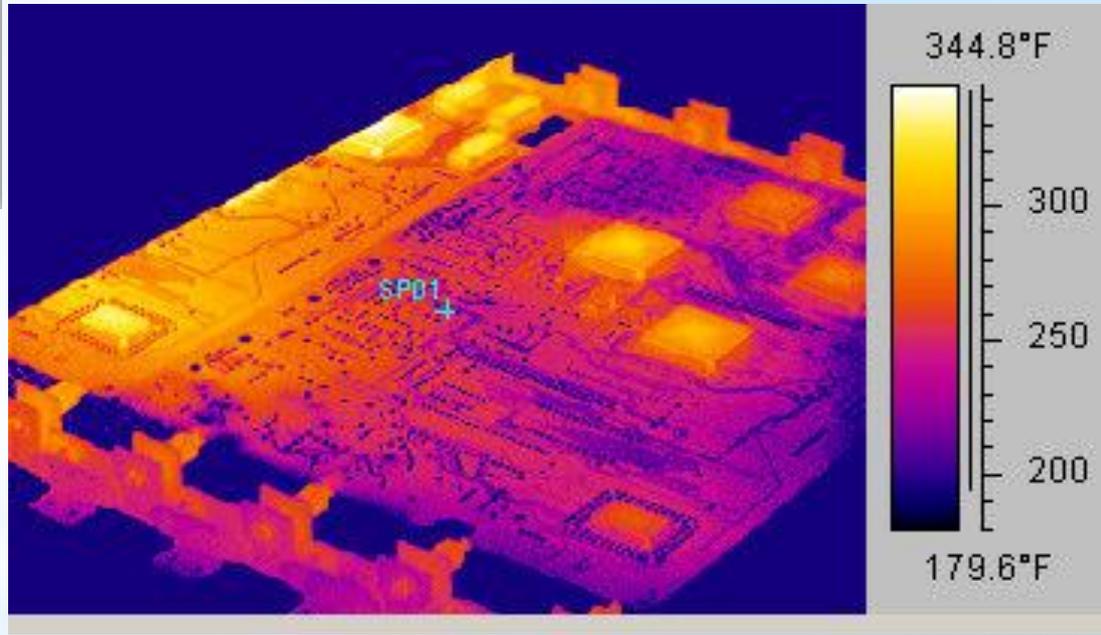








Рис. 6. Узлы и блоки АИС

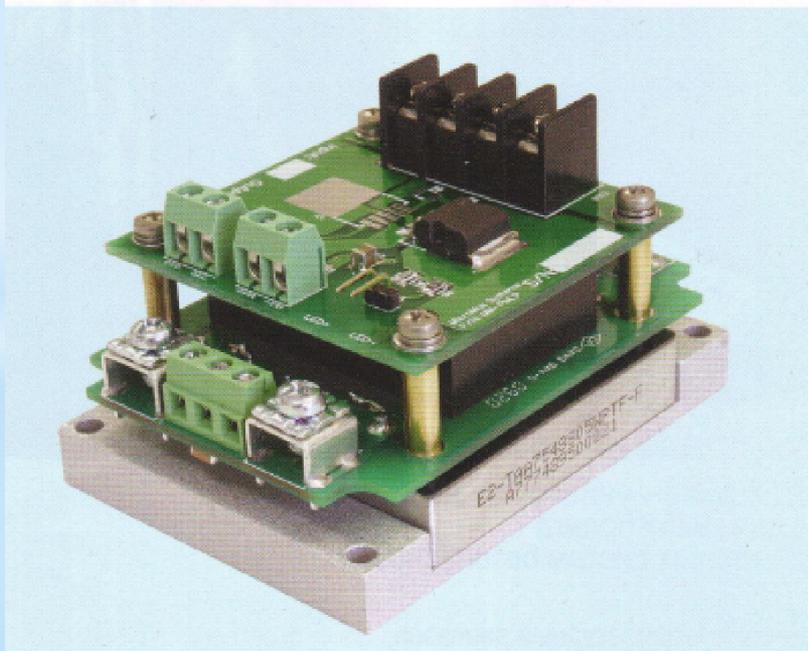
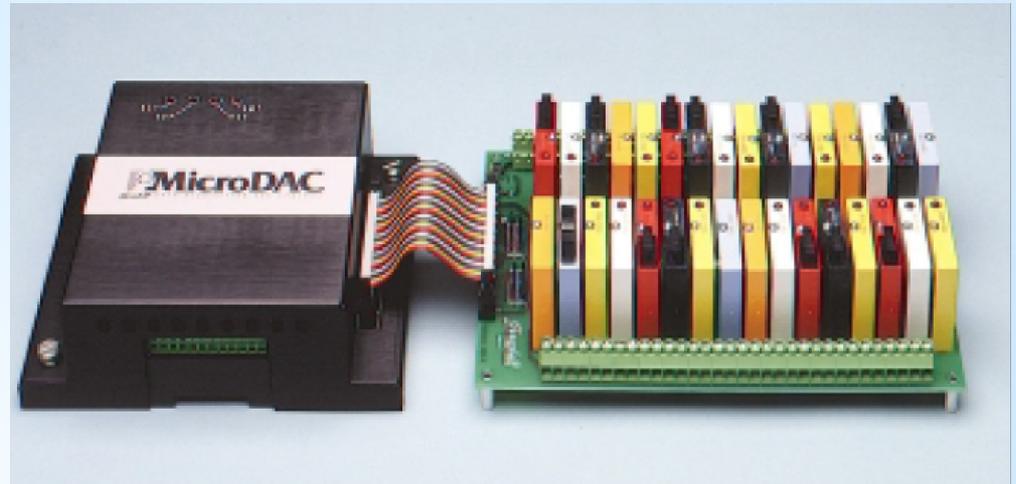
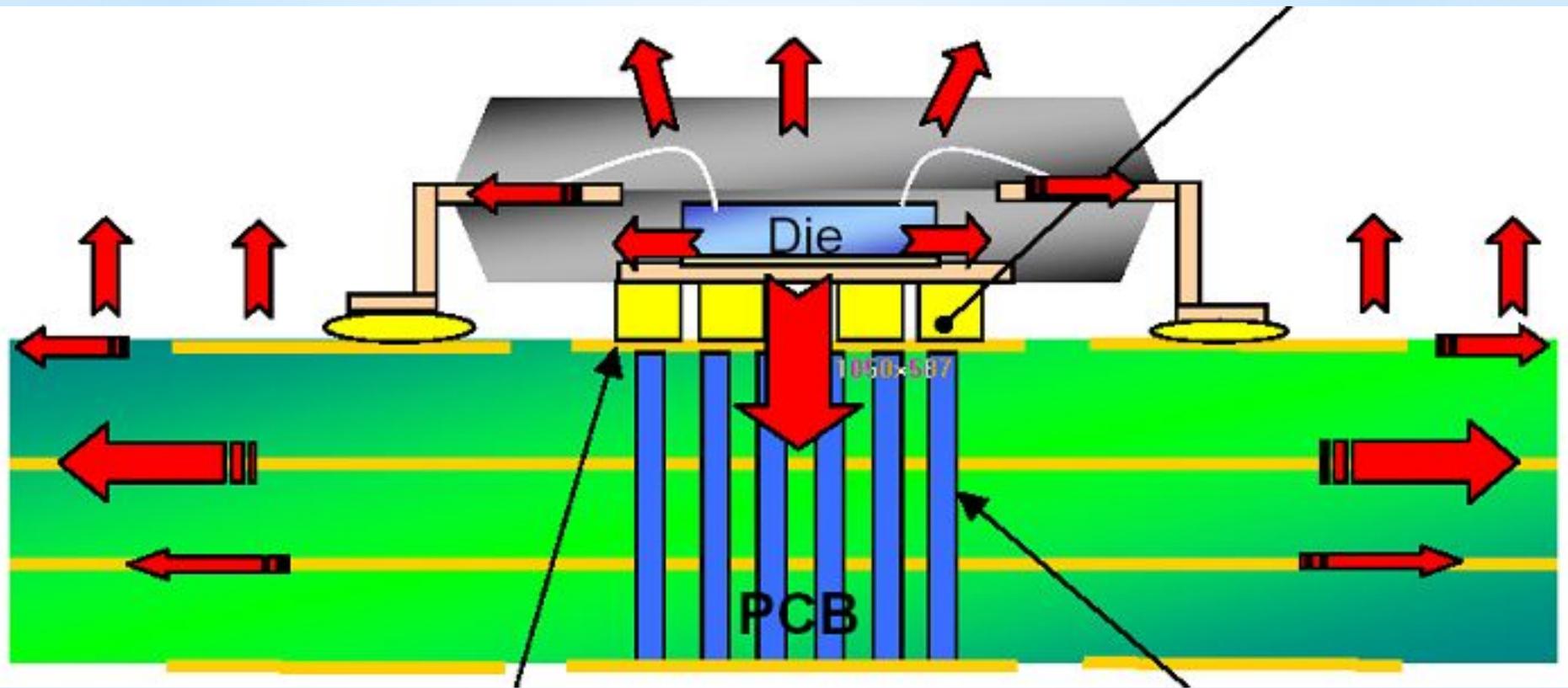
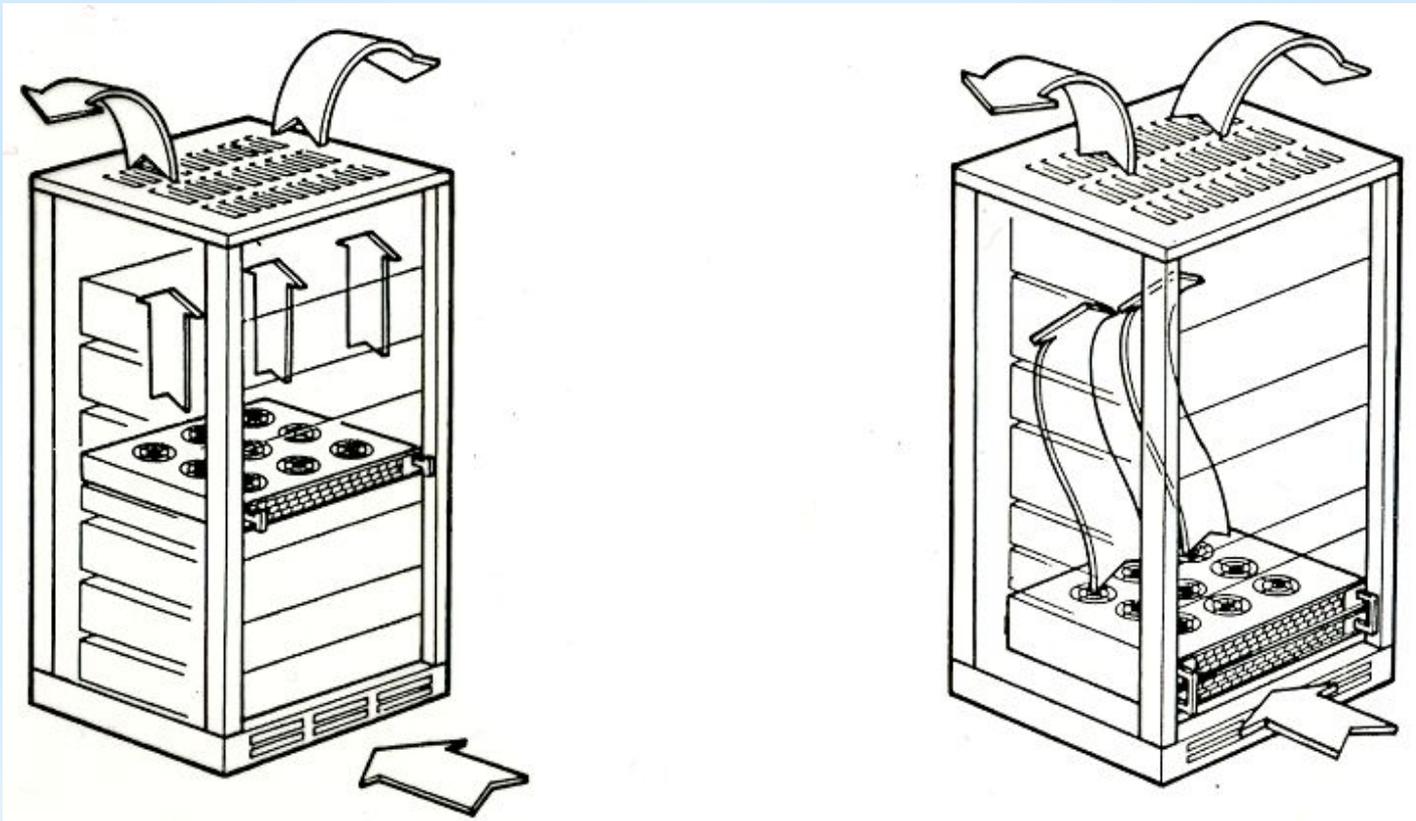
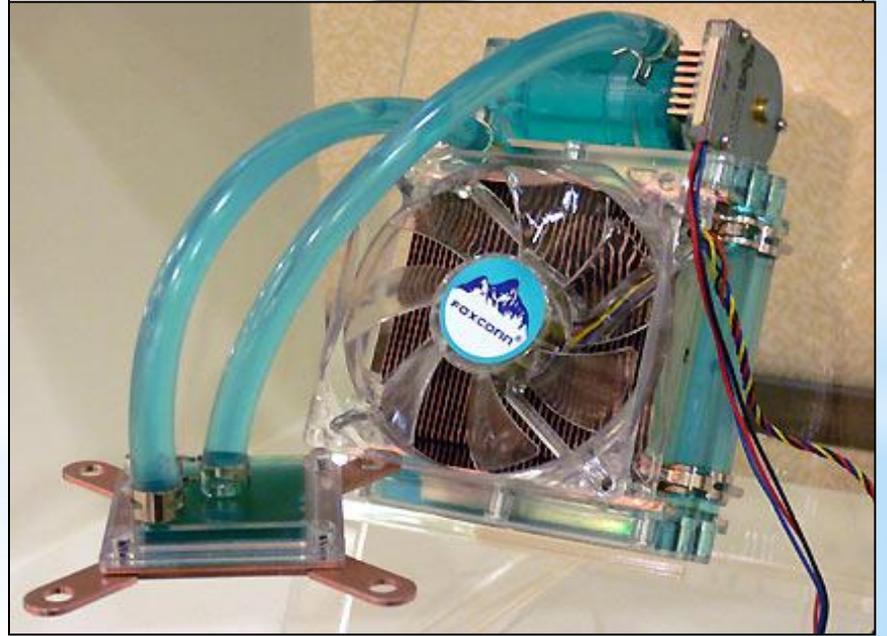


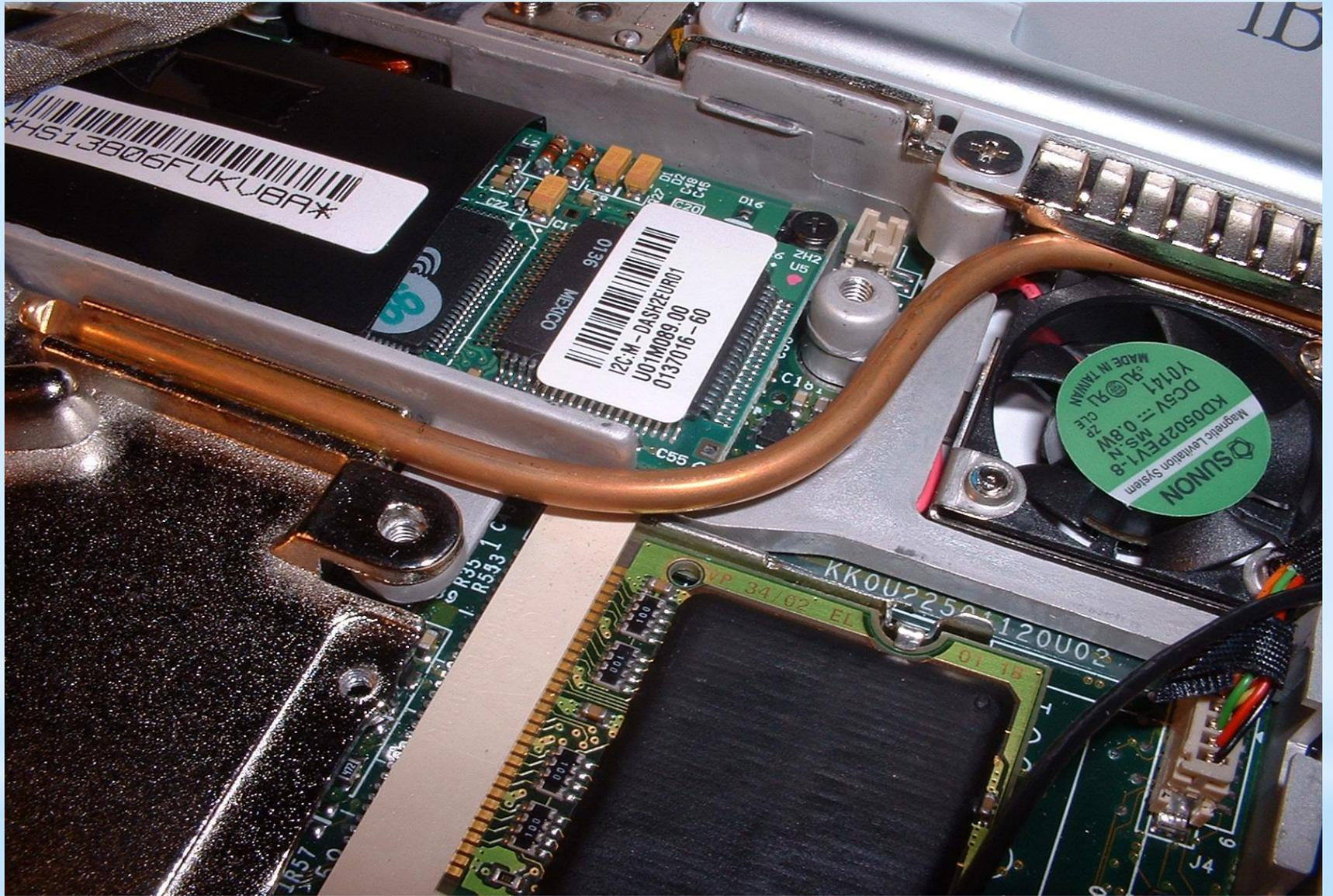
Рис. 1. Пример блока сервера с использованием объединительной платы

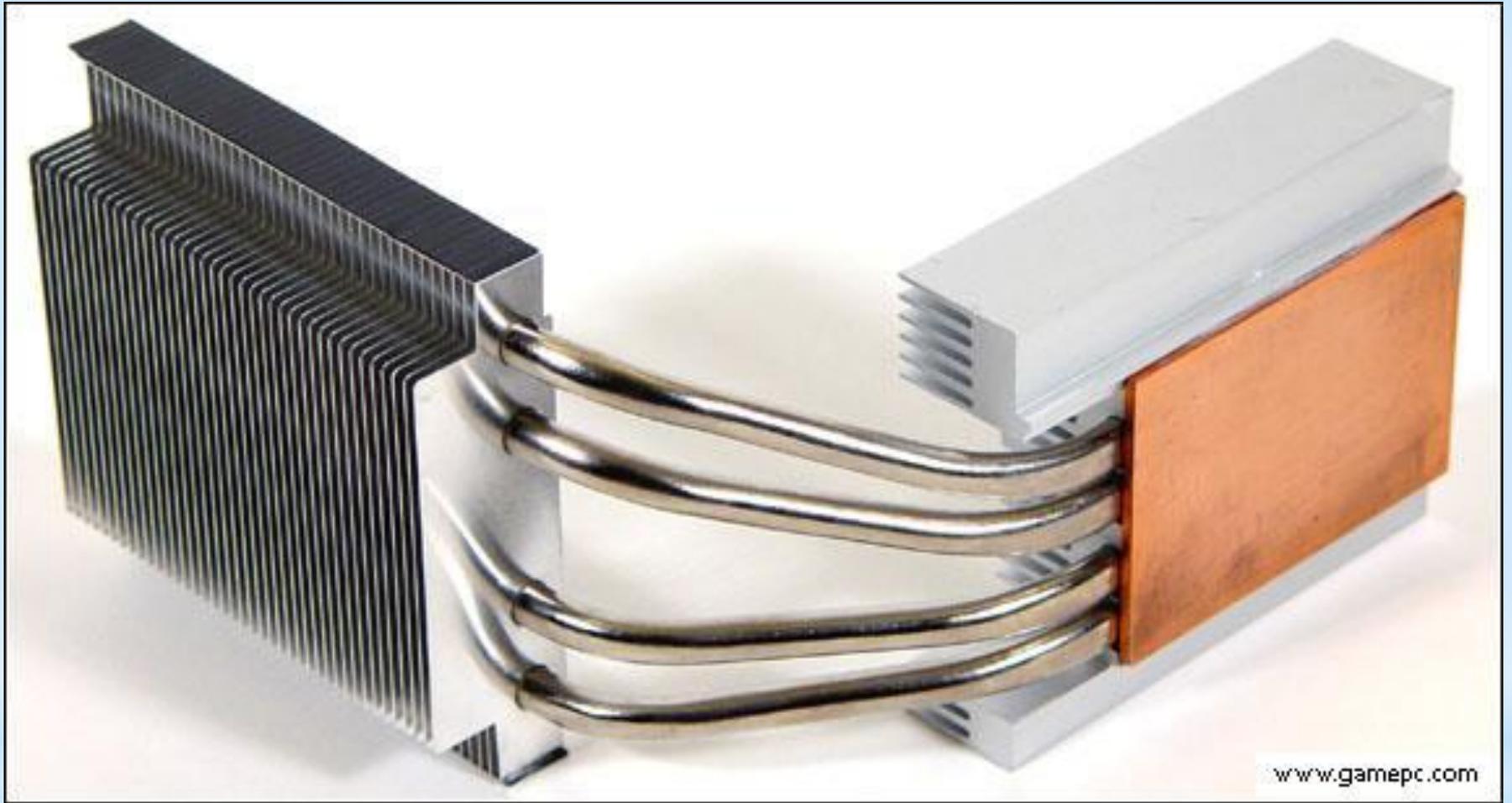




* Охлаждение вентиляцией







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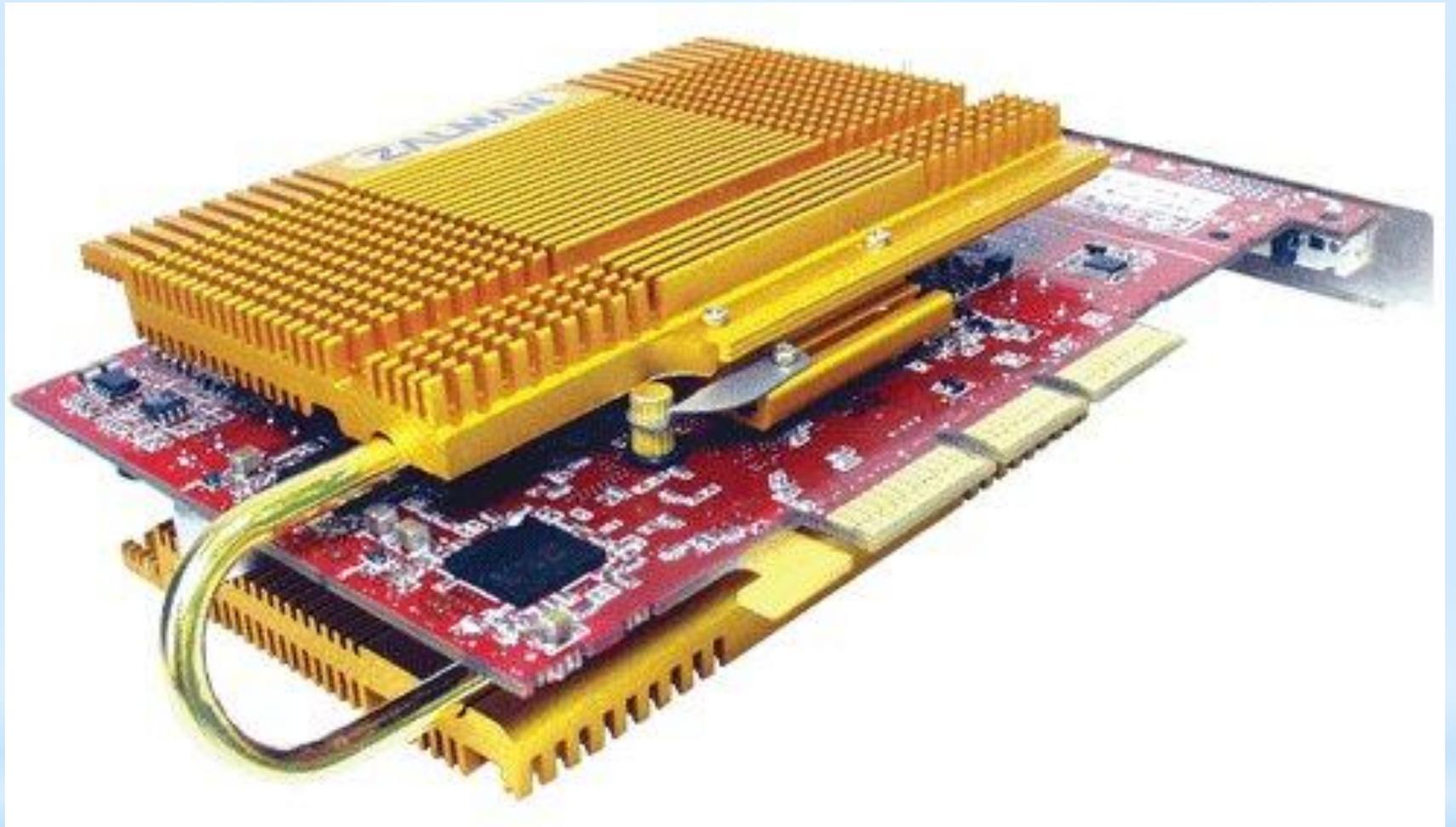




Рис. 12. Конструкция печатной платы по технологии «Прима»

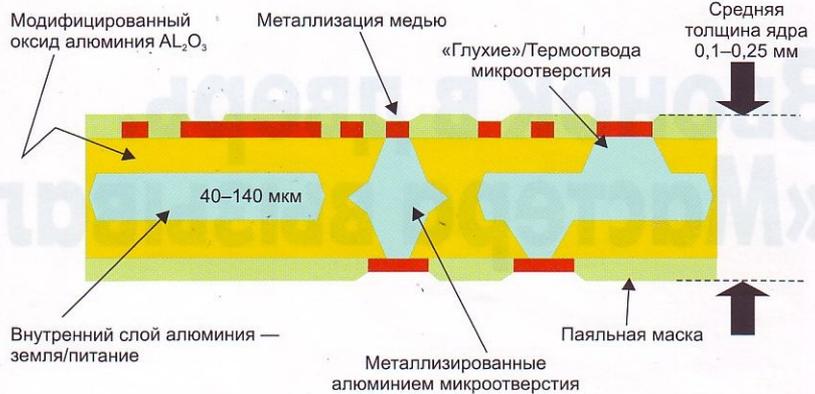


Рис. 13. Коммутационная плата по технологии ALOX

