



Applications of New Package-on-Package Technology that Benefits Medical Design

The demand for more compact design in both portable and desktop medical devices has increased significantly in the past few years. To help meet that demand, Express Manufacturing, Inc. has introduced a new manufacturing solution called Package-on-Package (PoP). PoP is a sophisticated assembly packaging technology that vertically stacks a discrete controller and memory Ball Grid Array components. It allows multi-chip packages to be integrated for greater space savings on the printed circuit board (PCB). Instead of occupying multiple flat surface areas on the PCB, PoP allows the components to stack up, much like a high-rise building.

Benefits

Compact design provides many benefits. Patient home care devices such as portable blood pressure monitors and other vital-sign monitoring devices can be more manageable. Small, easily portable devices can provide senior citizens with the option to “age in place” rather than staying in senior care facilities, and recovering patients can stay at home rather than in the hospital. In the case of hospital care, smaller bench-top devices such as sonogram machines can be brought bedside to care for a patient, eliminating the need to transport patients for routine exams. These practices can reduce overall healthcare costs, increase patient satisfaction and improve the efficiency of medical staff.

New Applications

In recent years mHealth (Mobile Health) or TeleHealth, including remote monitoring, has been touted as the best way to reduce hospitalizations and the costs associated with them. Remote monitoring, for example, allows a patient to return home more quickly after a heart attack while still allowing for appropriate medical supervision. A new design under development can now monitor the ECG pattern of the patient. These types of devices are very compact, designed in the form of a patch worn across the chest. These devices are very small and lightweight, utilizing a processor and a Bluetooth radio. Package-on-Package will make this compact design possible.

Corporate Headquarters

3519 West Warner Ave.
Santa Ana, CA 92704
USA
Ph: 714-979-2228
F: 714-556-0575
www.eminc.com

Hong Kong Offices

Unit 802, 8/F Apec Plaza
49 Hoi Yuen Rd.
Kwun Tong, Kowloon
Hong Kong
Ph: 852-2790-3623
F: 852-2790-3932
www.ealtd.com.hk

Asia Factory

99 Dai Tang Bian Rd.
Wen Tang Chia Xia
Dongcheng District
Dongguan City
China 523121



The Process

The process of PoP, sometimes called “Stacked Components” has been used for many years and is now gaining significant attention in North America. Because the vertical distance between components is greatly reduced when stacked rather than placed side by side, PoP significantly reduces real estate on the PCB while increasing overall speed.

Fuji has worked with component manufacturers and process development engineers as well as paste and flux manufacturers to develop and refine these processes so they are now easy and repeatable for end users. New innovations like the Fuji rotary flux dipping unit can spin out a very precise thickness of flux or paste and as many as four parts can be now be dipped simultaneously to increase placement speed. Recent advances in PoP technology have resulted in extremely high yields and reduced components size with higher ball counts.

Conclusions

The benefits of PoP are numerous, but the production process must be carefully designed and managed to ensure the high quality devices required of medical care. To manage the challenges associated with PoP requires the cooperation of PoP component suppliers, PCB design, fabrication and assembly, working closely together to create a production process. There is little doubt, however, that PoP will play an important role in component reliability and compact design for medical devices in the years to come.

Contact

Express Manufacturing, Inc.
3519 West Warner Avenue
Santa Ana, CA 92704
Tel: 714-979-2228
Fax: 714-556-0575

Corporate Headquarters

3519 West Warner Ave.
Santa Ana, CA 92704
USA
Ph: 714-979-2228
F: 714-556-0575
www.eminc.com

Hong Kong Offices

Unit 802, 8/F Apec Plaza
49 Hoi Yuen Rd.
Kwun Tong, Kowloon
Hong Kong
Ph: 852-2790-3623
F: 852-2790-3932
www.ealtd.com.hk

Asia Factory

99 Dai Tang Bian Rd.
Wen Tang Chia Xia
Dongcheng District
Dongguan City
China 523121