Biography: Courtney R. Furnival, Semiconductor Packaging Solutions

Courtney Furnival, is a designer/inventor with five decades of experience in almost every aspect of power electronics packaging from packaging design; to building and qualifying prototypes; to developing manufacturing processes; to high-yield/high-volume product. He has packaged RF, MOSFETs, IGBTs, GaN discrete devices and power modules.

Power

He designed 100+ custom QFN & LGA packages for power, HV, RF & multi-chip functions, providing process guidance to off-shore contract assemblers. Customers included IXYS, ASIC Advantage & Microsemi. Designed 100+ custom QFN & LGA packages for power, HV, RF & multi-chip functions, and built prototypes at contract assembler in Philippines. Customers included IXYS, ASIC Advantage & Microsemi.

High Power

Mr. Furnival designed 600V/900A and 1200V IGBT modules for a Ford Electric Vehicle Inverter, built working prototypes, while designing FORD module manufacturing facility in Dearborn, that included specifying processes and defining assembly equipment.

He designed & prototyped numerous HV isolated relays.

He also designed, patented & qualified IGBT modules up to 250V/1000A, 600V/400A & 1200V/200A modules. Defined equipment & tooling, and setup & qualified manufacturing process, equipment, in Italy, England & Mexico.

For P.E.R.I. in China, Courtney designed the 600 V & 1200 V Power IGBT DBC modules and transferred the packaging technology to them.

Director of Engineering for IGBT motor control modules/products. Responsible for package design, assembly process & testing, qualification & product engineering support.

Power WBG

Courtney designed & tested power 650V GaN and 1200V, 1700V & 3400V SiC QFN & LGA customer specific packages.

Materials

He developed application specific materials such as new glass & capacitor dielectric is applicable to custom packaging. Supported development of high-voltage thermally conductive laminates, defined requirements, characterized, and life tested the laminates.

Contributions to Company, Patents, & Education

SPS Power, IXYS, ASIC Advantage, Microsemi, Ford, Thermagon, International Rectifier, A&H Technology, Silicon General, TRW, RCA, and others.

7 Patents in power electronics packaging: 8 ,: US#9,214,416, US#8,094,458, US#7,307,341, US#6,147,868, US#6,081,039, US#5,914,577 & US#5,408,128.

Education: B.S. & graduate work in Physics, plus minors in Mathematics & Chemistry

µMaxPak Technology

The Near Chip-Scale innovative technology shown in Courtney Furnival's presentation grew out of his combined power module and QFN packaging experience.