SEMICON® KOREA 30 YEARS

Advanced eWLB/FO-WLP (embedded Wafer Level Ball Grid Array/FanOut-Wafer Level Package) for High Frequency Applications

Seung Wook Yoon – Director STATS ChipPAC

FO-WLP (Fan-Out Wafer Level Packaging) has been established as one of the most versatile packaging technologies in the recent past and is already accounting for a market value of over 1 billion USD due to its unique advantages. The technology combines high performance, increased functionality with a high potential for heterogeneous integration and reduce the total form factor as well as cost-effectiveness. FO-WLP has started in volume for mobile and consumer applications (RF, BB, connectivity, NFC, PMIC, audio codec, MCU etc) and is now moving to 5G communication, automotive, medical and IoT/WE applications. Advanced embedded Wafer Level Ball Grid Array (eWLB) FO-WLP provides a versatile platform for the semiconductor industry's technology evolution from single or multi-die 2D package designs to 2.5D interposers and 3D System-in-Package (SiP) configurations. WLCSP is already well adopted in the automotive market for cabin or infotainment applications as well as 77GHz radar sensors with FO-WLP. The range of applications continues to expand with the ultimately larger wave in the development of next generation automotive capabilities, i.e. electrical vehicle (EV) and autonomous driving car. The market share of current WLCSP volume is expected to double in the next 3-5 years. The car radar market is expected to grow 28% annually (2015-2022) and reach 200M$ in packaging and assembly.

This paper reports developments of eWLB/FO-WLP for high frequency applications, RF and mmWave above 70GHz. Package design optimization, electrical performance characterization, design parametric DOE study and component/board level reliability test would be presented. And also the case study of RF MEMS tuner and 77GHz ADAS automotive radar would be discussed.

Organized by: