European Consortium to Push Speed Limit of Silicon Based Transistor to 0.5 THz

Led by STMicroelectronics, the European Consortium is setting out to develop advanced silicon-based bipolar transistors with a maximum operating frequency of 0.5 THz (0.5 TeraHertz or 500 GigaHz) needed for future millimeter wave and terahertz communication, radar, imaging and sensing applications.

The three-year project, designated DOTFIVE and titled &quotTowards 0.5 Terahertz Silicon/Germanium Heterojunctin Bipolar Technology&quot is worth Euros 14.75 million with Euros 9.7 million European Commission funding, making it the largest &#151 more than Moore&#151 nanoelectronics project under EU Framework Programme 7.

DOTFIVE is aiming to establish a leadership position for the European semiconductor industry in the area of SiGe HBTs (Silicon-Germanium Heterojunction Bipolar Transistors) for millimeter wave applications, where semiconductor manufacturers like STMicroelectronics and Infineon Technologies are already involved. &quotWith this ambitious project, Europe is getting ahead of the RF roadmap defined in ITRS, strengthening its position in an area where the whole ecosystem is already strong,&quot said Gilles Thomas, DOTFIVE project coordinator and ST Microelectronics R&D Cooperative Programs Manager. Emerging high-volume millimeter wave applications encompass, for example, 77 GHz automotive radar applications and 60 GHz WLAN (Wireless Local Area Network) communication systems. According to U.S. market research company Strategy Analysts, the market for long-range anti-collision warning systems in cars could increase by more than 65 percent per year until 2011.

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