



Automotive Radar Sensors in Silicon Technologies

By Vipul Jain, Payam Heydari



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One of the leading causes of automobile accidents is the slow reaction of the driver while responding to a hazardous situation. State-of-the-art wireless electronics can automate several driving functions, leading to significant reduction in human error and improvement in vehicle safety. With continuous transistor scaling, silicon fabrication technology now has the potential to substantially reduce the cost of automotive radar sensors. This book bridges an existing gap between information available on dependable system/architecture design and circuit design. It provides the background of the field and detailed description of recent research and development of silicon-based radar sensors. System-level requirements and circuit topologies for radar transceivers are described in detail. Holistic approaches towards designing radar sensors are validated with several examples of highly-integrated radar ICs in silicon technologies. Circuit techniques to design millimeter-wave circuits in silicon technologies are discussed in depth.

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Editorial Review

From the Back Cover

This book presents architectures and design techniques for mm-wave automotive radar transceivers. Several fully-integrated transceivers and receivers operating at 22-29 GHz and 77-81 GHz are demonstrated in both CMOS and SiGe BiCMOS technologies. Excellent performance is achieved indicating the suitability of silicon technologies for automotive radar sensors. This book bridges an existing gap between information available on dependable system/architecture design and circuit design. It provides the background of the field and detailed description of recent research and development of silicon-based radar sensors. System-level requirements and circuit topologies for radar transceivers are described in detail. Holistic approaches towards designing radar sensors are validated with several examples of highly-integrated radar ICs in silicon technologies. Circuit techniques to design millimeter-wave circuits in silicon technologies are discussed in depth.

- Describes concepts and fundamentals of automotive radar sensors;
- Bridges the current gap between publications on system/architecture design and circuit design for automotive radar sensors;
- Describes in detail system-level requirements and circuit topologies for radar transceivers;
- Validates holistic approaches towards designing radar sensors with several examples of highly-integrated radar ICs in silicon technologies;
- Describes various techniques to design millimeter-wave circuits in silicon technologies.

Users Review

From reader reviews:

Toni Styer:

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