

Distinguished Microwave Lecture 2025

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IEEE AP-S and MTT-S Joint Student Chapter, The University of Texas at Dallas



High-Efficiency Silicon PAs for mmWave Radar Sensors

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BIO

Tolga Dinc received the Ph.D. degree in electrical engineering from Columbia University, New York, NY in 2017. Since then, he has been with Texas Instruments, Dallas, TX as an RF/mmWave Engineer. Tolga is a four-time award winner at the IEEE RFIC Symposium (2022, 2021, 2019 and 2015) and a recipient or co-recipient of several other honors, including the IEEE Microwave Magazine Best Paper Award in 2021 and the Columbia University Eli Jury Award in 2017. He has authored or coauthored 45+ papers for various RF/mmWave applications and holds over 20 granted/pending patents. He has been a TPC member for the IEEE CICC (2019-2023) and IEEE RFIC Symposium (since 2023). He currently serves as an Associate Editor for the IEEE Journal of Solid-State Circuits.

Abstract

In this talk, we will present the recently developed silicon-based high-efficiency PAs for mmWave radar sensors. We will start off by introducing applications and system level considerations for mmWave radar sensors with a goal of deriving the PA design targets. Rest of the talk will cover the design methodologies and techniques to enable high-efficiency PAs at mmWave radar frequencies. Specifically, we will discuss the recently proposed doubly-tuned transformer-based Class-E PA concept, which is better suited for mmWave operation than the traditional Class-E design. We will present measured results in BiCMOS and bulk CMOS at 77GHz and 60GHz bands to demonstrate the proposed concepts and techniques.

Date: September 18, 2025 (Thursday)

Time: 1:00 pm – 2:30 pm CST

**Location: AD 3.218, The University of Texas at Dallas, 800 W
Cambell Rd, Richardson TX 75080**

Teams Link: https://teams.microsoft.com/l/meetup-join/19%3ameeting_YTUyYjMxMmUtNWm4Mi00ODdkLThjODMtMWY4YWl5MzAwNTQw%40thread.v2/0?context=%7b%22id%22%3a%228d281d1d-9c4d-4bf7-b16e-032d15de9f6c%22%2c%22oid%22%3a%22cc11cb30-829b-44ef-a32a-9ca2dc2aca0a%22%7d

Meeting Link:

