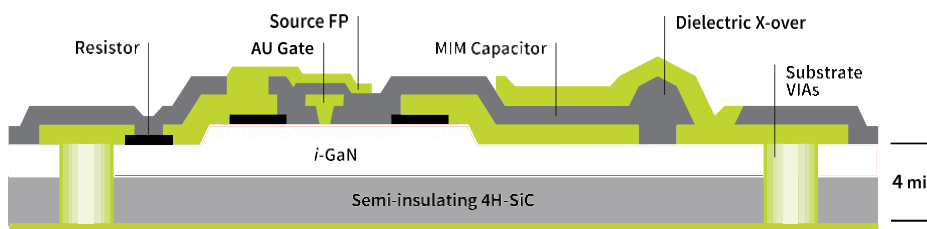


# G40V4 GaN on SiC 0.25 $\mu$ m MMIC Foundry Process

## Enabling 40 V RF Designs through Ku-Band



### PROCESS DESCRIPTION

The G40V4 is a high performance 40 V microwave process targeting applications operating at frequencies from DC through 18 GHz. The process has been fully qualified with the qualification report available upon request. The drain voltage of 40V with breakdown of 120V optimizes this process for high performance applications where high power and efficiency over wide bandwidths is required.

The process features two gold RF interconnect layers, MMIC capacitors, thin film and bulk GaN resistors, and dielectrically supported bridges for connections to circuit elements such as capacitors and inductors. The SiC substrate thickness is 100 microns and has the smallest substrate via sizes available in a GaN on SiC MMIC process, which enables very compact FET footprint for high frequency applications. Process Design Kits (PDKs) with scalable, accurate models of the G40V4 devices are available for Microwave Office (MWO) or Advanced Design System (ADS) simulators. The PDKs have been vetted for both small signal and large signal accuracy. Model validation reports are available upon request.

The G40V4 process is offered through the foundry services using either dedicated or shared wafer runs.

### FEATURES

- 0.25 $\mu$ m Gate Length
- $V_p \sim 3$  V
- 40 V bias with >120 V breakdown
- Performance DC-18 GHz
- 17.5 dB gain @ 3.5 GHz
- 6.9 W/mm @ 3.5 GHz
- PAE > 63% @ 3.5 GHz
- Metal1 = 3 $\mu$ m; Metal2 = 3 $\mu$ m
- MIM cap 180pF/mm<sup>2</sup>
- TFR 12 $\Omega$ /sq
- GaN Resistors: 70 and 415  $\Omega$ /sq
- Substrate Thickness: 100 $\mu$ m
- Substrate Vias
- Au Back Metal

### APPLICATIONS

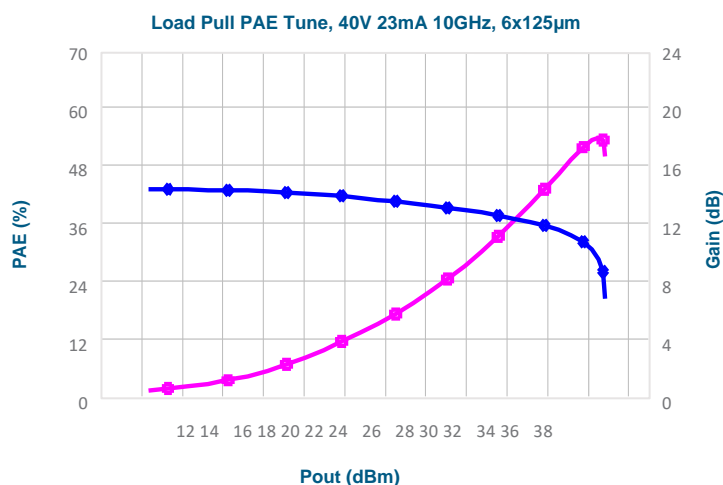
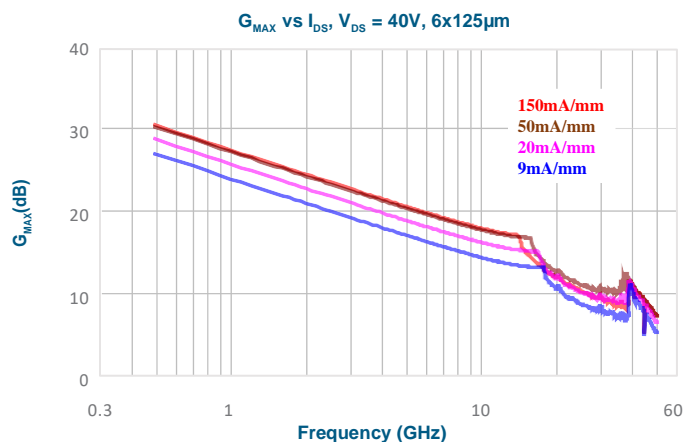
- Satcom
- RADAR
- Telecom
- Point-to-Point Radio
- Ultra-wide band EW
- ECM

### CIRCUIT TYPES

- High Power Amplifiers
- Low Noise Amplifiers
- RF Switches
- Phase-Shifters
- Attenuators

## FOUNDRY SERVICES

Customers can design and fabricate circuits through the foundry using either a dedicated or shared mask option. The dedicated mask provides the greatest flexibility and die count since the dedicated foundry run is completely composed of customer content. Shared masks are run quarterly. With this option, multiple customers share a single run with each customer purchasing a portion of the mask reticle into which their circuits must fit. In all cases, extreme care is taken to protect customer IP on shared masks or dedicated masks - your information is always protected. If you choose shared mask or dedicated mask options for your development, your designs are easily ported to production mask sets for volume production. The foundry is a high volume manufacturer and can handle your production needs.



## DESIGN TOOLS

- Design Manual
- Device Library of Circuit Elements: FETs, thin film resistors, bulk resistors, capacitors, inductors
- Design Kit for ADS Design Environment
- Design Kit for AWR Microwave Office
- Design Rule Check
- Thermal Reference Designs

## SUPPORT FEATURES

- Process Design Kits
- Design Rule Check
- Tiling of GDSII Stream Files
- On-wafer Test Development
- Failure Analysis
- Mask Procurement
- Production 100mm wafer
- Wafer Thinning
- Wafer Singulation
- Substrate Vias
- DC Test
- RF On-wafer Test
- Custom Design Services
- Die pick
- Wafer delivery on UV tape

## Notes & Disclaimer

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