

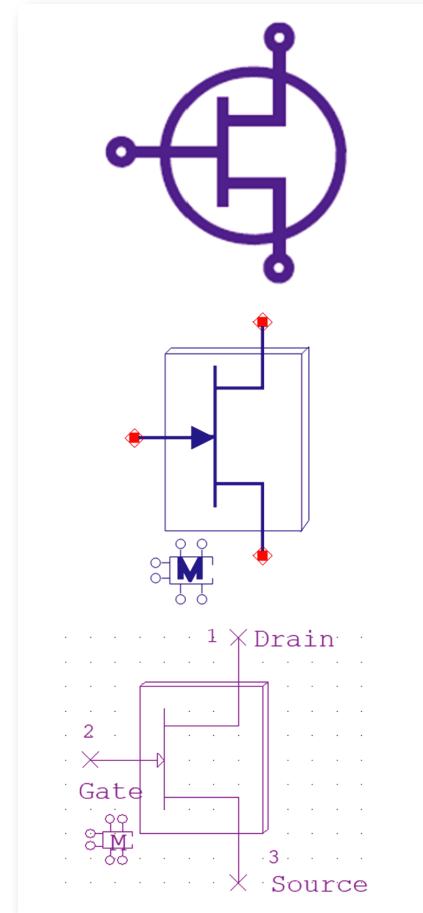
OVERVIEW

The **Modelithics Qorvo GaN Library** is a collection of precision nonlinear simulation models for Qorvo GaN die and packaged transistor devices. The GaN transistor models offer valuable features to allow for the most current and accurate design techniques, such as variable bias, temperature scaling, self-heating effects and intrinsic I-V sensing. The die transistor models offer bondwire on/off modes whenever applicable. Every model is validated with accurate broadband measurements.

LIBRARY FEATURES

The Modelithics Qorvo GaN Library provides designers with a very flexible and accurate design tool that offers many advantages over ideal or file-based models. Valuable features include:

- **SUPPORT FOR POPULAR EDA TOOLS** – Model versions are available for Keysight Advanced Design System (ADS) and the Cadence® AWR Design Environment® platform.
- **MEASUREMENT-BASED** – Each non-linear model is developed using multiple precision measurements under device-specific test conditions.
- **EXAMPLES** – The library includes example design project files that demonstrate the model features, show various test bench simulation setups, and plot simulated results.
- **WELL-DOCUMENTED** – Each model comes with a model datasheet that lists recommended model validity parameters, measurement and test fixture details, and model-to-measurement comparisons.
- **POWER AMPLIFIER (PA) VALIDATIONS** – Select Modelithics Qorvo GaN models have an associated PA example design.
- **EMBEDDING MODELS** – Make it possible for power amplifiers (PAs) to be designed without comprehensive load-pull analysis, allowing designers to directly synthesize the needed extrinsic impedances for a desired intrinsic waveform. After the extrinsic impedances are determined, a suitable matching network can be designed.

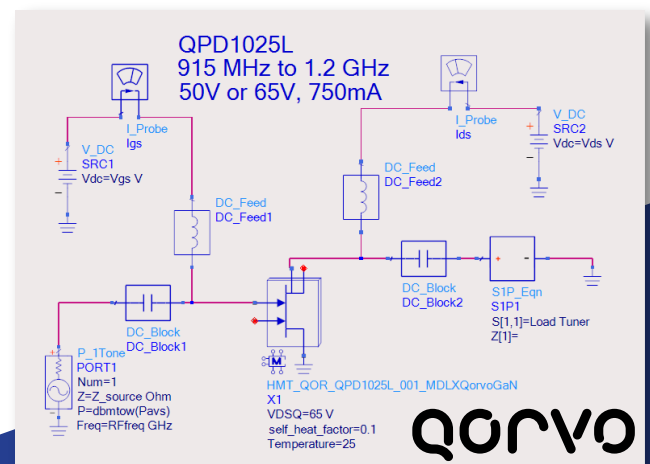
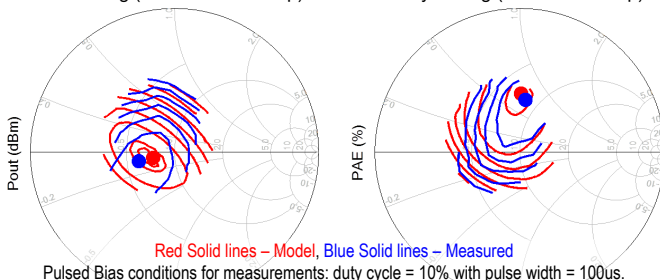


HMT-QOR-QPD1025L-001 for Qorvo QPD1025L GaN on SiC HEMT

Load Pull Validation: Frequency = 915 MHz, VDS = 65V,
VGS = -2.52V, IDS = 750mA, 3dB Gain Compression*, Z0 = 3Ω Center, 25C

Power Tuning (0.5dB contour step)

Efficiency Tuning (5% contour step)



Devices in the Modelithics Qorvo GaN Library

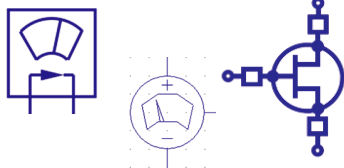
Packaged Devices				Die Devices	
QPD0005	QPD1016L	QPD3601*	T2G6001528-Q3	TGF2023-2-01	TGF2933 [†]
QPD0020	QPD1017	QPD3800*	T2G6001528-SG*	TGF2023-2-02	TGF2934* [†]
QPD0030	QPD1020	T1G2028536-FL*	T2G6003028-FL^	TGF2023-2-05	TGF2935* [†]
QPD0060	QPD1022	T1G2028536-FS*	T2G6003028-FS	TGF2023-2-10	TGF2936 [†]
QPD1000	QPD1025L	T1G3000532-SM*	TGF2819-FL	TGF2023-2-20	TGF2941* [†]
QPD1004	QPD1028L	T1G4004532-FL*	TGF2819-FS	TGF2952*	TGF2942* [†]
QPD1006	QPD1029L	T1G4004532-FS*	TGF2929-FL	TGF2953*	† Both small- and large-signal model versions
QPD1008	QPD1035	T1G4012036-FL*	TGF2929-FS*	TGF2954	
QPD1008L	QPD1035L	T1G4012036-FS*	TGF2965-SM	TGF2955*	
QPD1009	QPD1425	T1G4020036-FL	TGF2977-SM	TGF2956*	
QPD1010	QPD1425L	T1G4020036-FS	TGF2978-SM	TGF2957*	^ Embedding model version available
QPD1011	QPD1823*	T1G6001032-SM*	TGF2979-SM		
QPD1013	QPD1881L*	T2G4003532-FL*	TGF3015-SM		
QPD1014	QPD2017*	T2G4003532-FS*	TGF3020-SM		
QPD1015	QPD2194*	T2G4005528-FS	TGF3021-SM		
QPD1015L	QPD2195*	T2G6000528-Q3^	TQP0104*		
QPD1016	QPD2796*				

*Moved to legacy palate – not currently recommended for new designs.

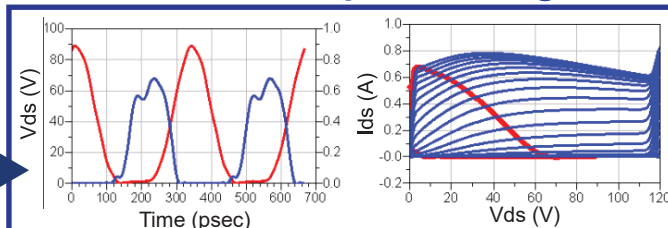
v25.5.8

More to come! New models are added continually.
Visit our website for an updated complete list.
www.Modelithics.com/MVP/Qorvo

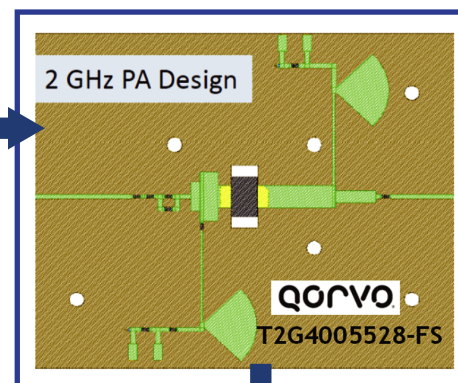
Power Amplifier Design



Intrinsic voltage and current access allows for simulation of the waveforms and dynamic load line.

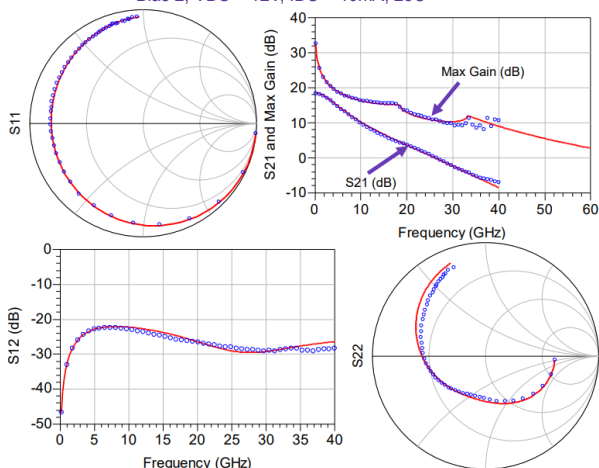


Waveform engineering can be used for the design of advanced PA modes of operation.



Substrate Scaling

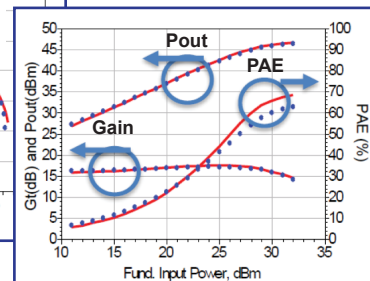
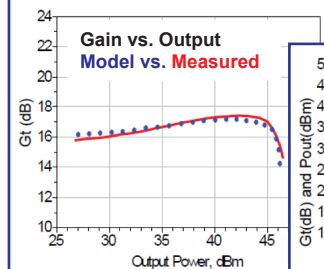
S-Parameters Model vs. Measured:
Bias 2, VDS = 12V, IDS = 40mA, 25C



HMT-QOR-TGF2942-SS-001
Modelithics Model for Qorvo
TGF2942 GaN on SiC HEMT

Modelithics models accurately predict multi-bias S-parameters. Additionally, die models have a ON/OFF wire/test fixture removal parameter. Large-signal models with substrate scalability are also available.

Red Solid lines - Model data
O Symbols - Measured data
Simulated at 25C with the frequency range from 0.2 - 40GHz. 50Ω Smith Charts



The Modelithics Qorvo GaN Library enables rapid design success and demonstrates excellent model to measurement agreement.

What's in YOUR DREAM LIBRARY?

Help us build **YOUR** dream library!
Pre-Release models are added based on customer demand. Share your desired models with
sales@modelithics.com!

Visit the Qorvo MVP Page on the Modelithics website to:

- Explore the current list of available Qorvo component models
- View model datasheets
- Browse literature collection for application notes, presentations, etc.
- Request* the Modelithics Qorvo GaN Library

www.Modelithics.com/MVP/Qorvo

*with approval and/or valid registration

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