RMG Meeting

June 4, 2016

10 GHz PA

PHOTOS & RESULTS

K5TRA

T.Apel

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PA Details

- TGA-2625-CP GaN MMIC from Triquint / Qorvo
- Milled Aluminum 2.7” x 1.7” x 0.75” housing
- Sequenced negative before positive bias circuit
- 12 W linear power output
- +28 V power supply
- Thermal design provides < 147°C channel temp.
PA Module Floor Plan

1.7”

0.0

0.0

2.7”

K5TRA

T.Apel
Packaged MMIC

Applications

- Radar
- Communications

Product Features

- Frequency Range: 10 – 11 GHz
- Pout: 42.5 dBm (at P_{IN} = 15 dBm)
- PAE: > 40 %
- Power Gain: 28 dB (at P_{IN} = 15 dBm)
- Bias: V_{D} = 28 V, I_{DD} = 365 mA, V_{G} = -2.6 V typical, pulsed (PW = 100 μs, DC = 10 %)
- Package Dimensions: 15.2 x 15.2 x 3.5 mm
- Package base is pure Cu offering superior thermal management

Functional Block Diagram
Schematic Diagram
Bias Sequencer Test

POSITIVE

NEGATIVE

60 mSec
Completed PA
Interior View
Interior - from another angle
+26v SWITCHING FOR NEW PA and NEW Si530 x16 LO MODULE
Dish-feed with LNA and 12W PA
Results and Conclusions

• TGA-2625-CP GaN MMIC from Triquint / Qorvo is awesome
• 14 dBm drive yields 10W, class AB  Idd ~ 1.13A
• 15 dBm drive yields 12W, class AB  Idd ~ 1.25A
• Great housing fab support from Ben and Chris
• Sequenced bias circuit works perfectly
• Homebrewing RF boards was a pain in the posterior
• Brass 1 mil foil was used to mitigate the ground transition between RF board edges and the MMIC flange
• Small tuning stubs on the output line matched transition reactance at SMA and MMIC
• Input attenuator (option) was not used
Questo è Tutto