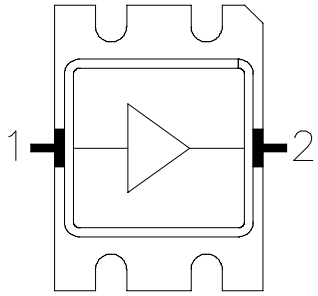
MECPKC30W

5.5 to 6.0 GHz GaN HEMT Power Amplifier

Functional Block Diagram



Pin #	Symbol	Description
1	Vg/ RF IN	Gate voltage/RF Input matched to 50Ω
2	Vd/ RF OUT	Drain voltage/RF Output matched to 50Ω
Package Bottom	Ground	Source connected to ground

Main Features

- 0.5µm GaN HEMT Technology
- 5.5 – 6.0 GHz full performances Frequency Range
- more than 25W Output Power @ Pin 35 dBm
- more than 35% PAE @ Pin 35 dBm
- 12 dB Linear Gain
- Bias: VDD = 40V, Idq = 200 mA, Vg = -1.9V (Typ.)
- CuMo Power package with RFin and RFout pin interfaces
- Fully matched to 50 Ω within the package

Product Description

MECPKC30W is a single stage High Power Amplifier designed by MEC for C-Band applications and based on a 0.5µm GaN on SiC process.

The MECPKC30W provides more than 25W of output power in the frequency range from 5.5 GHz to 6.0 GHz with a PAE higher than 35% and 12 dB of Linear Gain.

The MECPKC30W is provided within a CuMo power package for optimal thermal dissipation. It is fully matched to 50 Ω at the pin of the package.

Advanced Thin Film technology and manufacturing has been exploited to get a reliable and reproducible product performance.

Applications

- Radar
- Telecom

Main Characteristics*

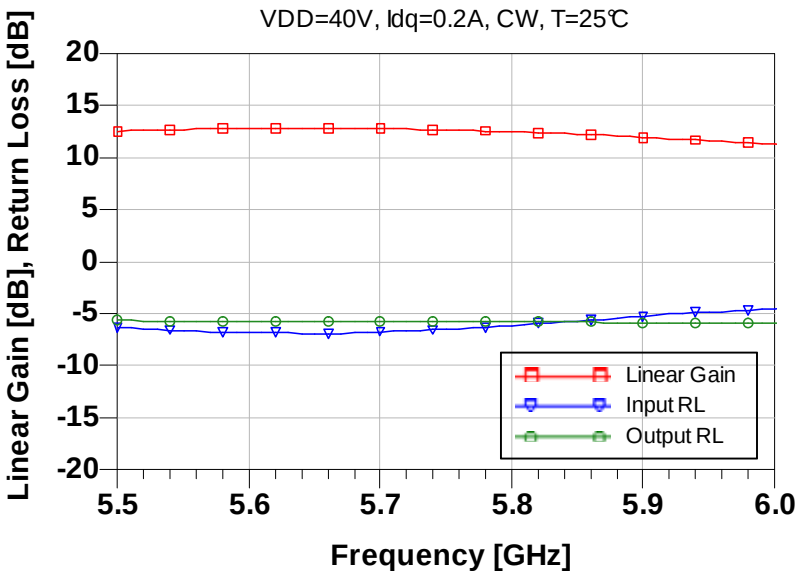
Test Conditions: T_{base_plate} = 25°C , Vdd = 40 V, Idq = 200 mA, Pulse Width = 50 µs, Duty Cycle = 15%

Parameter	Min	Typ	Max	Unit
Operating frequency	5.5		6.0	GHz
Small Signal Gain	11.3	12	12.8	dB
Input Return Loss			-5	dB
Output Return Loss			-6	dB
Output Power @ Pin = 35 dBm	25		33	W
Power Added Efficiency @ Pin = 35 dBm	35		44	%
Drain Supply Voltage		40		V
Supply Quiescent Drain Current		200		mA
Supply Drain Current @ Pin = 35 dBm	1.6		1.7	A
Gate Voltage		-1.9		V

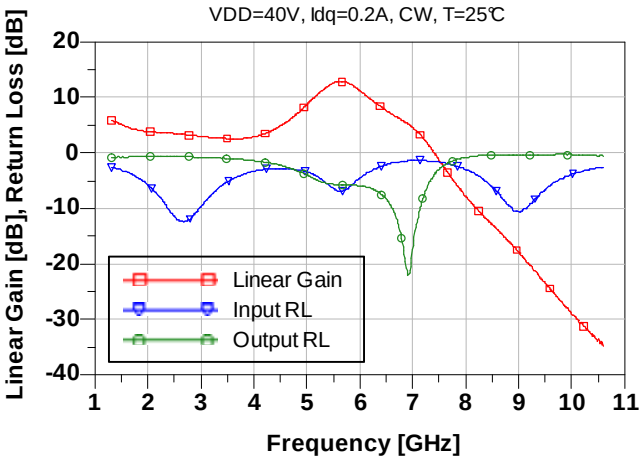
*Performances described in this document are based on preliminary on-jig characterization.
More details are available upon request at **contact.mec@mec-mmic.com**

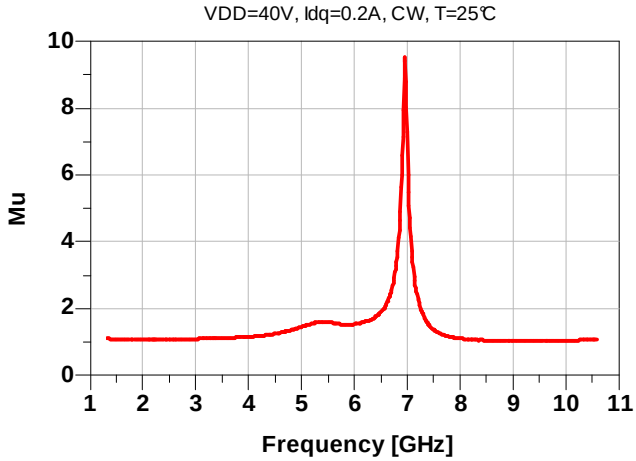
Typical Measured Performances

Linear Gain, Input and Output Return Loss Vs. Frequency (Operating Band)



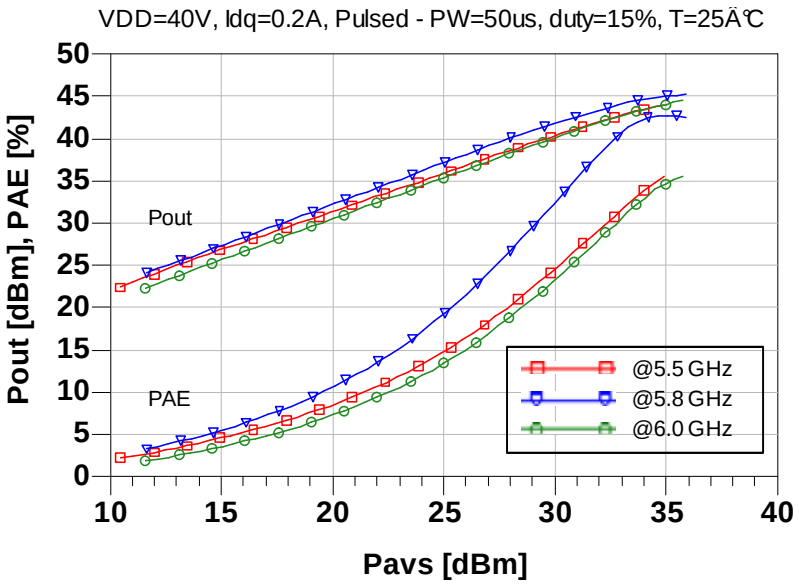
Linear Gain, Input and Output Return Loss Vs. Frequency (Broadband)**



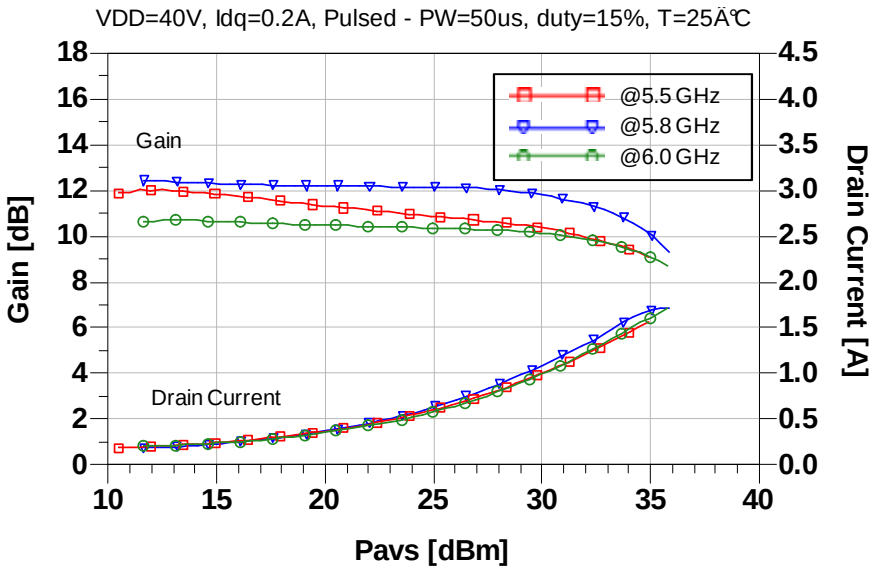


** S-parameter file is available upon request at **contact.mec@mec-mmic.com**

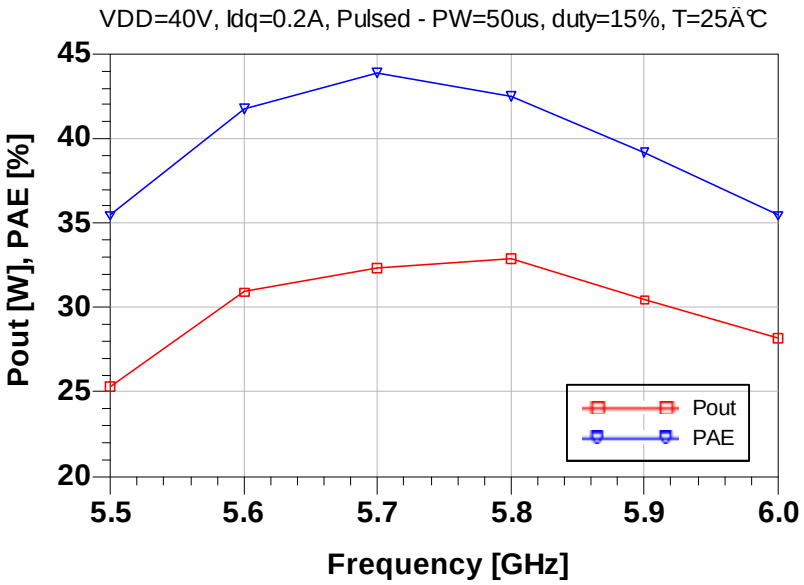
Output Power and PAE Vs. Input Power



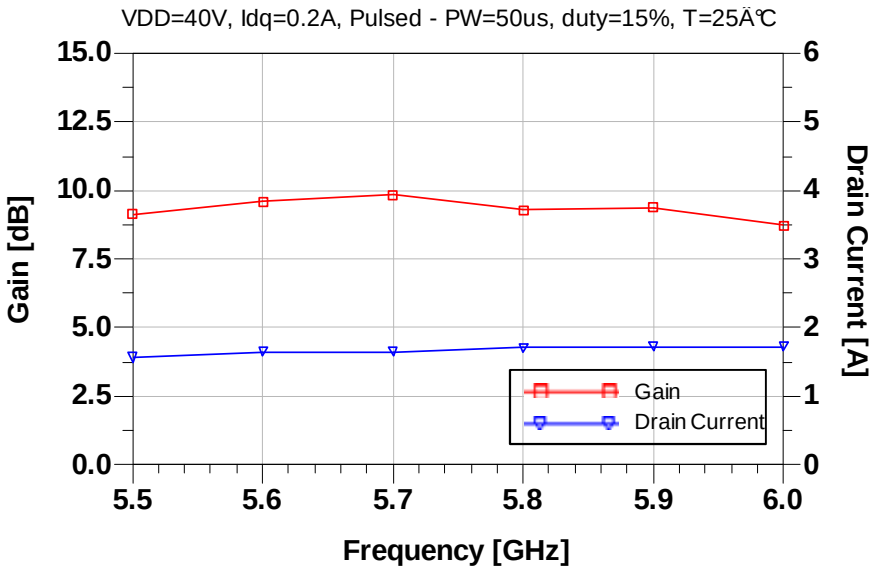
Gain and Drain Current Vs. Input Power



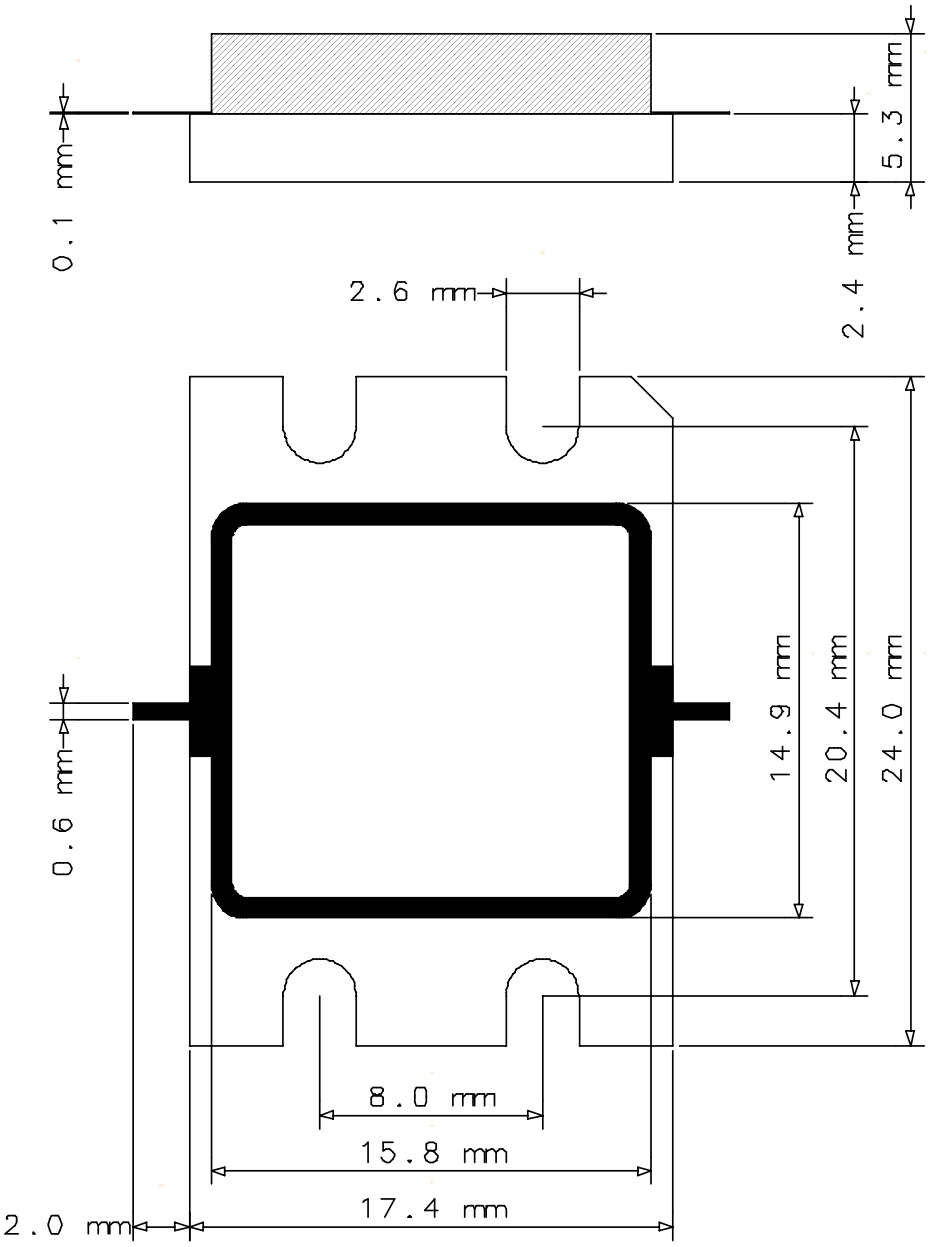
Output Power and PAE @ Pin = 35 dBm Vs. Frequency



Gain and Drain Current @ Pin = 35 dBm Vs. Frequency

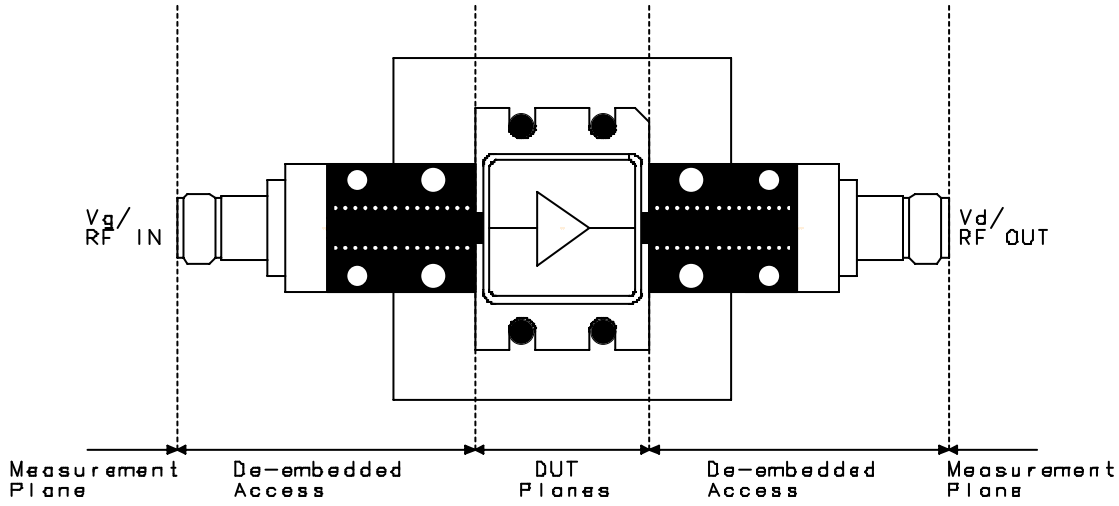


Package Outline



Detailed package dimensions and characteristics are available upon request at **contact.mec@mec-mmic.com**

Test Board



The device characteristics were measured at the package pins, by de-embedding at both ports the Shielded Conductor-backed Coplanar Waveguide access plus the input and output connectors by a TRL calibration.

Further details of the Test Board are available upon request at **contact.mec@mec-mmic.com**.

To implement RF to DC decoupling and improve input return loss, custom test-fixtures can be designed and provided upon request (**contact.mec@mec-mmic.com**).

Bias Procedure

Bias-Up

1. Vg set to -5 V.
2. Vd set to +40 V.
3. Adjust Vg until quiescent Id is 200 mA (Vg = -1.9 V Typical).
4. Apply RF signal.

Bias-Down

1. Turn off RF signal.
2. Reduce Vg to -5 V (Id0 ≈ 0 mA).
3. Set Vd to 0 V.
4. Set Vg to 0 V.

Contact Information

For additional technical Information and Requirements:

Email**:** **contact.mec@mec-mmic.com** Tel: **+39 0516333403**

For sales Information and Requirements:

Email**:** **sales@mec-mmic.com** Tel: **+39 0637511124**

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