

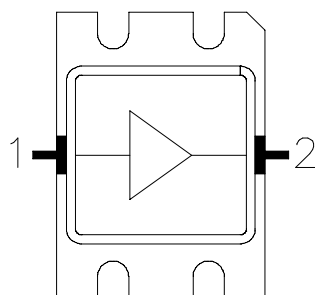
# MECPKC30W

## 5.5 to 6.0 GHz GaN HEMT Power Amplifier



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### 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

### 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.

### 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

### Applications

- Radar
- Telecom

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### Main Characteristics\*

Test Conditions:  $T_{\text{base\_plate}} = 25^{\circ}\text{C}$ ,  $V_{\text{dd}} = 40\text{ V}$ ,  $I_{\text{dq}} = 200\text{ mA}$ , Pulse Width =  $50\text{ }\mu\text{s}$ , Duty Cycle = 15%

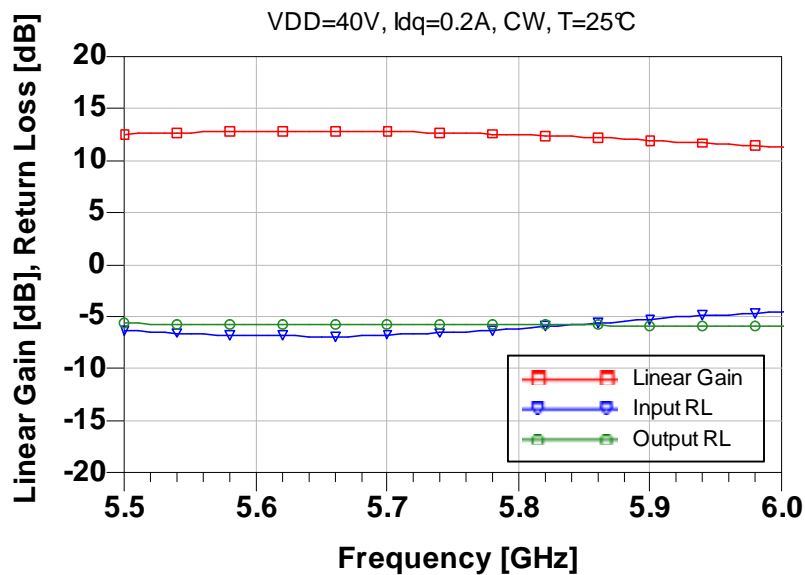
Parameter	Min	Typ	Max	Unit
Operating frequency	5.5		6.0	GHz
Small Signal Gain	11.3	12	12.8	dB
Input Return Loss			-5	dB
Output Return Loss			-6	dB
Output Power @ Pin = 35 dBm	25		33	W
Power Added Efficiency @ Pin = 35 dBm	35		44	%
Drain Supply Voltage		40		V
Supply Quiescent Drain Current		200		mA
Supply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

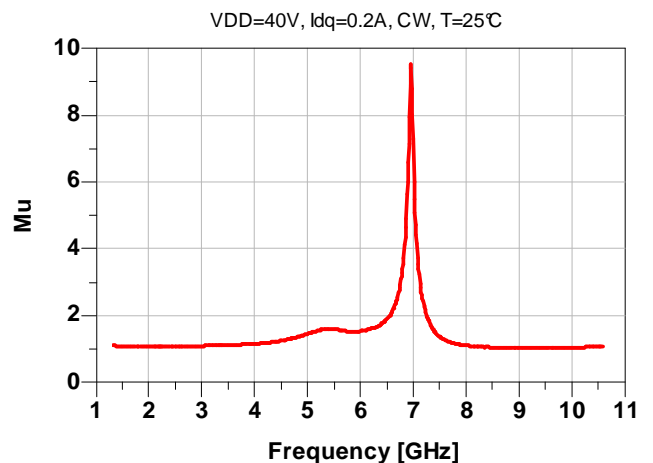
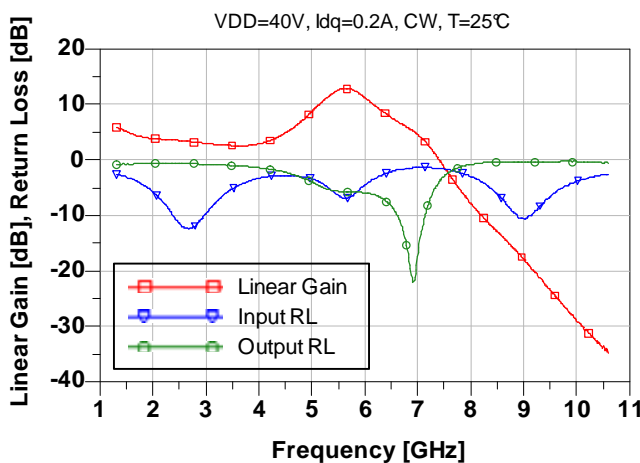
More details are available upon request at [contact.mec@mec-mmic.com](mailto:contact.mec@mec-mmic.com)

### Typical Measured Performances

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

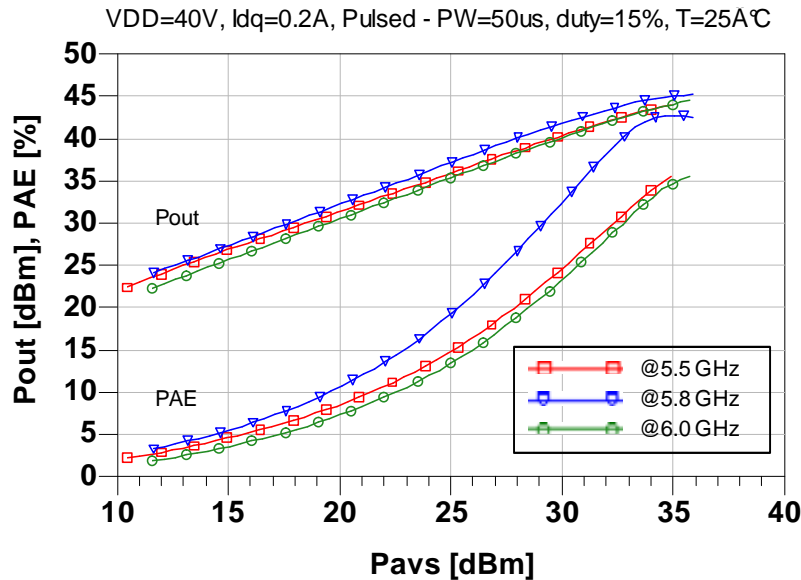


#### Linear Gain, Input and Output Return Loss Vs. Frequency (Broadband)\*\*

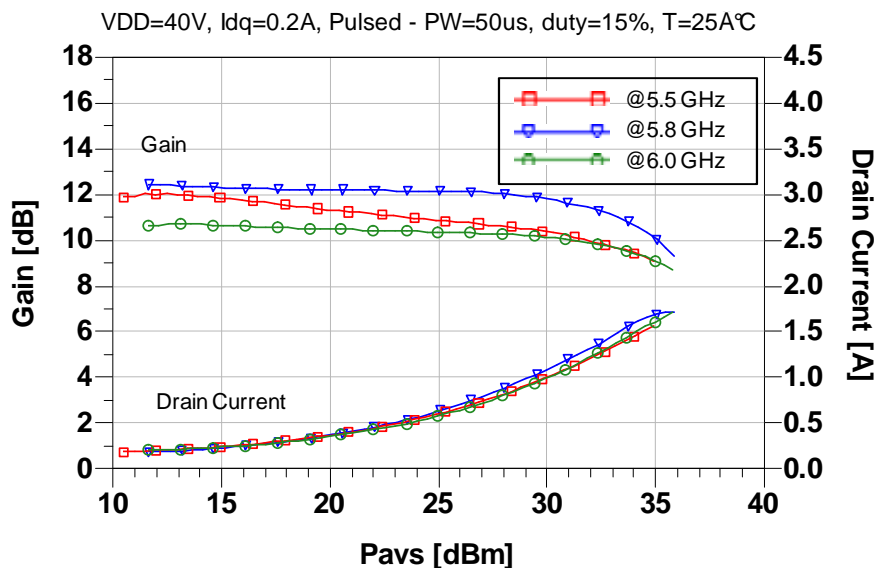


\*\* S-parameter file is available upon request at [contact.mec@mec-mmhc.com](mailto:contact.mec@mec-mmhc.com)

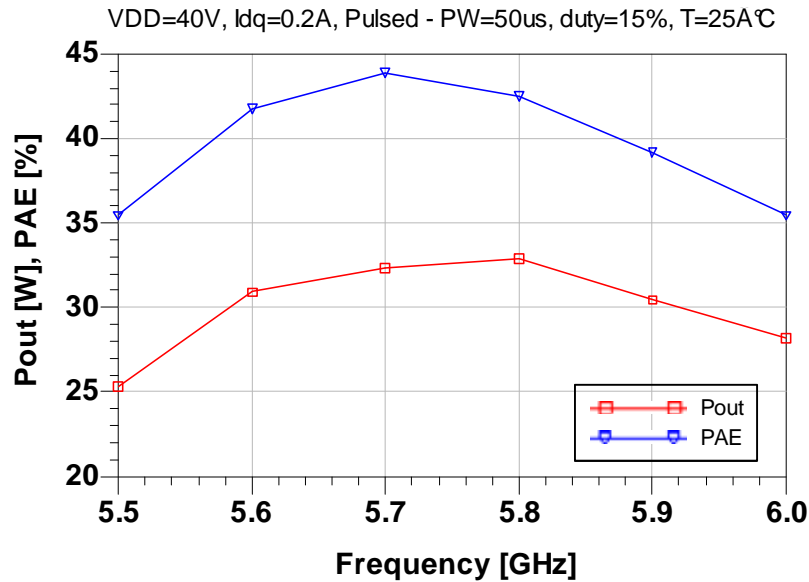
### Output Power and PAE Vs. Input Power



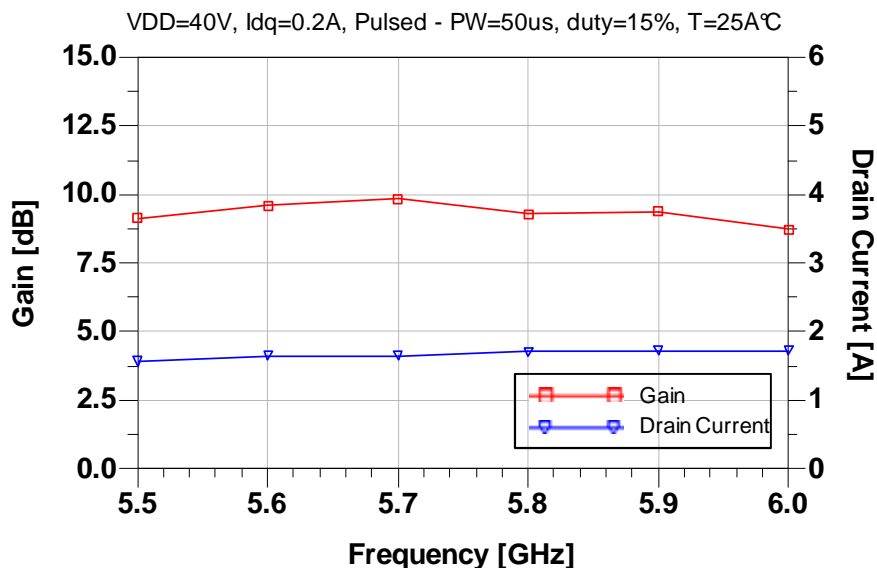
### Gain and Drain Current Vs. Input Power



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



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



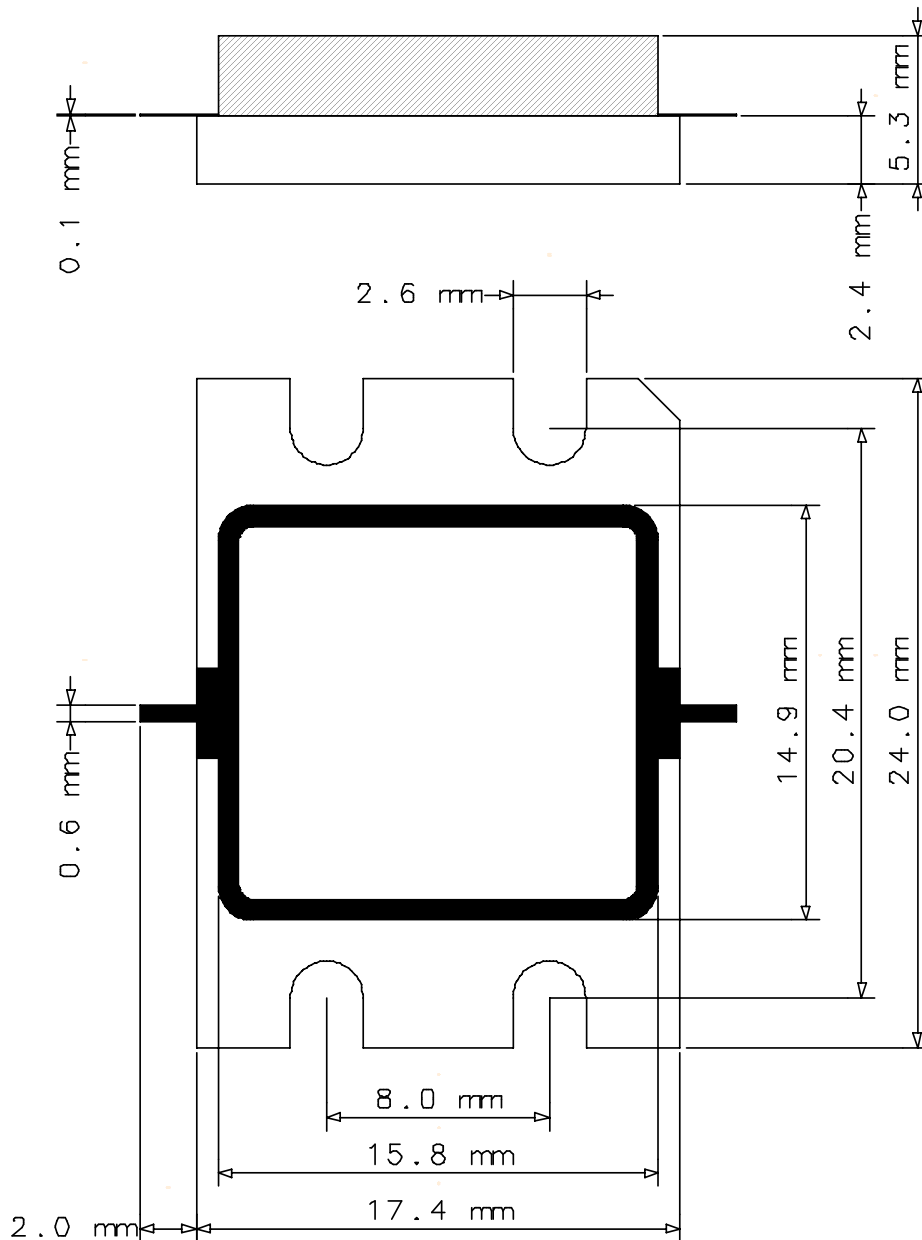
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## 5.5 to 6.0 GHz GaN HEMT Power Amplifier



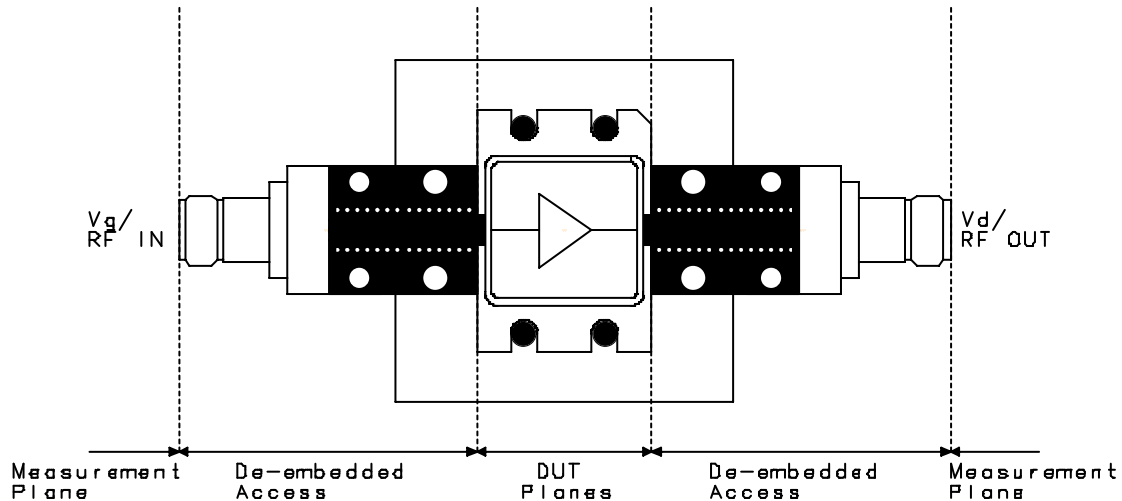
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### Package Outline



Detailed package dimensions and characteristics are available upon request at [contact.mec@mec-mmhc.com](mailto:contact.mec@mec-mmhc.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](mailto: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](mailto:contact.mec@mec-mmic.com)).

### Bias Procedure

#### Bias-Up

1.  $V_g$  set to -5 V.
2.  $V_d$  set to +40 V.
3. Adjust  $V_g$  until quiescent  $I_d$  is 200 mA ( $V_g = -1.9$  V Typical).
4. Apply RF signal.

#### Bias-Down

1. Turn off RF signal.
2. Reduce  $V_g$  to -5 V ( $I_{d0} \approx 0$  mA).
3. Set  $V_d$  to 0 V.
4. Set  $V_g$  to 0 V.

# **MECPKC30W**

## **5.5 to 6.0 GHz GaN HEMT Power Amplifier**



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### **Contact Information**

For additional technical Information and Requirements:

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### **Notice**

The furnished information is believed to be reliable. However, performances and specifications contained herein are based on preliminary characterizations and then susceptible to possible variations. On the basis of customer requirements the product can be tested and characterized in specific operating conditions and, if needed, tuned to meet custom specifications.

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