Tagore Technology

TA9210D

12.5W CW 0.03 – 4.0 GHz GaN Power Transistor

Application Note: TA9210D EVB L

Application Note

2400MHz~2500MHz

28V 100mA

Rev-1.1

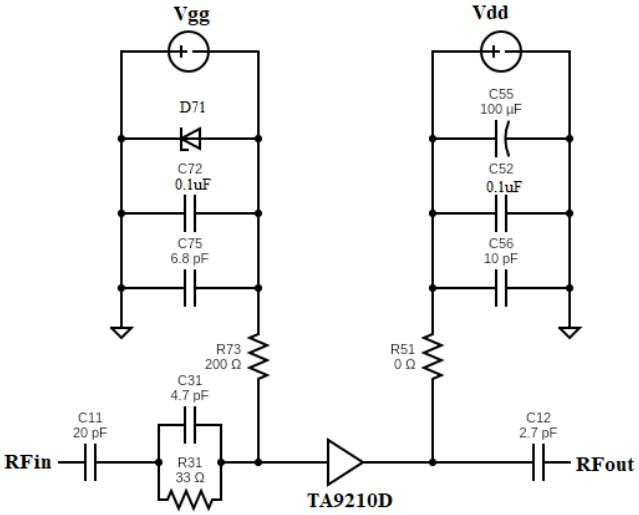
List of Contents

1. General Description

The TA9210D is a broadband capable 12.5W GaN power transistor covering 30MHz to 2.7GHz frequency band with a single match. TA9210D is usable up to 4GHz. The input and output can be matched for best power and efficiency for the desired band.

The TA9210D is packaged in a compact, low-cost Quad Flat No lead (QFN) 3x6x0.75mm, 32 leads plastic package. TA9210D-EVB-L is tuned from 2400MHz to 2500MHz.

2. TA9210D-EVB-L Board Details



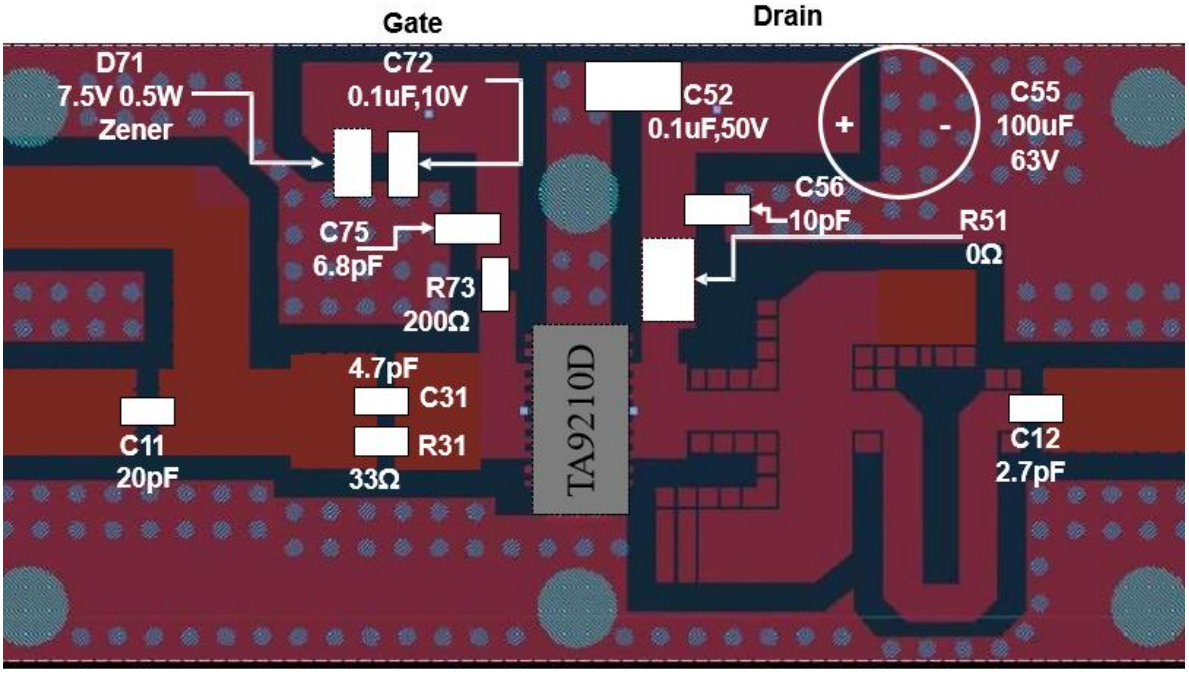


Figure 2.1 TA9210D-EVB-L 2400MHz ~ 2500MHz Schematic and EVB Layout

3. TA9210D-EVB-L Bill of Material

Component ID	Value	Manufacturer	Recommended Part Number
C11	20pF	AVX	600S200GT250XT
C12	3.3pF	AVX	600S3R3AT250XT
C31,C75	4.7pF	AVX	600S4R7AT250XT
R31	33Ω	Vishay	CRCW060333R0FKEAHP
R51	0Ω	Vishay	CRCW08050000Z0EAC
C52	0.1µF, 50V	Murata	GRM31C5C1H104JA01L
C55	100µF, 63V	Nichicon	UPW1J101MPD1TD
C56	15pF	AVX	600S150GT250XT
D71	7.5 V Zener	On Semiconductor	MMSZ5236BT 1G
C72	0.1µF, 10V	AVX	0603ZC104K4T2A
R73	51Ω	Vishay	CRCW060351R0FKEAHP
Q1	12.5W GaN Transistor	Tagore Technology	TA9210D
PCB		Rogers RO4350B, 20 mils, 2 oz copper	

Table 3.1 TA9210D-EVB-L BOM

4. TA9210D-EVB-L Biasing Sequence

Turn ON Device	Turn OFF Device
1. Set V_G to -5V 2. Set V_D to +28V 3. Adjust V_G to reach required I_{DQ} current 4. Apply RF power	1. Turn RF power off 2. Turn off V_D 3. Turn off V_G

Table 4.1 TA9210D-EVB-L Bias and Sequencing

5. TA9210D-EVB-L Board Measurement Summary

Frequency (GHz)	S21 Gain(dB)	S11 (dB)	S22 (dB)	Psat (dBm)	PAE% @Psat
2.4	18.4	-14.0	-17.2	41.3	75
2.45	18.5	-28.8	-12.8	41.0	77
2.5	18.3	-17.6	-10.2	41.2	76

Table 5.1 TA9210D-EVB-L 28V 100mA Electrical Characteristics Summary

6. TA9210D-EVB-L Test Results

All the tests are carried out at room temperature.

6.1. S parameters

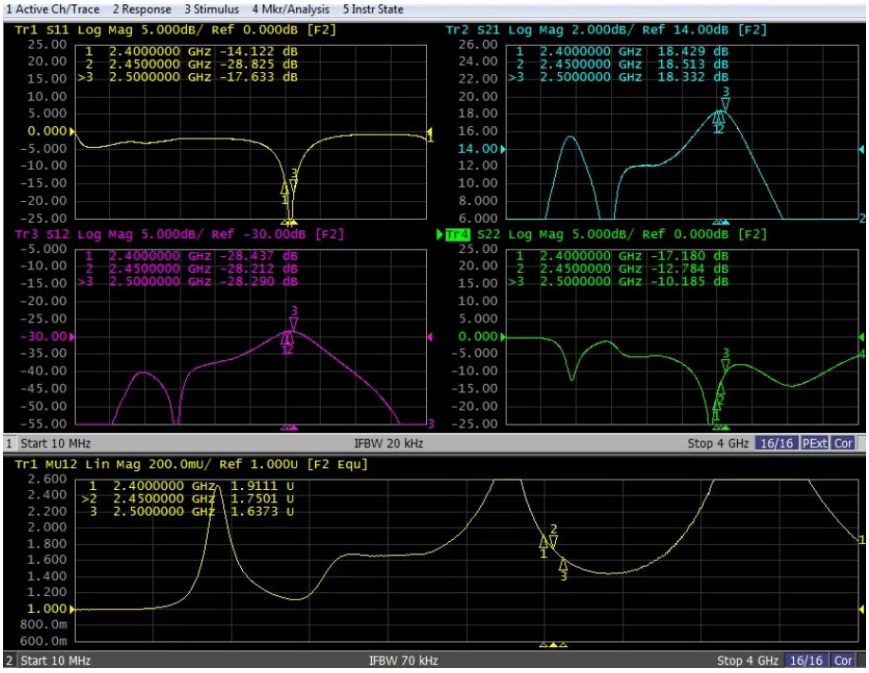


Figure 6.1.1. S parameters of TA9210D-EVB-L 28V 100mA

6.2. Gain, PAE vs Pout @ 28V Vdd, 100mA Idq

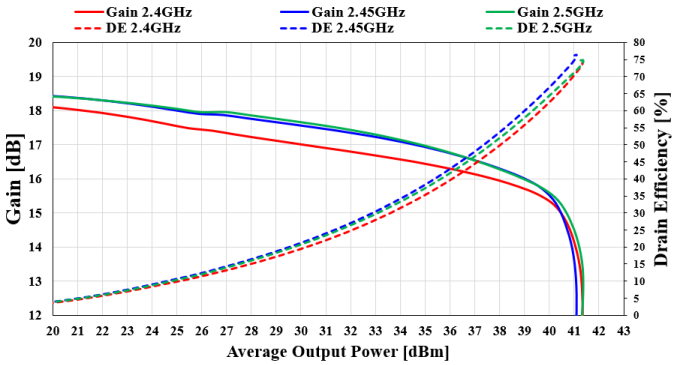


Figure 6.2.1 Gain, PAE v/s Pout Of TA9210D-EVB-L, VD=28V, IDQ=100mA

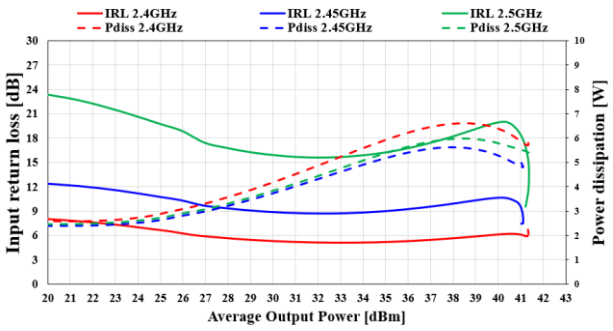


Figure 6.2.2 IRL, Pdiss v/s Pout Of TA9210D-EVB-L, VD=28V, IDQ=100mA

Tagore Technology

Edition Revision 1.1 - 2023-10-12

Published by

Tagore Technology Inc.

601 W Campus Dr. Ste C1

Arlington Heights, IL 60004, USA

Legal Disclaimer

The information provided in this document shall in no event be regarded as a guarantee of conditions or characteristics. Tagore Technology assumes no responsibility for the consequences of the use of this information, nor for any infringement of patents or of other rights of third parties which may result from the use of this information. No license is granted by implication or otherwise under any patent or patent rights of Tagore Technology. The specifications mentioned in this document are subject to change without notice.

Information

For further information on technology, delivery terms and conditions and prices, please contact Tagore Technology: support@tagoretech.com.