

# TA9410E

25W CW 0.02 – 3.0 GHz GaN Power Transistor

Application Note: TA9410E EVB E

## Application Note

5100MHz~5300MHz

50V 100mA

Rev-1.1

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## 1. General Description

The TA9410E is a broadband GaN power transistor capable of delivering 25W CW from 20MHz to 3.0GHz frequency band. The input and output can be matched for best power and efficiency for the desired band. The TA9410E is packaged in a compact, low-cost Quad Flat No lead (QFN) 5x6x0.8mm, 8 leads plastic package.

TA9410E-EVB-E is an evaluation board specially tuned for frequency range of 5100MHz~5300MHz applications. Its high output power, power added efficiency performance makes it suitable for application of Private mobile radio handsets, public safety radios, Cellular infrastructure, Military radios etc.

## 2. TA9410E-EVB-E Board Details

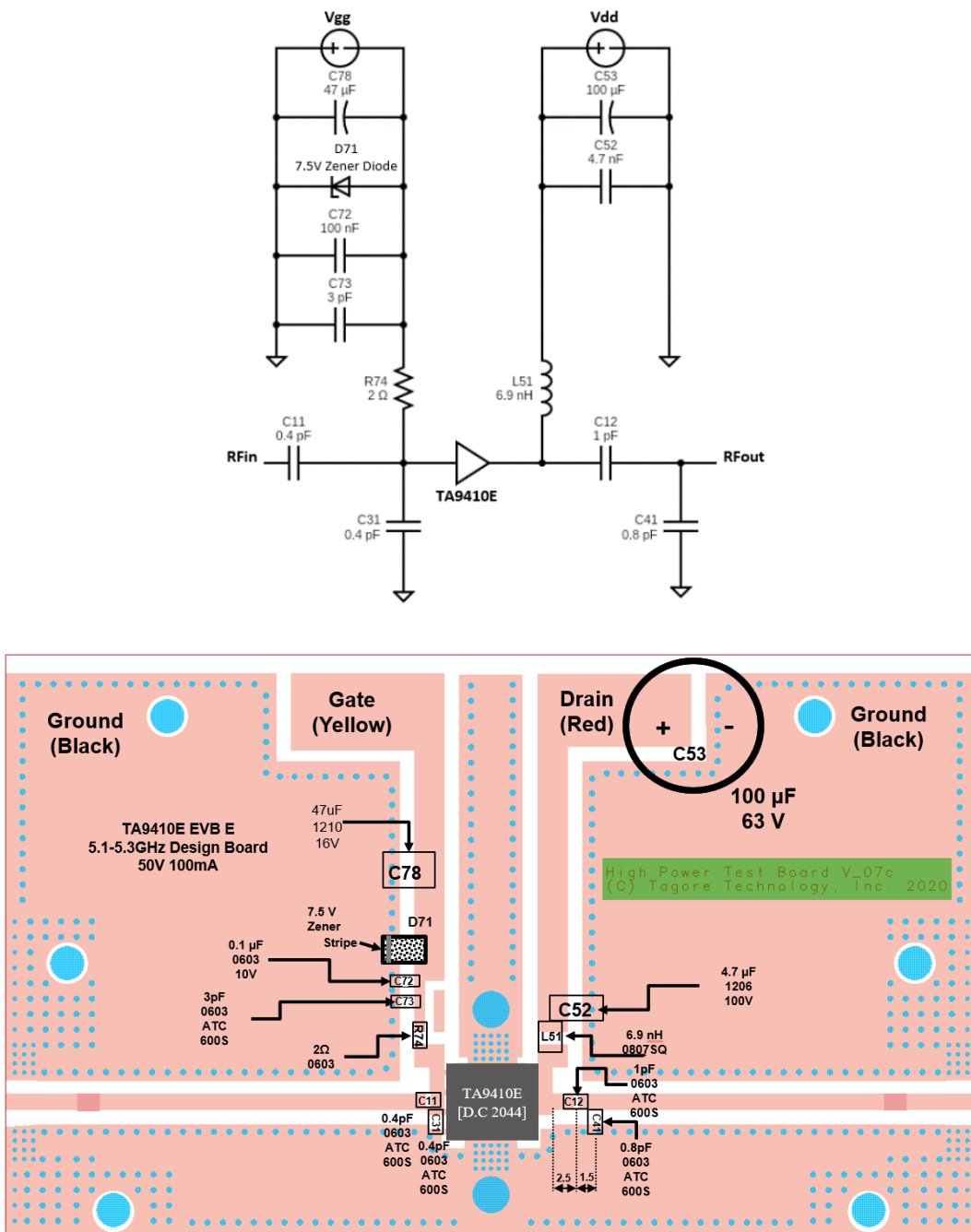


Figure 2.1 TA9410E-EVB-E 5100MHz ~ 5300MHz Schematic and EVB Layout

### 3. TA9410E-EVB-E Bill of Material

Component ID	Value	Manufacturer	Recommended Part Number
C11, C31	0.4pF, 50V	AVX	600S0R4AT250XT
C12	1.0pF	AVX	600S1R0BT250XT
C41	0.8pF	AVX	600S0R8BT250XT
L51	6.9nH	Coil craft	0807SQ-6N9_L_
C52	4.7μF, 50V	Murata	GRM31CC72A475KE11K
C53	100μF, 63V	Nichicon	UPW1J101MPD1TD
D71	7.5 V Zener	On Semiconductor	SZMMSZ5236BT 1G
C72	0.1μF, 10V	AVX	0603ZC104K4T2A
C73	3.0pF	AVX	600S3R0AT250XT
R74	2Ω	Vishay	CRCW06032R00FKEAHP
C78	47μF, 16V	Murata	GRM32ER61C476ME15L
Q1	25W GaN Transistor	Tagore Technology	TA9410E
PCB	Rogers RO4350B, 20 mils, 1 oz copper		

**Table 3.1 TA9410E-EVB-E BOM**

### 4. TA9410E-EVB-E Biasing Sequence

Turn ON Device	Turn OFF Device
1. Set $V_G$ to -5V 2. Set $V_D$ to +50V 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 TA9410E-EVB-E Bias and Sequencing**

### 5. TA9410E-EVB-E Board Measurement Summary

Frequency (MHz)	S21 Gain(dB)	S11(dB)	S22(dB)	Psat(dBm)	PAE (%) @Psat
5100	11.6	-8.3	-4.5	43.4	34
5200	11.8	-7.9	-6.2	43.6	38
5300	11.4	-7.4	-9.1	43.5	39

**Table 5.1 TA9410E-EVB-E Electrical Characteristics Summary**

## 6. TA9410E-EVB-E Test Results

All the tests are carried out at room temperature.

### 6.1. S parameters

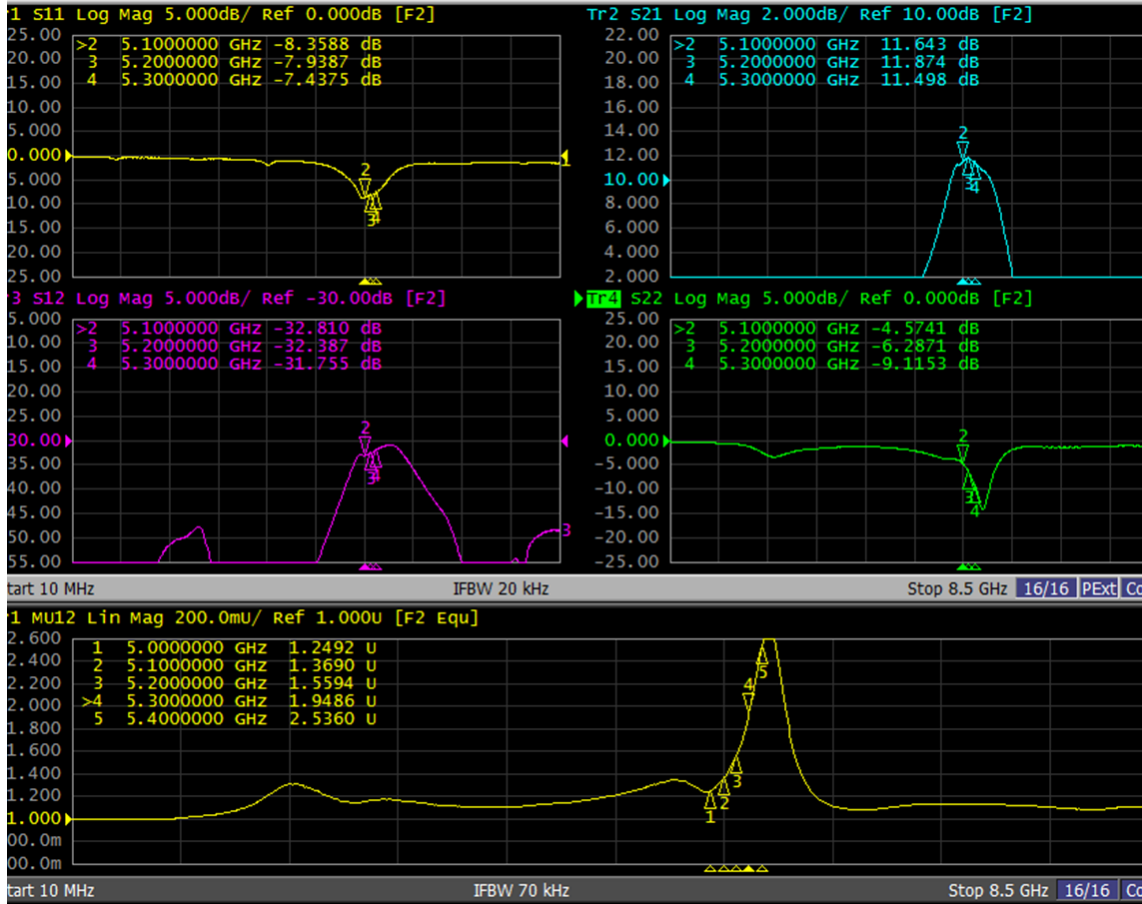


Figure 6.1.1. S parameters of TA9410E-EVB-E

### 6.2. Large Signal Test Results

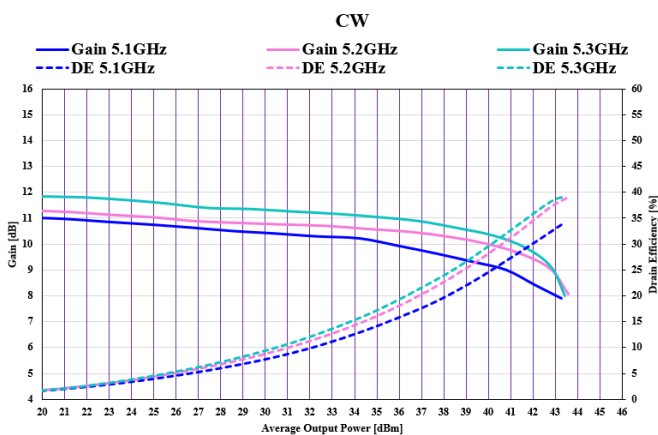


Figure 6.2.1. Gain Vs Pout of TA9410E-EVB-E CW set up

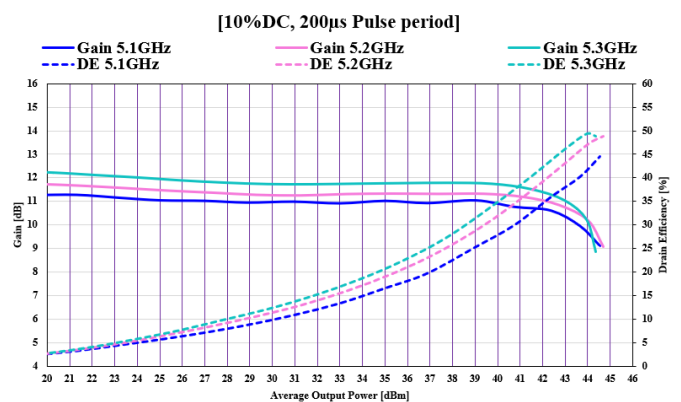


Figure 6.2.2. Gain Vs Pout of TA9410E-EVB-E with 10% DC & 200uS pulse period

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601 W Campus Dr. Ste C1

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