



ACT41000 Power Amplifier User Guide

12/10/2021

Description

This document provides information for the Qorvo® ACT41000 Power Amplifier Graphic User Interface (GUI) software to both simplify and automatically provide optimal RF PA gate voltage to set the correct Idq bias current. The initial design will be optimized for the QPA2211

Setup

1. Plug the ACT41000 into USB port of windows PC
2. Supply voltage to ACT41000 board from 20-40V
3. Invoke the “ACT41000_REF_GUI_Rev0.x.exe”

GUI

Connect hardware

BIAS Search

BIAS Down

Vdrain configuration parameters

Vgate configuration parameters

ACT41000-104-REF01 GUI Rev0.6

ACT41000 Power Amplifier

CONNECT

BIAS SEARCH

BIAS DOWN

Drain

RILIM (kΩ)

16

Rcs (Ω)

0.02

Id Current Limit (mA)

4003.84

▼

Idq (mA)

406.64

▼

PA Vdrain

<<<<

<<

<

22V

>

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>>>>

Gate

Vgate Min (V)

-5.0

▼

Vgate Max(V)

0

▼

Step (mV)

2.442

▼

Vgate_bias (V)

Vgate (V)

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0

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GUI Detailed Functional Buttons

CONNECT

Connect

Connect button will check the connection from PC with ACT41000 board. The “Hardware error” message will pop up to notify the user that hardware is not ready to use. Otherwise, when connect successfully, the background of the buttons will be change to blue

CONNECT

BIAS SEARCH

BIAS Search

BIAS search button will find the optimal gate bias voltage after the user set up necessary parameters of Vdrain and Vgate, the user can then apply an RF signal to the RF PA. A text box will display Vgate value found, if no value found, it will display “not found”

BIAS DOWN

BIAS Down/Stop

BIAS down/Stop button will put the system in Bias Down State ($V_{\text{drain}}=0$, $V_{\text{gate}}=0$).

Note: For details see flow chart

GUI: Vdrain, Vgate Configuration Parameters

Input RILIM value

Input Rcs value

Select Id value

Select Idq value

Select range of Vgate to search

Select Vgate step resolution

Vgate value found after click BIAS search button

ACT41000-104-REF01 GUI Rev0.6

ACT41000 Power Amplifier

CONNECT BIAS SEARCH BIAS DOWN

Drain

RILIM (kΩ) 16

Rcs (Ω) 0.02

Id Current Limit (mA) 4003.84

Idq (mA) 406.64

PA Vdrain 22V

Gate

Vgate Min (V) -5.0

Vgate Max(V) 0

Step (mV) 2.442

Vgate_bias (V)

Vgate (V) 0

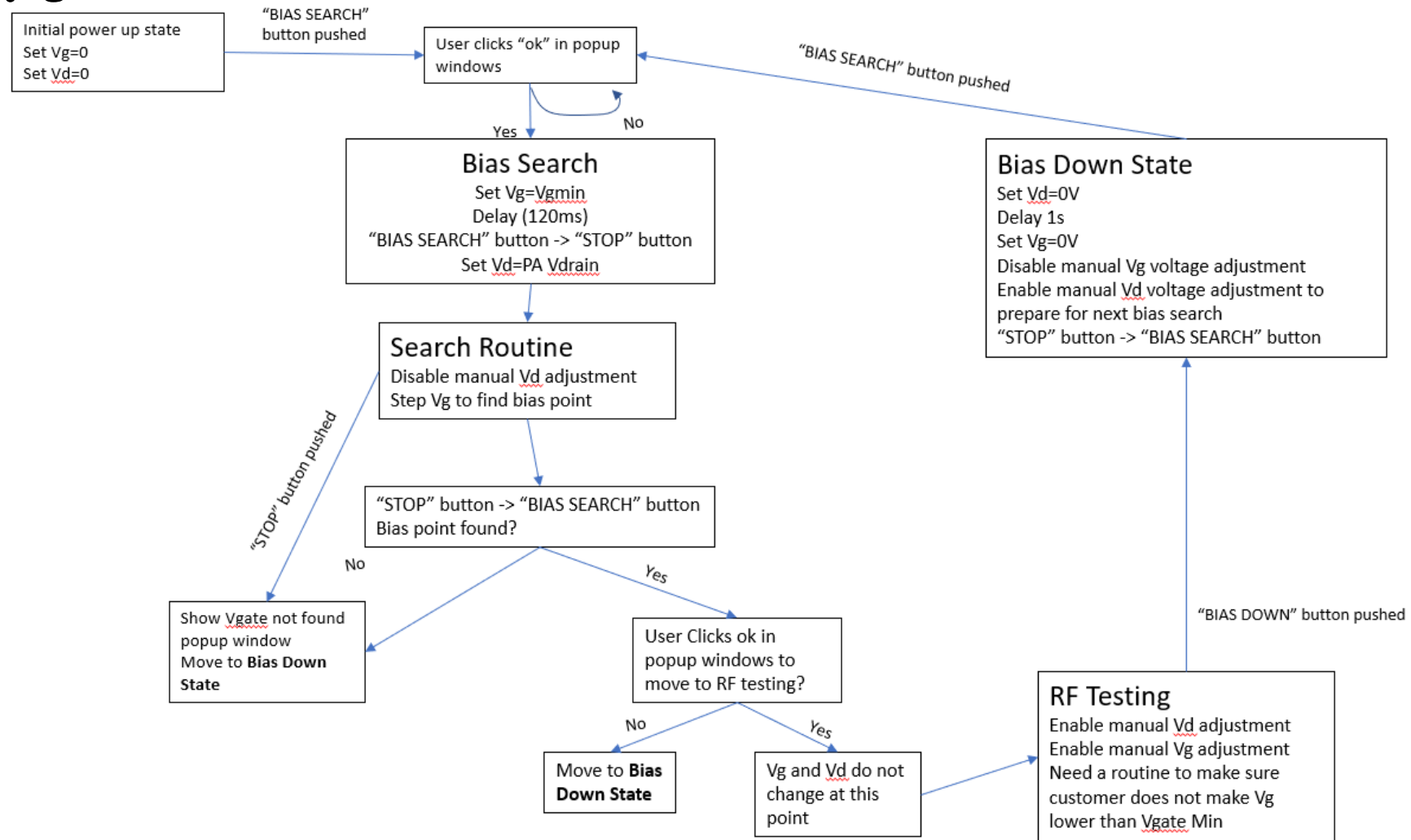
Reduce Vdrain/Vgate by 1/2/8 step

Select Vdrain value

Increase Vdrain/Vgate by 1/2/8 step

Select Vgate value in RF testing

Flow chart



Note: In RF testing, just change selection on GUI, output of Vdrain/Vgate will change immediately.

