

MK1040VP Class AB at 915MHz

Introduction

This amplifier is designed with Innegration 50V LDMOS MK1040VP to show its high power operation at key ISM band 915MHz. We offer 2 kinds of tuning guidance which can be chosen by customers per your preference.

For more product info, please check our website in the catalog of Multi Market 50V LDMOS.

Tuning 1: Higher Efficiency with the expense of slightly lower power

Tuning 2: Higher power with the expense of slightly lower efficiency

Tuning 1:

Demo and Transistor

Frequency band : 915MHz
 Application : Multi Market
 Configuration : Class AB
 Test Signal : CW/Pulse
 Transistor : MK1040VP
 Date code : 172722S
 PCB : 30 Mil Rogers 4350

The amplifier has been characterized under the following conditions:

- The output power measurement using CW/Pulse

Note: The PA is tested with a supply voltage of $V_{DS}= 50 V$, $I_{DQ}= 100 mA$ all measurements unless otherwise noted.

1. Pulse and CW performance

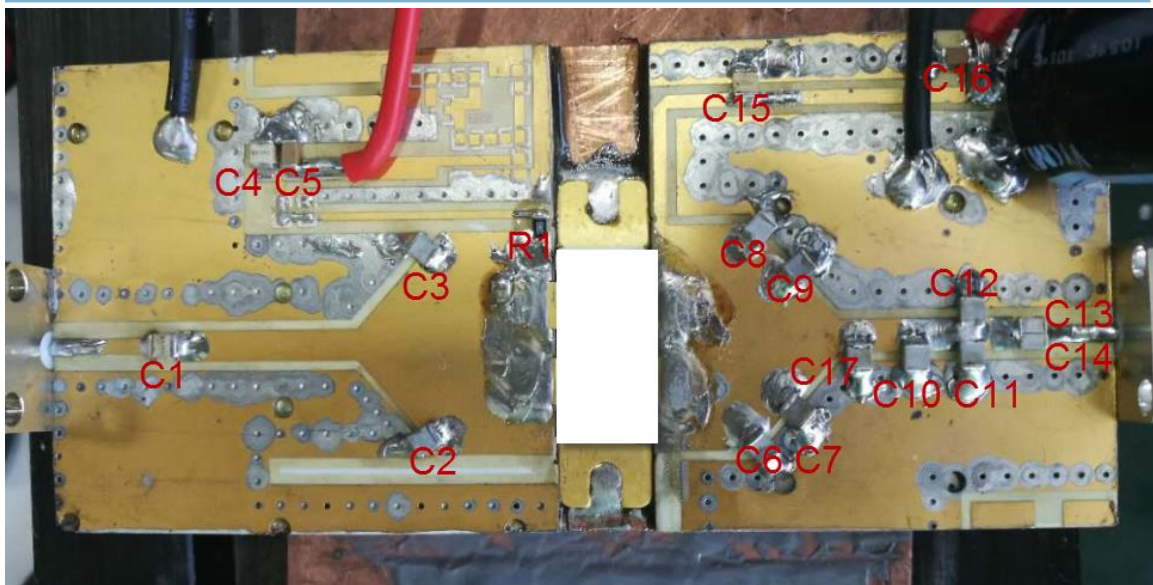
Signal: pulse width 100us, duty cycle 10% $V_{gs}=3.21v, V_{ds}=50v, I_{dq}=100mA$

Freq(MHz)	Pin(dBm)	Psat(dBm)	Psat(W)	IDS(A)	Gain(dB)	η (%)
915	39.8	56.7	468	1.6	16.9	62

Signal: CW $V_{gs}=3.21v, V_{ds}=50v, I_{dq}=100mA$

Freq(MHz)	Pin(dBm)	Psat(dBm)	Psat(W)	IDS(A)	Gain(dB)	η (%)
915	38.7	55.85	385	12.95	17.15	59

2. Fixture pictures and bill of materials



BOM:

C1,C4,C15	51PF	ATC100B
C2,C3	5.6PF	ATC800B
C6,C8	8.2PF	ATC800B
C7,C9	6.8PF	ATC800B
C10	3PF	ATC800B
C11,C12,C17	1.8PF	ATC800B
C13,C14	27PF	ATC800B
C5,C16	1UF	1UF/50V
R1	10Ω	1206

Tuning 2:

Demo and Transistor

Frequency band : 915MHz
 Application : Multi Market
 Configuration : Class AB
 Test Signal : CW/Pulse
 Transistor : MK1040VP
 Date code : 172001S
 PCB : 30 Mil Rogers 4350

The amplifier has been characterized under the following conditions:

- The output power measurement using CW/Pulse

Note: The PA is tested with a supply voltage of $V_{DS} = 50\text{ V}$, $I_{DQ} = 100\text{ mA}$ all measurements unless otherwise noted.

3. Pulse and CW performance

Signal: pulse width 100us, duty cycle 10% $V_{gs}=2.97v, V_{ds}=50v, I_{dq}=100mA$

Freq(MHz)	Pin(dBm)	Psat(dBm)	Psat(W)	IDS(A)	Gain(dB)	η (%)
915	39.5	57.3	537	1.8	17.8	60%

Signal: pulse width 200us, duty cycle 10% $V_{gs}=2.97v, V_{ds}=50v, I_{dq}=100mA$

Freq(MHz)	Pin(dBm)	Psat(dBm)	Psat(W)	IDS(A)	Gain(dB)	η (%)
915	40.1	57.4	550	1.89	17.3	58.5%

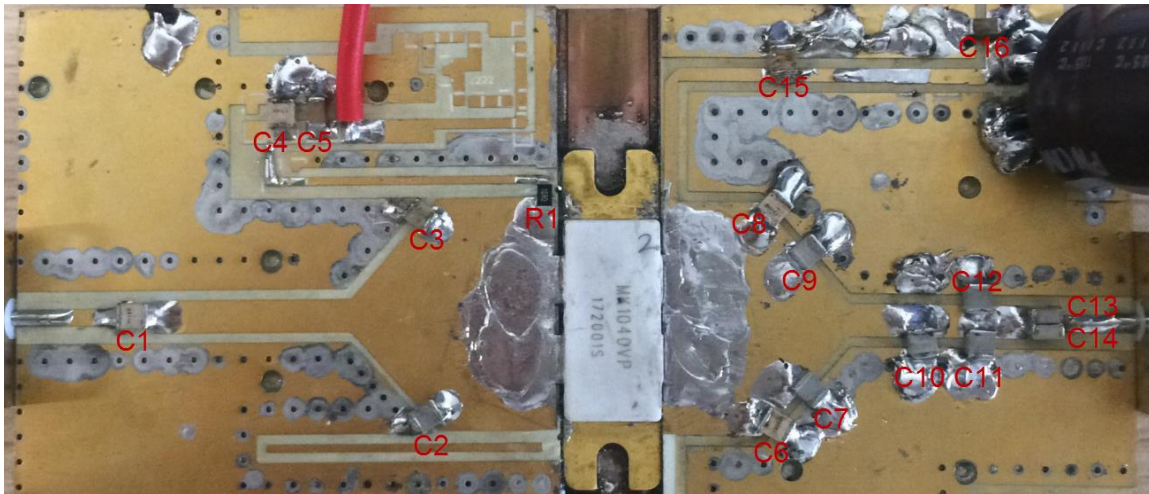
Signal: pulse width 1ms, duty cycle 20% $V_{gs}=2.97v, V_{ds}=50v, I_{dq}=100mA$

Freq(MHz)	Pin(dBm)	Psat(dBm)	Psat(W)	IDS(A)	Gain(dB)	η (%)
915	40.1	57	501	3.55	16.9	56.5%

Signal: CW $V_{gs}=2.97v, V_{ds}=50v, I_{dq}=100mA$

Freq(MHz)	Pin(dBm)	Psat(dBm)	Psat(W)	IDS(A)	Gain(dB)	η (%)
915	39.5	56.1	407	15.1	16.6	54%

4. Fixture pictures and bill of materials



C1,C4,C15	51PF	ATC100B
C2,C3	5.6PF	ATC800B
C6,C8	8.2PF	ATC800B
C7,C9	6.8PF	ATC800B
C10	3PF	ATC800B
C11,C12	1.8PF	ATC800B
C13,C14	27PF	ATC800B
C5,C16	1UF	1UF/50V
R1	50Ω	1206