

Document information

| Info | Content |
|-----------------|--|
| Keywords | NA-1938 |
| Abstract | Measurement results of a demo board for 1030-1090 MHz with 1x BLA6H0912L-500, BLP10H610. |

Revision history

| Rev | Date | Description |
|-----|----------|--|
| 1 | 20130807 | |
| 2 | 20150424 | Update for web publication |
| 3 | 20151005 | The format of this document has been redesigned to comply with the new identity guidelines of Ampleon. Legal texts have been adapted to the new company name where appropriate. |

1. Introduction

1.1 General Description

This document contains measurement results of a 1090 MHz demo amplifier (Board NA-1938) with 1x BLA6H0912L-500 and 1x BLP6H610.

1.1.1 Test object details

| | |
|------------------|--|
| Transistor type: | BLA6H0912L-500 (bolded down) BLP6H610 (soldered down) |
| Production code: | m0939 Philippines |
| Package: | SOT534A |
| Board: | 1090 MHz Line-up |
| Demo number: | NA-1938 |

1.2 Used Test signals

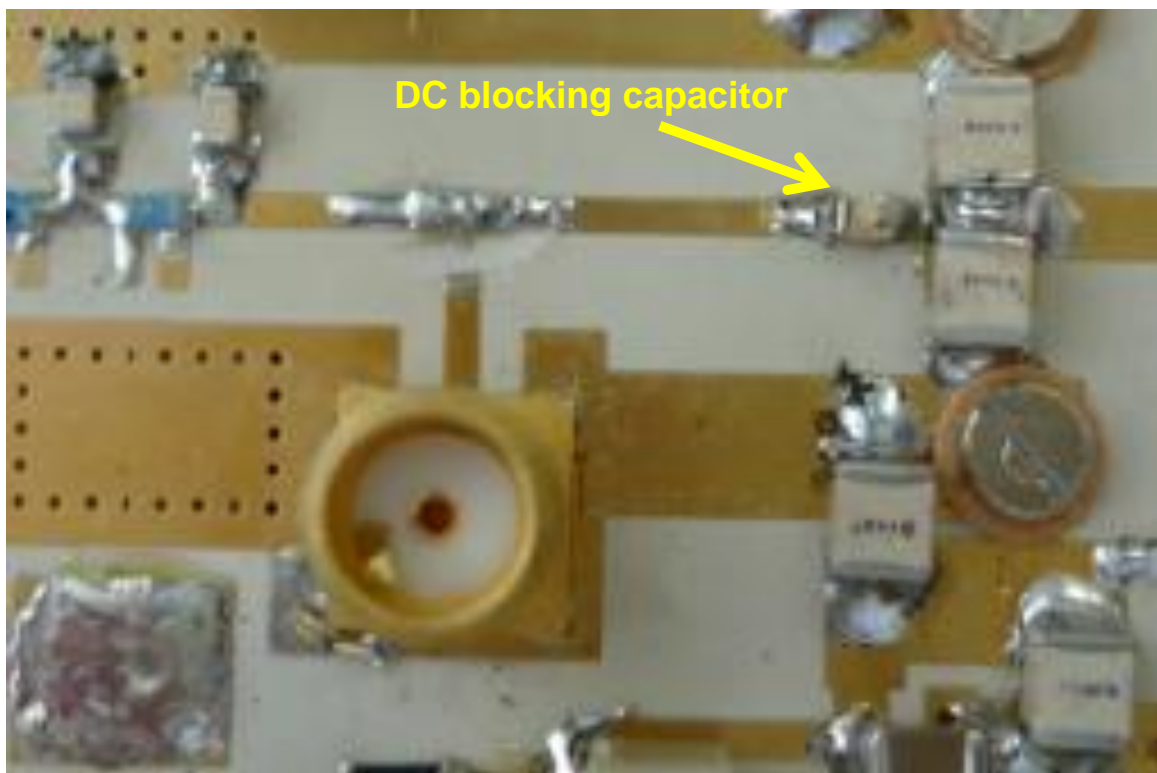
Pulsed CW: 300 μ s – 10%

1.3 Application board

A description of this circuit can be found in **Chapter 3**. The test circuit has been designed on Rogers Duroid 6006, $h=0.64$ mm, $\epsilon_R=6.15$, 2x 35 μ m cladding.

All testing has been performed at $V_{DS}=48$ V, $I_{DQ}=50$ mA (driver), $I_{DQ}=150$ mA (final) and $T_{HS}=25^\circ$ C.

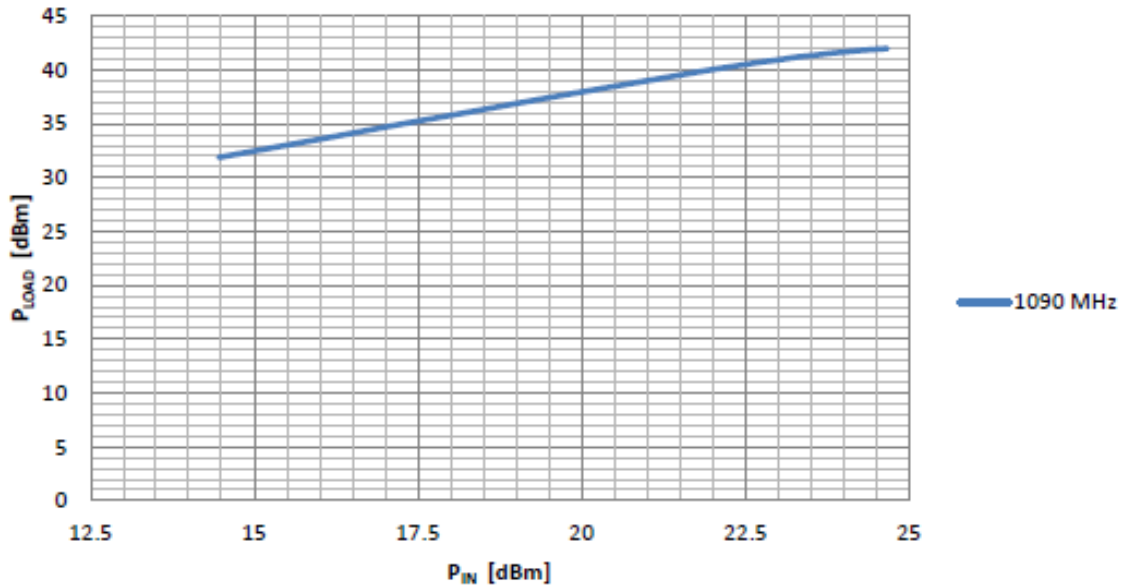
Between driver and final transistor the ability is to connect a SMA-connector so that driver and final can be evaluated individually. Note that when evaluating the driver separately, a DC-blocking ATC100 capacitor of 100pF should be placed between output of the driver and the SMA-connector.



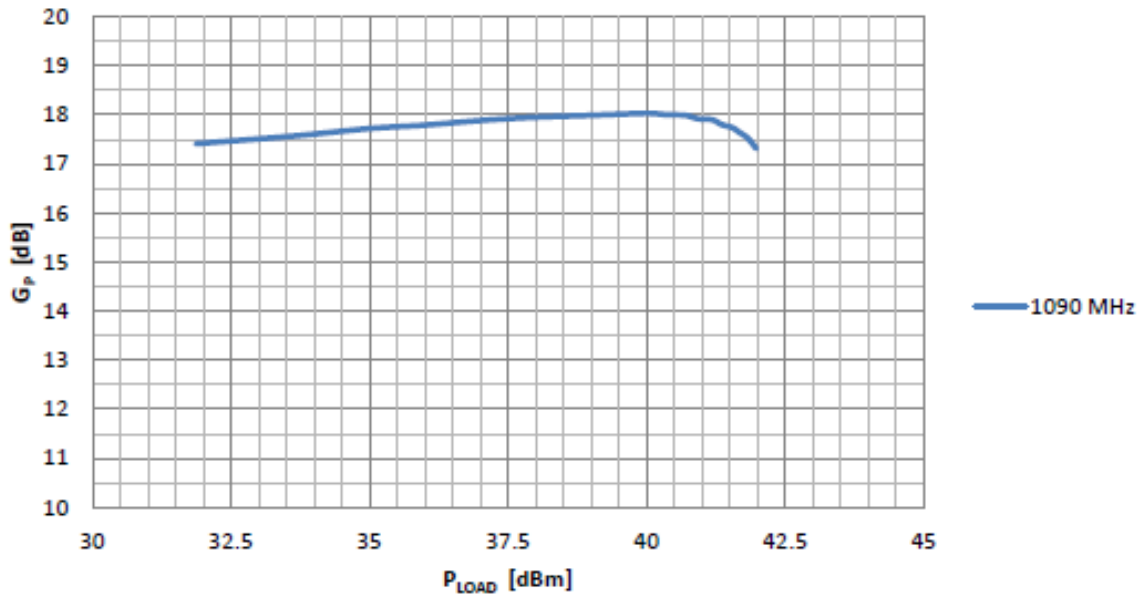
2. Measurement Results

2.1 Evaluation driver stage

$$P_{LOAD} = f(P_{IN}) \text{ at } V_{DS} = 48 \text{ V, } t_p = 300\mu\text{s, } \delta = 10\% \text{ and } T_{HS} = 25^\circ\text{C}$$

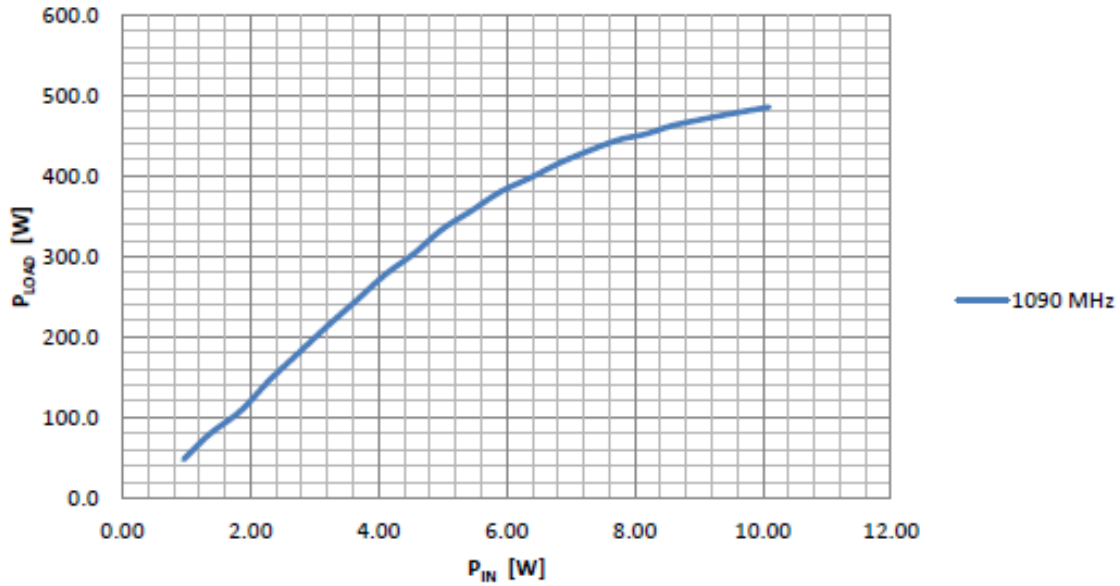


$$G_p = f(P_{LOAD}) \text{ at } V_{DS} = 48 \text{ V, } t_p = 300\mu\text{s, } \delta = 10\% \text{ and } T_{HS} = 25^\circ\text{C}$$

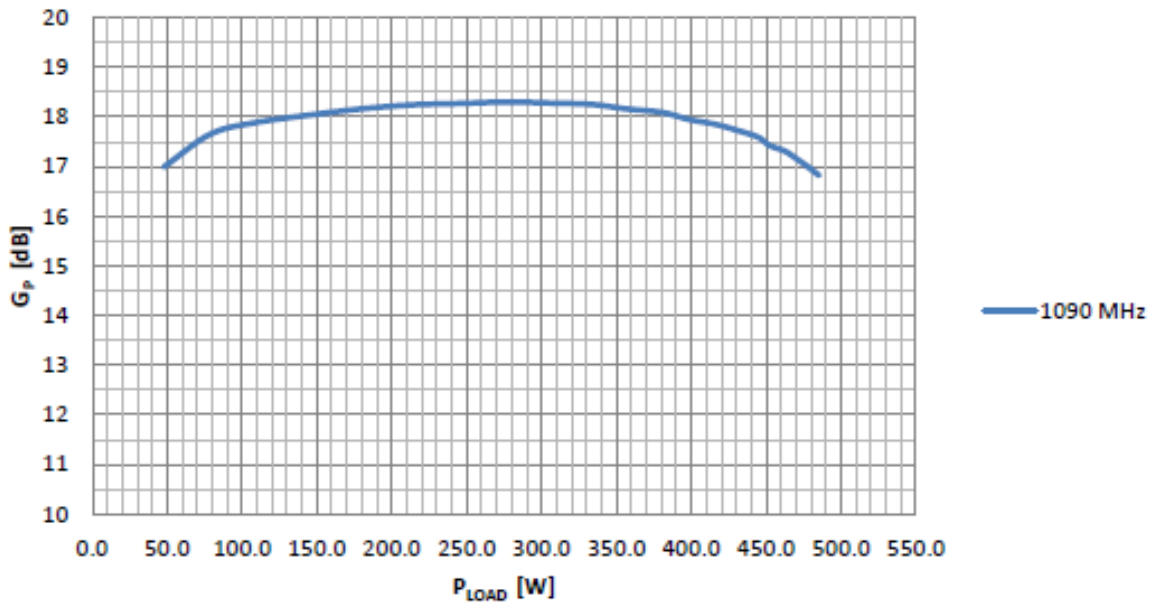


2.2 Evaluation final stage

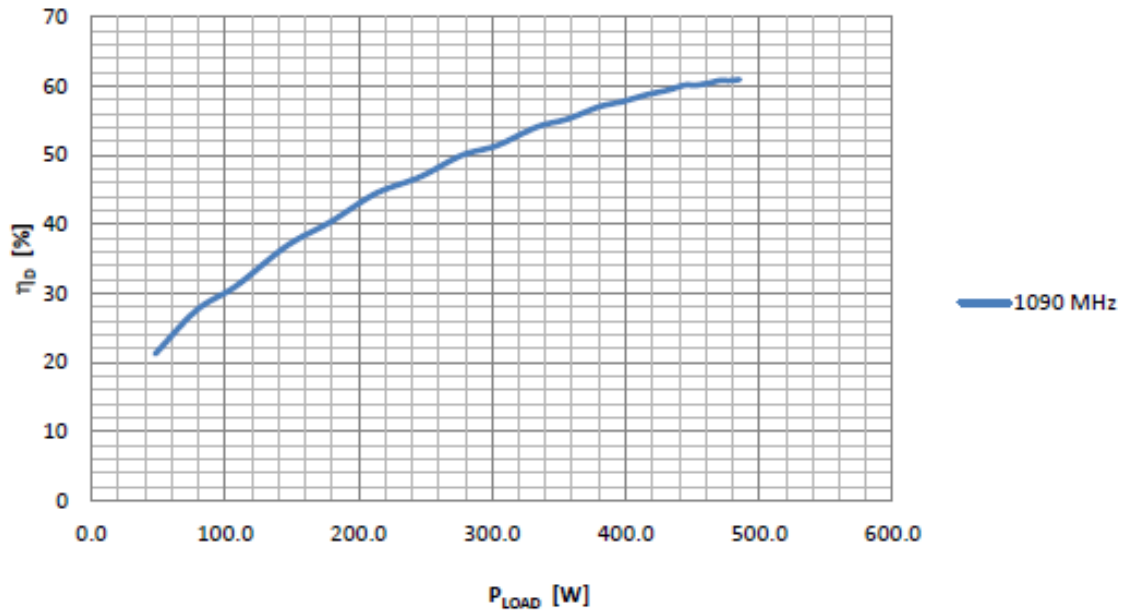
$P_{LOAD} = f(P_{IN})$ at $V_{DS} = 48\text{ V}$, $t_p = 300\mu\text{s}$, $\delta = 10\%$ and $T_{HS} = 25^\circ\text{C}$



$G_P = f(P_{LOAD})$ at $V_{DS} = 48\text{ V}$, $t_p = 300\mu\text{s}$, $\delta = 10\%$ and $T_{HS} = 25^\circ\text{C}$

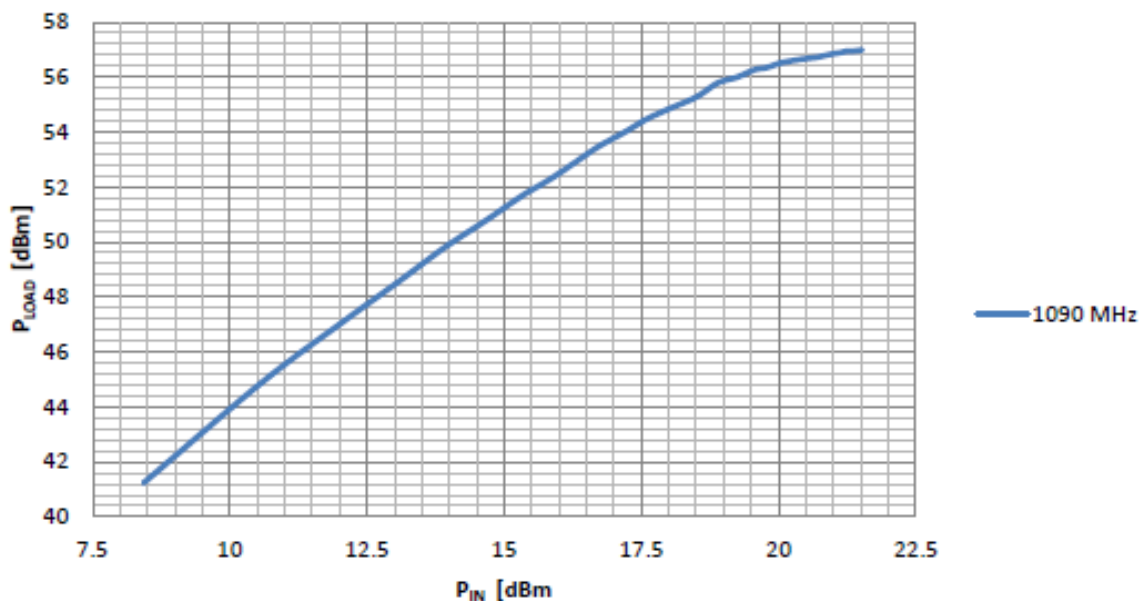


$\eta_D = f(P_{LOAD})$ at $V_{DS} = 48\text{ V}$, $t_p = 300\mu\text{s}$, $\delta = 10\%$ and $T_{HS} = 25^\circ\text{C}$

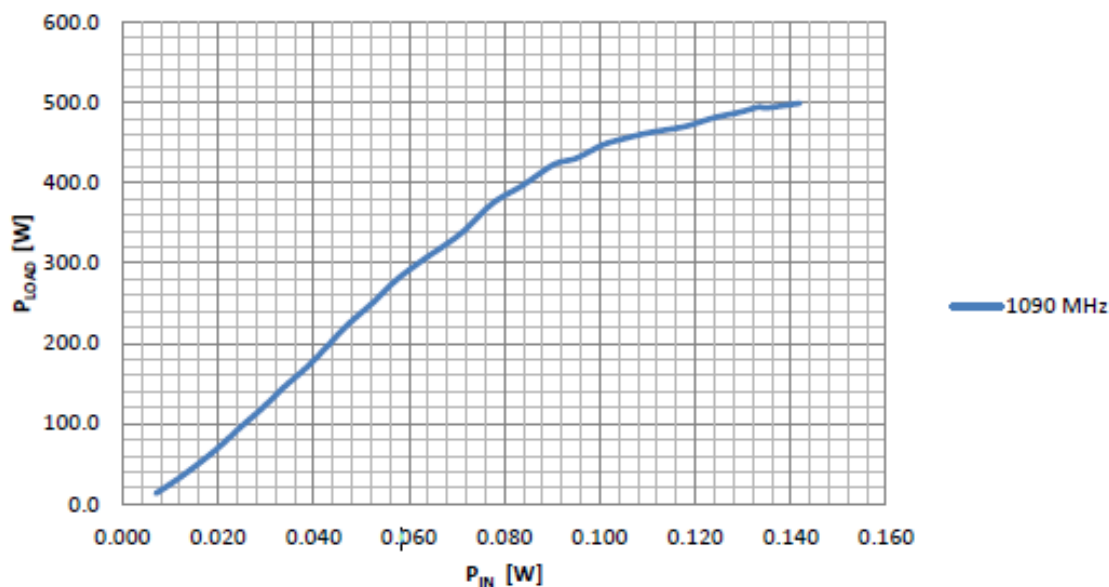


2.3 Evaluation entire Line-up.

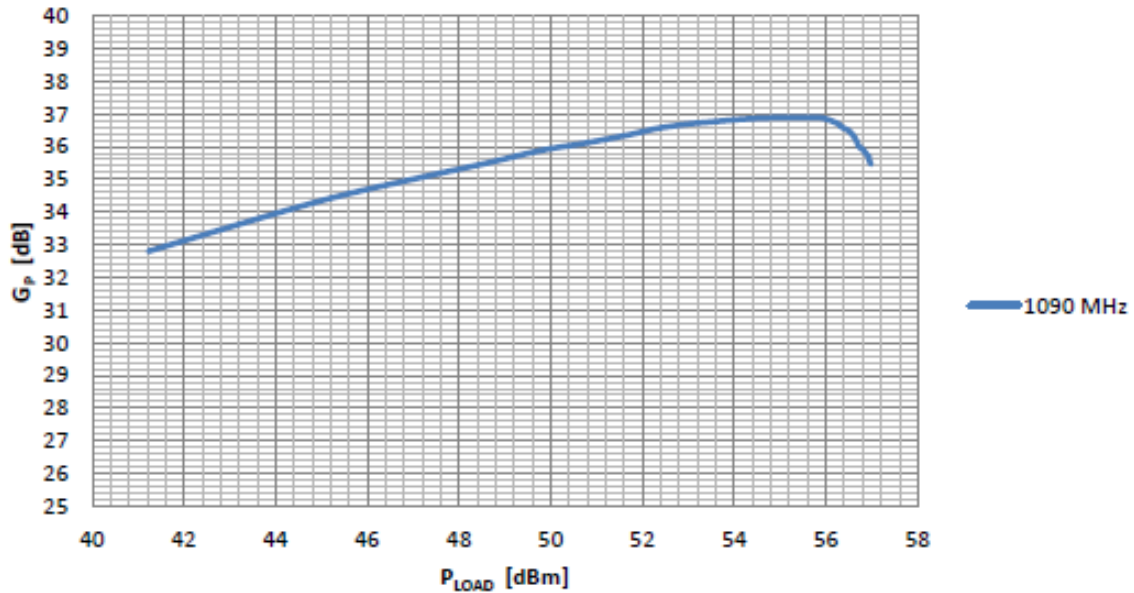
$P_{LOAD} = f(P_{IN})$ of 2-stage line-up with
 $V_{DS} = 48V$, $t_p = 300\mu s$, $\delta = 10\%$ and $T_{HS} = 25^\circ C$



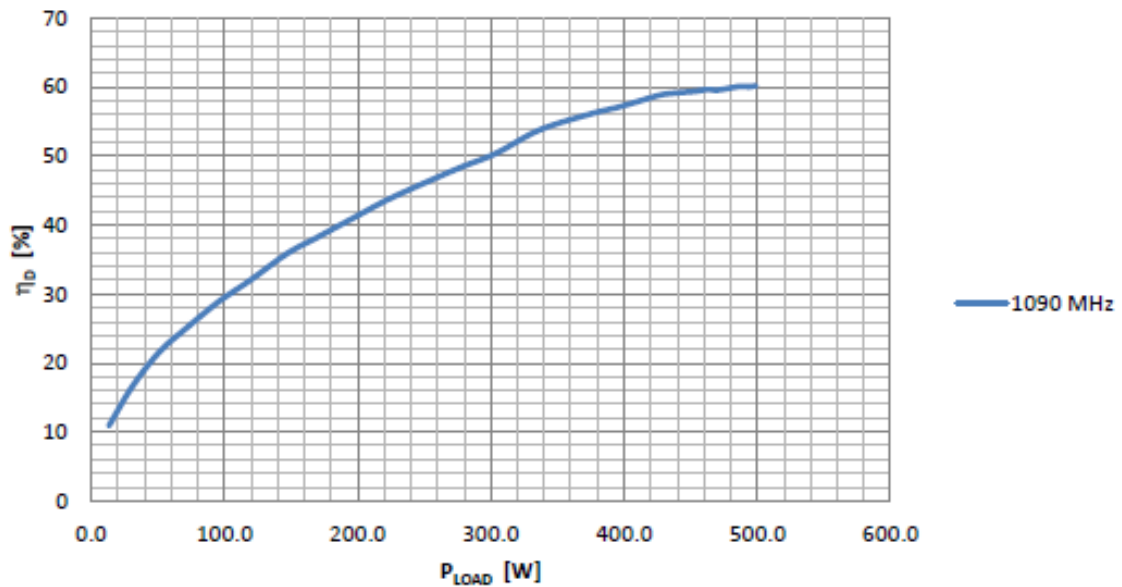
$P_{LOAD} = f(P_{IN})$ of 2-stage line-up with
 $V_{DS} = 48V$, $t_p = 300\mu s$, $\delta = 10\%$ and $T_{HS} = 25^\circ C$



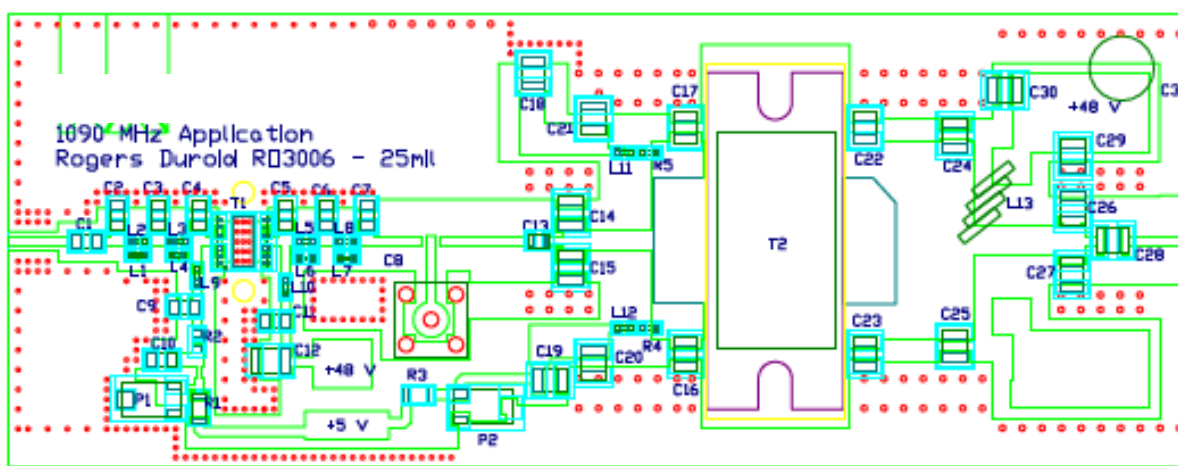
$G_p = f(P_{LOAD})$ of 2-stage line-up with
 $V_{DS} = 48V$, $t_p = 300\mu s$, $\delta = 10\%$ and $T_{HS} = 25^\circ C$



$\eta_D = f(P_{LOAD})$ of 2-stage line-up with
 $V_{DS} = 48V$, $t_p = 300\mu s$, $\delta = 10\%$ and $T_{HS} = 25^\circ C$



3. PCB Layout

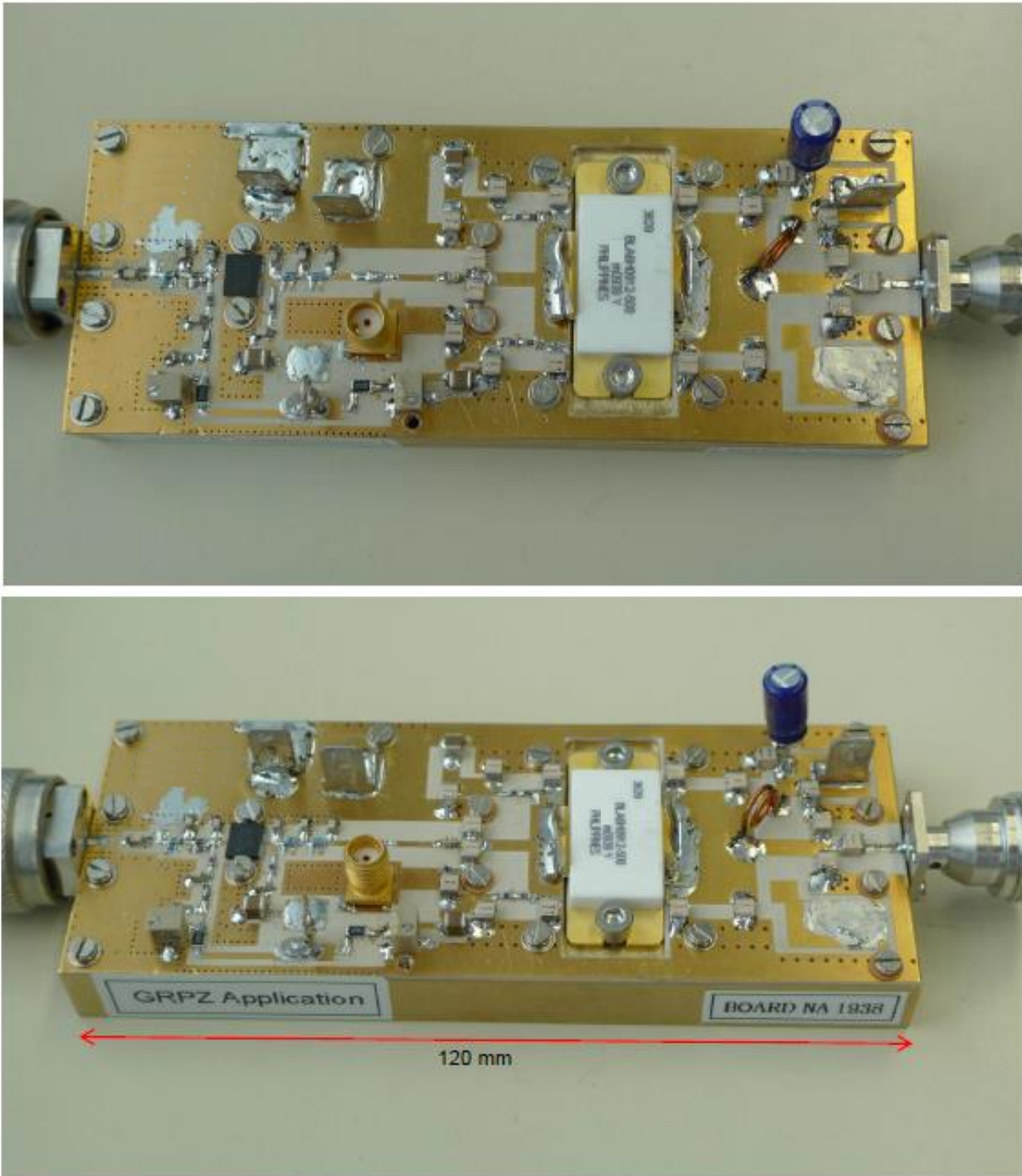


Components list application circuit.

| | | |
|---------------------------|--------------|--|
| C1, C8, C9, C13, C21, C11 | 100 pF | ATC100A |
| C2 | - | ATC100A |
| C3 | 4.7 pF | ATC100A |
| C4 | 0.7 pF | ATC100A |
| C5 | 2.7 pF | ATC100A |
| C6 | 9.1 pF | ATC100A |
| C7 | 4.7 pF | ATC100A |
| C12 | 4.7 μ F | 50 V |
| C10 | 300 pF | ATC700A |
| L1, L2 | 1.2 nH | Coilcraft – 0603CT-1N2XJL |
| L3,L4 | 3.6 nH | Coilcraft – 0603CT-3N6XJL |
| L5 | 1.8 nH | Coilcraft – 0603CT-1N8XJL |
| L8 | 2.2 nH | Coilcraft – 0603CT-2N2XJL |
| L9, L10, L11, L12 | 18 nH | Coilcraft – 0603CT-18NXJL |
| L13 | | 1 mm Cu-Wire 1.5 turns \varnothing 5mm |
| T1 | | BLP10H610 |
| T2 | | BLA6H0912L-500 |
| C13 | 100 pF | ATC 100A |
| C14, C15 | 2.4 pF | ATC 100B |
| C16, C17 | 6.8 pF | ATC 100B |
| C20, C21, C28, C29 | 36 pF | ATC 100B |
| C24, C25 | - | ATC100B |
| C18, C19 | 4.7 μ F | 50 V |
| C22, C23 | 5.1 pF | ATC 100B |
| C26, C27 | 1.1 pF | ATC 100B |
| C30 | 1 nF | ATC 100B |
| C31 | 47 μ F | 63 V |
| R1, R3 | 100 Ω | VISHAY: CRCW1206100RFKEAHP |
| R2, R4, R5 | 10 Ω | SMD Resistor 0603 size |
| P1, P2 | 200 Ω | Bourns 3214X (Top adjust) Trimming Potentiometer |

PCB Material: Rogers Duroid 3006, thickness 0,635 mm (25 mil), $\epsilon_r = 6.15$, Cu = 35 micron

4. Photo's Demo Board



5. Attachments

Please see the attachment for the support files.

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