



# STEVAL-TDR007V1

3 stage RF power amplifier demonstration board using:  
PD57002-E, PD57018-E, 2 x PD57060-E

## Features

- N-channel enhancement-mode lateral MOSFETs
- Excellent thermal stability
- Frequency: 1030 MHz
- Supply voltage: 36 V
- Peak power: 200 W typical
- Input power: 23 dBm
- Harmonics < -45 dBc
- Rise and fall time < 100 ns
- RoHS compliant

## Description

The STEVAL-TDR007V1 is a 200 W RF power amplifier intended for IFF - 1030 MHz interrogator using PD57002-E + PD57018-E + 2 x PD57060-E N-channel lateral MOS field-effect transistors.

STEVAL-TDR007V1 is designed in cooperation with ETSA in France.

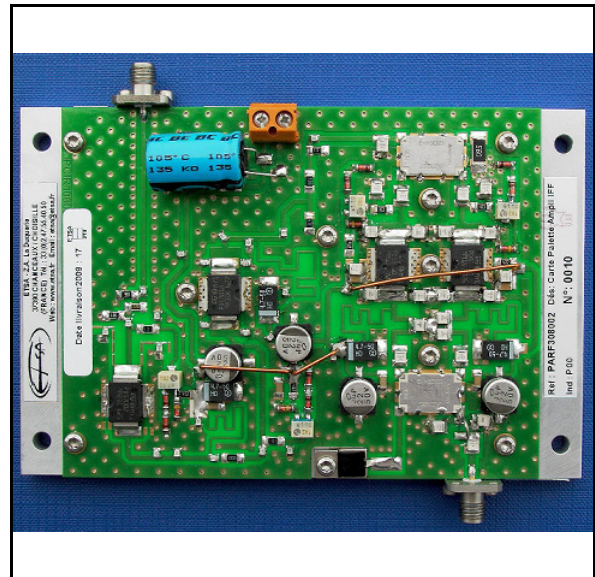


Table 1. Device summary

| Order code      |
|-----------------|
| STEVAL-TDR007V1 |

# Contents

|          |   |           |
|----------|---|-----------|
| <b>1</b> | <b>Electrical data</b> .....  | <b>3</b>  |
|          | 1.1 Maximum ratings .....   | 3         |
| <b>2</b> | <b>Electrical characteristics</b> .....   | <b>3</b>  |
| <b>3</b> | <b>Circuit schematic</b> .....  | <b>4</b>  |
| <b>4</b> | <b>Circuit layout</b> .....   | <b>5</b>  |
| <b>5</b> | <b>Package mechanical data:</b><br><b>PD57002-E, PD57018-E, PD57060-E</b> ..... | <b>6</b>  |
|          | 5.1 Mounting indications .....  | 7         |
| <b>6</b> | <b>Revision history</b> .....   | <b>10</b> |

# 1 Electrical data

## 1.1 Maximum ratings

**Table 2. Absolute maximum ratings**

| Symbol     | Parameter                  | Value      | Unit |
|------------|----------------------------|------------|------|
| $V_{DD}$   | Supply voltage             | 36         | V    |
| $I_D$      | Drain current              | 1.0        | A    |
| $T_{CASE}$ | Operating case temperature | +80        | °C   |
| $T_A$      | Max. ambient temperature   | -10 to +50 | °C   |

## 2 Electrical characteristics

$T_A = +25\text{ °C}$ ,  $V_{DD} = 36\text{ V}$ ,  $I_{dq} = 100\text{ mA}$ , Freq. = 1030 MHz, PW = 32  $\mu\text{s}$ , DC = 2.5 %

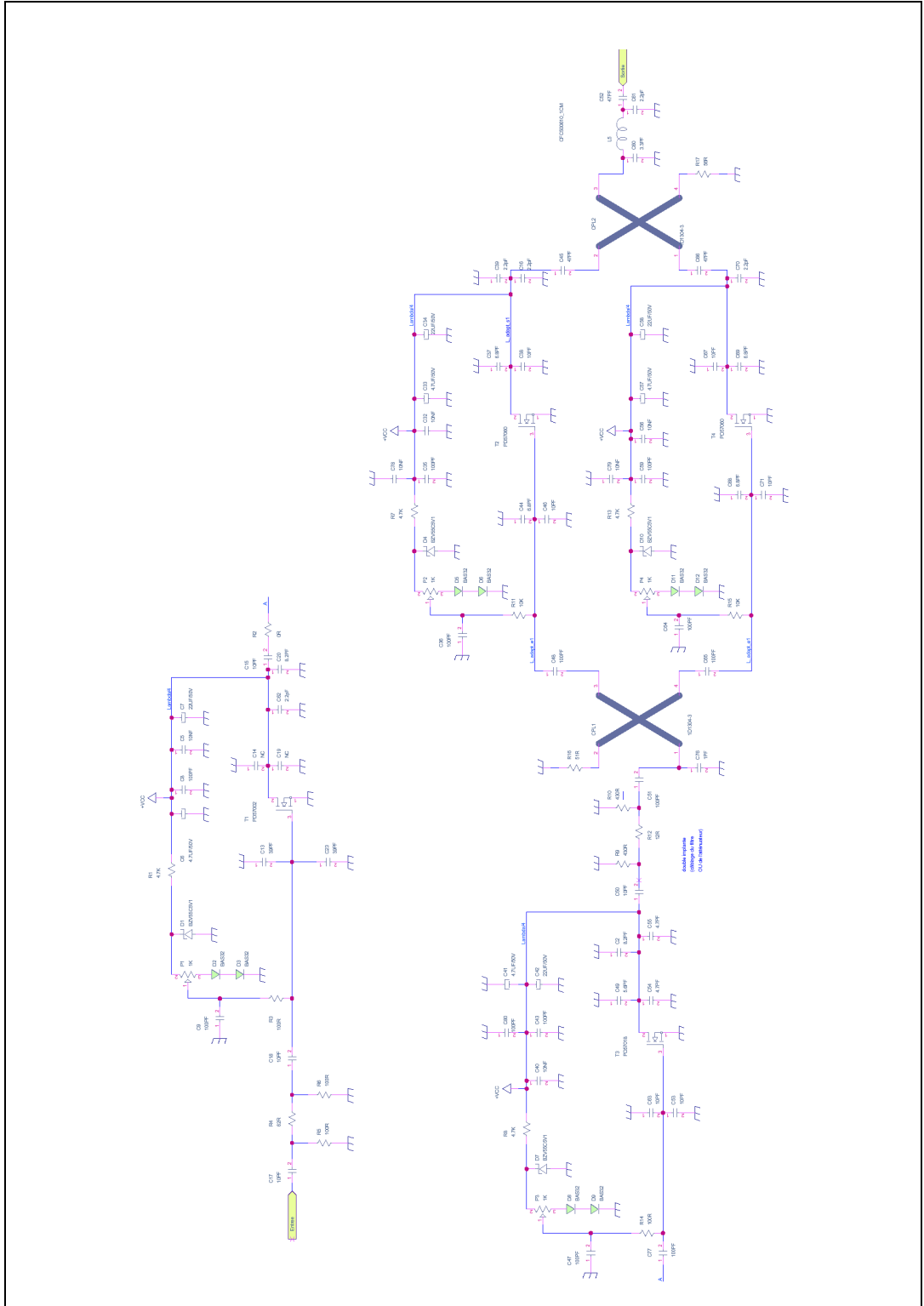
**Table 3. Electrical specification**

| Symbol             | Test conditions            | Min | Typ | Max | Unit |
|--------------------|----------------------------|-----|-----|-----|------|
| $P_{OUT}$          | @ $P_{IN} = 23\text{ dBm}$ | 52  | 53  |     | dBm  |
| IRL                | @ $P_{IN} = 23\text{ dBm}$ |     |     | -10 | dB   |
| $I_{TOTAL}$        | @ $P_{IN} = 23\text{ dBm}$ |     | 500 | 600 | mA   |
| Rise and Fall time | @ $P_{IN} = 23\text{ dBm}$ |     |     | 100 | ns   |
| Power droop (1)    | @ $P_{IN} = 23\text{ dBm}$ |     | 0.2 | 1   | dB   |
| Harmonics          | @ $P_{IN} = 23\text{ dBm}$ |     | -60 | -45 | dBc  |

1. 1000  $\mu\text{F}$  connected to 36 V supply pin

### 3 Circuit schematic

Figure 1. Circuit schematic





## 5 **Package mechanical data: PD57002-E, PD57018-E, PD57060-E**

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: [www.st.com](http://www.st.com). ECOPACK is an ST trademark.

## 5.1 Mounting indications

Figure 3. PowerSO-10 mounting indications

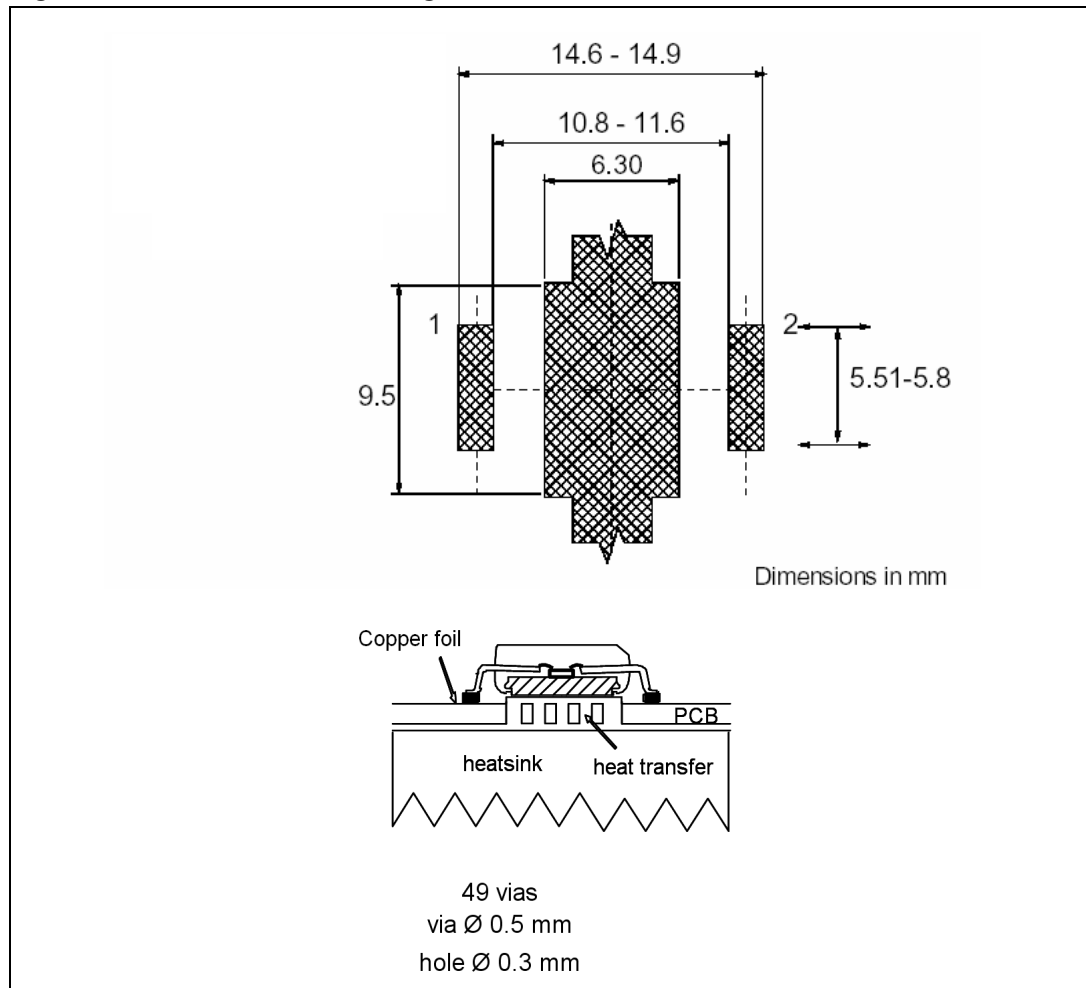
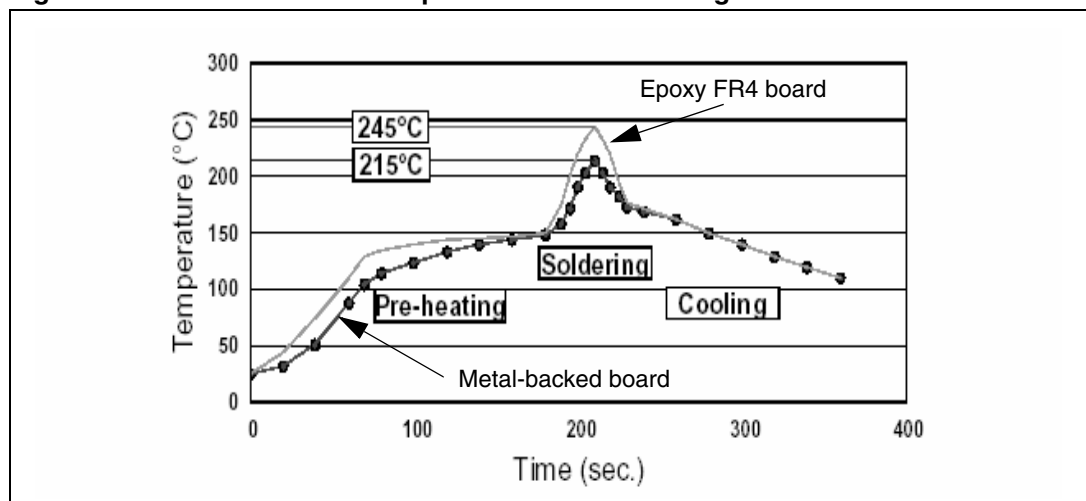


Figure 4. Recommended heat profile / reflow soldering



**Table 4. PowerSO-10RF formed lead (gull wing) mechanical data**

| Dim. | mm.   |        |       | Inch  |        |        |
|------|-------|--------|-------|-------|--------|--------|
|      | Min   | Typ    | Max   | Min   | Typ    | Max    |
| A1   | 0     | 0.05   | 0.1   | 0.    | 0.0019 | 0.0038 |
| A2   | 3.4   | 3.5    | 3.6   | 0.134 | 0.137  | 0.142  |
| A3   | 1.2   | 1.3    | 1.4   | 0.046 | 0.05   | 0.054  |
| A4   | 0.15  | 0.2    | 0.25  | 0.005 | 0.007  | 0.009  |
| a    |       | 0.2    |       |       | 0.007  |        |
| b    | 5.4   | 5.53   | 5.65  | 0.212 | 0.217  | 0.221  |
| c    | 0.23  | 0.27   | 0.32  | 0.008 | 0.01   | 0.012  |
| D    | 9.4   | 9.5    | 9.6   | 0.370 | 0.374  | 0.377  |
| D1   | 7.4   | 7.5    | 7.6   | 0.290 | 0.295  | 0.298  |
| E    | 13.85 | 14.1   | 14.35 | 0.544 | 0.555  | 0.565  |
| E1   | 9.3   | 9.4    | 9.5   | 0.365 | 0.37   | 0.375  |
| E2   | 7.3   | 7.4    | 7.5   | 0.286 | 0.292  | 0.294  |
| E3   | 5.9   | 6.1    | 6.3   | 0.231 | 0.24   | 0.247  |
| F    |       | 0.5    |       |       | 0.019  |        |
| G    |       | 1.2    |       |       | 0.047  |        |
| L    | 0.8   | 1      | 1.1   | 0.030 | 0.039  | 0.042  |
| R1   |       |        | 0.25  |       |        | 0.01   |
| R2   |       | 0.8    |       |       | 0.031  |        |
| T    | 2 deg | 5 deg  | 8 deg | 2 deg | 5 deg  | 8 deg  |
| T1   |       | 6 deg  |       |       | 6 deg  |        |
| T2   |       | 10 deg |       |       | 10 deg |        |

*Note: Resin protrusions not included (max value: 0.15 mm per side)*

**Figure 5. Package dimensions**

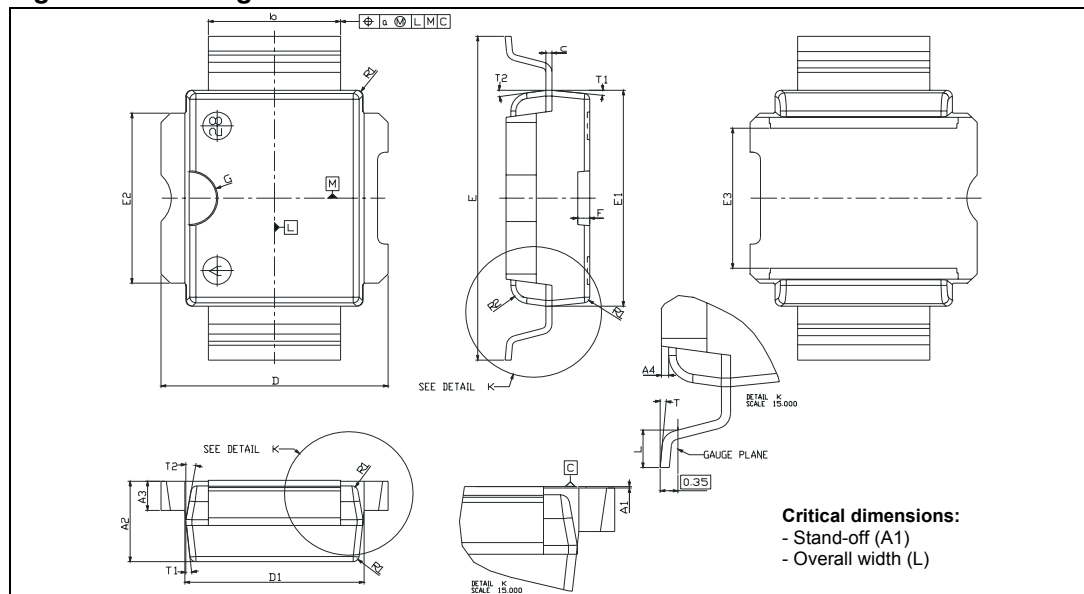
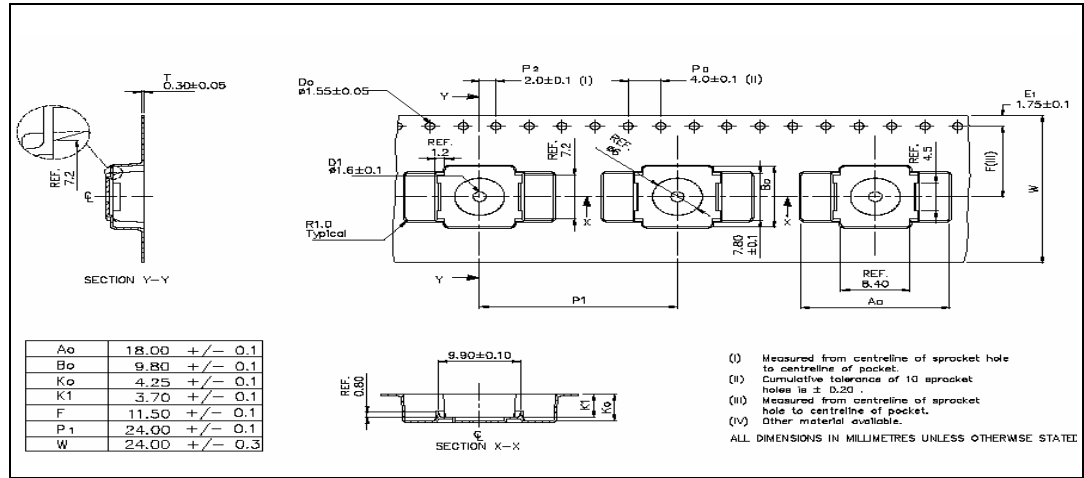


Figure 6. PowerSO-10RF tape and reel



## 6 Revision history

**Table 5. Document revision history**

| Date        | Revision | Changes         |
|-------------|----------|-----------------|
| 01-Jul-2008 | 1        | Initial release |

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