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.

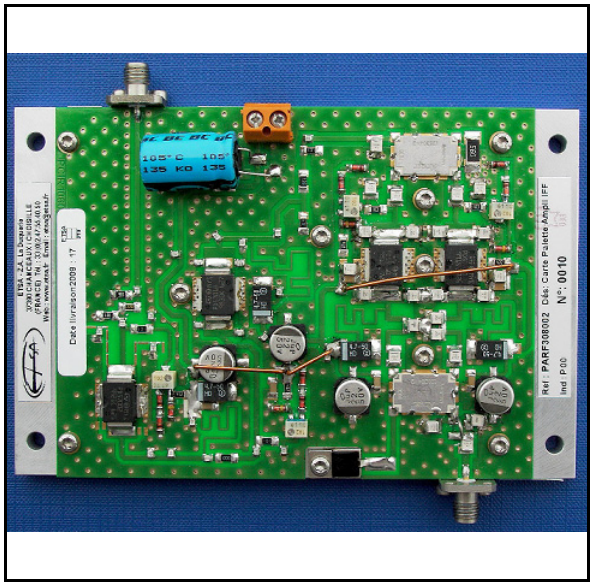


Table 1. Device summary

Order code
STEVAL-TDR007V1

Contents

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 °C, V_{DD} = 36 V, I_{dq} = 100 mA, Freq. = 1030 MHz, PW = 32 µs, DC = 2.5 %

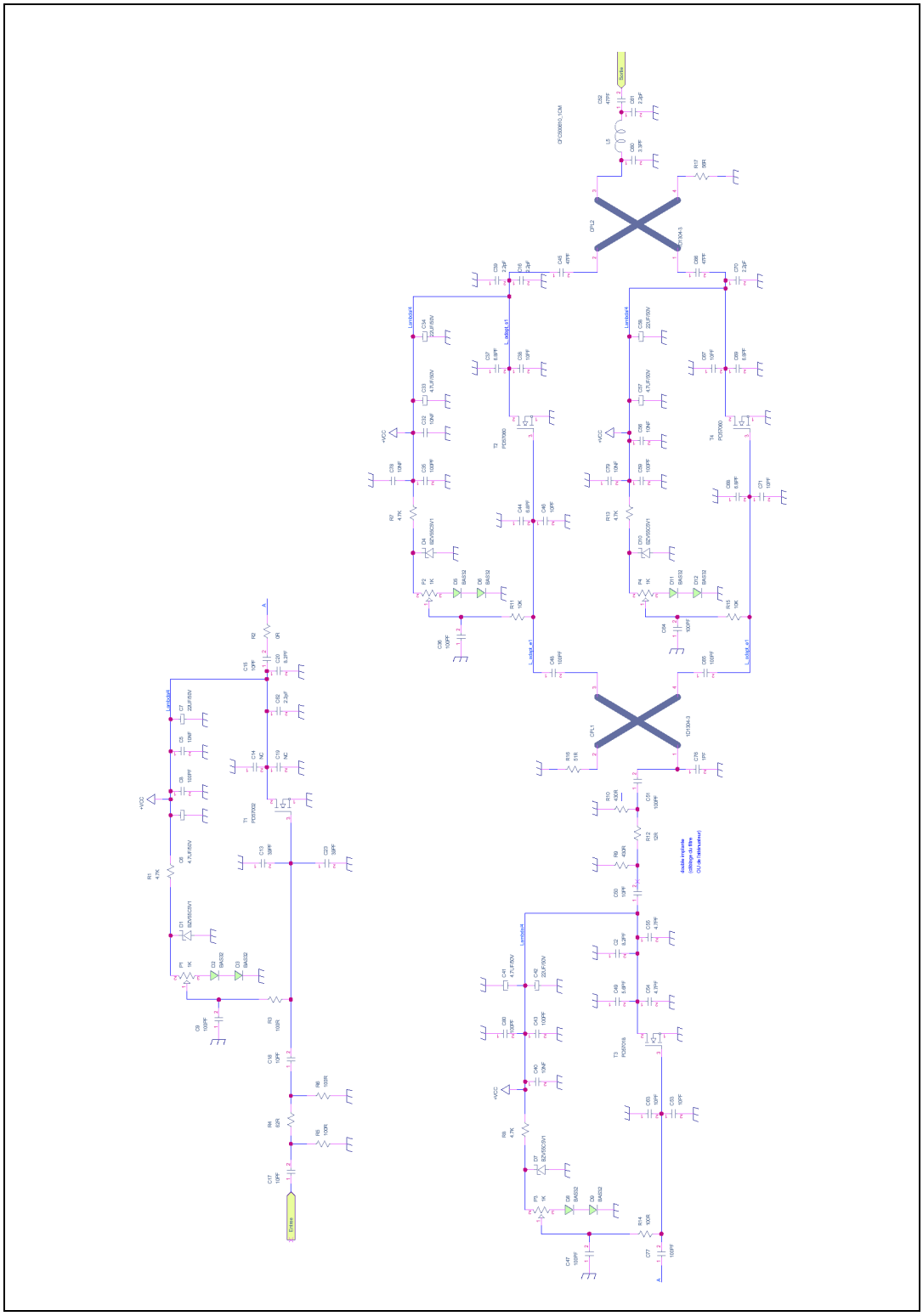
Table 3. Electrical specification

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

1. 1000 µF connected to 36 V supply pin

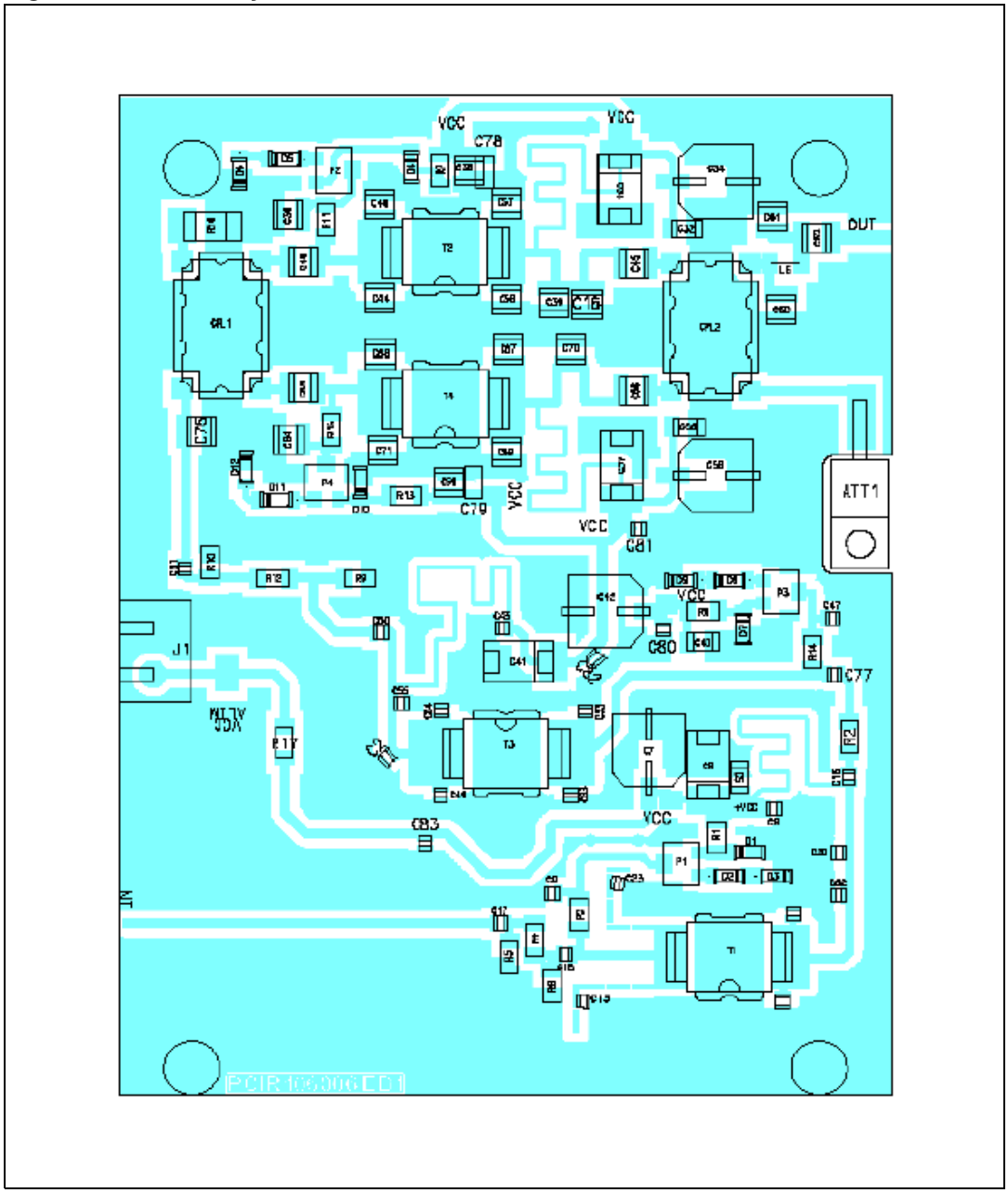
3 Circuit schematic

Figure 1. Circuit schematic



4 Circuit layout

Figure 2. Circuit layout



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. ECOPACK is an ST trademark.

5.1 Mounting indications

Figure 3. PowerSO-10 mounting indications

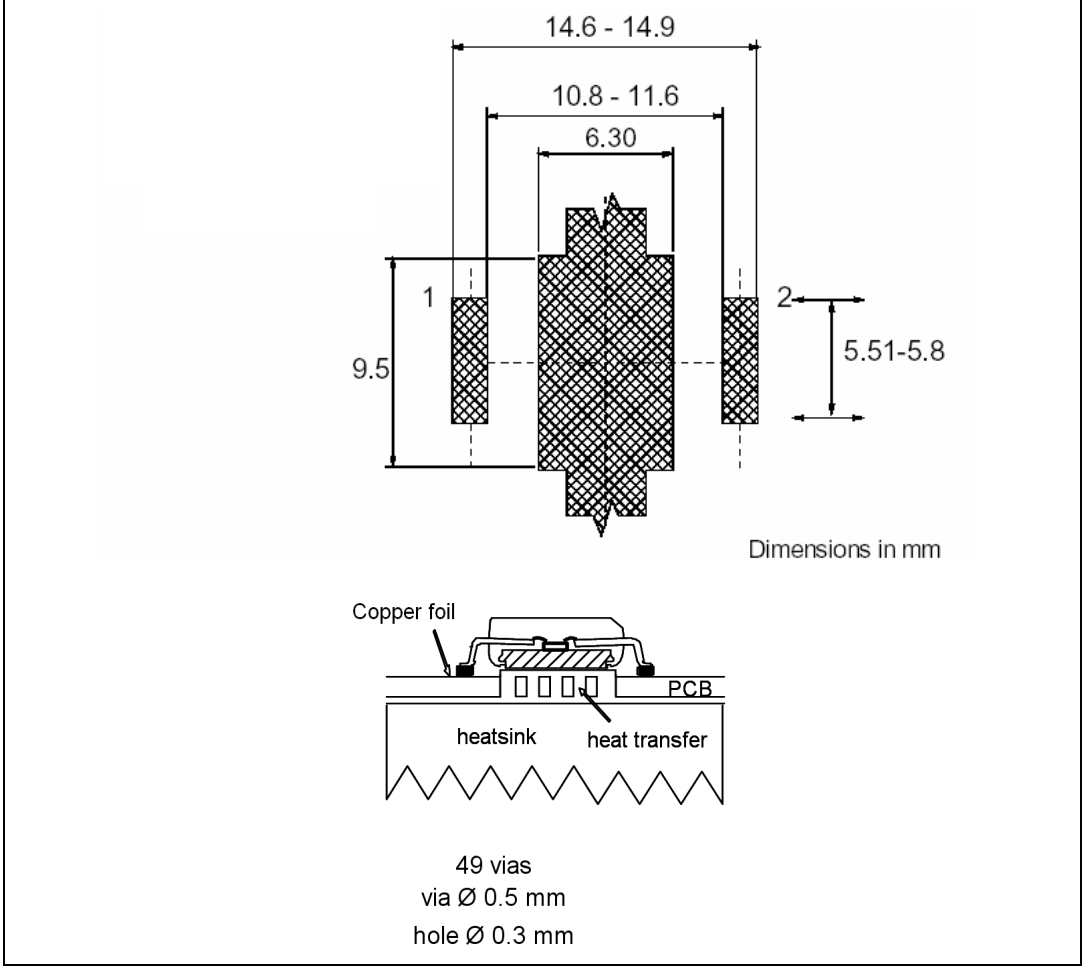


Figure 4. Recommended heat profile / reflow soldering

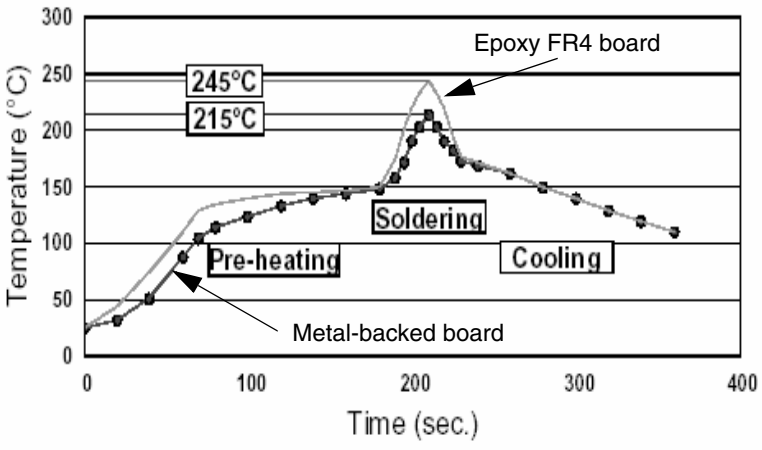


Table 4. PowerSO-10RF formed lead (gull wing) mechanical data

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

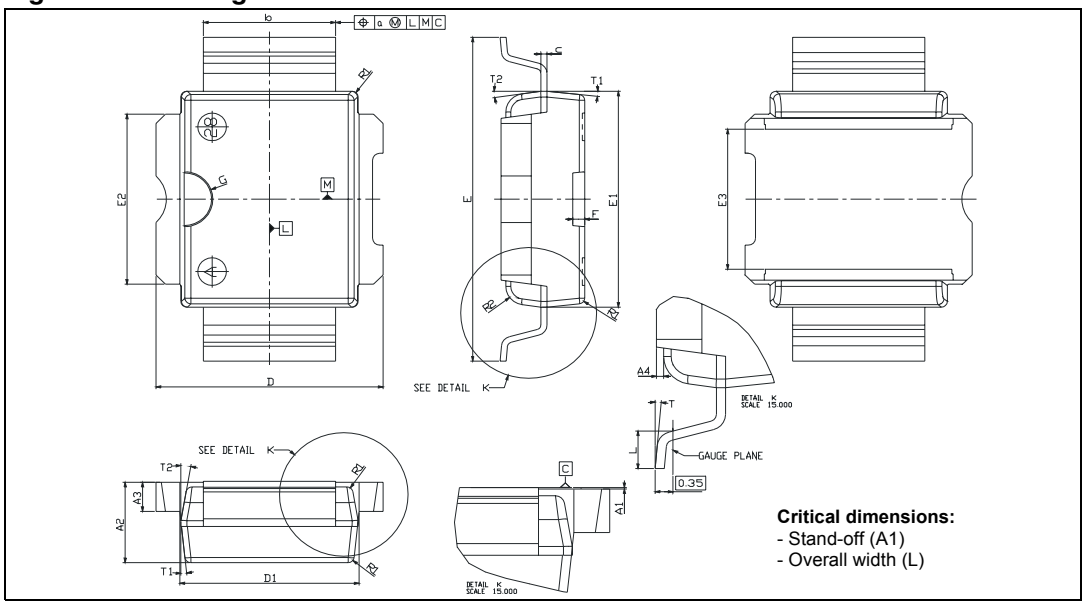
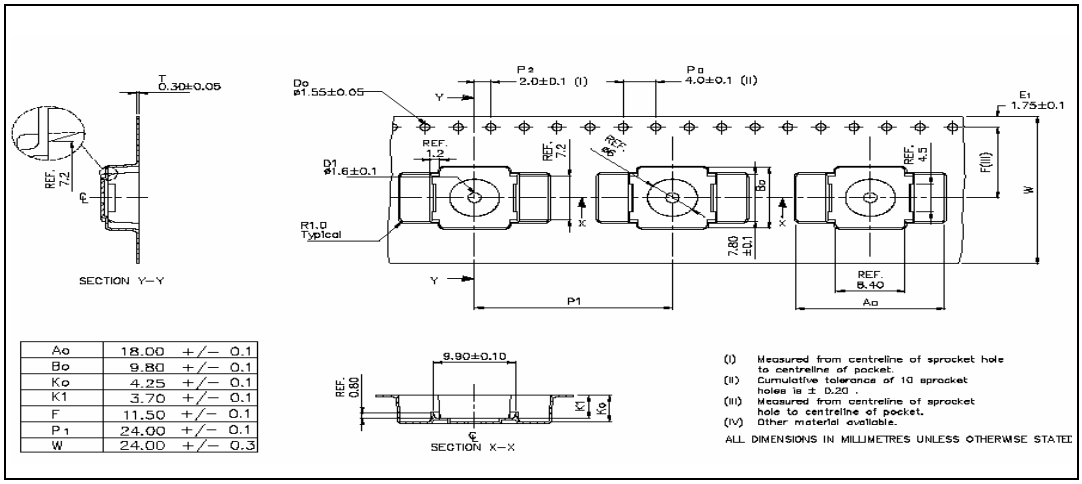


Figure 6. PowerSO-10RF tape and reel



Ao	18.00	+/– 0.1
Bo	9.80	+/– 0.1
Ko	4.25	+/– 0.1
K1	3.70	+/– 0.1
F	11.50	+/– 0.1
P1	24.00	+/– 0.1
W	24.00	+/– 0.3

6 Revision history

Table 5. Document revision history

Date	Revision	Changes
01-Jul-2008	1	Initial release
24-Mar-2009	2	Updated coverpage

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