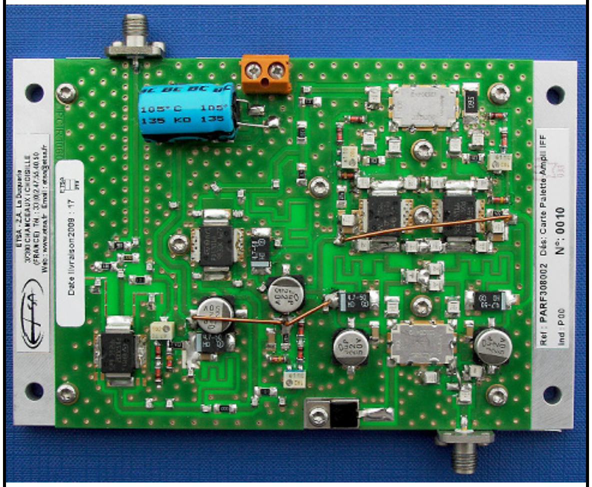
STEVAL-TDR007V1

3 stages 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.

AB-2x57060-1030 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 %

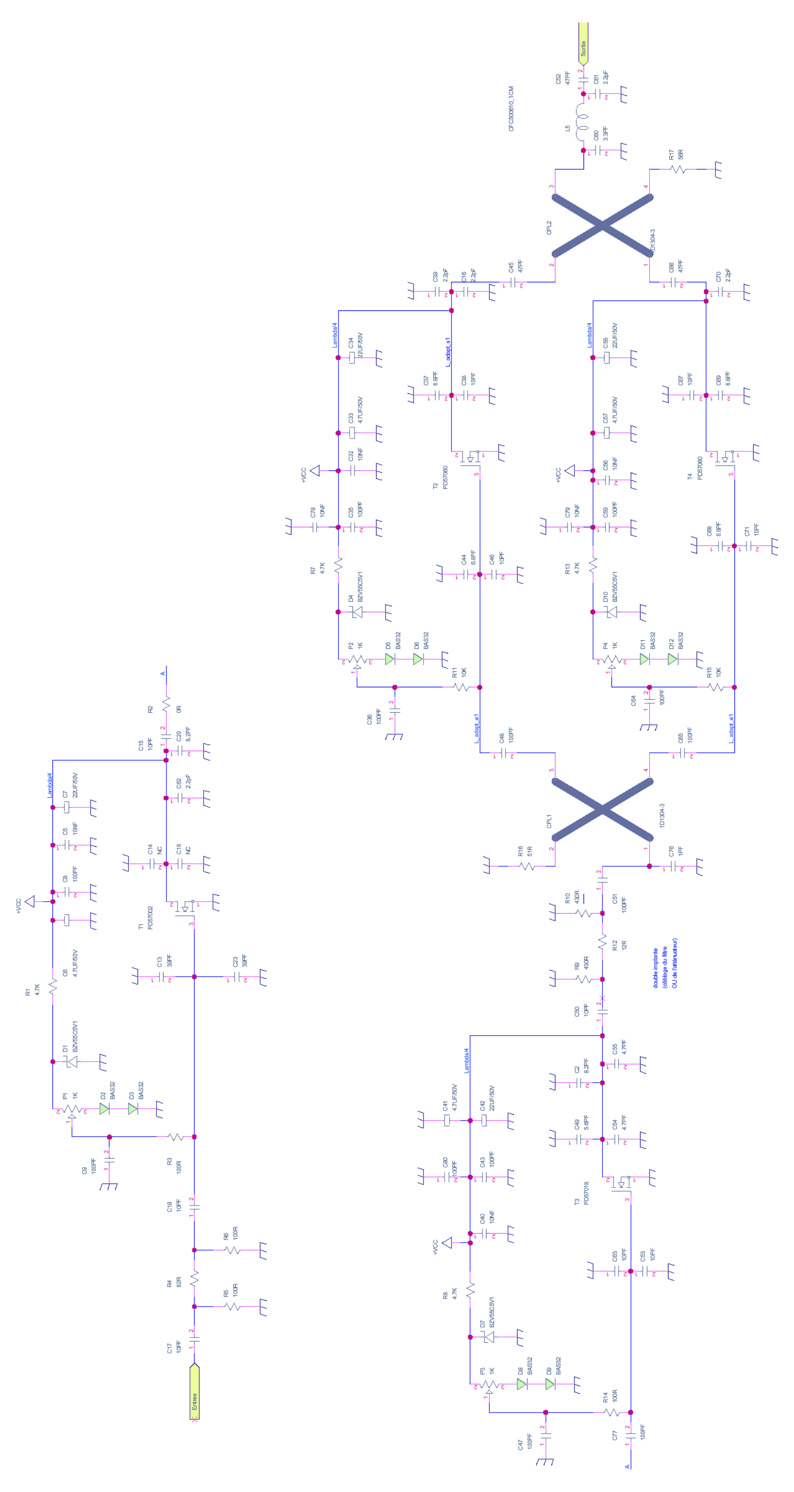
Table 3. **Electrical specification**

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

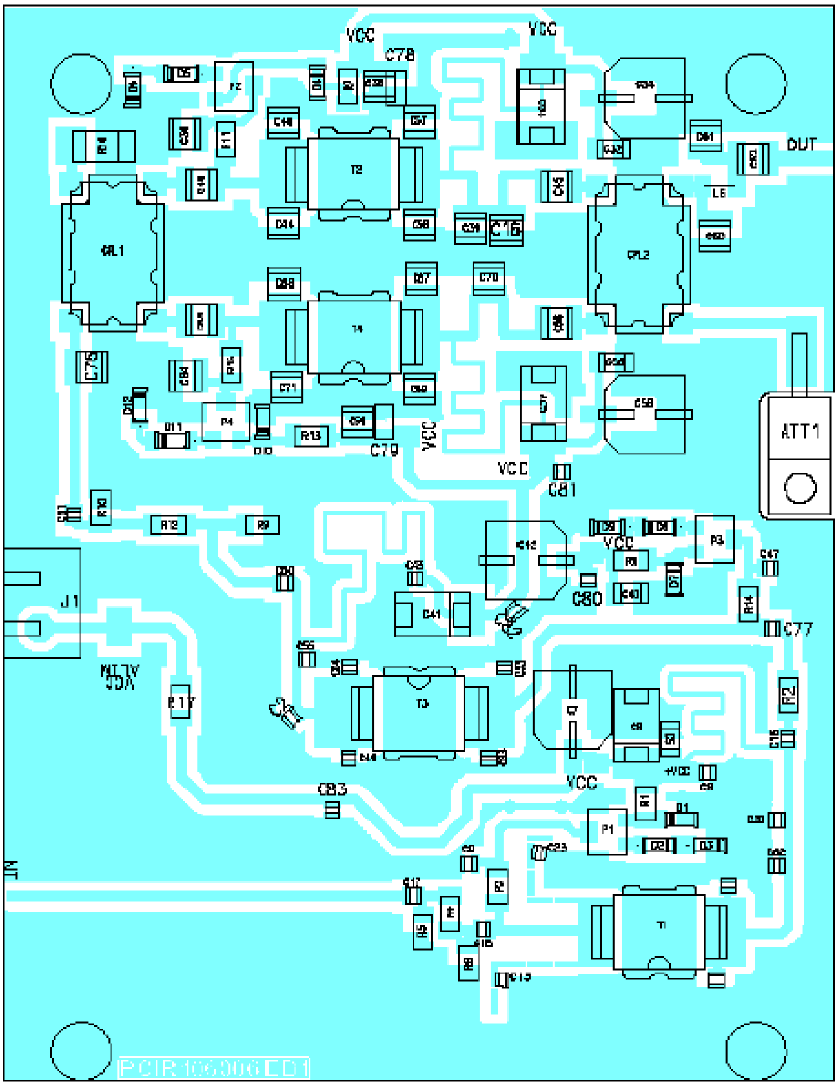
3 Circuit schematic

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 ECOPACK® packages. These packages have a lead-free second level interconnect. The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com

5.1 Mounting indications

Figure 3. PowerSO-10 mounting indications

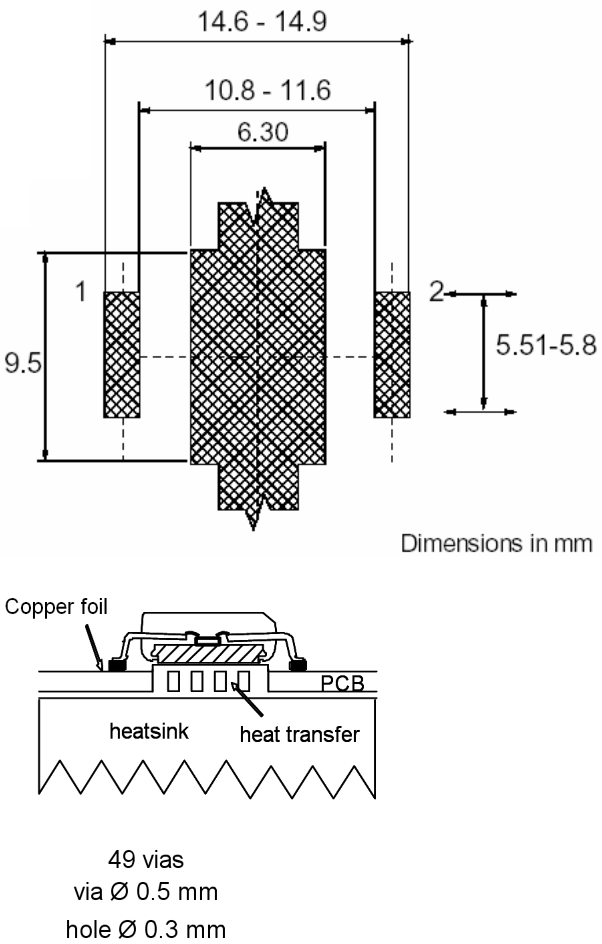


Figure 4. Recommended heat profile / reflow soldering

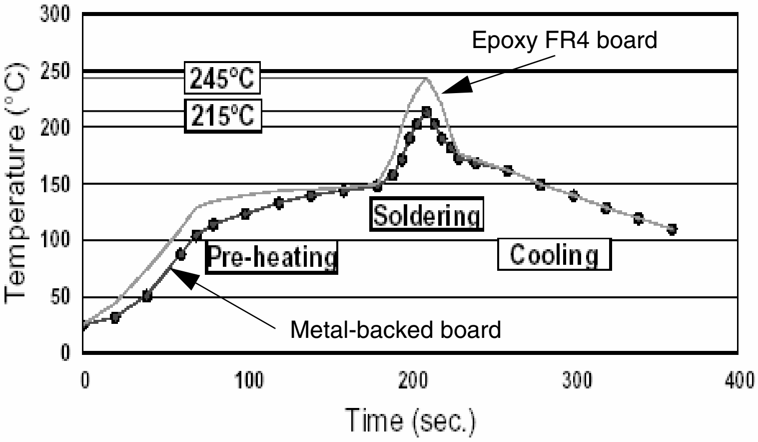
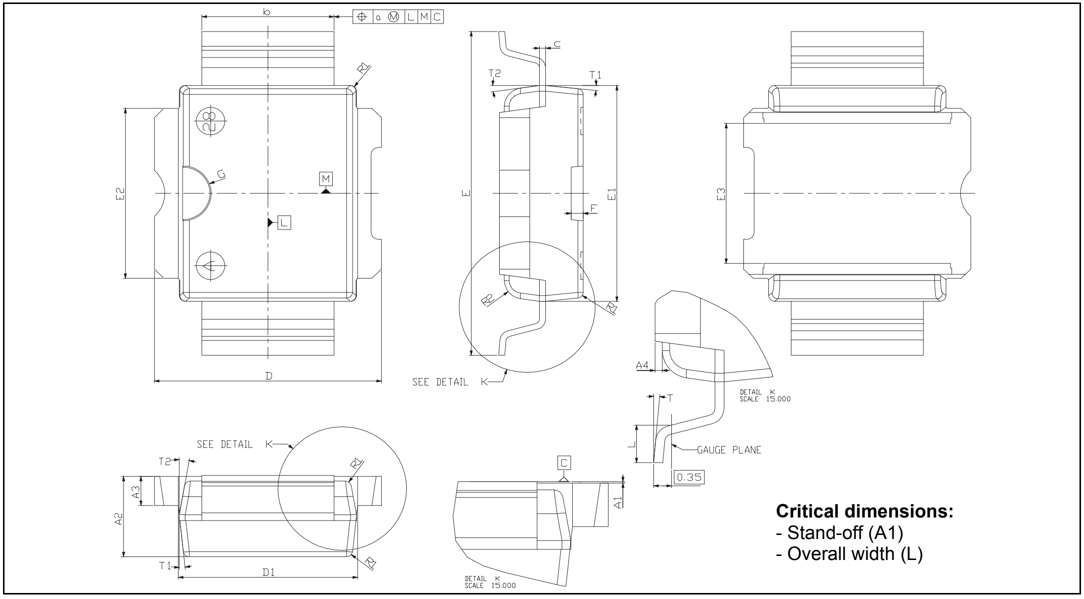


Table 4. PowerSO-10RF formed lead (gull wing) mechanical data

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	

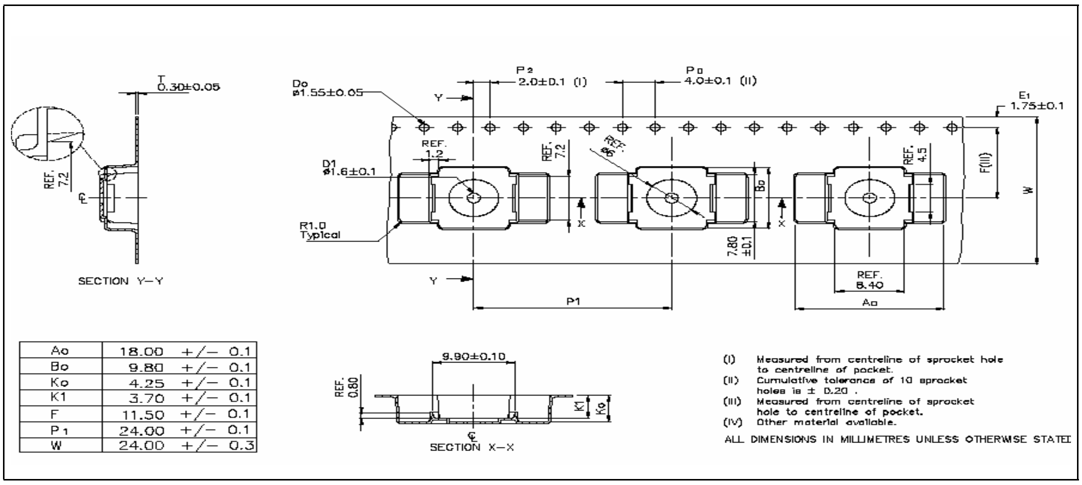
Note: Resin protrusions not included (max value: 0.15 mm per side)

Figure 5. Package dimensions



Critical dimensions:
- Stand-off (A1)
- Overall width (L)

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

(I) Measured from centreline of sprocket hole to centreline of pocket.
(II) Cumulative tolerance of 10 sprocket holes is ± 0.20 .
(III) Measured from centreline of sprocket hole to centreline of pocket.
(IV) Other material available.

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED

6 Revision history

Table 5. Document revision history

Date	Revision	Changes
01-Jul-2008	1	Initial release

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