STEVAL-TDR022V1

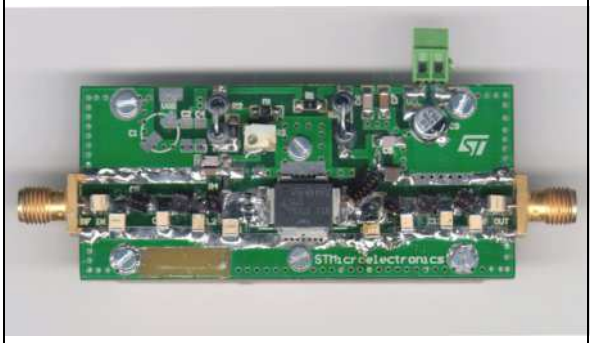
RF power amplifier using the PD85025-E for UHF OFDM and 2-way mobile radios

Features

- Excellent thermal stability
- Frequency: 340 - 520 MHz
- Supply voltage: 15 V
- Output power: 10 WPEP
- Gain: 16.5 dB min.
- IMD3 < -27 dBc at 10 WPEP
- Load mismatch: 20:1
- BeO free amplifier

Description

The STEVAL-TDR022V1 is an demonstration board using PD85025-E LDMOS transistor and designed for UHF OFDM and 2-way mobile radios.



Mechanical specification:
L = 60 mm, W = 30 mm

Table 1. Device summary

Order code
STEVAL-TDR022V1

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1 Electrical characteristics

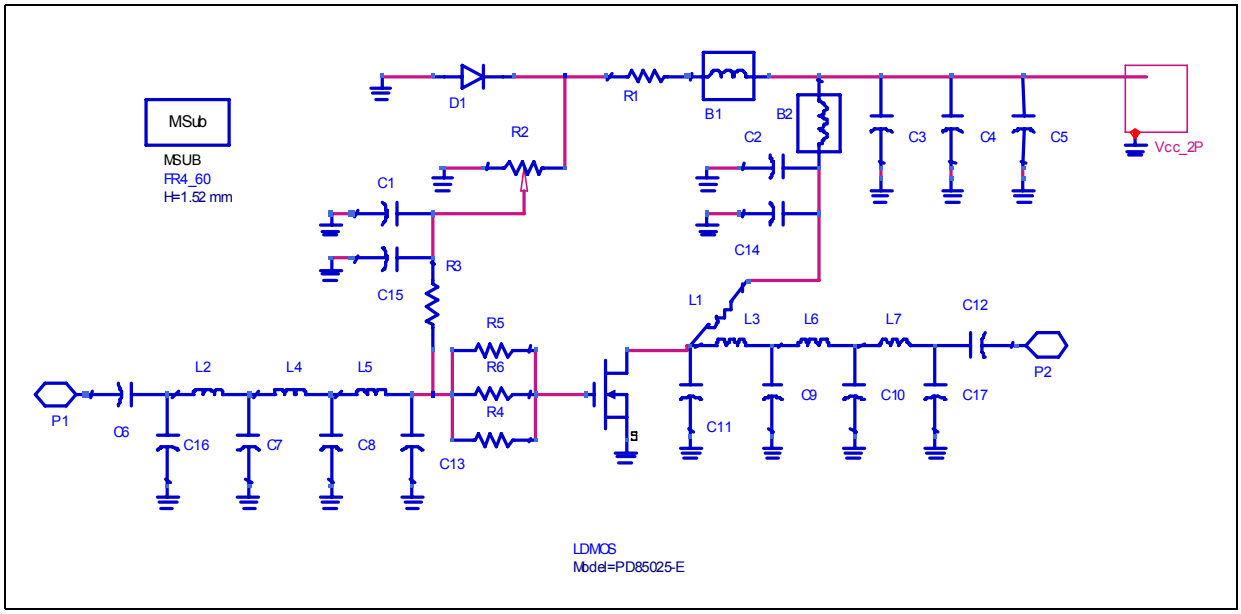
T_A = + 25 °C, V_{DD} = 15 V, I_{dq} = 220 mA

Table 2. Electrical specification

Symbol	Test conditions	Min.	Typ.	Max.	Unit
Freq	Frequency range	340		520	MHz
P_{OUT}	2 Tones test - DF = 600 kHz		10		WPEP
Gain	@ P_{OUT} = 10 WPEP	16.5			dB
I_D	Drain current @ 10W PEP			1.25	A
H2	2^{nd} harmonic @ P_{OUT} = 10 WPEP		-37 / -60		dB
H3	3^{rd} harmonic @ P_{OUT} = 10 WPEP		-60 / -68		dB
VSWR	Load mismatch all phases @ P_{OUT} = 10 W		20:1		

2 Test circuit

Figure 1. Test circuit schematic



3 Circuit layout

Figure 2. Circuit layout

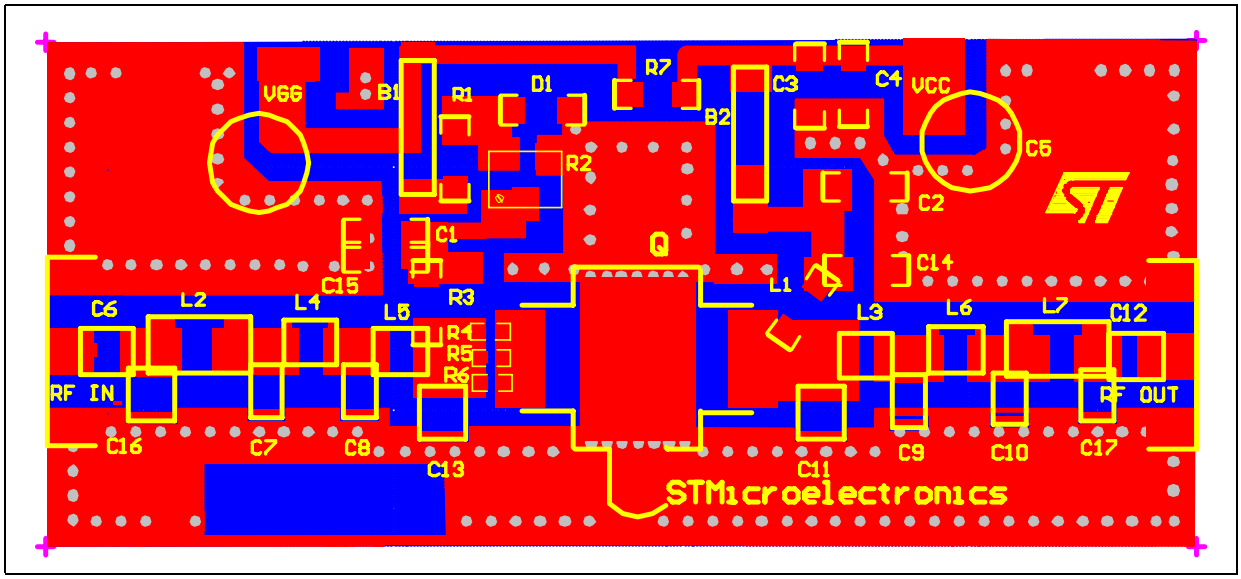


Table 3. Component part list

Component ID	Description	Value	Case size	Manufacturer	Part code
B1	Ferrite bead			Panasonic	EXCELDRC35C
B2	Ferrite bead			Panasonic	EXCELDRC35C
C1, C2	Capacitor	120 pF	1206	Murata	GRM42-6 COG 121J 50_
C3	Capacitor	1 nF	1206	Murata	GRM42-6 COG 102J 50
C4	Capacitor	100 nF	1206	Murata	GRM42-6_X7R 104K 50_
C5	Capacitor	10 µF	SMT	Panasonic	EEVHB1V100P
C6, C12	Capacitor	180 pF	100B	ATC	ATC 100B 181JW
C7	Capacitor	22 pF	100B	ATC	ATC 100B 220JW
C8	Capacitor	47 pF	100B	ATC	ATC 100B 470JW
C9	Capacitor	36 pF	100B	ATC	ATC 100B 360JW
C10	Capacitor	22 pF	100B	ATC	ATC 100B 220JW
C11	Capacitor	47 pF	100B	ATC	ATC 100B 470 JW
C16	Capacitor	6.8 pF	100B	ATC	ATC 100B 6R8BW
C13	Capacitor	51 pF	100B	ATC	ATC 100B 510JW
C14	Capacitor	10 µF		Murata	GRM32NF51E106ZA01B
C15	Capacitor	330 nF	1206	Murata	GRM42-6_X7R 334K 50_
C17	Capacitor	9.1 pF	100B	ATC	ATC 100B 9R1JW
D1	Zener diode	5.1 V	SOD110	Philips	BZX284C5V1
L1	Inductor	22 nH		Coilcraft	B07TJLB

Table 3. Component part list (continued)

Component ID	Description	Value	Case size	Manufacturer	Part code
L2, L7	Inductor	12.5 nH		Coilcraft	A04TJLB
L3, L5	Inductor	2,5 nH		Coilcraft	A01TKLB
L4, L6	Inductor	5 nH		Coilcraft	A02TJLB
R1	Resistor	1 kΩ	1206	Tyco Electronics	01623440-1
R2	Potentiometer	10 kΩ		Bourns Electronics	3214W-1-103E
R3	Resistor	16 Ω	1206	Bourns Electronics	
R7	Resistor	0 Ω	1206	Bourns Electronics	
R4, R5, R6	Resistor	2.2 Ω	603	VISHAY	D11/CRCW0603
Vcc_2P	Connector DC	2 poli	2.54mm	Phoenix Contact	1725656
P1_P2	RF Connector	SMA_Female	Flange solder		1.54 mm
Q	LDMOS	PD85025-E		STMicroelectronics	PD85025-E
Board	FR-4 THk=0.060" 2OZ Cu both sides				

4 Revision history

Table 4. Document revision history

Date	Revision	Changes
11-Oct-2010	1	Initial release

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