



## DB-915-12W

12W / 12V / 875-915 MHz PA using 1x PD55015S  
The LdmoST FAMILY

### General Features

- EXCELLENT THERMAL STABILITY
- COMMON SOURCE CONFIGURATION
- $P_{OUT} = 12W$  WITH 12 dB GAIN OVER 815 - 915 MHz
- 10:1 LOAD VSWR CAPABILITY
- BeO FREE AMPLIFIER

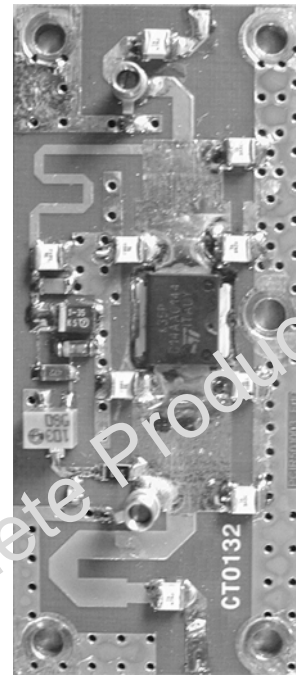
### Description

The DB-915-12W is a common source N-Channel enhancement-mode lateral Field-Effect RF power amplifier designed as booster for GSM-R applications.

The DB-915-12W is designed in cooperation with Européenne de Télécommunications S.A (www.etsa.fr), for high gain and broadband performance operating in common source mode at 12 V, capable of withstanding load mismatch up to 10:1 all phases and with harmonics lower than 30 dBc.

### Order Code

- DB-915-12W



**Mechanical Specification:**  
L=60 mm, W=30 mm, H=10mm

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# 1 Electrical Data

## 1.1 Maximum Ratings

Table 1. Absolute Maximum Ratings

( $T_{CASE} = 25^{\circ}C$ )

Symbol	Parameter	Value	Unit
$V_{DD}$	Supply voltage	18	V
$I_D$	Drain Current	4.5	A
$P_{DISS}$	Power Dissipation	67	W
$T_{CASE}$	Operating Case Temperature	-20 to +85	$^{\circ}C$
$P_{amb}$	Max. Ambient Temperature	+55	$^{\circ}C$

## 2 Electrical Characteristics

( $T_{amb} = +25\text{ }^{\circ}\text{C}$ ,  $V_{dd} = 26\text{ V}$ ,  $I_{dq} = 150\text{ mA}$ )

**Table 2. Electrical Specification**

Symbol	Test Conditions	Min.	Typ.	Max.	Unit
FREQ.	Frequency Range	875		915	MHz
Gain	$P_{OUT} = 12\text{ W}$	11	12		dB
$P_{1dB}$	Over frequency range: 875 - 915 MHz		12		W
Flatness	Over frequency range and @ $P_{OUT} = 12\text{ W}$			+/- 0.5	dB
Flatness	$P_{OUT}$ from 0.1 W to 60 W			1	dB
ND at $P_{1dB}$	$P_{1dB}$	45	50		%
IRTL	Input return Loss $P_{OUT}$ from 0.1 W to 12 W			-6	dB
Harmonic	$P_{OUT} = 12\text{ W}$			-30	dBc
VSWR	Load Mismatch all phases @ $P_{OUT} = 12\text{ W}$	10:1			
Spurious	10:1 VSWR all phases and $P_{OUT}$ from 0.1 to 12 W			-76	dBc
IMD <sub>3</sub>	$P_{OUT} = 12\text{ WPEP}$			-25	dBc

### 3 Typical Performance

Figure 1. Power Gain vs. Frequency

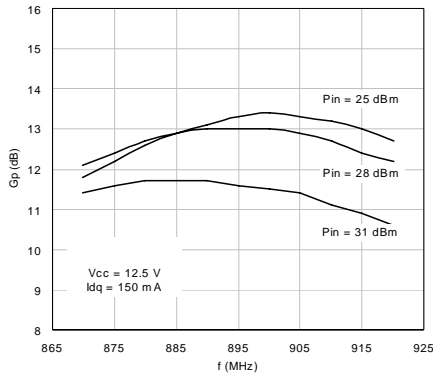


Figure 2. Output Power vs. Frequency

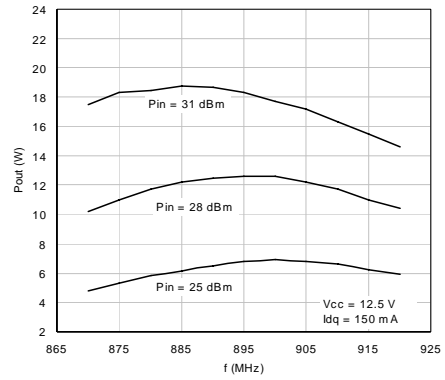


Figure 3. Drain Current vs. Frequency

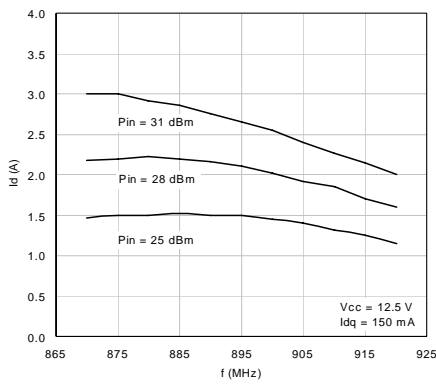


Figure 4. Input Return Loss vs. Frequency

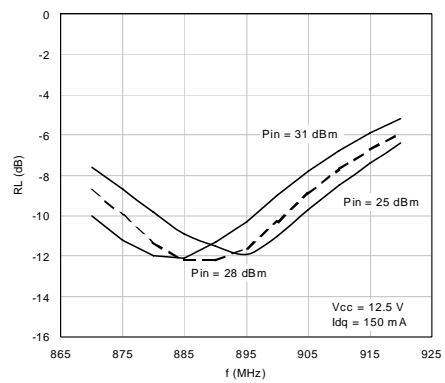
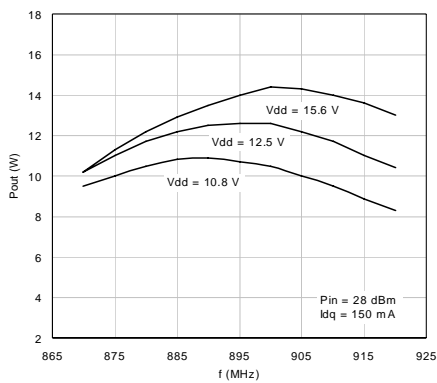


Figure 5. Output Power vs. Frequency



## 4 Test Circuit

Figure 6. Test Fixture Component Layout

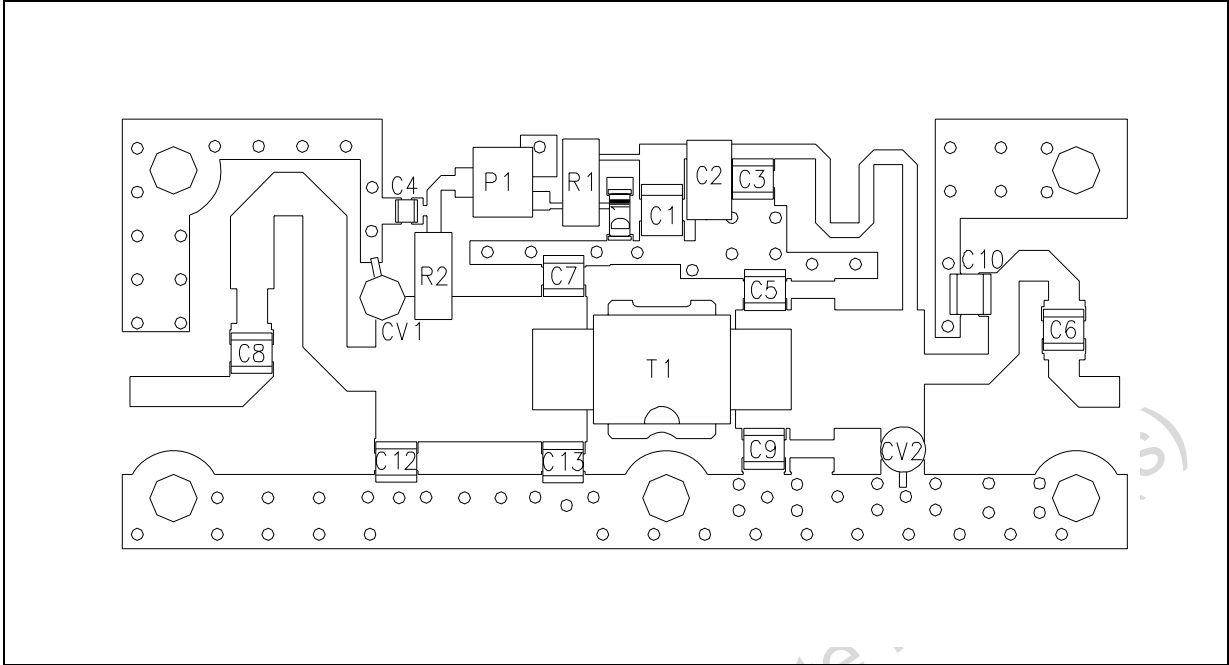
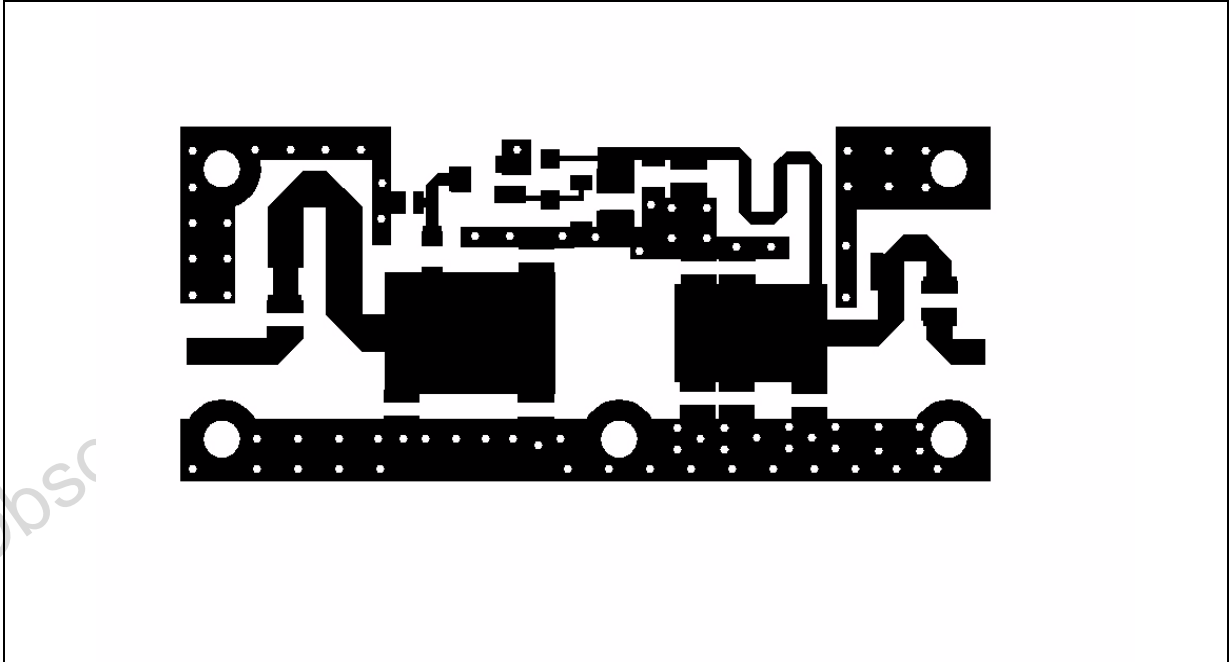


Figure 7. Test Circuit Photomaster



**Table 3. Test Circuit Component Part List**

Ref.	Value	Ref. Manufacturer	Manufacturer
1	RF Power Amplifier Circuit	PCIR501003	ETSA
CV1, CV2	Trim capacitor HQ 0.6-4.5pF 500V	AT27273	TECK
C4	Chip Capacitor HQ 0603 100pF TA 5% 50V	500-CHA-101-JVLE	TEKELEC
C10	Chip Capacitor HQ 5.6pF TB +/- 0,25pF 500V	501-CHB-3R3-CVLE	TEKELEC
C12	Chip Capacitor HQ 4.7pF TB +/- 0,25pF 500V	501-CHB-8R2-CVLE	TEKELEC
C5, C7, C9 C13	Chip Capacitor HQ 10pF TB 5% 500V	501-CHB-100-JVLE	TEKELEC
C6, C8	Chip Capacitor HQ 47pF TB 5% 500V	501-CHB-470-JVLE	TEKELEC
C3	Chip Capacitor HQ 100pF TB 5% 500V	501-CHB-101-JVLE	TEKELEC
C2	Capacitor 1206 100nF 63V X7R 10%	VJ1206Y104KXAT/630	VISHAY
C1	Capacitor CMS tantale 1µF 20% 35V	293D105X9035B	Vishay-Sprague
R1	Resistor CMS 4,7K 1206 1/4W 5%	27597	BOURNS
R2	Resistor CMS 10K 1206 1/4W 5%	27605	BOURNS
P1	Trim resistor CMS cermet 3224W 10K	3224W-103	BOURNS
D1	Zener Diode 5.1V 500mW SOD80	BZV55C5V1	OMNITECH
T1	RF LDMOS Transistor 12V 15W	PD55015S	STMicroélectronics
BOARD	TEFLON-GLASS Er = 2.55, THK = 0.762mm, COPPER FLANGE 2 mm THICKNESS	MX3-30-C1/10C	METCLAD

## 5 Revision History

Date	Revision	Description of Changes
04-Nov-2005	1	First Issue.

Obsolete Product(s) - Obsolete Product(s)



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