



DB-900-80W

RF POWER AMPLIFIER using 2 x PD57045S The *LdmoST* FAMILY

PRELIMINARY DATA

RF POWER AMPLIFIER DEMOBOARD USING
TWO N-CHANNEL ENHANCEMENT-MODE
LATERAL MOSFETS

- EXCELLENT THERMAL STABILITY
- COMMON SOURCE CONFIGURATION
- $P_{OUT} = 80\text{ W}$ min. with 13 dB gain over 869-894 MHz
- 10:1 LOAD VSWR CAPABILITY
- BeO FREE AMPLIFIER

TYPICAL CDMA PERFORMANCE:

IS-95 CD MA / 9ch FWD

$P_{out} = 14\text{W}$

Gain = 13 dB

$N_d = 22\%$

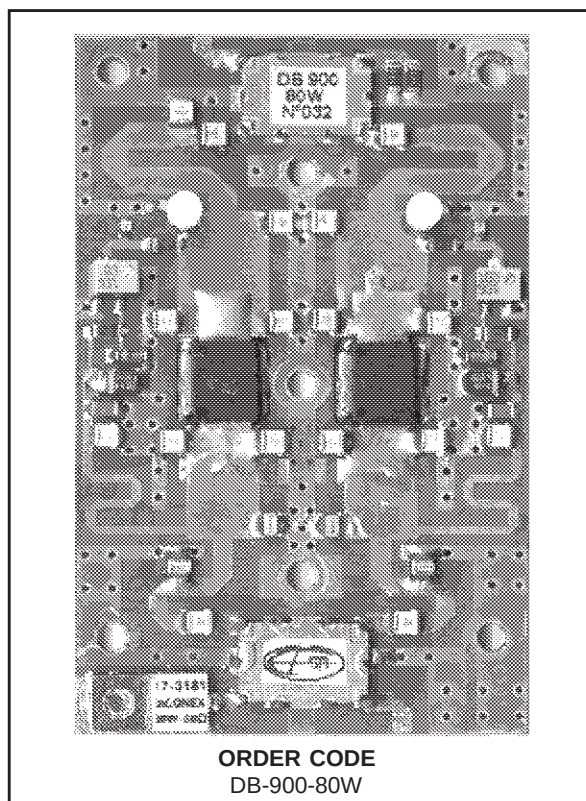
ACPR (750 KHz) : -45 dBc

ACPR (1.98 MHz) : -60 dBc

DESCRIPTION

The DB-900-80W is a common source N-Channel enhancement-mode lateral Field-Effect RF power amplifier designed for IS-54/-136 & IS-95 base station applications.

The DB-900-80W is designed in cooperation with Europeenne de Telecommunications S.A. (www.etsa.rf), for high gain and broadband performance operating in common source mode at 26 V, capable of withstanding load mismatch up to 10:1 all phases and with harmonics lower than 30 dBc.



MECH. SPECIFICATION L=80 mm W=50 mm H=10 mm

ABSOLUTE MAXIMUM RATINGS ($T_{CASE} = 25^{\circ}\text{C}$)

Symbol	Parameter	Value	Unit
V_{DD}	Supply voltage	32	V
I_D	Drain Current	9	A
P_{DISS}	Power dissipation at $T_{case} = +85^{\circ}\text{C}$	135	W
T_{CASE}	Operating Case Temperature	-20 to +85	$^{\circ}\text{C}$
P_{amb}	Max. Ambient Temperature	+55	$^{\circ}\text{C}$

DB-900-80W**ELECTRICAL SPECIFICATION ($T_{amb} = +25^{\circ}\text{C}$, $V_{dd} = 26\text{V}$, $I_{dq} = 2 \times 200 \text{ mA}$)**

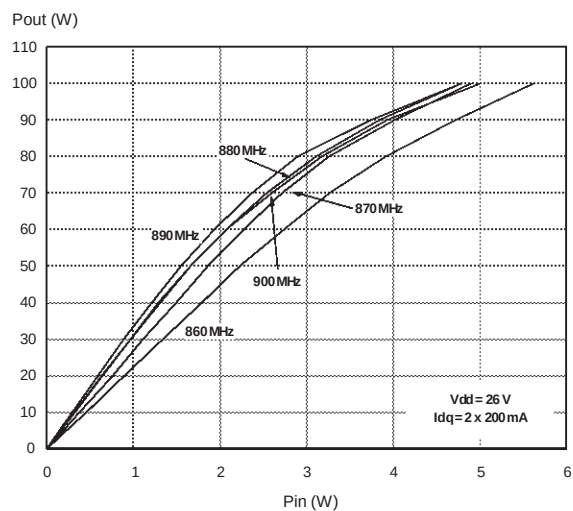
Symbol	Test Conditions	Min.	Typ.	Max.	Unit
FREQ.	Frequency Range	869		894	MHz
Gain	$P_{OUT} = 80 \text{ W}$	13	14		dB
P_{1dB}	Over frequency range: 869 - 894 MHz	80	90		W
Flatness	Over frequency range and @ $P_{OUT} = 80 \text{ W}$			+/- 0.5	dB
Flatness	P_{OUT} from 0.1W to 80 W			1	dB
ND at P_{1dB}	P_{1dB}	45	50		%
IRTL	Input return Loss P_{OUT} from 0.1W to 80 W		-20	-15	dB
Harmonic	$P_{OUT} = 80 \text{ W}$		-40	-30	dBc
VSWR	Load Mismatch all phases @ $P_{OUT} = 80 \text{ W}$	10:1			
Spurious	10:1 VSWR all phases and P_{OUT} from 0.1 to 80W			-76	dBc
IMD ₃	$P_{OUT} = 80 \text{ WPEP}$			-25	dBc

TYPICAL CDMA PERFORMANCE IS 95 / 9ch FWD ($V_{dd} = 26\text{V}$, $I_{dq} = 300\text{mA}$)

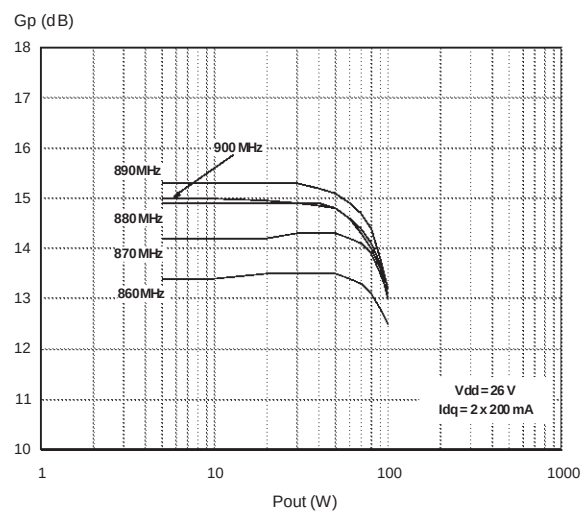
Frequency	Pout CH PWR	Pin CH PWR	Pout CH PWR	ACPR -750 KHz	ACPR +750 KHz	ACPR -1.98 MHz	ACPR +1.98 MHz	I _{total}	Nd
(MHz)	(W)	(dBm)	(dBm)	(dBc)	(dBc)	(dBc)	(dBc)	(A)	(%)
865	0.63	16.3	28.0	50.5	51.5	71	70	0.64	3.79
875	0.63	15.7	28.0	52.0	53.0	71	71	0.61	3.98
885	0.63	15.3	28.0	54.0	55.0	71	71	0.60	4.04
895	0.63	14.9	28.0	55.0	54.5	72	72	0.58	4.18
865	3.98	23.3	36.0	49.0	51.0	68.0	68.0	1.42	10.78
875	3.98	23.0	36.0	49.5	51.5	68.0	68.0	1.37	11.18
885	3.98	22.6	36.0	52.0	54.0	69.0	69.0	1.32	11.60
895	3.98	22.3	36.0	52.0	54.0	70.0	70.0	1.26	12.15
865	15.85	28.9	42.0	45	45	63	63	2.76	22.09
875	14.79	28.3	41.7	45	45	64	64	2.59	21.96
885	14.13	28.2	41.5	45	45	65	65	2.50	21.73
895	14.79	28.0	41.7	45	45	66	66	2.41	23.61

TYPICAL PERFORMANCE

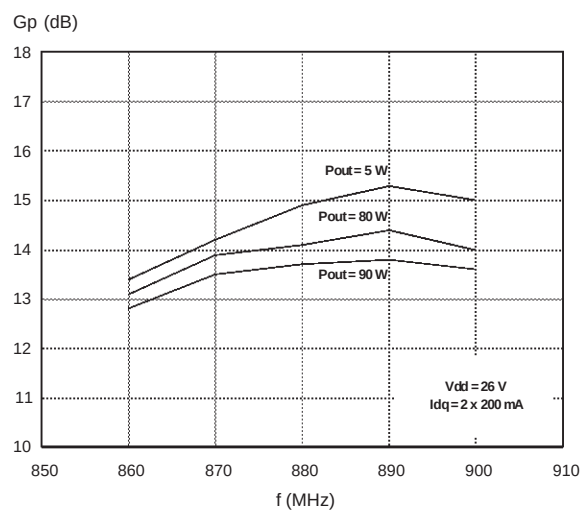
Output Power vs. Input Power



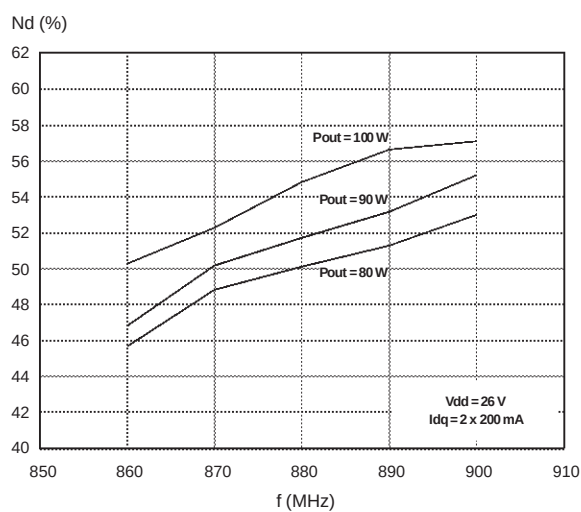
Power Gain vs. Input Power



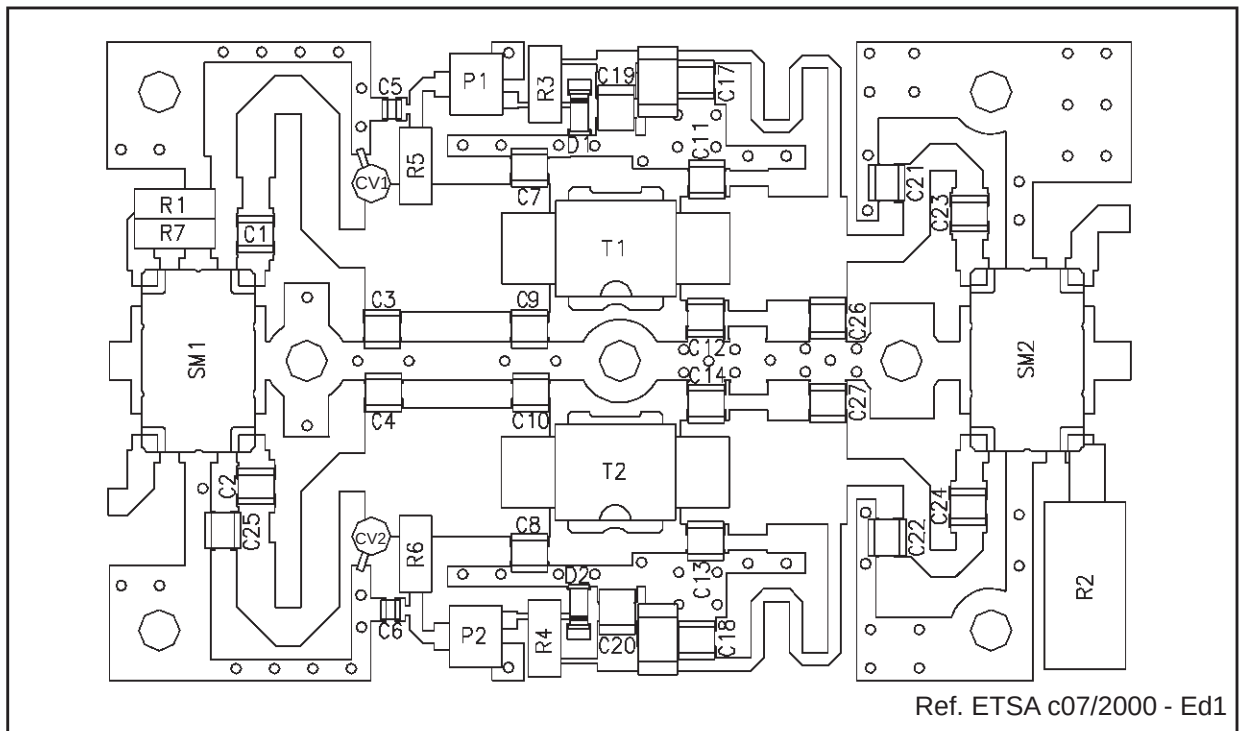
Power Gain vs. Frequency



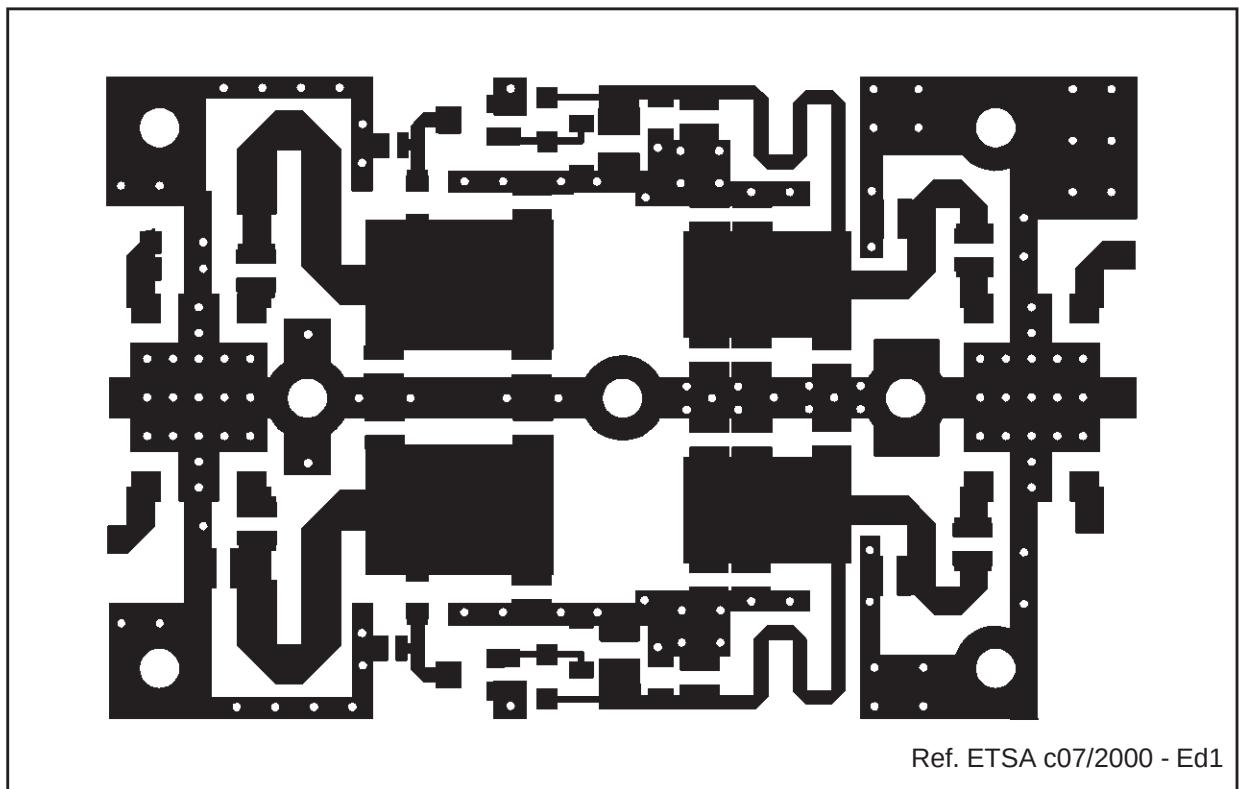
Efficiency vs. Frequency



TEST FIXTURE COMPONENT LAYOUT



TEST CIRCUIT PHOTOMASTER



TEST CIRCUIT COMPONENT PART LIST

COMPONENT	DESCRIPTION
T1, T2	PD57045S TRANSISTOR
C1, C2, C23, C24	47pF - 500V CERAMIC CHIP CAPACITOR
C3, C4	4.7pF - 500V CERAMIC CHIP CAPACITOR
C5, C6, C17, C18	100pF - 500V CERAMIC CHIP CAPACITOR
C7, C8, C9, C10, C11, C12, C13, C14	10pF - 500V CERAMIC CHIP CAPACITOR
C15, C16	100nF - 63V CERAMIC CHIP CAPACITOR
C19, C20	1 μ F / 35V ELECTROLYTIC CAPACITOR
C21, C22	5.6pF - 500V CERAMIC CHIP CAPACITOR
C26, C27	6.8pF - 500V CERAMIC CHIP CAPACITOR
C25	0.5pF - 500V CERAMIC CHIP CAPACITOR
CV1, CV2	ADJUSTABLE CAPACITOR 0.6 - 4.5pF / 500V
P1, P2	10K Ohms MULTITURN POTENTIOMETER
R1,R7	100 Ohms 1/4W 1206 SMD CHIP RESISTOR
R2	50 Ohms 30W - 4GHz LOAD
R3, R4	4.7K Ohms 1/4W 1206 SMD CHIP RESISTOR
R5, R6	10K Ohms 1/4W 1206 SMD CHIP RESISTOR
D1, D2	ZENER DIODE 5V - 500 mW SOD80
SM1, SM2	90° SMD HYBRID COUPLER ANAREN Xinger 1304-3
BOARD	METCLAD MX3-30-C1/10C THK 0.762 mm Cu 35 μ
SUBSTRATE	TEFLON-GLASS Er = 2.55
BACK SIDE	COPPER FLANGE 2 mm THICKNESS
CERAMIC CHIP CAPACITORS	ATC100B or EQUIVALENT

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