DB-900-100W

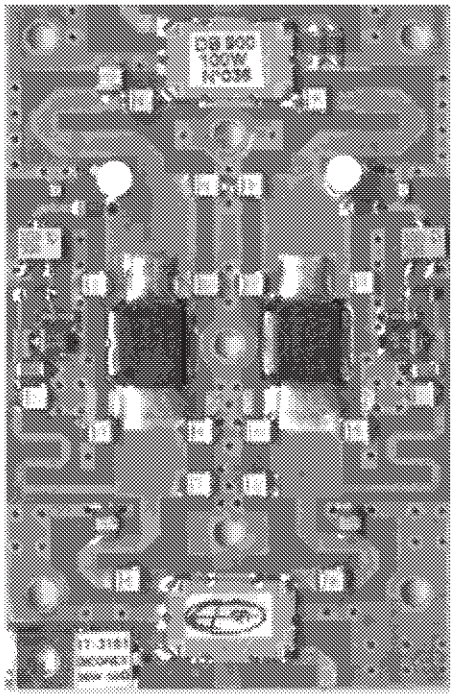
RF POWER AMPLIFIER using 2 x PD57060S
The *LdmoST* FAMILY

PRELIMINARY DATA

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

- EXCELLENT THERMAL STABILITY
- COMMON SOURCE CONFIGURATION
- P_{OUT} = 100 W min. with 13 dB gain over 869-894 MHz
- 10:1 LOAD VSWR CAPABILITY
- BeO FREE AMPLIFIER

TYPICAL CDMA PERFORMANCE:
IS-95 CDMA / 9ch FWD
Pout = 20W
Gain = 13 dB
Nd = 22%
ACPR (750 KHz) : -45 dBc
ACPR (1.98 MHz) : -60 dBc



ORDER CODE
DB-900-100W

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

DESCRIPTION

The DB-900-100W 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-900-100W is designed in cooperation with Europeenne de Telecomunications 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.

ABSOLUTE MAXIMUM RATINGS (T_{CASE} = 25°C)

Symbol	Parameter	Value	Unit
V_{DD}	Supply voltage	32	V
I_D	Drain Current	12	A
P_{DISS}	Power dissipation at Tcase = +85°C	145	W
T_{CASE}	Operating Case Temperature	-20 to +85	°C
P_{amb}	Max. Ambient Temperature	+55	°C

ELECTRICAL SPECIFICATION (T_{amb} = +25°C, Vdd = 26V, Idq = 2 x 200 mA)

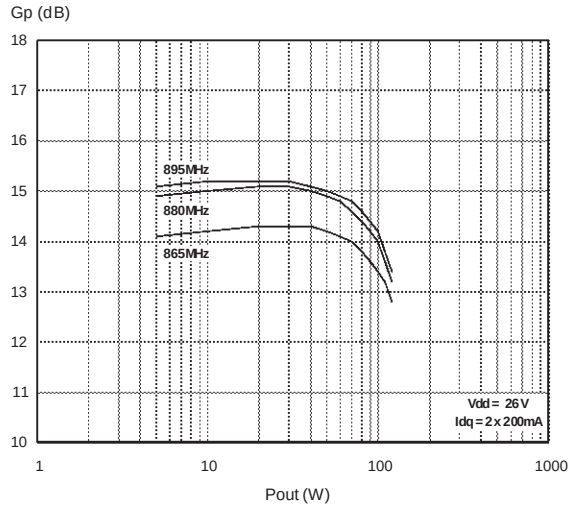
Symbol	Test Conditions	Min.	Typ.	Max.	Unit
FREQ.	Frequency Range	869		894	MHz
Gain	P_{OUT} = 100 W	12.5	13		dB
P_{1dB}	Over frequency range: 869 - 894 MHz	100			W
Flatness	Over frequency range and @ P_{OUT} = 100 W			+/- 0.5	dB
Flatness	P_{OUT} from 0.1W to 100 W			1	dB
ND at P_{1dB}	P_{1dB}	40	45		%
IRTL	Input return Loss P_{OUT} from 0.1W to 100 W		-20	-15	dB
Harmonic	P_{OUT} = 100 W		-40	-30	dBc
VSWR	Load Mismatch all phases @ P_{OUT} = 100 W	10:1			
Spurious	10:1 VSWR all phases and P_{OUT} from 0.1 to 100W			-76	dBc
IMD_3	P_{OUT} = 100 WPEP			-25	dBc

TYPICAL CDMA PERFORMANCE IS 95 / 9ch FWD (Vdd = 26V, Idq = 350mA)

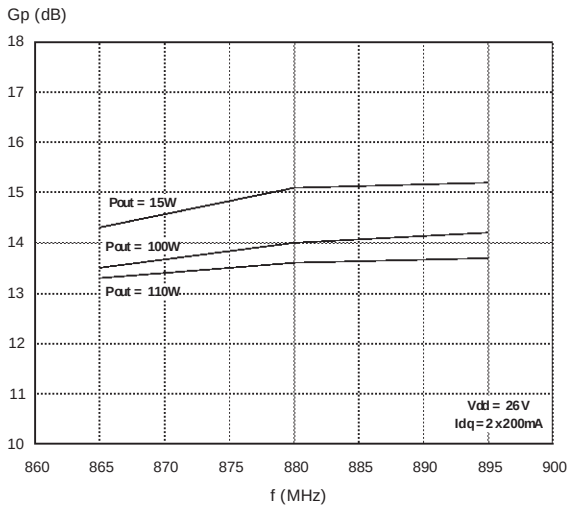
Frequency	Pout CH PWR	Pout CH PWR	ACPR -750 KHz	ACPR +750 KHz	ACPR -1.98 MHz	ACPR +1.98 MHz	I total	Nd
(MHz)	*(W)*	*(dBm)*	*(dBc)*	*(dBc)*	*(dBc)*	*(dBc)*	*(A)*	*(%)*
865	10	40.0	53.4	50.8	67.0	67.0	2.5	15.4
880	10	40.0	54.2	51.7	68.6	68.3		
895	10	40.0	53.2	51.7	69.0	69.0		
865	20	43.0	45.0	45.0	64.0	64.0	3.5	22.0
880	20	43.0	45.1	45.4	64.7	64.7		
895	20	43.0	45.2	45.7	66.8	66.5		

TYPICAL PERFORMANCE

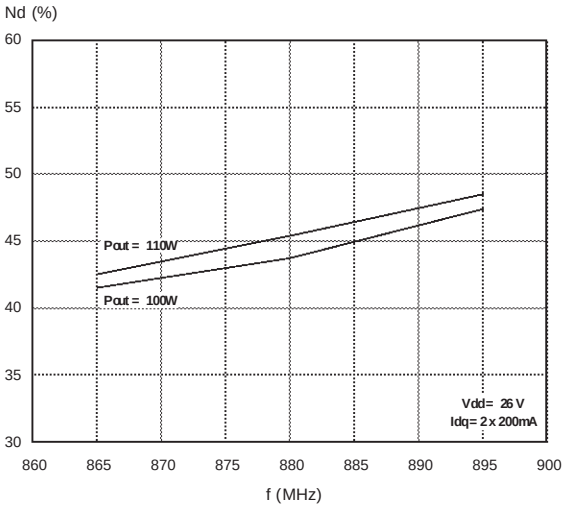
Power Gain vs Output Power



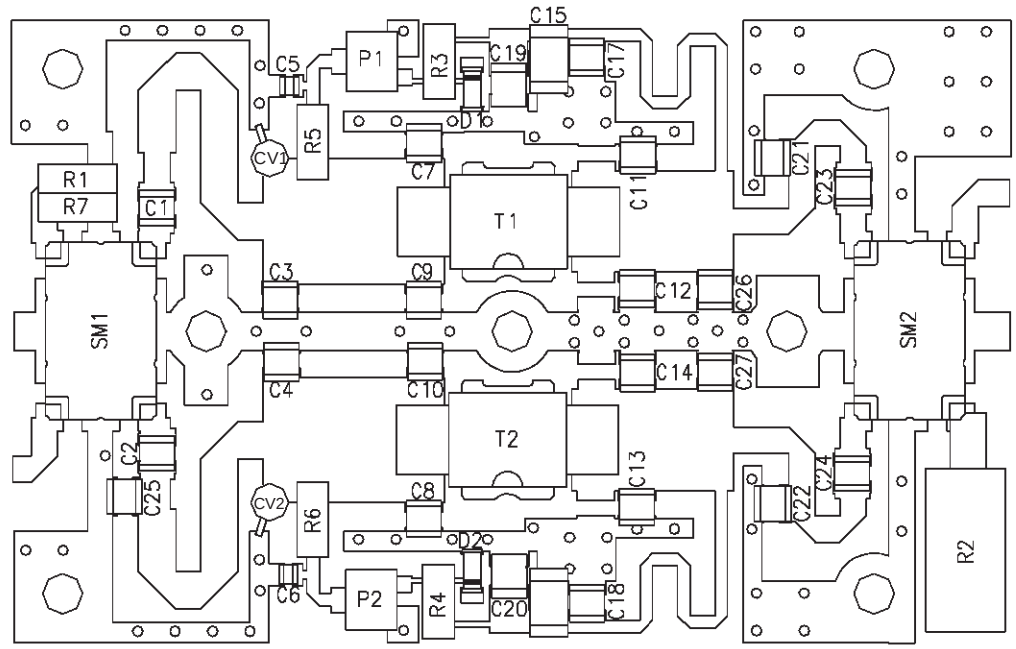
Power Gain vs Frequency



Efficiency vs Frequency

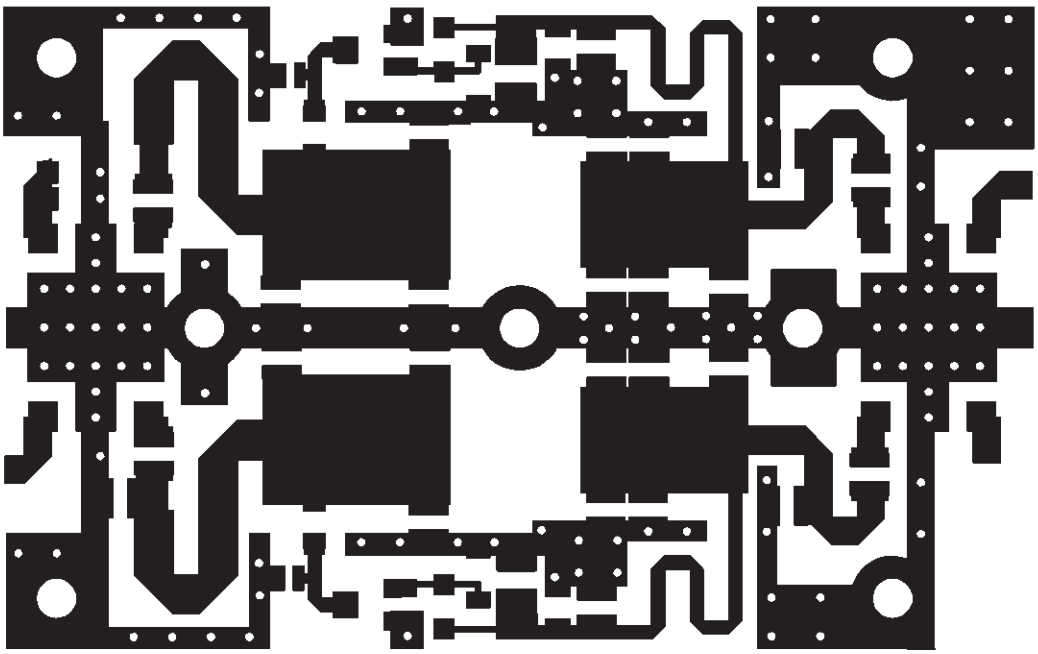


TEST FIXTURE COMPONENT LAYOUT



Ref. ETSA c07/2000 - Ed1

TEST CIRCUIT PHOTOMASTER



Ref. ETSA c07/2000 - Ed1

TEST CIRCUIT COMPONENT PART LIST

COMPONENT	DESCRIPTION
T1, T2	PD57060S TRANSISTOR
C1, C2, C23, C24	47pF - 500V CERAMIC CHIP CAPACITOR
C3, C4, C12, C14	6.8pF - 500V CERAMIC CHIP CAPACITOR
C5, C6, C17, C18	100pF - 500V CERAMIC CHIP CAPACITOR
C7, C8, C9, C10, C11, C13	10pF - 500V CERAMIC CHIP CAPACITOR
C15, C16	100nF - 63V CERAMIC CHIP CAPACITOR
C19, C20	1µF / 35V ELECTROLYTIC CAPACITOR
C26, C27	3.3pF - 500V CERAMIC CHIP CAPACITOR
C21, C22	4.7pF - 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 35µ
SUBSTRATE	TEFLON-GLASS Er = 2.55
BACK SIDE	COPPER FLANGE 2 mm THICKNESS
CERAMIC CHIP CAPACITORS	ATC100B or EQUIVALENT