



DB-960-90W

90W / 26V / 925-960 MHz PA using 2x PD57060S

The *LdmosST* FAMILY

PRELIMINARY DATA

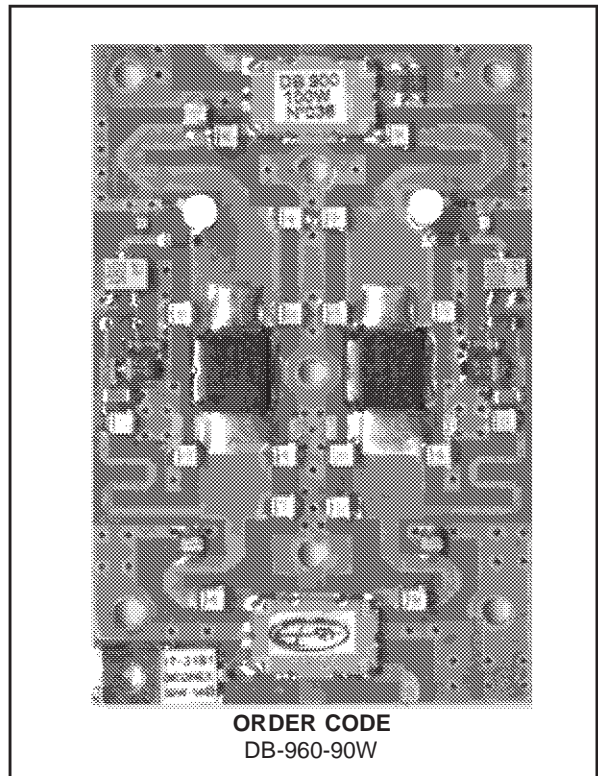
N-CHANNEL ENHANCEMENT-MODE LATERAL MOSFETs

- EXCELLENT THERMAL STABILITY
- COMMON SOURCE CONFIGURATION
- $P_{OUT} = 90$ W min. with 13 dB gain over 925-960 MHz
- 10:1 LOAD VSWR CAPABILITY
- BeO FREE AMPLIFIER.

DESCRIPTION

The DB-960-90W is a common source N-Channel enhancement-mode lateral Field-Effect RF power amplifier designed for GSM/GPRS/EDGE base station applications.

The DB-960-90W is designed in cooperation with Europeenne de Telecommunications S.A. (www.et-sa.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.



MECHANICAL 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 | 12 | A |
| P_{DISS} | Power Diss. at $T_{case} = +85^{\circ}\text{C}$ | 145 | W |
| T_{CASE} | Operating Case Temperature | -20 to +85 | $^{\circ}\text{C}$ |
| P_{amb} | Max. Ambient Temperature | +55 | $^{\circ}\text{C}$ |

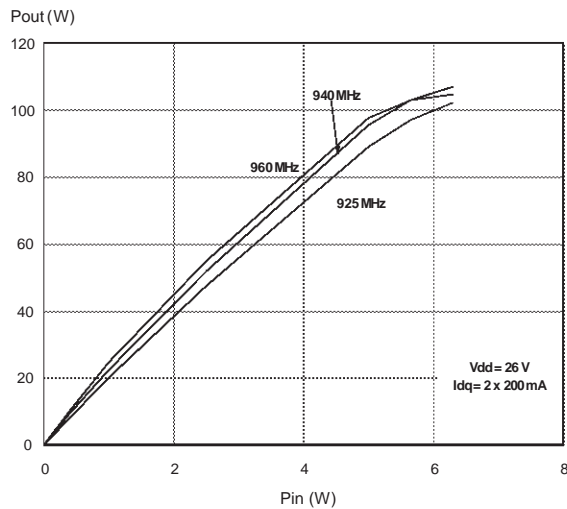
DB-960-90W

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

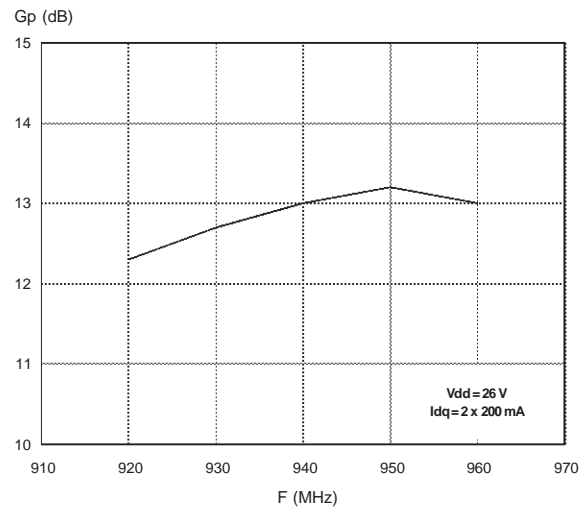
| Symbol | Test Conditions | Min. | Typ. | Max. | Unit |
|------------------|---|------|------|---------|------|
| FREQ. | Frequency Range | 925 | | 960 | MHz |
| Gain | $P_{OUT} = 90 \text{ W}$ | 12 | 13 | | dB |
| P_{1dB} | Over frequency range: 925 - 960 MHz | 90 | 100 | | W |
| Flatness | Over frequency range and @ $P_{OUT} = 90 \text{ W}$ | | | +/- 0.5 | dB |
| Flatness | P_{OUT} from 0.1W to 90 W | | | 1 | dB |
| ND at P_{1dB} | P_{1dB} | 40 | 45 | | % |
| IRTL | Input return Loss P_{OUT} from 0.1W to 90 W | | -20 | -15 | dB |
| Harmonic | $P_{OUT} = 90 \text{ W}$ | | | -30 | dBc |
| VSWR | Load Mismatch all phases @ $P_{OUT} = 90 \text{ W}$ | 10:1 | | | |
| Spurious | 10:1 VSWR all phases and P_{OUT} from 0.1 to 90 W | | | -76 | dBc |
| IMD ₃ | $P_{OUT} = 90 \text{ WPEP}$ | | | -25 | dBc |

TYPICAL PERFORMANCE

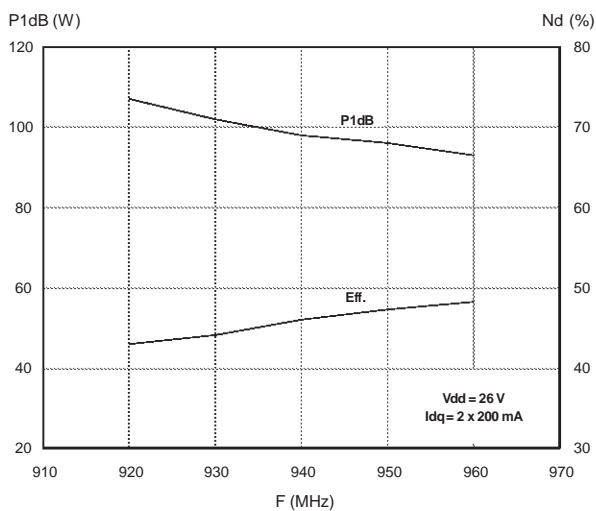
Output Power vs. Input Power



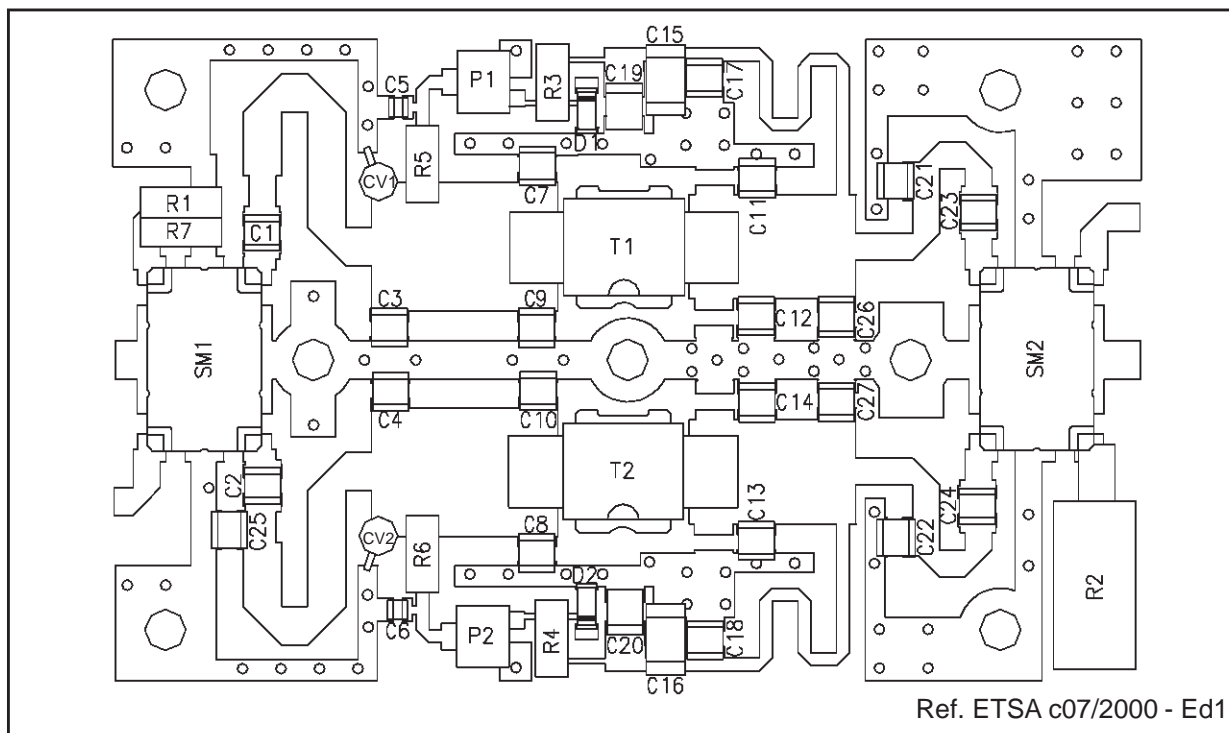
Power Gain vs. Frequency ($P_{out} = 90\text{W}$)



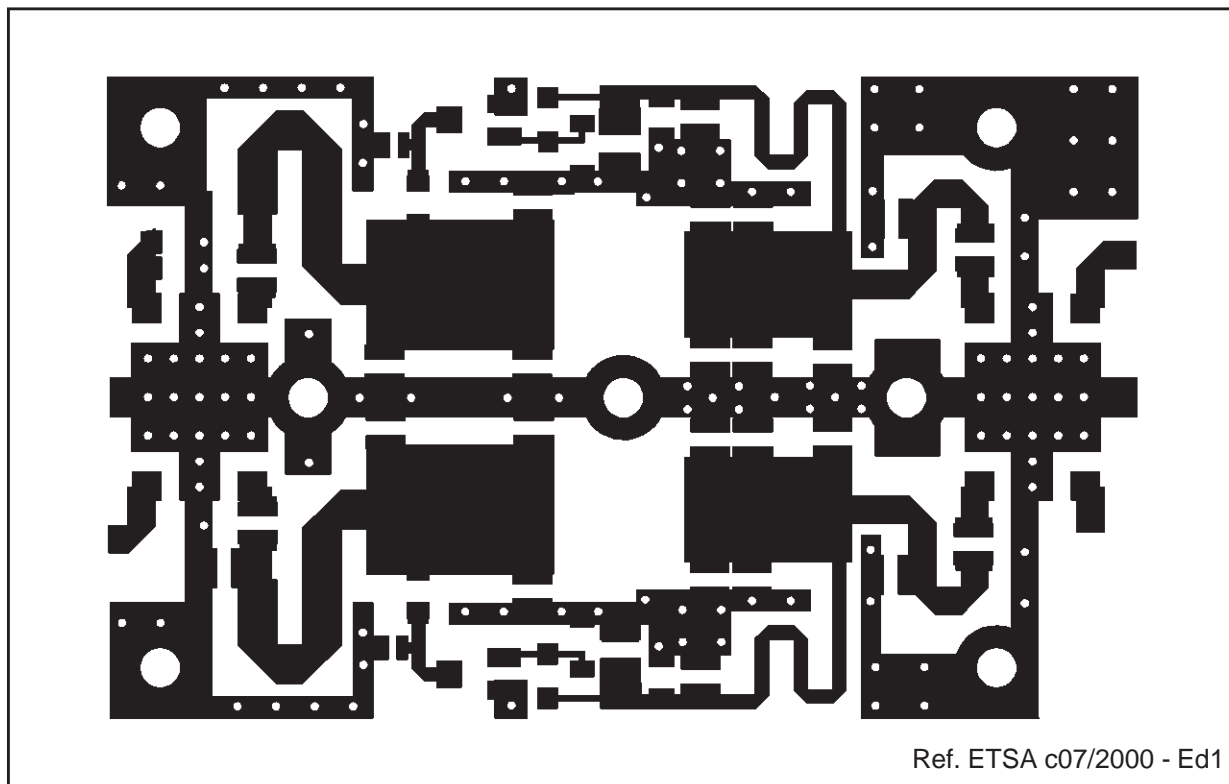
Output Power and Efficiency vs. Frequency



TEST FIXTURE COMPONENT LAYOUT



TEST CIRCUIT PHOTOMASTER



TEST CIRCUIT COMPONENT PART LIST

| COMPONENT | DESCRIPTION |
|---------------------------|---|
| T1, T2 | PD57060S TRANSISTOR |
| C1, C2, C23, C24 | 47pF - 500V CERAMIC CHIP CAPACITOR |
| C3, C4 | 3.3pF - 500V CERAMIC CHIP CAPACITOR |
| C5, C6, C17, C18 | 100pF - 500V CERAMIC CHIP CAPACITOR |
| C7, C8, C9, C10, C11, C13 | 10pF - 500V CERAMIC CHIP CAPACITOR |
| C12, C14 | 6.8pF - 500V CERAMIC CHIP CAPACITOR |
| C15, C16 | 100nF - 63V CERAMIC CHIP CAPACITOR |
| C19, C20 | 1μF / 35V ELECTROLYTIC CAPACITOR |
| C21, C22, C26, C27 | 3.3pF - 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 |

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