



## DB-960-70W

### RF POWER AMPLIFIER using 2 x PD57045S The *LdmosST* FAMILY

PRELIMINARY DATA

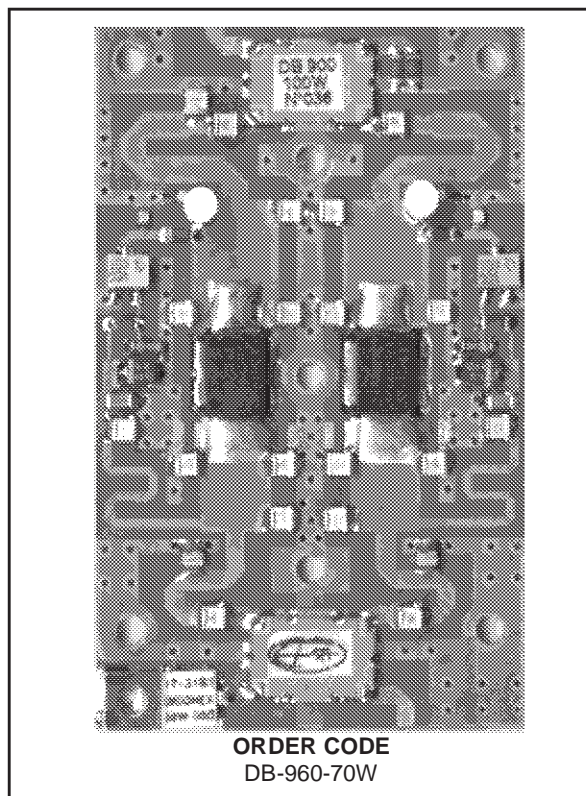
#### N-CHANNEL ENHANCEMENT-MODE LATERAL MOSFETs

- EXCELLENT THERMAL STABILITY
- COMMON SOURCE CONFIGURATION
- $P_{OUT} = 70\text{ W}$  min. with 13 dB gain over 925-960 MHz
- 10:1 LOAD VSWR CAPABILITY
- BeO FREE AMPLIFIER.

#### DESCRIPTION

The DB-960-70W is a common source N-Channel enhancement-mode lateral Field-Effect RF power amplifier designed for GSM & E-GSM base station applications.

The DB-960-70W is designed in cooperation with Européenne de Télécommunications S.A ([www.etsa.fr](http://www.etsa.fr)), 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	9	A
$P_{DISS}$	Power Dissipation	135	W
$T_{CASE}$	Operating Case Temperature	-20 to +85	$^{\circ}\text{C}$
$P_{amb}$	Max. Ambient Temperature	+55	$^{\circ}\text{C}$

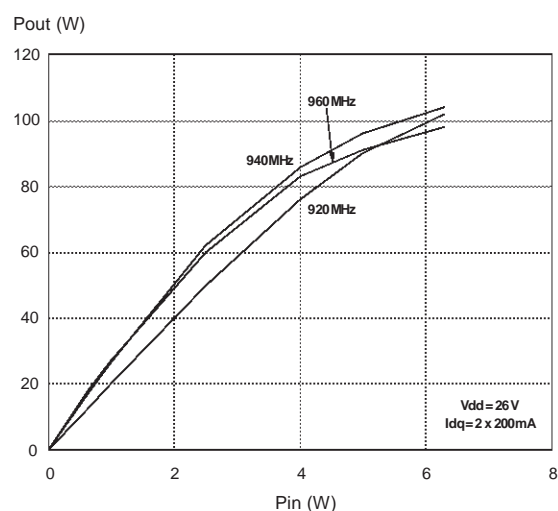
## DB-960-70W

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

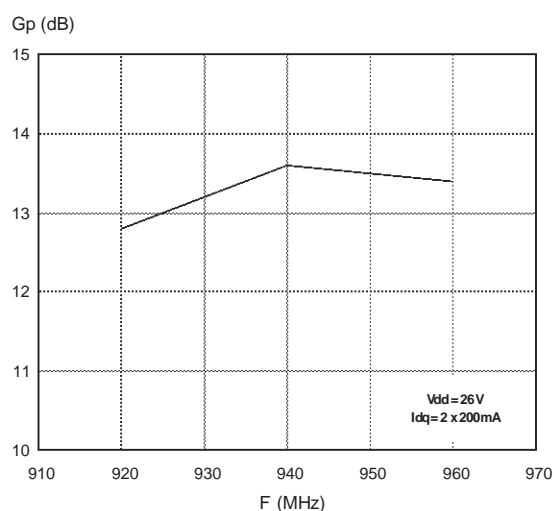
Symbol	Test Conditions	Min.	Typ.	Max.	Unit
FREQ.	Frequency Range	925		960	MHz
Gain	$P_{OUT} = 75\text{ W}$	12.5	13		dB
$P_{1dB}$	Over frequency range: 925 - 960 MHz	70	75		W
Flatness	Over frequency range and @ $P_{OUT} = 75\text{ W}$			+/- 0.5	dB
Flatness	$P_{OUT}$ from 0.1W to 75W			1	dB
ND at $P_{1dB}$	$P_{1dB}$	45	50		%
IRTL	Input return Loss $P_{OUT}$ from 0.1W to 75W		-20	-15	dB
Harmonic	$P_{OUT} = 75\text{ W}$		-40	-30	dBc
VSWR	Load Mismatch all phases @ $P_{OUT} = 75\text{ W}$	10:1			
Spurious	10:1 VSWR all phases and $P_{OUT}$ from 0.1 to 75W			-76	dBc
IMD <sub>3</sub>	$P_{OUT} = 75\text{ WPEP}$			-25	dBc

### TYPICAL PERFORMANCE

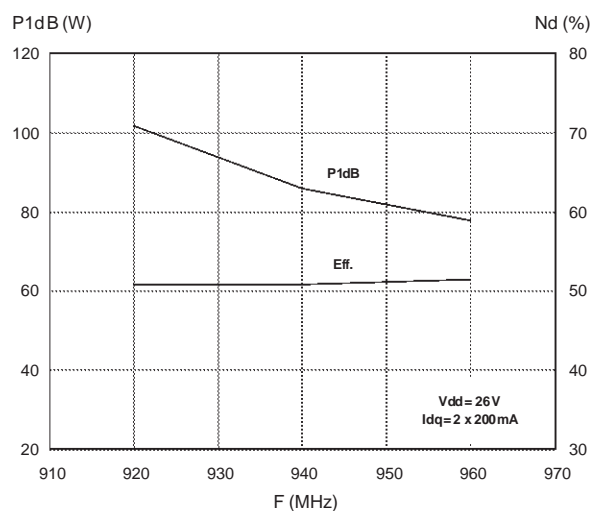
#### Output Power versus Input Power



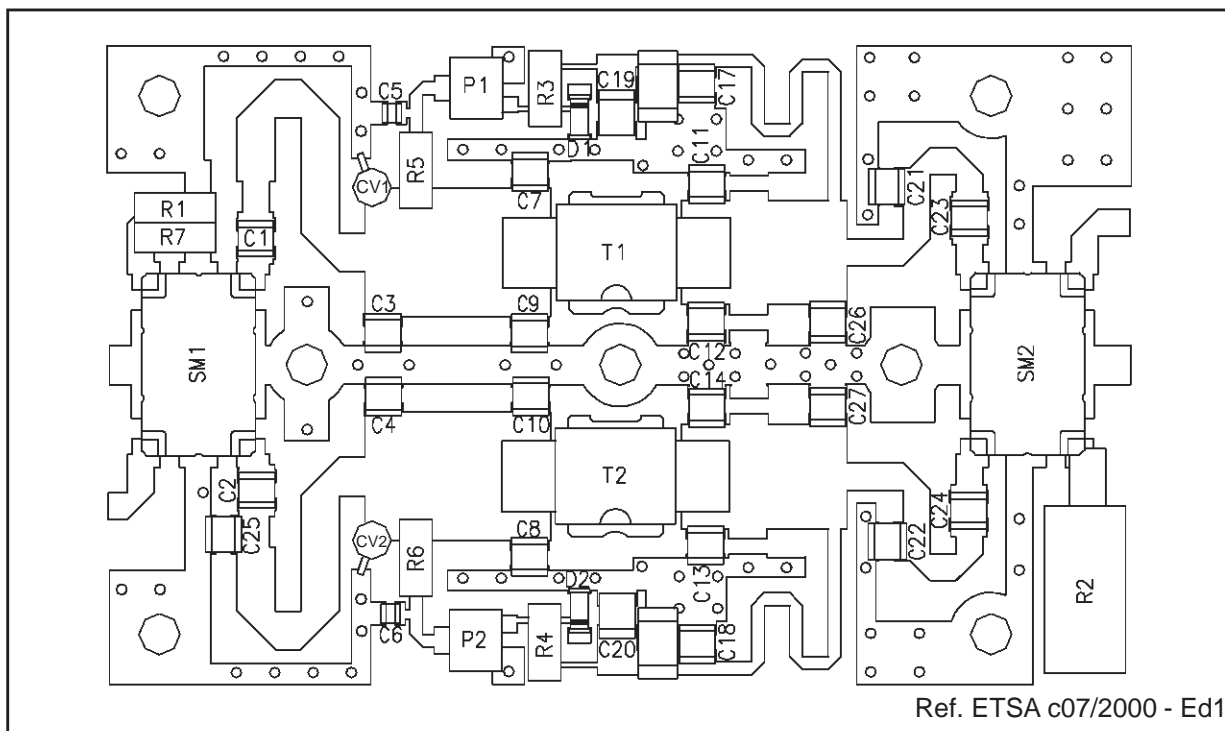
#### Power Gain versus Frequency ( $P_{out} = 75\text{W}$ )



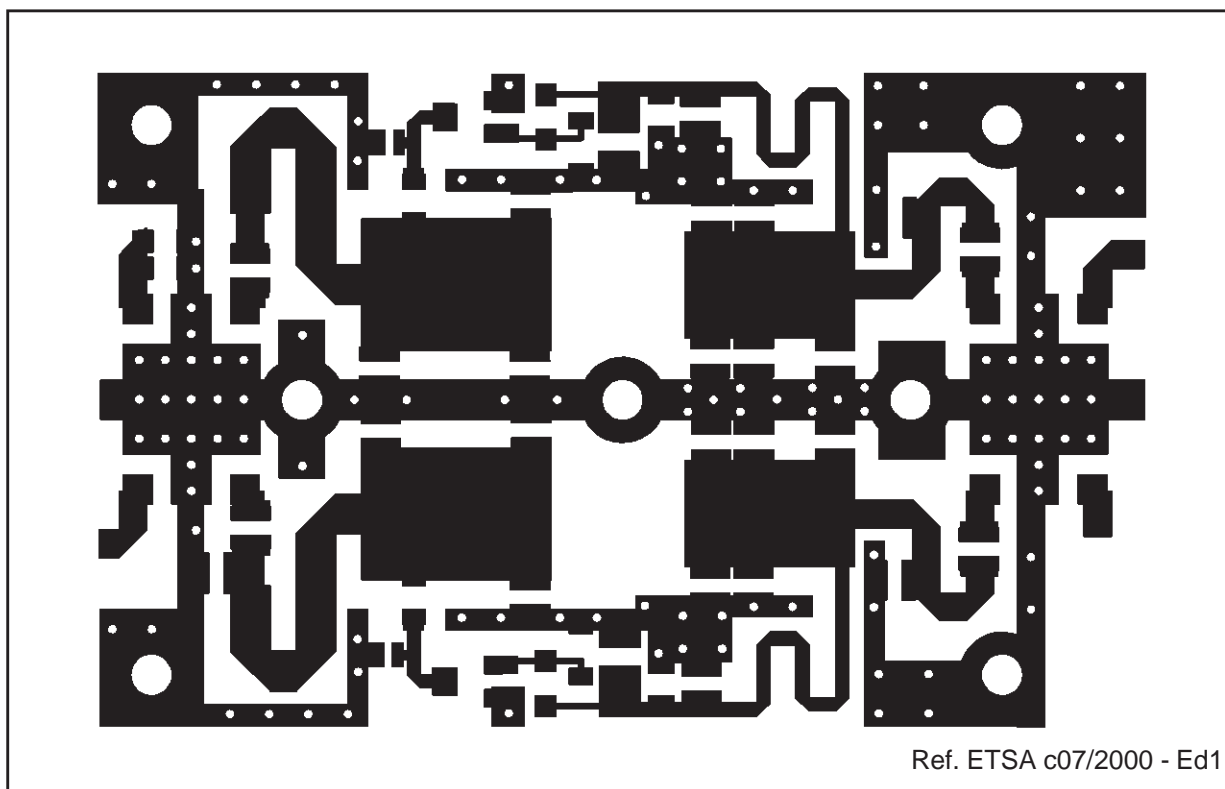
#### $P_{1dB}$ and Efficiency versus Frequency



## TEST FIXTURE COMPONENT LAYOUT



## TEST CIRCUIT PHOTOMASTER



## DB-960-70W

### TEST CIRCUIT COMPONENT PART LIST

COMPONENT	DESCRIPTION
T1, T2	PD57045S TRANSISTOR
C1, C2, C23, C24	47pF - 500V CERAMIC CHIP CAPACITOR
C3, C4	2.2pF - 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 $\mu$ F / 35V ELECTROLYTIC CAPACITOR
C21, C22	4.7pF - 500V CERAMIC CHIP CAPACITOR
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 35 $\mu$
SUBSTRATE	TEFLON-GLASS Er = 2.55
BACK SIDE	COPPER FLANGE 2 mm THICKNESS
CERAMIC CHIP CAPACITORS	ATC100B or EQUIVALENT

Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is registered trademark of STMicroelectronics  
© 2001 STMicroelectronics - All Rights Reserved

All other names are the property of their respective owners.

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - China - Finland - France - Germany - Hong Kong - India - Italy - Japan - Malaysia - Malta - Morocco -  
Singapore - Spain - Sweden - Switzerland - United Kingdom - U.S.A.

<http://www.st.com>