

UHF Amplifier Module

BGY113A

7W UHF Amplifier

DATASHEET

OEM – Philips

Source: Philips Data Handbook SC09

RF Power Modules and Transistors for Mobile Phones 1996

UHF amplifier modules**BGY113A; BGY113B****FEATURES**

- 7.5 V nominal supply voltage
- 7 W output power
- Easy control of output power by DC voltage.

APPLICATIONS

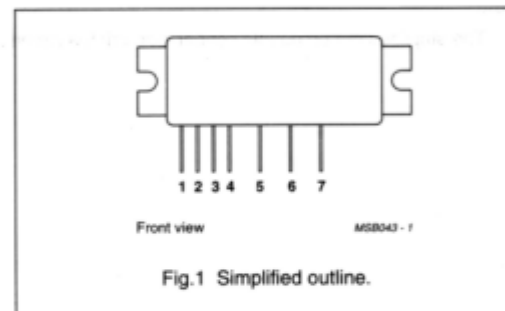
- Hand-held communication equipment operating in the frequency bands 400 to 440 MHz and 430 to 470 MHz respectively.

DESCRIPTION

The BGY113A and BGY113B are four-stage UHF amplifier modules in a 7-lead SOT288D package. The modules consist of four NPN silicon planar transistor dies mounted together with matching and bias circuit components on a metallized ceramic substrate. The modules produce an output power of 7 W into a load of 50 Ω with an RF drive power of 1 mW.

PINNING - SOT288D

PIN	DESCRIPTION
1	RF input
2	V _{S1}
3	V _C
4	V _{S2}
5	V _{S3}
6	V _{S4}
7	RF output
Flange	ground

**QUICK REFERENCE DATA**

RF performance at T_{mb} = 25 °C.

TYPE NUMBER	MODE OF OPERATION	f (MHz)	V _S (V)	P _L (W)	G _p (dB)	η (%)	Z _S ; Z _L (Ω)
BGY113A	CW	400 to 440	7.5	≥ 7	≥ 38.5	≥ 40	50
BGY113B	CW	430 to 470	7.5	≥ 7	≥ 38.5	≥ 40	50

WARNING**Product and environmental safety - toxic materials**

This product contains beryllium oxide. The product is entirely safe provided that the BeO discs are not damaged. All persons who handle, use or dispose of this product should be aware of its nature and of the necessary safety precautions. After use, dispose of as chemical or special waste according to the regulations applying at the location of the user. It must never be thrown out with the general or domestic waste.

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BGY113A; BGY113B

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

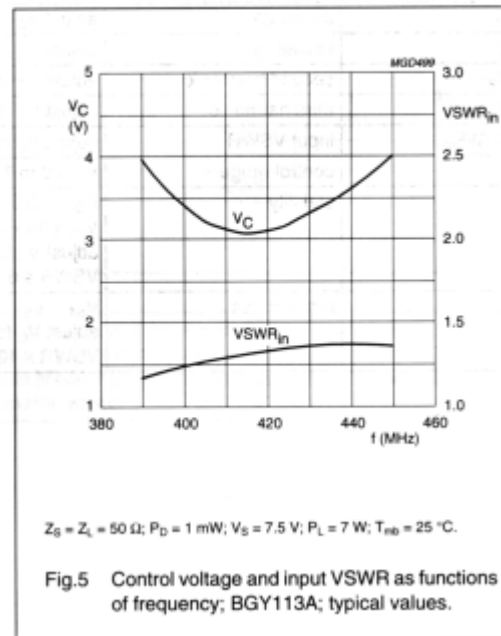
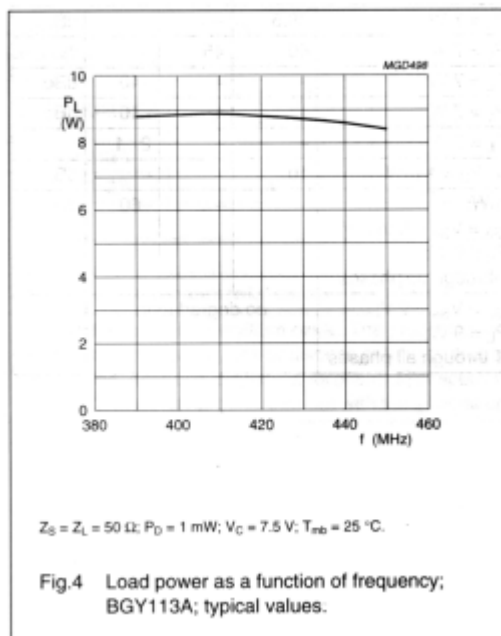
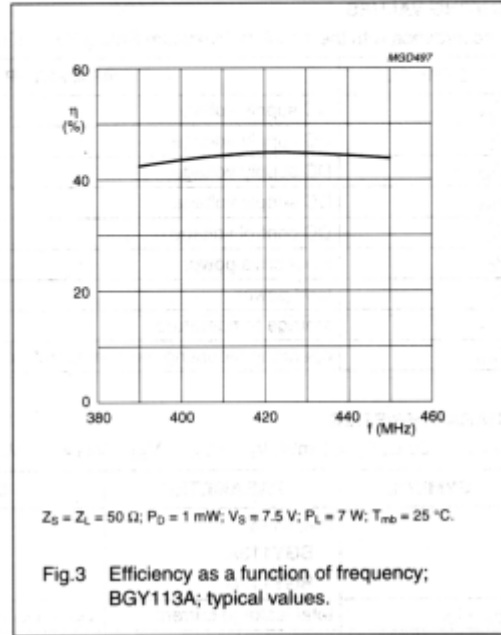
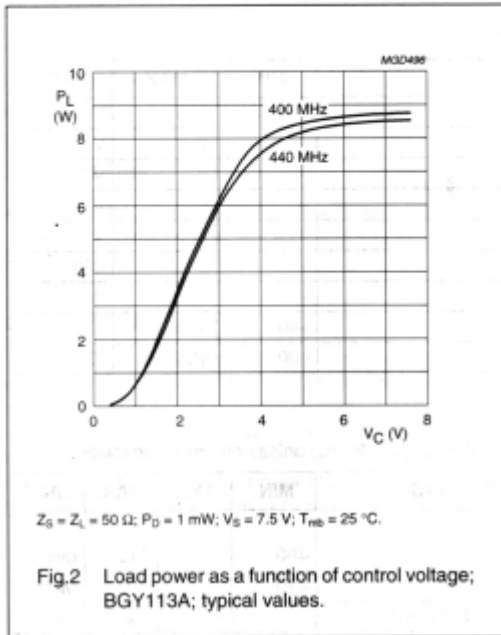
SYMBOL	PARAMETER	MIN.	MAX.	UNIT
V_{S1}	DC supply voltage	–	9	V
V_{S2}	DC supply voltage	–	9	V
V_{S3}	DC supply voltage	–	9	V
V_{S4}	DC supply voltage	–	9	V
V_C	DC control voltage	–	7.5	V
P_D	input drive power	–	5	mW
P_L	load power	–	9	W
T_{stg}	storage temperature	–40	+100	°C
T_{mb}	operating mounting base temperature	–30	+90	°C

CHARACTERISTICS $Z_S = Z_L = 50 \Omega$; $P_D = 1$ mW; $V_{S1} = V_{S2} = V_{S3} = V_{S4} = 7.5$ V; $V_C \leq 7.5$ V; $T_{mb} = 25$ °C; unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
f	frequency		400	–	440	MHz
	BGY113A		430	–	470	MHz
$I_{Q3} + I_{Q4}$	total leakage current	$V_{S1} = V_{S2} = V_C = 0$; $P_D = 0$	–	–	0.2	mA
P_L	load power	$V_C = 7.5$ V	7	–	–	W
G_p	power gain	adjust V_C for $P_L = 7$ W	38.5	–	–	dB
η	efficiency	adjust V_C for $P_L = 7$ W	40	45	–	%
H_2	second harmonic	adjust V_C for $P_L = 7$ W	–	–	–40	dBc
H_3	third harmonic	adjust V_C for $P_L = 7$ W	–	–	–40	dBc
$VSWR_{in}$	input VSWR	adjust V_C for $P_L = 7$ W	–	–	2 : 1	
	control range	$V_C = 0$ to 7.5 V; $P_D = 1$ mW	10	–	–	dB
	stability	$P_D = 0.5$ to 2 mW; $V_{S1} = V_{S2} = V_{S3} = V_{S4} = 5$ to 9 V; adjust V_C for $P_L \leq 9$ W; $VSWR \leq 6 : 1$ through all phases	–	–	–60	dBc
	ruggedness	$V_{S1} = V_{S2} = V_{S3} = V_{S4} = 9$ V; adjust V_C for $P_L = 9$ W; $VSWR \leq 10 : 1$ through all phases	no degradation			

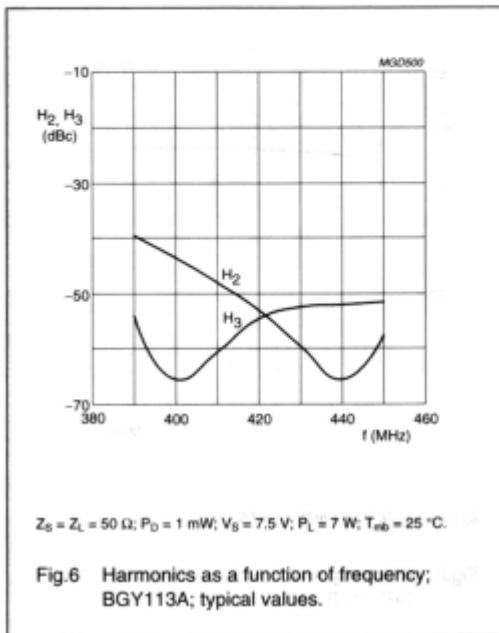
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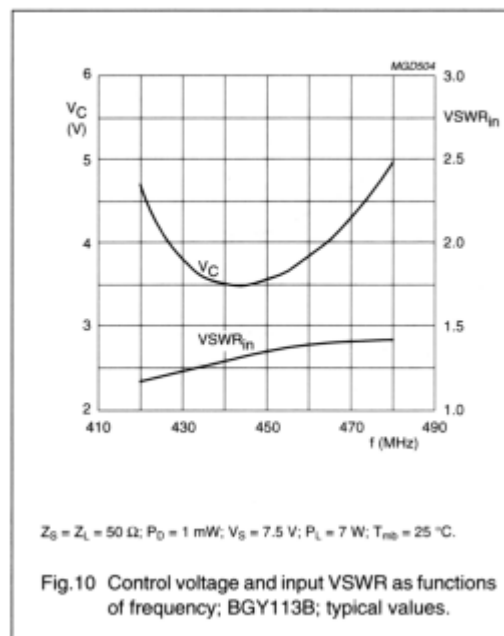
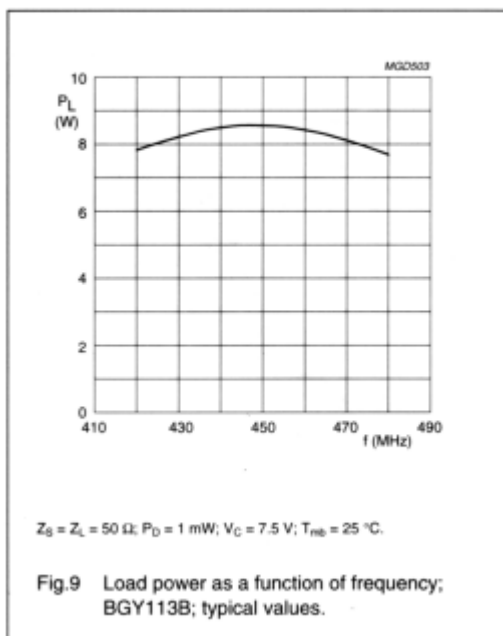
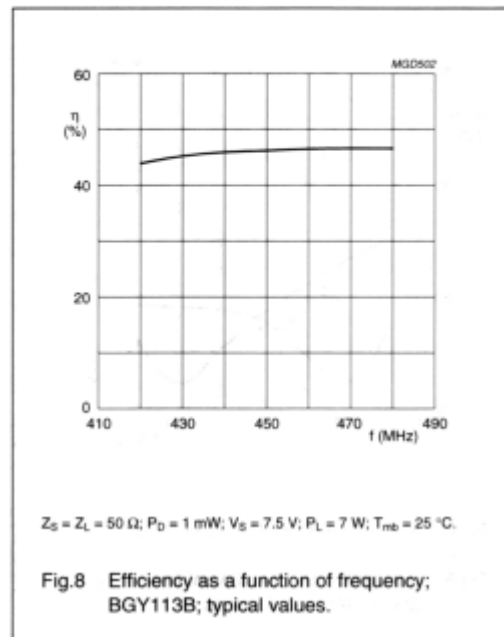
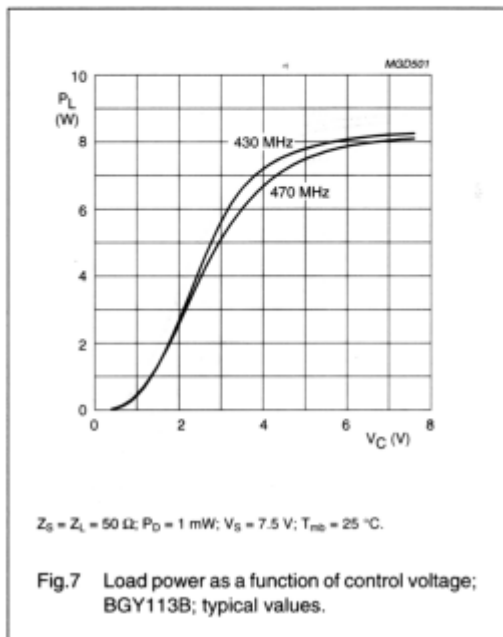
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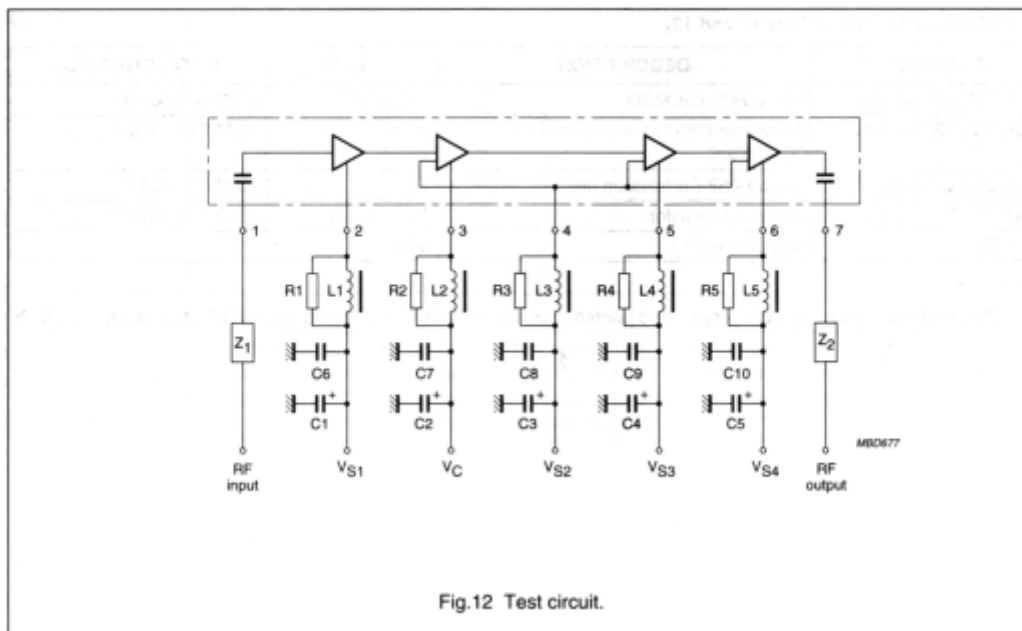
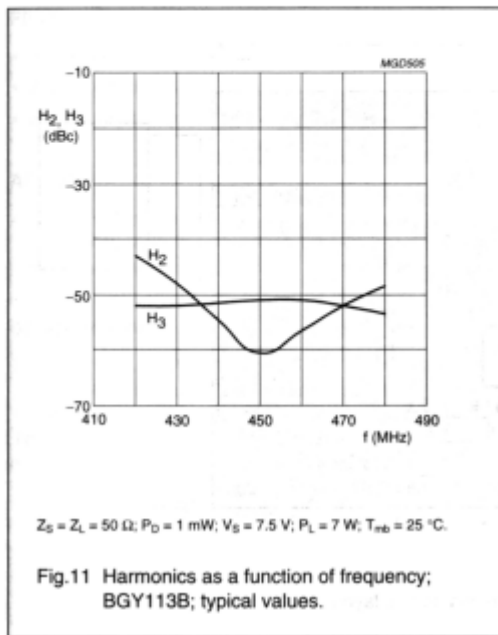
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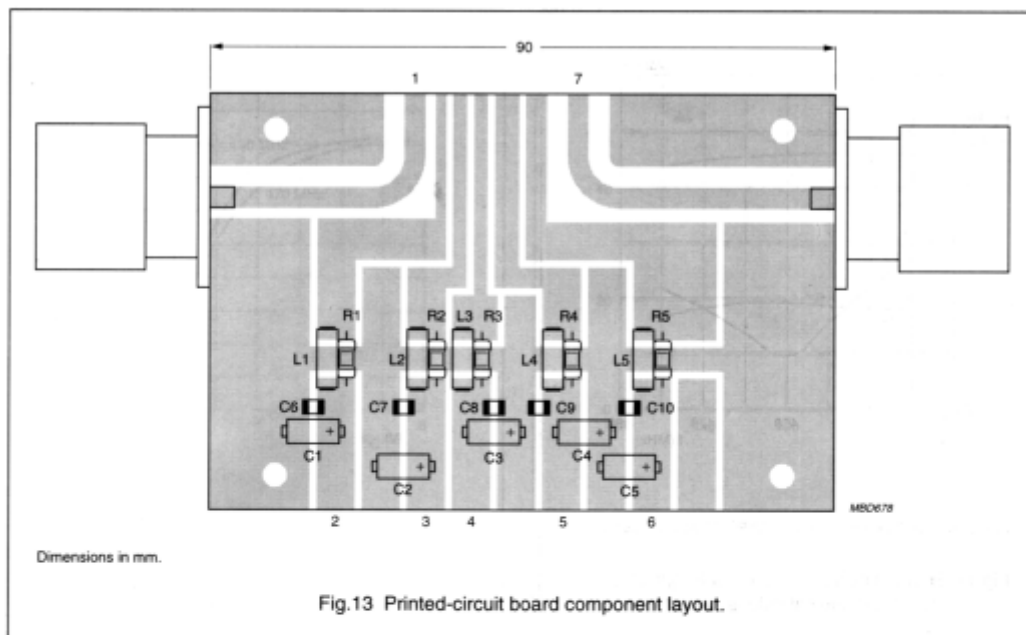
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List of components (see Figs 12 and 13)

COMPONENT	DESCRIPTION	VALUE	CATALOGUE NO.
C1, C2, C3, C4, C5	electrolytic capacitor	1 μ F; 63 V	2222 085 68108
C6, C7, C8, C9, C10	multilayer ceramic chip capacitor; X7R, 0805	18 nF	2222 910 16739
L1, L2, L3, L4, L5	Grade 4S2 Ferroxcube bead		4330 030 36300
R1, R2, R3, R4, R5	metal film resistor	10 Ω ; 0.4 W	2322 195 13109
Z1, Z2	stripline; note 1	50 Ω	—

Note

- The striplines are on a double copper-clad printed-circuit board with epoxy dielectric ($\epsilon_r = 4.7$); thickness = $\frac{1}{16}$ inch.