

# UHF Amplifier Module

## **BGY110F**

890-915MHz UHF Amplifier

# DATASHEET

OEM – Philips

Source: Philips Data Handbook SC09

RF Power Modules and Transistors for Mobile Phones 1996

**UHF amplifier modules****BGY110D; BGY110E;  
BGY110F; BGY110G****FEATURES**

- 7.2 V nominal supply voltage
- 1.7 W output power
- Easy control of output power by DC voltage.

**APPLICATIONS**

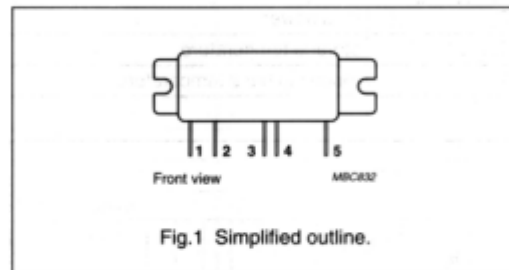
- Hand-held transmitting equipment operating in the 824 to 849 MHz, 872 to 905 MHz, 890 to 915 MHz and 902 to 928 MHz frequency ranges respectively.

**DESCRIPTION**

The BGY110D, 110E, 110F and 110G are four-stage UHF amplifier modules in a SOT246 package. Each module consists of four NPN silicon planar transistor dies, mounted together with matching and bias circuit components on a metallized ceramic substrate.

**PINNING - SOT246**

PIN	DESCRIPTION
1	RF input/ $V_C$
2	$V_{S1}$
3	$V_{S2}$
4	$V_{S3}$
5	RF output
Flange	ground

**QUICK REFERENCE DATA**

RF performance at  $T_{mb} = 25\text{ }^{\circ}\text{C}$ .

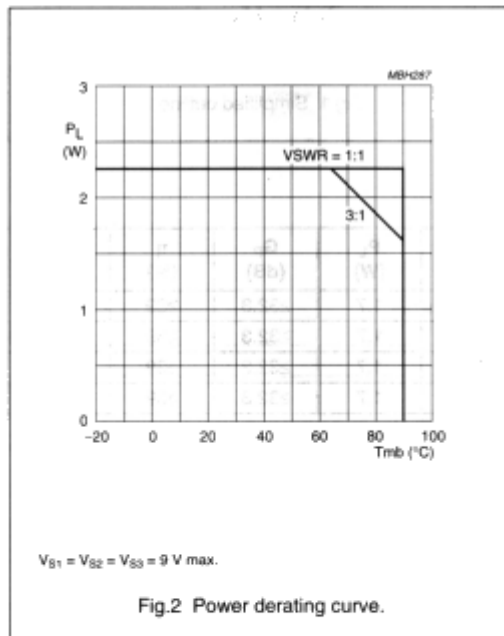
TYPE NUMBER	MODE OF OPERATION	f (MHz)	$V_S$ (V)	$V_C$ (V)	$P_L$ (W)	$G_p$ (dB)	$\eta$ (%)	$Z_S; Z_L$ ( $\Omega$ )
BGY110D	CW	824 to 849	7.2	4.5	1.7	$\geq 32.3$	$\geq 39$	50
BGY110E	CW	872 to 905	7.2	4.5	1.7	$\geq 32.3$	$\geq 39$	50
BGY110F	CW	890 to 915	7.2	4.5	1.7	$\geq 32.3$	$\geq 39$	50
BGY110G	CW	902 to 928	7.2	4.5	1.7	$\geq 32.3$	$\geq 39$	50

## UHF amplifier modules

BGY110D; BGY110E;  
BGY110F; BGY110G**LIMITING VALUES**

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

SYMBOL	PARAMETER	MIN.	MAX.	UNIT
$V_{S1}$	DC supply voltage	-	10	V
$V_{S2}$	DC supply voltage	-	10	V
$V_{S3}$	DC supply voltage	-	10	V
$V_C$	DC control voltage	-	4.5	V
$+V_o$	RF output terminal voltage	-	25	V
$P_D$	input drive power	-	3	mW
$P_L$	load power	-	2.25	W
$T_{stg}$	storage temperature	-40	+100	°C
$T_{mb}$	mounting base temperature	-	90	°C



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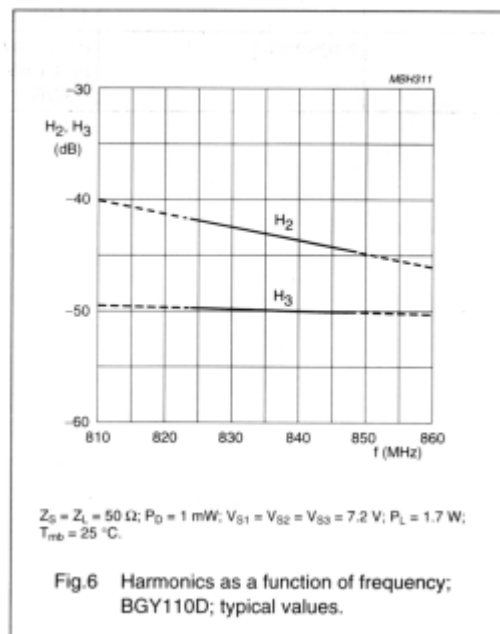
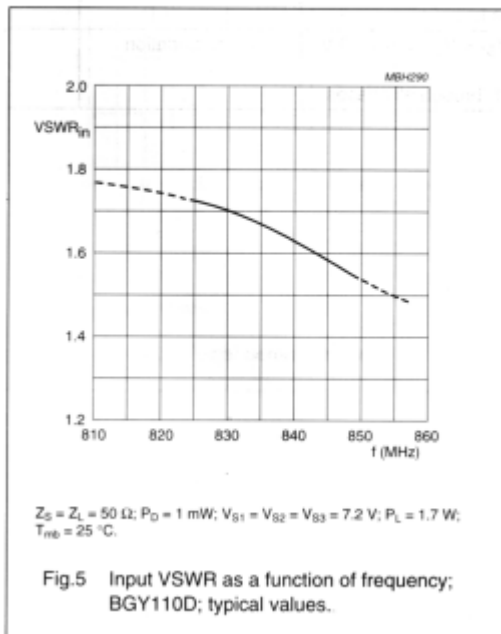
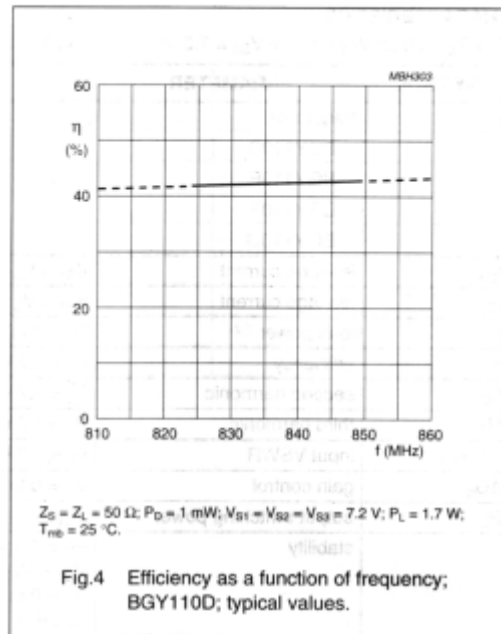
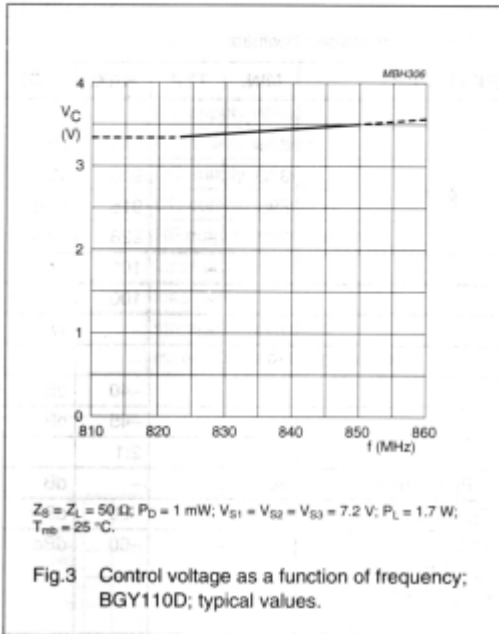
## CHARACTERISTICS

 $Z_S = Z_L = 50 \Omega$ ;  $V_{S1} = V_{S2} = V_{S3} = 7.2 \text{ V}$ ;  $V_C = 4.5 \text{ V}$ ;  $T_{mb} = 25 \text{ }^\circ\text{C}$ ; unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
f	frequency					
	BGY110D		824	–	849	MHz
	BGY110E		872	–	905	MHz
	BGY110F		890	–	915	MHz
	BGY110G		902	–	928	MHz
$I_{C2}$	leakage current	$V_{S1} = V_C = 0$	–	–	100	$\mu\text{A}$
$I_{C3}$	leakage current	$V_{S1} = V_C = 0$	–	–	100	$\mu\text{A}$
$P_L$	load power	$P_D = 1 \text{ mW}$	1.7	–	–	W
$\eta$	efficiency	$P_L = 1.7 \text{ W}$	39	–	–	%
$H_2$	second harmonic	$P_L = 1.7 \text{ W}$	–	–	–40	dB
$H_3$	third harmonic	$P_L = 1.7 \text{ W}$	–	–	–45	dB
$VSWR_{in}$	input VSWR	$P_L = 1.7 \text{ W}$	–	–	2:1	
$\Delta G_p$	gain control	$V_C = 0 \text{ to } 4.5 \text{ V}$ ; $P_D = 1 \text{ mW}$	30	–	–	dB
$P_L$	output switching power	$V_{S1} = V_C = 0$ ; $P_D = 1 \text{ mW}$	–	–	–20	dBm
	stability	$P_D = 0.5 \text{ to } 2 \text{ mW}$ ; $V_{S1} = V_{S2} = V_{S3} = 6 \text{ to } 9 \text{ V}$ ; $V_C = 0 \text{ to } 4.5 \text{ V}$ ; $P_L \leq 2 \text{ W}$ ; $VSWR \leq 6 : 1$	–	–	–60	dBc
$P_n$	noise power	30 kHz bandwidth; $P_L = 1.7 \text{ W}$ ; 45 MHz above $f_0$	–	–84	–80	dBm
	ruggedness	$P_D = 1 \text{ mW}$ ; $V_{S1} = V_{S2} = V_{S3} = 9 \text{ V}$ ; $P_L \leq 1.8 \text{ W}$ ; $VSWR = 10 : 1$ through all phases;	no degradation			

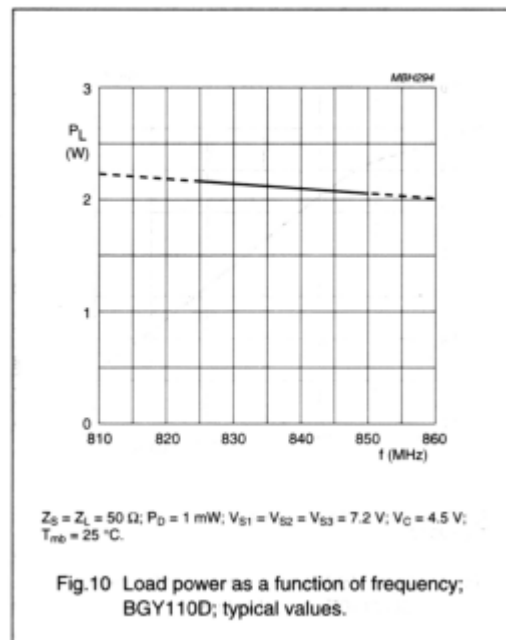
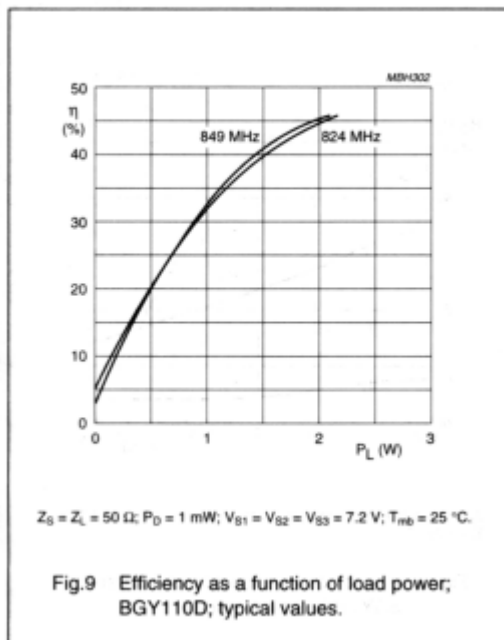
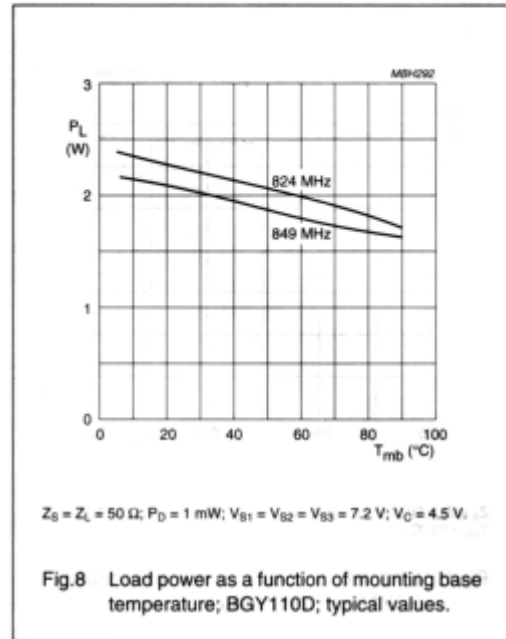
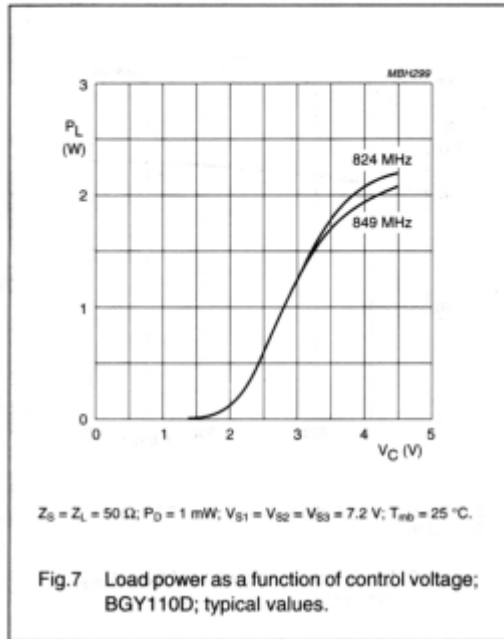
UHF amplifier modules

BGY110D; BGY110E;  
BGY110F; BGY110G



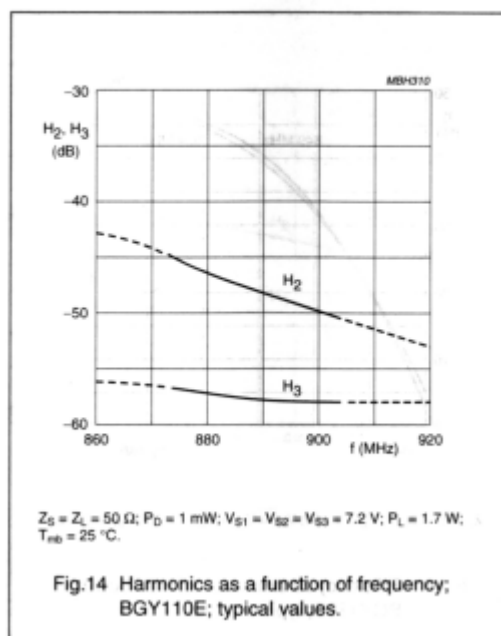
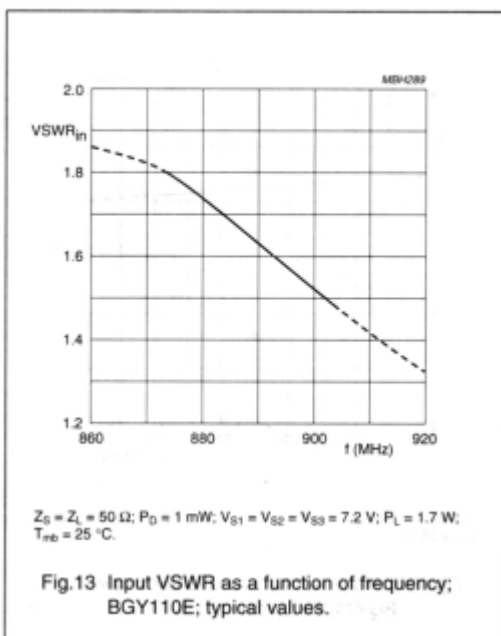
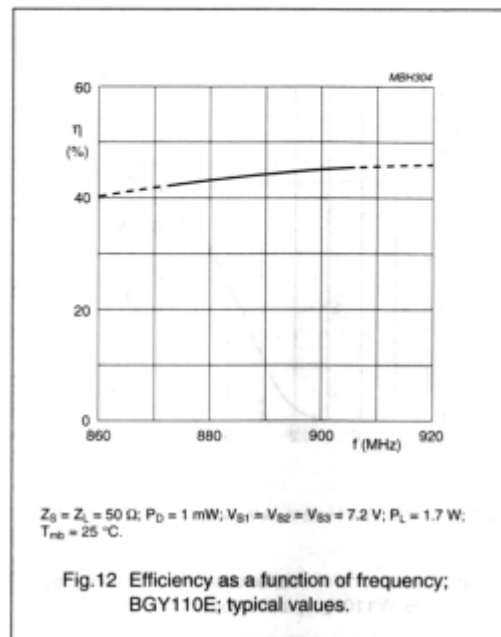
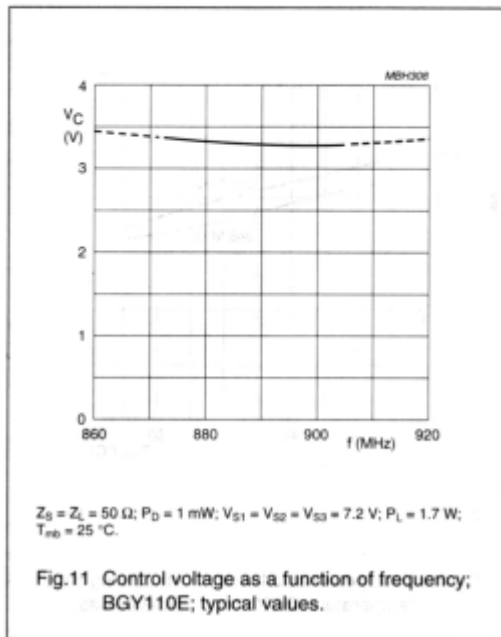
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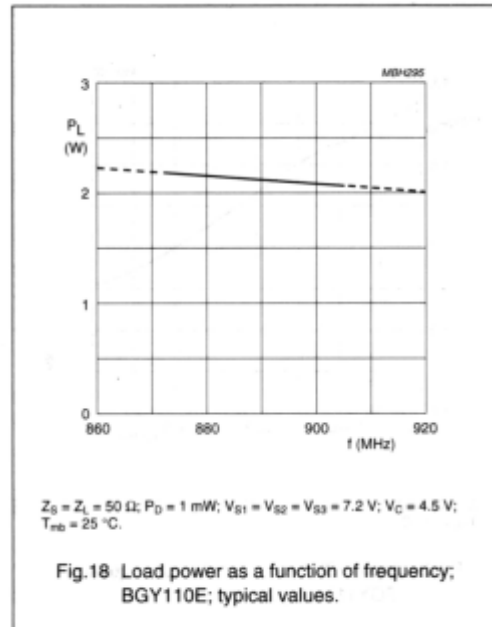
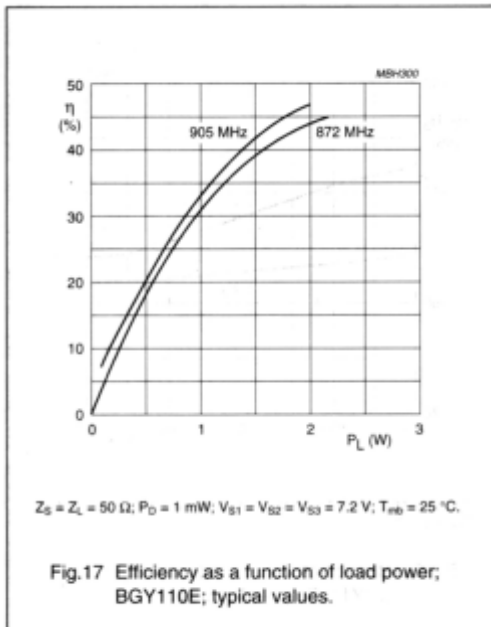
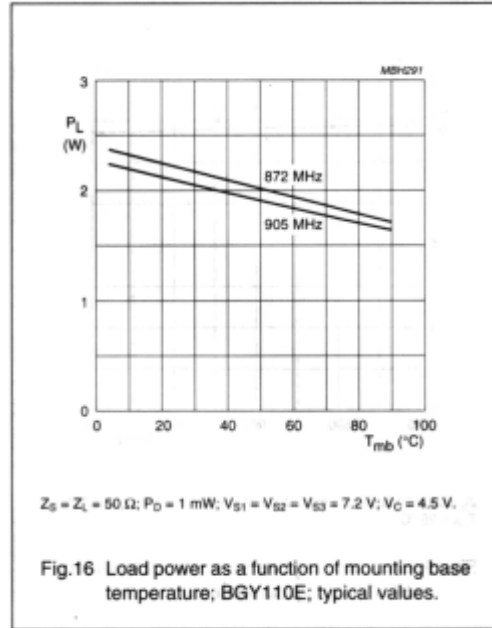
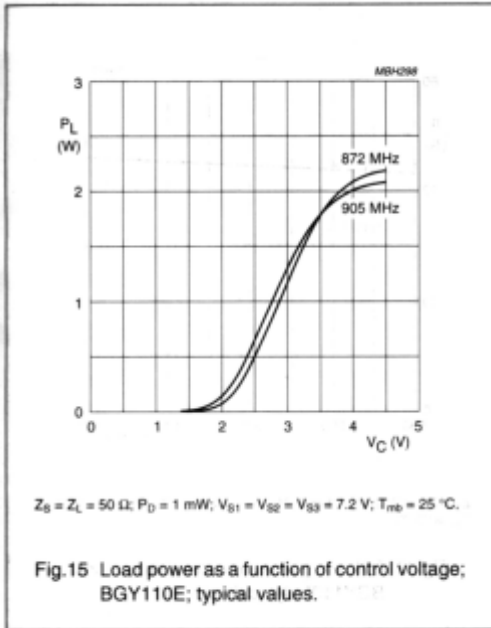
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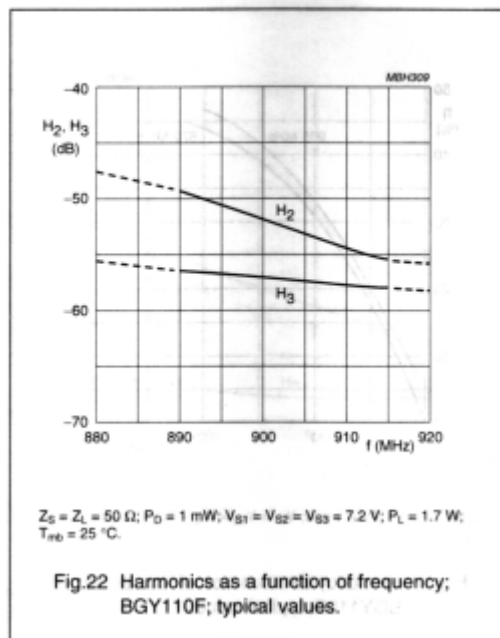
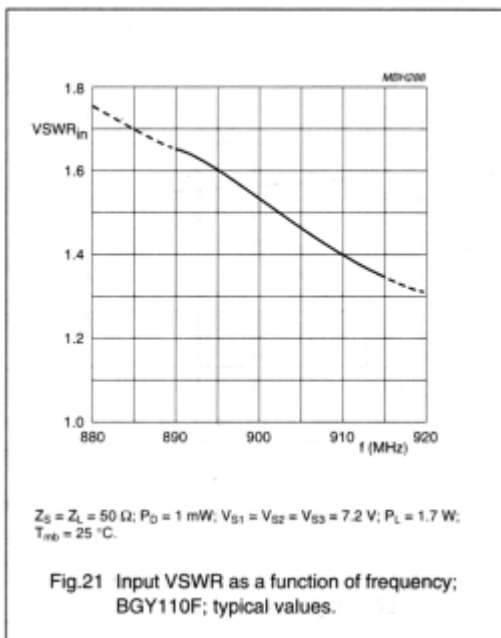
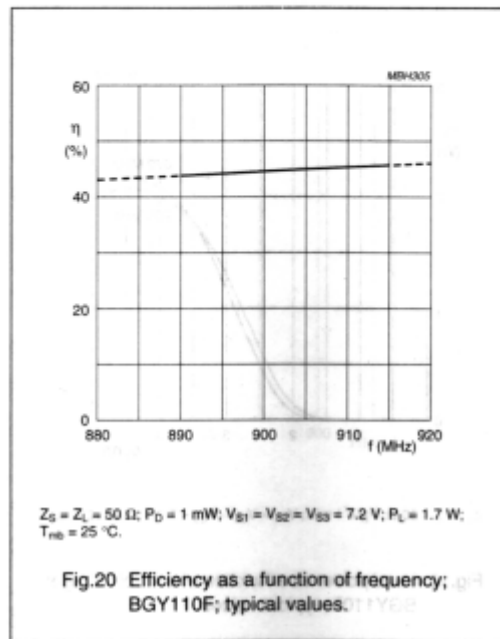
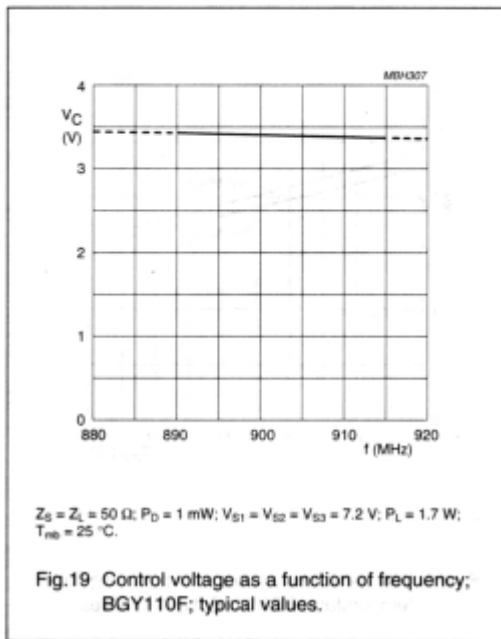
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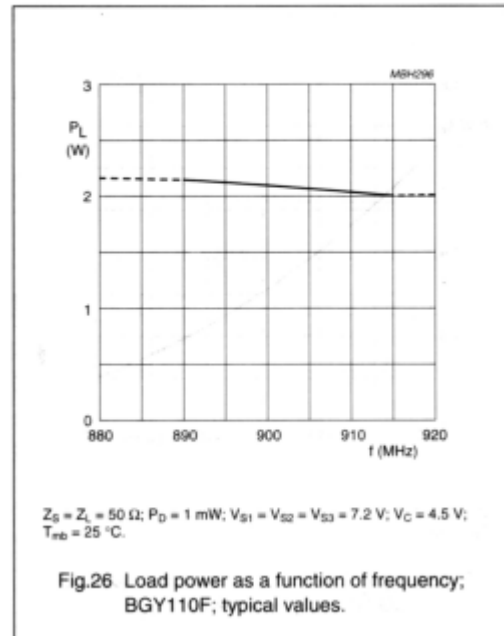
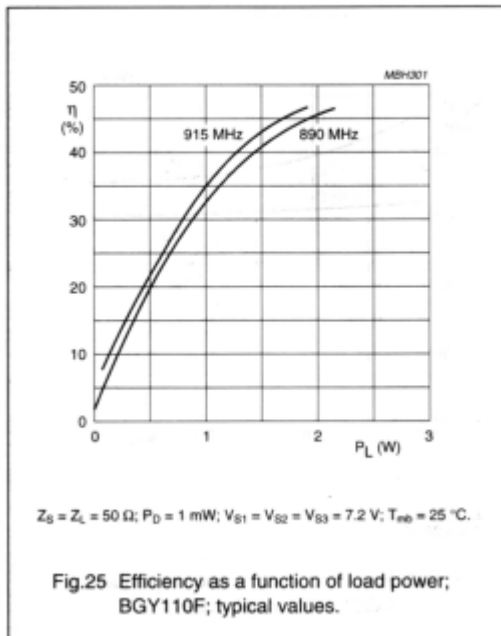
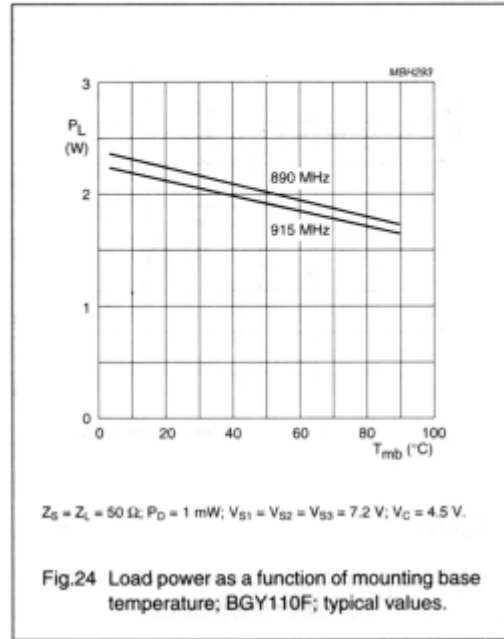
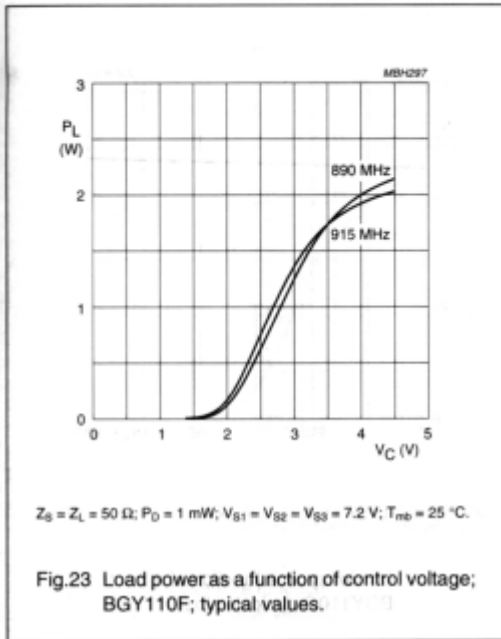
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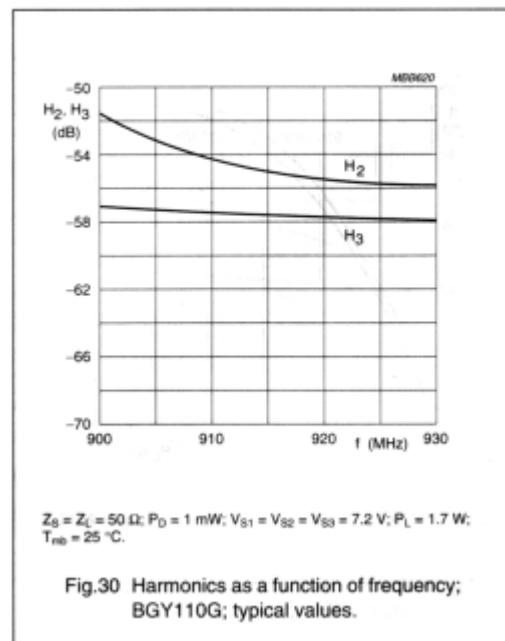
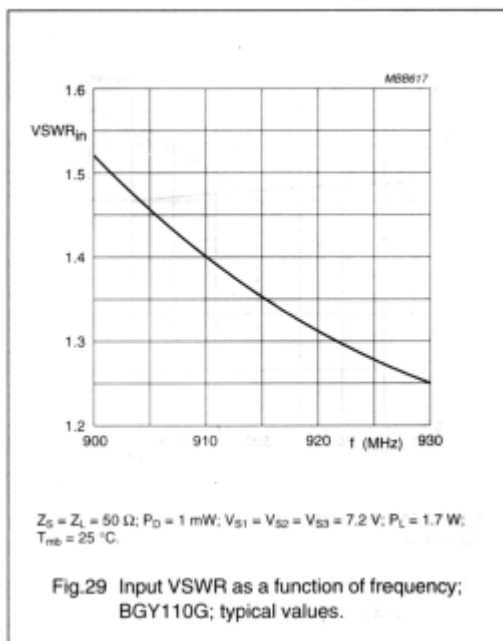
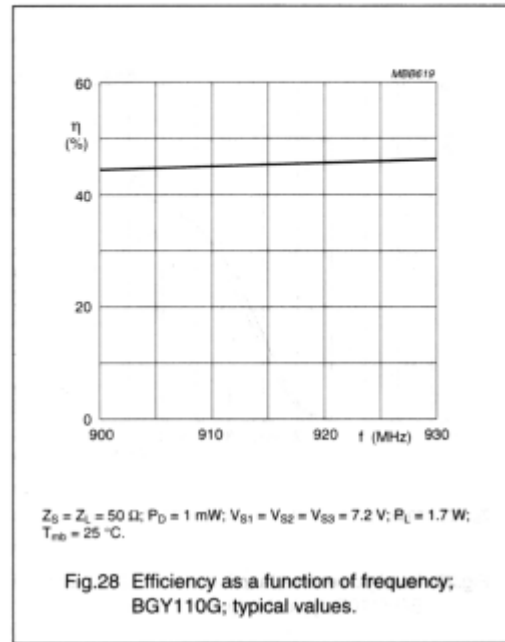
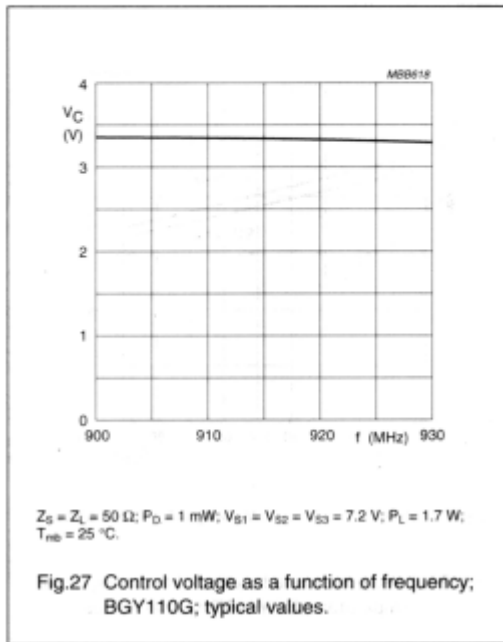
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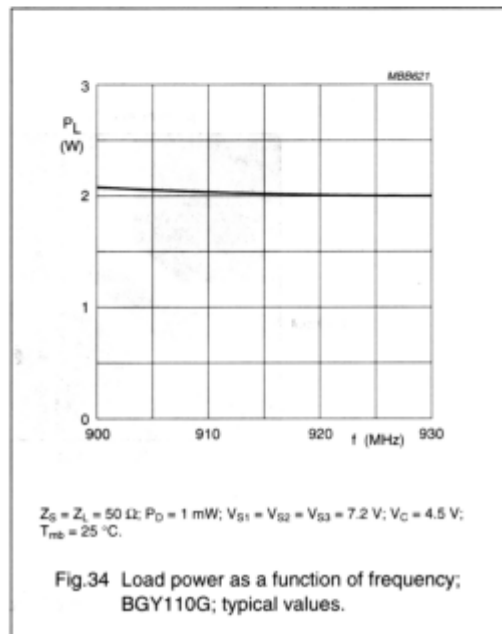
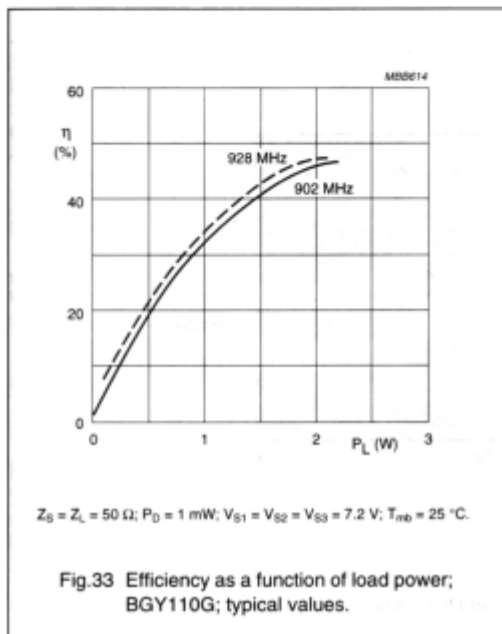
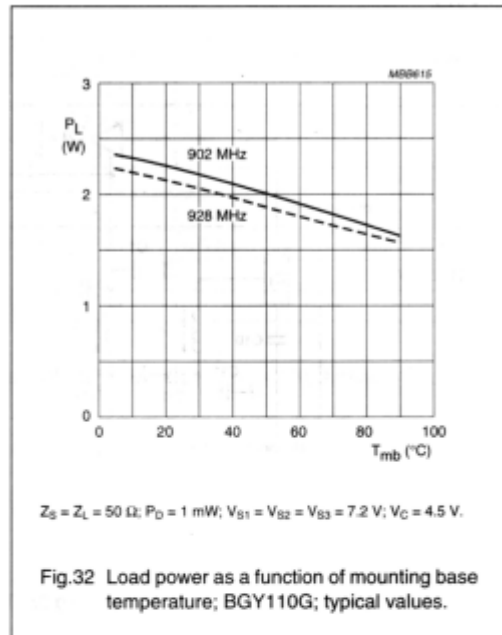
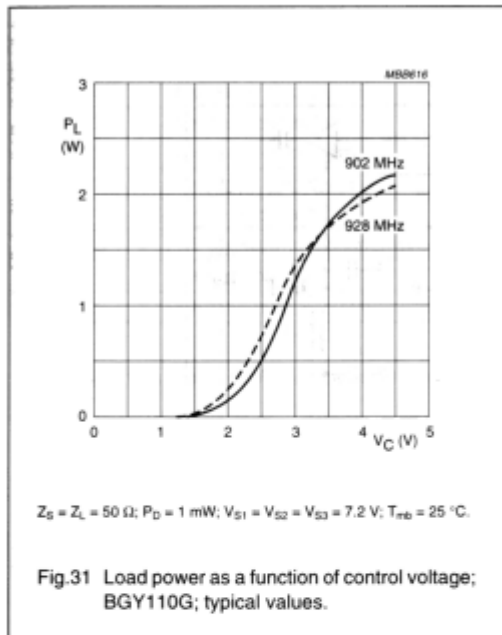
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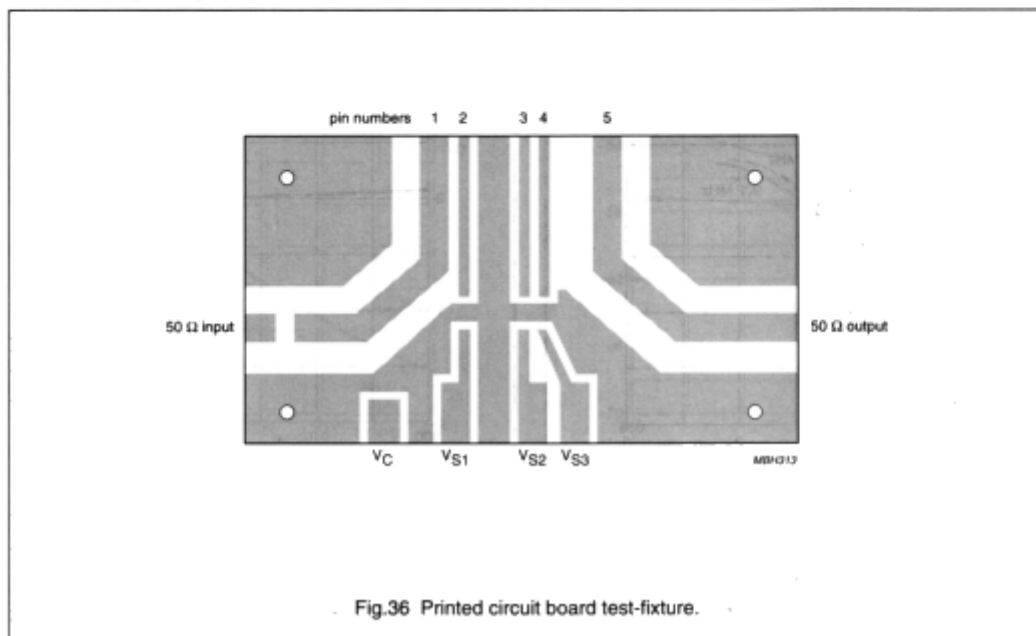
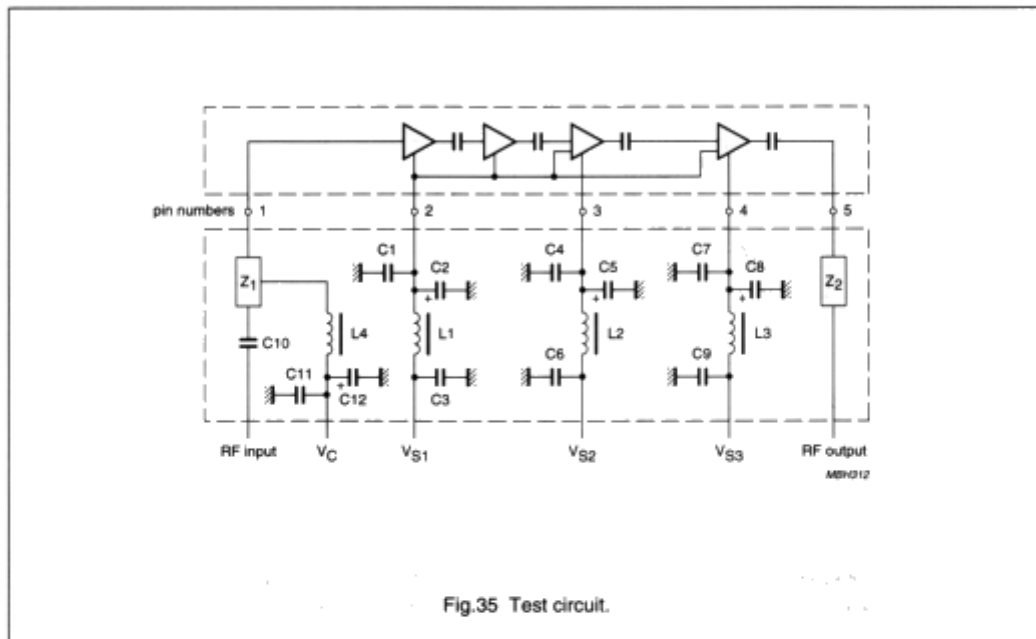
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Philips Semiconductors

Product specification

UHF amplifier modules

BGY110D; BGY110E;  
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COMPONENT	DESCRIPTION	VALUE	DIMENSIONS	CATALOGUE NO.
C1, C4, C7	multilayer chip capacitor	100 nF		
C2, C5, C8	tantalum capacitor	2.2 $\mu$ F		
C3, C6, C9	multilayer chip capacitor	33 pF		
C10, C11	multilayer chip capacitor	1 nF		
C12	tantalum capacitor	1 $\mu$ F		
L1, L2, L3	RF choke, 1 turn copper wire on grade 3B core	22 $\mu$ H	0.4 mm	4330 030 32221
L4	Ferroxcube coil	5 $\mu$ H		3122 108 20153
Z <sub>1</sub> , Z <sub>2</sub>	stripline; note 1	50 $\Omega$		

**Note**

1. The striplines are on double copper-clad printed circuit board with PTFE dielectric ( $\epsilon_r = 2.2$ ), thickness  $\frac{1}{16}$  inch.