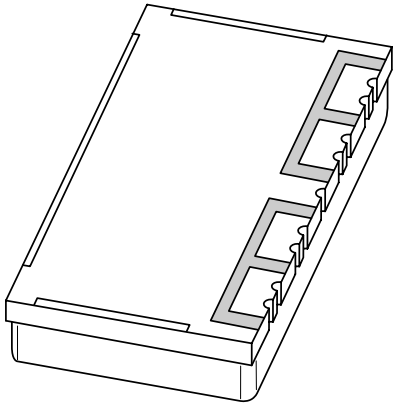


# DATA SHEET



## **BGY120A; BGY120B** UHF amplifier modules

Objective specification

1997 Nov 11

# UHF amplifier modules

# BGY120A; BGY120B

## FEATURES

- Single 3.5 V nominal supply voltage
- 1 W output power
- Easy control of output power by DC voltage
- Very high efficiency (typ. 60%)
- Silicon bipolar technology
- Standby current less than 10  $\mu$ A.

## APPLICATIONS

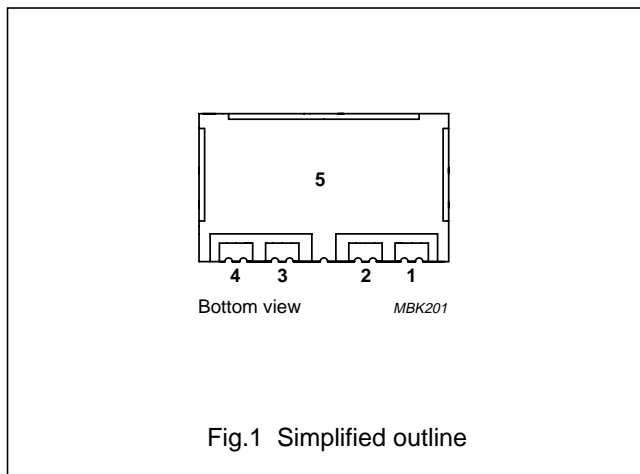
- Hand-held transmitting equipment operating in the 824 to 849 MHz and 872 to 905 MHz frequency ranges.

## DESCRIPTION

The BGY120A and BGY120B are two-stage UHF amplifier modules in a SOT482B package with plastic cover. Each module consists of two NPN silicon planar transistor dies mounted together with a matching and bias circuit components on a metallized ceramic substrate. These modules produce an output power of 1 W into a load of 50  $\Omega$  with an RF drive power of 5 mW.

## PINNING - SOT482B

PIN	DESCRIPTION
1	RF input
2	$V_C$
3	$V_S$
4	RF output
5	flange connected to ground



## QUICK REFERENCE DATA

RF performance at  $T_{mb} = 25$  °C.

TYPE	MODE OF OPERATION	f (MHz)	$V_S$ (V)	$P_L$ (W)	$G_p$ (dB)	$\eta$ (%)	$Z_S; Z_L$ ( $\Omega$ )
BGY120A	CW	824 to 849	3.5	1	$\geq 23$	typ. 60	50
BGY120B	CW	872 to 905	3.5	1	$\geq 23$	typ. 60	50

## UHF amplifier modules

## BGY120A; BGY120B

**LIMITING VALUES**

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

SYMBOL	PARAMETER	MIN.	MAX.	UNIT
$V_S$	DC supply voltage	–	5	V
$V_C$	DC control voltage	–	2.9	V
$P_D$	input drive power	–	10	mW
$P_L$	load power	–	1.4	W
$T_{stg}$	storage temperature	–40	+100	°C
$T_{mb}$	operating mounting-base temperature	–30	+100	°C

**CHARACTERISTICS** $Z_S = Z_L = 50 \Omega$ ;  $P_D = 5 \text{ mW}$ ;  $V_S = 3.5 \text{ V}$ ;  $V_C \leq 2.5 \text{ V}$ ;  $T_{mb} = 25 \text{ °C}$ ; unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
f	frequency range					
	BGY120A		824	–	849	MHz
	BGY120B		872	–	905	MHz
$I_Q$	total leakage current	$V_C = 0.3 \text{ V}$ ; $P_D < -60 \text{ dBm}$	–	–	10	$\mu\text{A}$
$I_C$	control current		–	–	10	mA
$P_L$	load power	$V_C = 2.5 \text{ V}$	1	–	–	W
		$V_S = 3.2 \text{ V}$ ; $T_{mb} = 85 \text{ °C}$	0.71	–	–	W
$G_p$	power gain	adjust $V_C$ for $P_L = 1 \text{ W}$	23	–	–	dB
$\eta$	efficiency	$V_S = 3.2 \text{ V}$ ; adjust $V_C$ for $P_L = 0.9 \text{ W}$	55	60	–	%
$H_2$	second harmonic	adjust $V_C$ for $P_L = 0.9 \text{ W}$	–	–	–35	dBc
$H_3$	third harmonic	adjust $V_C$ for $P_L = 0.9 \text{ W}$	–	–	–40	dBc
$V_{SWR_{in}}$	input VSWR	adjust $V_C$ for $P_L = 0.9 \text{ W}$	–	–	2 : 1	
		$V_C \leq 0.5 \text{ V}$	–	–	4 : 1	
	stability	$P_L \leq 1.4 \text{ W}$ ; $V_C = 0 \text{ to } 2.9 \text{ V}$ ; $V_S = 2.8 \text{ to } 5 \text{ V}$ ; $P_D = 4 \text{ to } 10 \text{ dBm}$ ; $V_{SWR} \leq 6 : 1$ through all phases	–	–	–60	dBc
	isolation	$V_C \leq 0.5 \text{ V}$	–	–40	–	dBm
$P_n$	noise power	adjust $V_C$ for $P_L = 1 \text{ W}$ ; bandwidth = 30 kHz; $f_n = f_o + 45 \text{ MHz}$	–	–	–90	dBm
$d_{im}$	reverse intermodulation	$P_{Tx} = 0.9 \text{ W}$ ; $f_{int} = f_{Tx} - 45 \text{ MHz}$ ; $P_{int} = P_{Tx} - 30 \text{ dB}$ ; note 1	–	–	–8	dB
	ruggedness	$V_S = 5 \text{ V}$ ; adjust $V_C$ for $P_L = 1.4 \text{ W}$ ; $V_{SWR} \leq 10 : 1$ through all phases	no degradation			

**Note**

1. With respect to  $P_{int}$ .

UHF amplifier modules

BGY120A; BGY120B

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**PACKAGE OUTLINE**

PACKAGE  
OUTLINE  
NOT  
RELEASED  
FOR  
GENERAL  
PUBLICATION

## UHF amplifier modules

## BGY120A; BGY120B

**DEFINITIONS**

<b>Data Sheet Status</b>	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
<b>Limiting values</b>	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
<b>Application information</b>	
Where application information is given, it is advisory and does not form part of the specification.	

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UHF amplifier modules

BGY120A; BGY120B

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**NOTES**

UHF amplifier modules

BGY120A; BGY120B

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**NOTES**

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Printed in The Netherlands

127107/00/02/pp8

Date of release: 1997 Nov 11

Document order number: 9397 750 02971

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