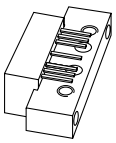

BGE787B

750 MHz, 29 dB gain push-pull amplifier

Rev. 03 — 29 March 2005 Product data sheet

1. Product profile

1.1 General description

Hybrid high dynamic range amplifier module operating at a supply voltage of 24 V (DC) in a SOT115J package. The module consists of two cascaded stages both in cascode configuration.

CAUTION

This device is sensitive to ElectroStatic Discharge (ESD). Therefore care should be taken during transport and handling.

1.2 Features

- Excellent linearity
- Extremely low noise
- High gain
- Excellent return loss properties

1.3 Applications

- Single module line extender in CATV systems operating in the 40 MHz to 750 MHz frequency range.

1.4 Quick reference data

Table 1: Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
G_p	power gain	f = 50 MHz		28.5	-	29.5	dB
		f = 750 MHz		29	-	-	dB
I_{tot}	total current consumption (DC)	V_B = 24 V	[1]	-	-	340	mA

[1] The module normally operates at V_B = 24 V, but is able to withstand supply transients up to 30 V.

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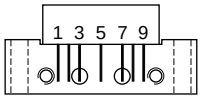
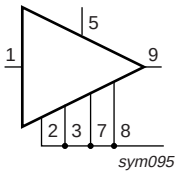
2. Pinning information

Table 2: Pinning

Pin	Description	Simplified outline	Symbol
1	input		
2	common		
3	common		
5	$+V_B$		
7	common		
8	common		
9	output		

3. Ordering information

Table 3: Ordering information

Type number	Package		
	Name	Description	Version
BGE787B	-	rectangular single-ended package; aluminium flange; 2 vertical mounting holes; 2 × 6-32 UNC and 2 extra horizontal mounting holes; 7 gold-plated in-line leads	SOT115J

4. Limiting values

Table 4: Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions	Min	Max	Unit
V_B	supply voltage		-	25	V
V_i	RF input voltage		-	55	dBmV
T_{stg}	storage temperature		–40	+100	°C
T_{mb}	mounting base temperature		–20	+100	°C

5. Characteristics

Table 5: Characteristics

Bandwidth 40 MHz to 750 MHz; V_B = 24 V; T_{case} = 30 °C; $Z_S = Z_L$ = 75 Ω; unless otherwise specified.

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
G_p	power gain	f = 50 MHz		28.5	-	29.5	dB
		f = 750 MHz		29	-	-	dB
SL	slope cable equivalent	f = 40 MHz to 750 MHz		0.2	-	2.2	dB
FL	flatness of frequency response	f = 40 MHz to 750 MHz		-	-	±0.45	dB
s_{11}	input return losses	f = 40 MHz to 80 MHz		20	-	-	dB
		f = 80 MHz to 160 MHz		18.5	-	-	dB
		f = 160 MHz to 320 MHz		17	-	-	dB
		f = 320 MHz to 640 MHz		15.5	-	-	dB
		f = 640 MHz to 750 MHz		14	-	-	dB
s_{22}	output return losses	f = 40 MHz to 80 MHz		20	-	-	dB
		f = 80 MHz to 160 MHz		18.5	-	-	dB
		f = 160 MHz to 320 MHz		17	-	-	dB
		f = 320 MHz to 640 MHz		15.5	-	-	dB
		f = 640 MHz to 750 MHz		14	-	-	dB
φ_{s21}	phase response	f = 50 MHz		135	-	225	deg
CTB	composite triple beat	110 channels flat; V_o = 44 dBmV; measured at 745.25 MHz		-	-	–48	dB
X_{mod}	cross modulation	110 channels flat; V_o = 44 dBmV; measured at 55.25 MHz		-	-	–52	dB
CSO	composite second order distortion	110 channels flat; V_o = 44 dBmV; measured at 746.5 MHz		-	-	–56	dB
d_2	second order distortion		[1]	-	-	–70	dB
V_o	output voltage	d_{im} = –60 dB	[2]	59	-	-	dBmV
NF	noise figure	f = 50 MHz		-	-	5	dB
		f = 750 MHz		-	-	6.5	dB
PM	positive match	f = 40 MHz to 2 GHz		-	-	3	dB
I_{tot}	total current consumption (DC)		[3]	-	-	340	mA

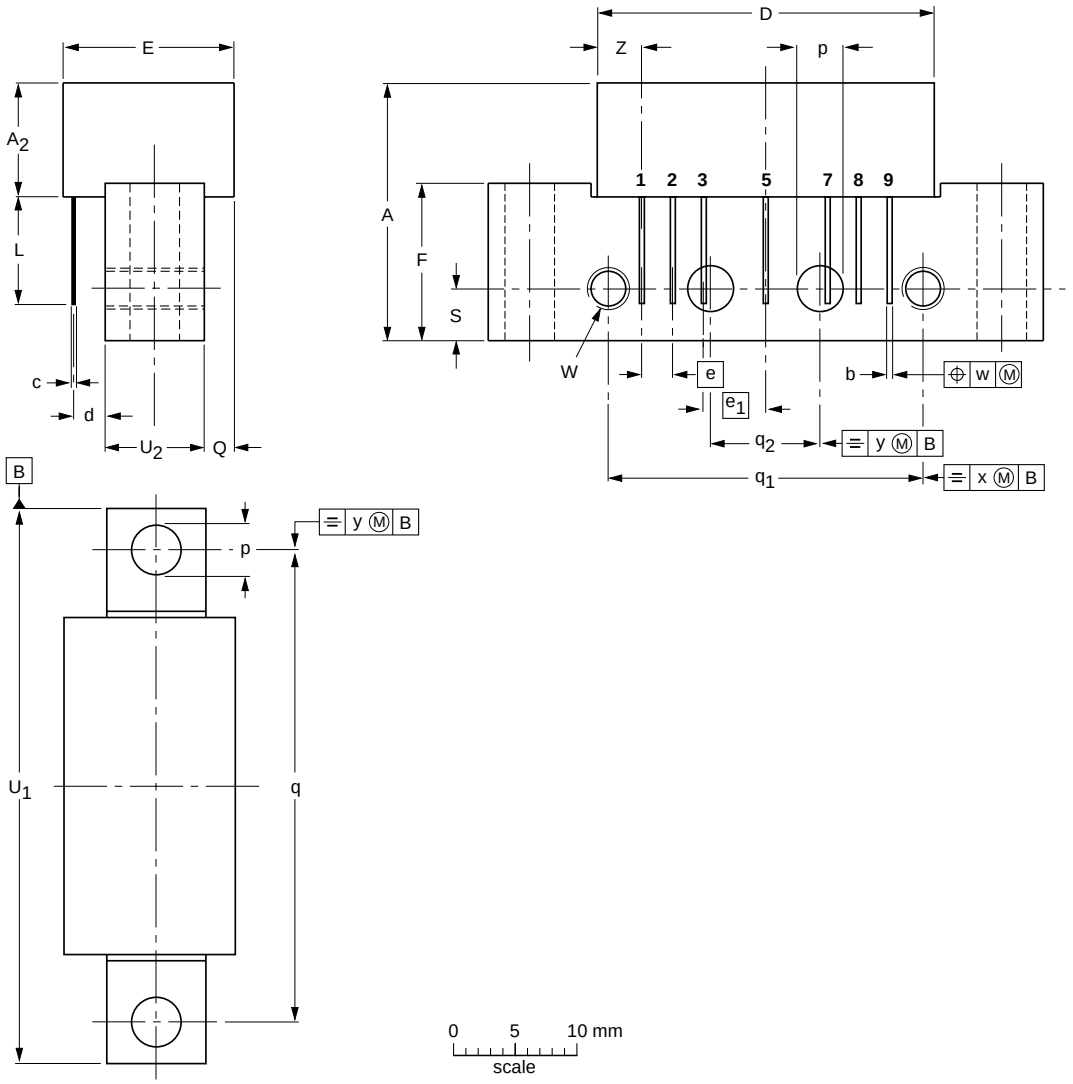
[1] f_p = 55.25 MHz; V_p = 44 dBmV; f_q = 691.25 MHz; V_q = 44 dBmV; measured at $f_p + f_q$ = 746.5 MHz.

[2] Measured according to DIN45004B;
f_p = 740.25 MHz; $V_p = V_o$; f_q = 747.25 MHz; $V_q = V_o$ – 6 dB; f_r = 749.25 MHz; $V_r = V_o$ – 6 dB; measured at $f_p + f_q - f_r$ = 738.25 MHz.

[3] The module normally operates at V_B = 24 V, but is able to withstand supply transients up to 30 V.

6. Package outline

Rectangular single-ended package; aluminium flange; 2 vertical mounting holes; 2 x 6-32 UNC and 2 extra horizontal mounting holes; 7 gold-plated in-line leads **SOT115J**



DIMENSIONS (mm are the original dimensions)

UNIT	A max.	A_2 max.	b	c	D max.	d max.	E max.	e	e_1	F	L min.	p	Q max.	q	q_1	q_2	S	U_1	U_2	W	w	x	y	Z max.
mm	20.8	9.1	0.51 0.38	0.25	27.2	2.54	13.75	2.54	5.08	12.7	8.8	4.15 3.85	2.4	38.1	25.4	10.2	4.2	44.75 44.25	8.2 7.8	6-32 UNC	0.25	0.7	0.1	3.8

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT115J						~~99-02-06~~ 04-02-04

Fig 1. Package outline SOT115J

7. Revision history

Table 6: Revision history

Document ID	Release date	Data sheet status	Change notice	Doc. number	Supersedes
BGE787B_3	20050329	Product data sheet	-	9397 750 14788	BGE787B_N_2
Modifications:	• The format of this data sheet has been redesigned to comply with the new presentation and information standard of Philips Semiconductors.				
BGE787B_N_2	20001003	Preliminary specification	-	9397 750 07565	BGE787B_1
BGE787B_1	20000426	Objective specification	-	9397 750 07011	-

8. Data sheet status

Level	Data sheet status [1]	Product status [2] [3]	Definition
I	Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
II	Preliminary data	Qualification	This data sheet contains data from the preliminary specification. Supplementary data will be published at a later date. Philips Semiconductors reserves the right to change the specification without notice, in order to improve the design and supply the best possible product.
III	Product data	Production	This data sheet contains data from the product specification. Philips Semiconductors reserves the right to make changes at any time in order to improve the design, manufacturing and supply. Relevant changes will be communicated via a Customer Product/Process Change Notification (CPCN).

[1] Please consult the most recently issued data sheet before initiating or completing a design.

[2] The product status of the device(s) described in this data sheet may have changed since this data sheet was published. The latest information is available on the Internet at URL http://www.semiconductors.philips.com.

[3] For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

9. Definitions

Short-form specification — The data in a short-form specification is extracted from a full data sheet with the same type number and title. For detailed information see the relevant data sheet or data handbook.

Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). 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.

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