



# BGE787B

750 MHz, 29 dB gain push-pull amplifier

Rev. 4 — 16 September 2011

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 and benefits

- 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

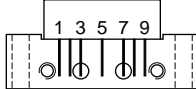
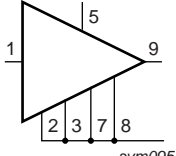
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$G_p$	power gain	$f = 50 \text{ MHz}$	28.5	-	29.5	dB
		$f = 750 \text{ MHz}$	29	-	-	dB
$I_{\text{tot}}$	total current consumption (DC)	$V_B = 24 \text{ V}$	<a href="#">[1]</a>	-	340	mA

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



## 2. Pinning information

**Table 2. Pinning**

Pin	Description	Simplified outline	Symbol
1	input		
2	common		
3	common		
5	+V <sub>B</sub>		
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 <sub>B</sub>	supply voltage		-	25	V
V <sub>i</sub>	RF input voltage		-	55	dBmV
T <sub>stg</sub>	storage temperature		-40	+100	°C
T <sub>mb</sub>	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;  $Z_S = Z_L = 75$   $\Omega$ ; 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	-	-	$\pm 0.45$	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
$\phi_{s21}$	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;

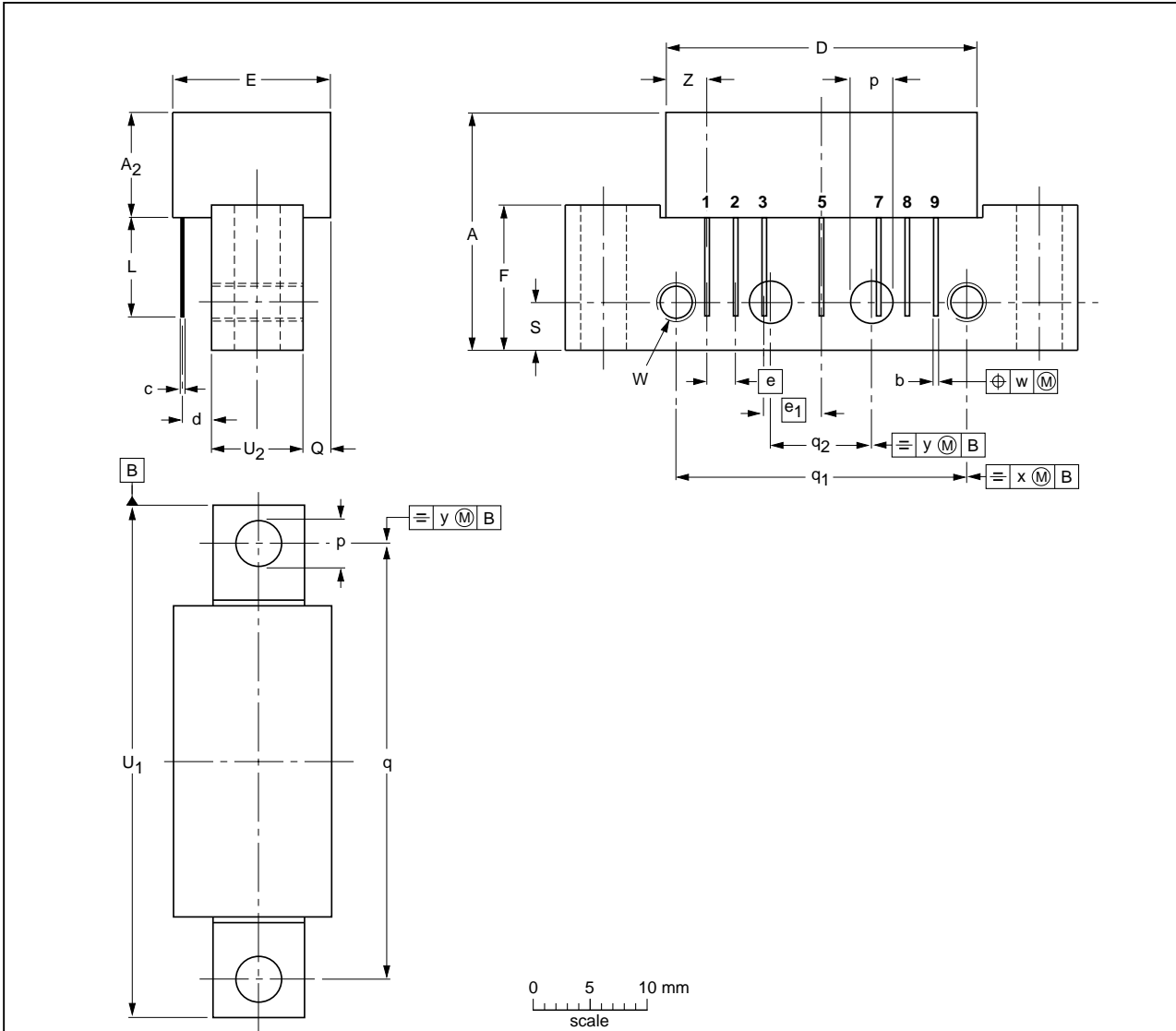
$f_p = 740.25$  MHz;  $V_p = V_o$ ;  $f_q = 747.25$  MHz;  $V_q = V_o - 6$  dB;  $f_r = 749.25$  MHz;  $V_r = V_o - 6$  dB; measured at  $f_p + f_q - f_r = 738.25$  MHz.

[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 <sub>2</sub> max.	b	c	D max.	d	E max.	e	e <sub>1</sub>	F	L min.	p	Q max.	q	q <sub>1</sub>	q <sub>2</sub>	S	U <sub>1</sub>	U <sub>2</sub>	W	w	x	y	Z max.
mm	20.8	9.5	0.51 0.38	0.25	27.2	2.04 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						04-02-04 10-06-18

**Fig 1. Package outline SOT115J**

## 7. Revision history

Table 6. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BGE787B v.4	20110916	Product data sheet	-	BGE787B v.3
Modifications:		<ul style="list-style-type: none"><li>• The format of this data sheet has been redesigned to comply with the new identity guidelines of NXP Semiconductors.</li><li>• Legal texts have been adapted to the new company name where appropriate.</li><li>• Package outline drawings have been updated to the latest version.</li></ul>		
BGE787B v.3 (9397 750 14788)	20050329	Product data sheet	-	BGE787B_N v.2
BGE787B_N v.2 (9397 750 07565)	20001003	Preliminary specification	-	BGE787B v.1
BGE787B v.1 (9397 750 07011)	20000426	Objective specification	-	-

## 8. Legal information

### 8.1 Data sheet status

Document status <sup>[1][2]</sup>	Product status <sup>[3]</sup>	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

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

[2] The term 'short data sheet' is explained in section "Definitions".

[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL <http://www.nxp.com>.

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