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BGE788

750 MHz, 34 dB gain push-pull amplifier

Rev. 5 — 16 September 2011 Product data sheet

1. Product profile

1.1 General description

Hybrid high dynamic range amplifier module in a SOT115J package operating at a supply voltage of 24 V (DC). 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

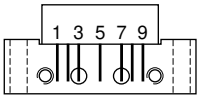
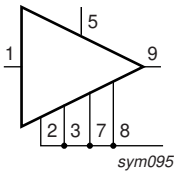
Table 1. Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
G_p	power gain	f = 50 MHz		33.5	-	34.5	dB
		f = 750 MHz		34	-	-	dB
I_{tot}	total current consumption (DC)	V_B = 24 V	[1]	290	-	320	mA

[1] The module normally operates at V_B = 24 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	$+V_B$		
7	common		
8	common		
9	output		

3. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BGE788	-	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 740 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		33.5	-	34.5	dB
		f = 750 MHz		34	-	-	dB
SL	slope cable equivalent	f = 40 MHz to 750 MHz		0.5	-	2.5	dB
FL	flatness of frequency response	f = 40 MHz to 750 MHz		-	-	±0.5	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		-	-	−49	dB
X_{mod}	cross modulation	110 channels flat; V_o = 44 dBmV; measured at 55.25 MHz		-	-	−51	dB
CSO	composite second order distortion	110 channels flat; V_o = 44 dBmV; measured at 746.5 MHz		-	-	−52	dB
d_2	second order distortion		[1]	-	-	−64	dB
V_o	output voltage	d_{im} = −60 dB	[2]	58	-	-	dBmV
F	noise figure	f = 750 MHz		-	-	7	dB
PM	positive match	f = 40 MHz to 2 GHz		-	-	3	dB
I_{tot}	total current consumption (DC)		[3]	290	-	320	mA

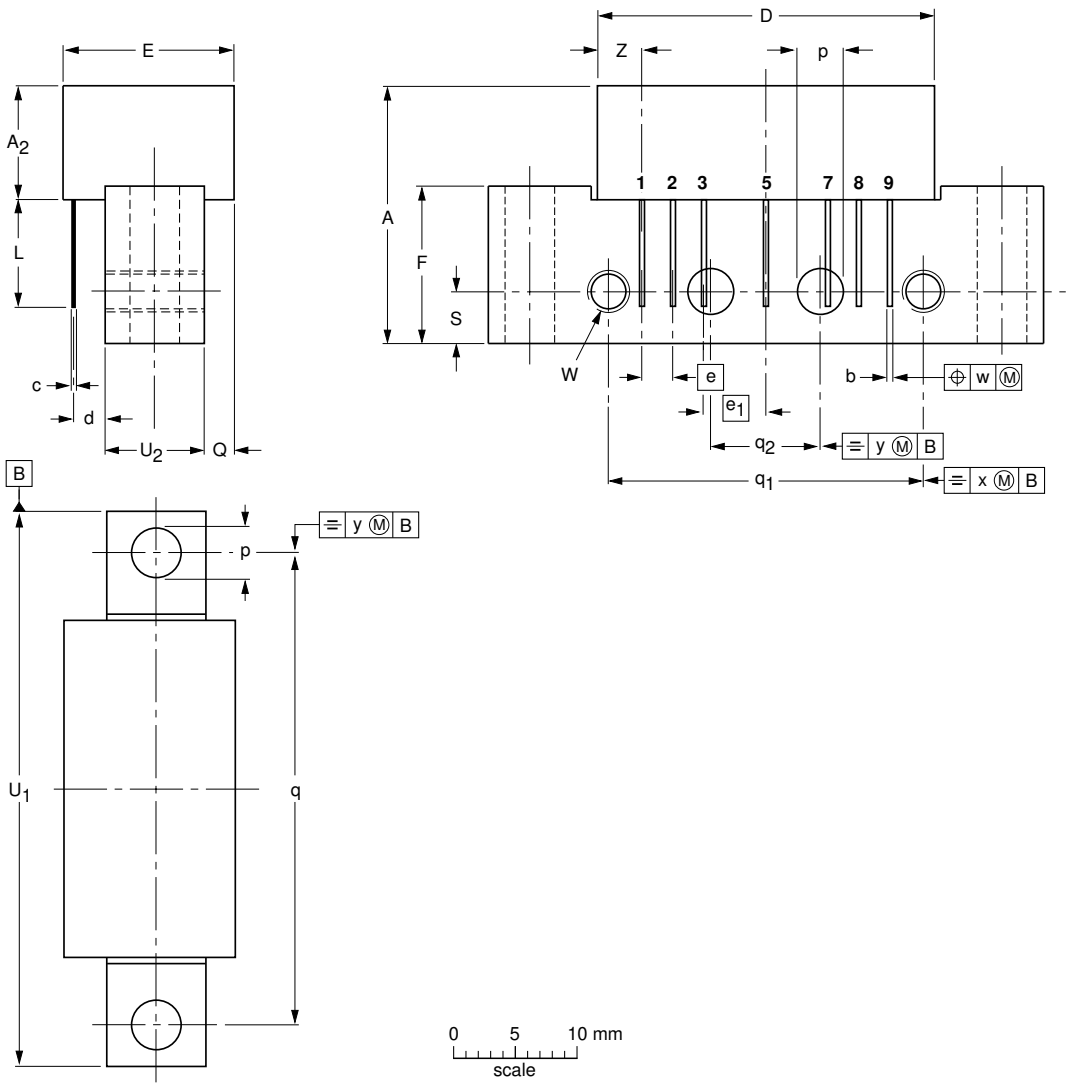
[1] f_p = 55.25 MHz; V_p = 44 dBmV; f_q = 691.25 MHz; V_q = 44 dBmV; measured at $f_p + f_q$ = 746.5 MHz.

[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	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	9.5	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
BGE788 v.5	20110916	Product data sheet	-	BGE788 v.4
Modifications:	• The format of this data sheet has been redesigned to comply with the new identity guidelines of NXP Semiconductors. • Legal texts have been adapted to the new company name where appropriate. • Package outline drawings have been updated to the latest version.			
BGE788 v.4 (9397 750 14433)	20050330	Product data sheet	-	BGE788 v.3
BGE788 v.3 (9397 750 08812)	20011115	Product specification	-	BGE788 v.2
BGE788 v.2 (9397 750 02981)	19980108	Product specification	-	BGE788_N v.1
BGE788_N v.1 (9397 750 02294)	19970505	Preliminary specification	-	-

8. Legal information

8.1 Data sheet status

Document status[1][2]	Product status[3]	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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10. Contents

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