CGD944C

870 MHz, 25 dB gain power doubler amplifier

Rev. 4 — 25 June 2014 Product data sheet

1. Product profile

1.1 General description

Hybrid amplifier module in a SOT115J package, operating at a supply voltage of 24 V (DC), employing Hetero Field Effect Transistor (HFET) GaAs dies.

1.2 Features and benefits

- High output capability
- Excellent linearity
- Extremely low noise
- Excellent return loss properties
- Rugged construction
- Gold metallization ensures excellent reliability

1.3 Applications

- CATV systems operating in the 40 MHz to 870 MHz frequency range

1.4 Quick reference data

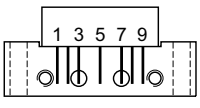
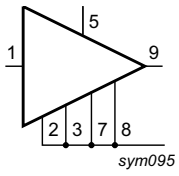
Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
G_p	power gain	f = 870 MHz	24	25	26	dB
I_{tot}	total current	V_B = 24 V [1]	-	450	-	mA

[1] Direct Current (DC).

2. Pinning information

Table 2. Pinning

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

3. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
CGD944C	-	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		-	30	V
$V_{i(RF)}$	RF input voltage	single tone	-	75	dBmV
		132 channels flat	-	45	dBmV
T_{stg}	storage temperature		−40	+100	°C
T_{mb}	mounting base temperature		−20	+100	°C

5. Characteristics

Table 5. Characteristics

Bandwidth to 870 MHz; V_B = 24 V (DC); T_{mb} = 35 °C; unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
G_p	power gain	f = 870 MHz	24	25	26	dB
SL_{sl}	slope straight line	f = 40 MHz to 870 MHz [1]	1	-	2	dB
FL	flatness of frequency response	f = 40 MHz to 870 MHz [2]	-	0.5	-	dB
CTB	composite triple beat	79 + 53 flat NTSC channels [3]	-	−68	−66	dBc
		98 flat PAL channels [4]	-	−66	-	dBc
CSO	composite second-order distortion	79 + 53 flat NTSC channels [3]	-	−70	−67	dBc
		98 flat PAL channels [4]	-	−66	-	dBc
Xmod	cross modulation	79 + 53 flat NTSC channels [3]	-	−66	−58	dB
RL_{in}	input return loss	f = 40 MHz to 80 MHz	20	-	-	dB
		f = 80 MHz to 160 MHz	19	-	-	dB
		f = 160 MHz to 320 MHz	18	-	-	dB
		f = 320 MHz to 640 MHz	18	-	-	dB
		f = 640 MHz to 870 MHz	18	-	-	dB
RL_{out}	output return loss	f = 40 MHz to 80 MHz	20	-	-	dB
		f = 80 MHz to 160 MHz	19	-	-	dB
		f = 160 MHz to 320 MHz	18	-	-	dB
		f = 320 MHz to 640 MHz	18	-	-	dB
		f = 640 MHz to 870 MHz	18	-	-	dB

Table 5. Characteristics *...continued*

Bandwidth to 870 MHz; V_B = 24 V (DC); T_{mb} = 35 °C; unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
NF	noise figure	f = 50 MHz	-	3.5	5.0	dB
		f = 870 MHz	-	3.5	5.0	dB
I_{tot}	total current	V_B = 24 V [5]	-	450	-	mA

[1] G_p at 870 MHz minus G_p at 40 MHz.

[2] flatness straight line (peak to valley).

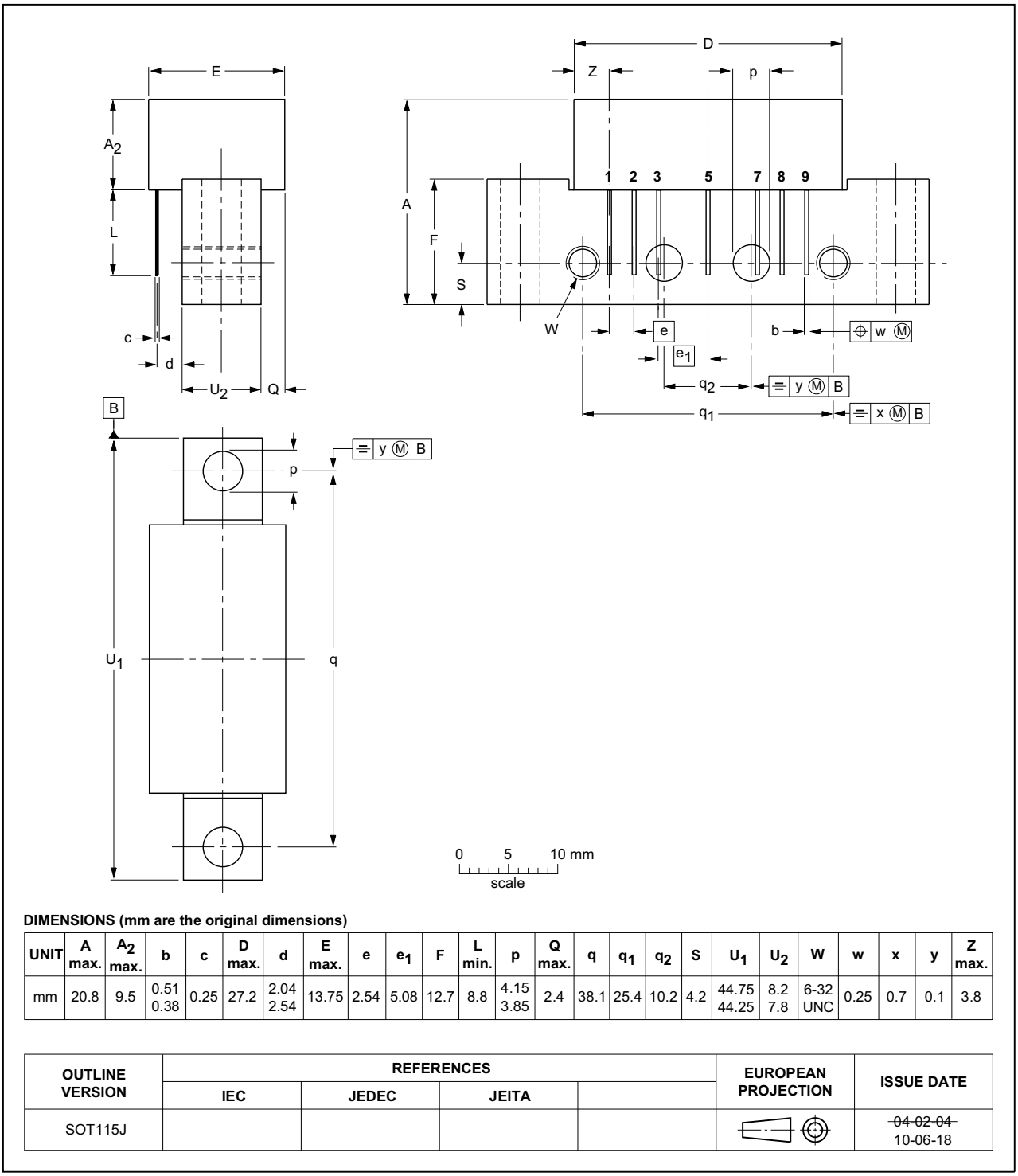
[3] 79 NTSC channels (5.25 MHz to 547.25 MHz, 48 dBmV output level) + 53 NTSC channels (553.25 MHz to 870 MHz, 38 dBmV output level).

[4] V_o = 48 dBmV.

[5] Direct Current (DC).

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. Handling information

CAUTION

This device is sensitive to ElectroStatic Discharge (ESD). Observe precautions for handling electrostatic sensitive devices.

Such precautions are described in the *ANSI/ESD S20.20*, *IEC/ST 61340-5*, *JESD625-A* or equivalent standards.

8. Abbreviations

Table 6. Abbreviations

Acronym	Description
CATV	Community Antenna TeleVision
DC	Direct Current
GaAs	Gallium-Arsenide
NTSC	National Television Standard Committee
PAL	Phase-Alternation Line
RF	Radio Frequency
UNC	UNified Coarse thread

9. Revision history

Table 7. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
CGD944C v.4	20140625	Product data sheet	-	CGD944C v.3
Modifications:	• Table note 3 on page 3: 997.25 MHz has been changed to 870 MHz. • Section 7 on page 5: The ESD warning has been moved here from the front page. • Legal texts have been updated.			
CGD944C v.3	20100929	Product data sheet	-	CGD944C v.2
CGD944C v.2	20091116	Product data sheet	-	CGD944C v.1
CGD944C v.1	20070606	Product data sheet	-	-

10. Legal information

10.1 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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12. Contents

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