

CGD942C

870 MHz, 23 dB gain power doubler amplifier

Rev. 02 — 19 November 2009

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.



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

1.2 Features

- 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

	Parameter	Conditions		Typ	Max	Unit
G_p	power gain	$f = 870 \text{ MHz}$	22	23	24	dB
I_{tot}	total current	$V_B = 24 \text{ V}$	[1] -	450	-	mA

[1] Direct Current (DC)

2. Pinning information

Table 2. Pinning

	Description	Graphic symbol
1	input	
2, 3	common	
5	+V _B	
7, 8	common	
9	output	

3. Ordering information

Table 3. Ordering information

	Package		
	Name	Description	Version
CGD942C	-	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	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; $V_B = 24\text{ V (DC)}$; $T_{mb} = 35\text{ }^{\circ}\text{C}$; unless otherwise specified.

Symbol	Parameter	Conditions	Typ	Max	Unit
G_p	power gain	$f = 870\text{ MHz}$	22	23	24 dB
SL_{sl}	slope straight line	$f = 40\text{ MHz to }870\text{ MHz}$	[1] 1	-	2 dB
FL	flatness of frequency response	$f = 40\text{ MHz to }870\text{ MHz}$	[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	$f = 40\text{ MHz to }80\text{ MHz}$	20	-	- dB
		$f = 80\text{ MHz to }160\text{ MHz}$	19	-	- dB
		$f = 160\text{ MHz to }320\text{ MHz}$	18	-	- dB
		$f = 320\text{ MHz to }640\text{ MHz}$	18	-	- dB
		$f = 640\text{ MHz to }870\text{ MHz}$	18	-	- dB
RL_{out}	output return loss	$f = 40\text{ MHz to }80\text{ MHz}$	20	-	- dB
		$f = 80\text{ MHz to }160\text{ MHz}$	19	-	- dB
		$f = 160\text{ MHz to }320\text{ MHz}$	18	-	- dB
		$f = 320\text{ MHz to }640\text{ MHz}$	18	-	- dB
		$f = 640\text{ MHz to }870\text{ MHz}$	18	-	- dB
NF	noise figure	$f = 50\text{ MHz}$	-	3.5	5.0 dB
		$f = 870\text{ MHz}$	-	3.5	5.0 dB
I_{tot}	total current	$V_B = 24\text{ V}$	[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 (55.25 MHz to 547.25 MHz, 48 dBmV output level) + 53 NTSC channels (553.25 MHz to 997.25 MHz, 38 dBmV output level).

[4] $V_o = 48\text{ dBmV}$.

[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

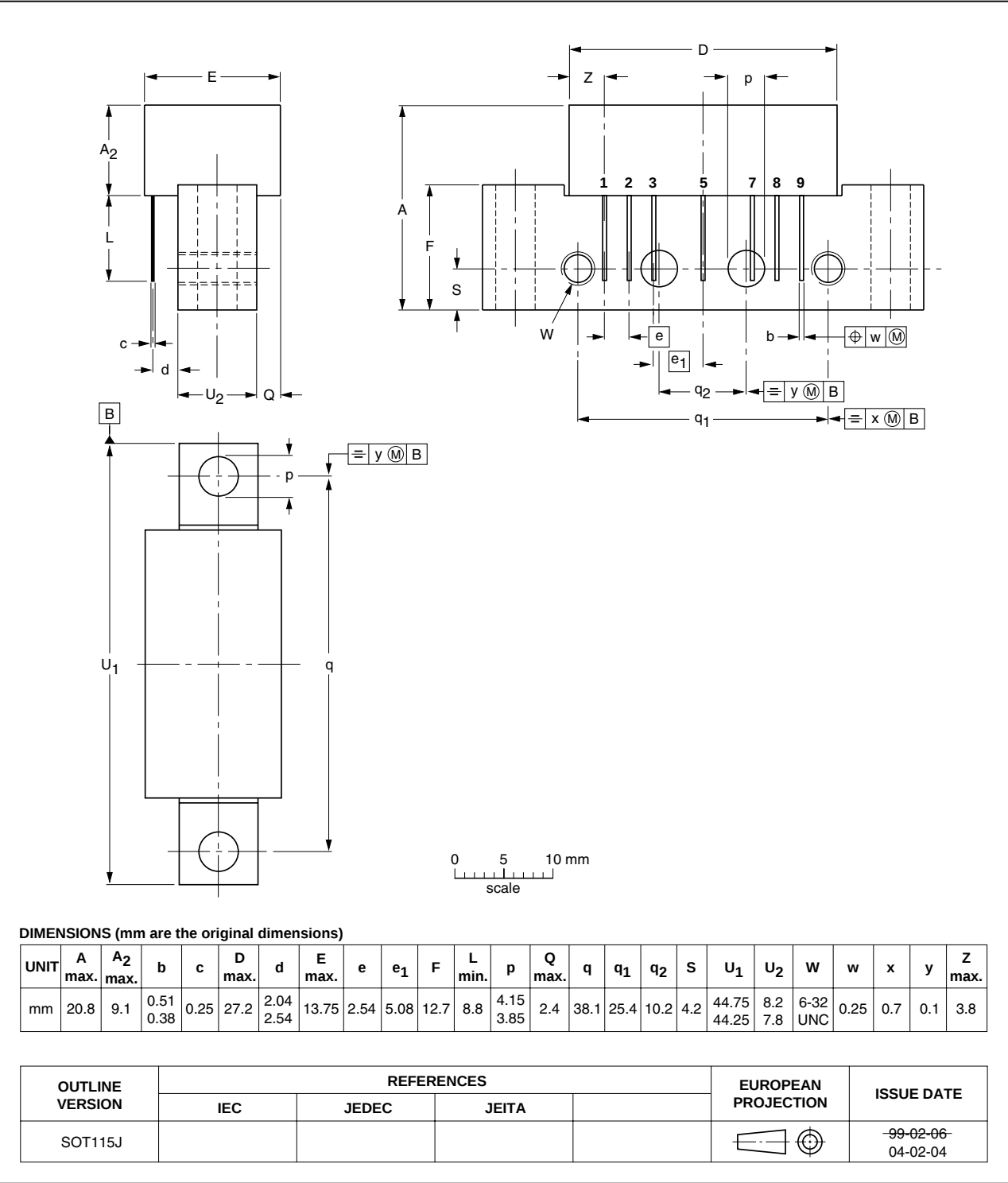


Fig 1. Package outline SOT115J

7. 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

8. Revision history

Table 7. Revision history

	Release date	Data sheet status	Change notice	Supersedes
CGD942C_2	20091119	Product data sheet	-	CGD942C_1
Modifications:	• Table 5 on page 3: Correction made to the unit of CTB. • Table 5 on page 3: Correction made to the unit of CSO.			
CGD942C_1	20070607	Product data sheet	-	-

9. Legal information

9.1 Data sheet status

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.

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11. Contents

1 Product profile 1

1.1 General description 1

1.2 Features 1

1.3 Applications 1

1.4 Quick reference data 1

2 Pinning information. 2

3 Ordering information. 2

4 Limiting values. 2

5 Characteristics. 3

6 Package outline 4

7 Abbreviations. 5

8 Revision history. 5

9 Legal information. 6

9.1 Data sheet status 6

9.2 Definitions. 6

9.3 Disclaimers. 6

9.4 Trademarks. 6

10 Contact information. 6

11 Contents 7



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