

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; $V_B = 24$ V (DC); $T_{mb} = 35$ °C; unless otherwise specified.

Symbol	Parameter	Conditions		Typ	Max	Unit
G_p	power gain	f = 870 MHz	22	23	24	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
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 (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] $V_o = 48$ 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

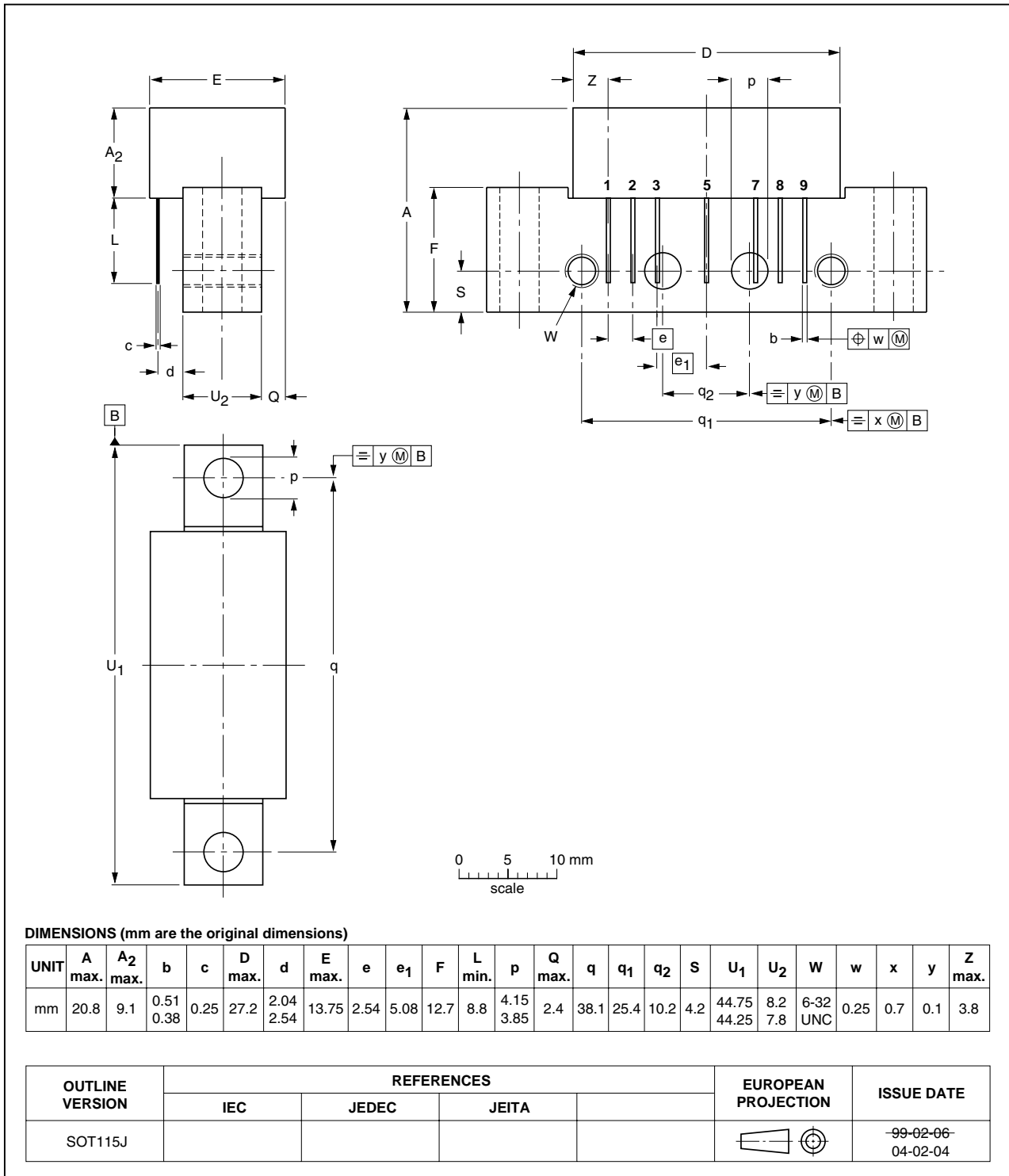


Fig 1. Package outline SOT115J

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:	<ul style="list-style-type: none"> • 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.

- [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".
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