

CGD942C

870 MHz, 23 dB gain power doubler amplifier

Rev. 01 — 7 June 2007

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.

CAUTION



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

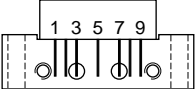
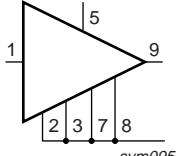
Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	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

Pin	Description	Simplified outline	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
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	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; $V_B = 24\text{ V (DC)}$; $T_{mb} = 35\text{ °C}$; unless otherwise specified.

Symbol	Parameter	Conditions	Min	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	dB
		98 flat PAL channels	[4] -	-66	-	dB
CSO	composite second-order distortion	79 + 53 flat NTSC channels	[3] -	-70	-67	dB
		98 flat PAL channels	[4] -	-66	-	dB
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.

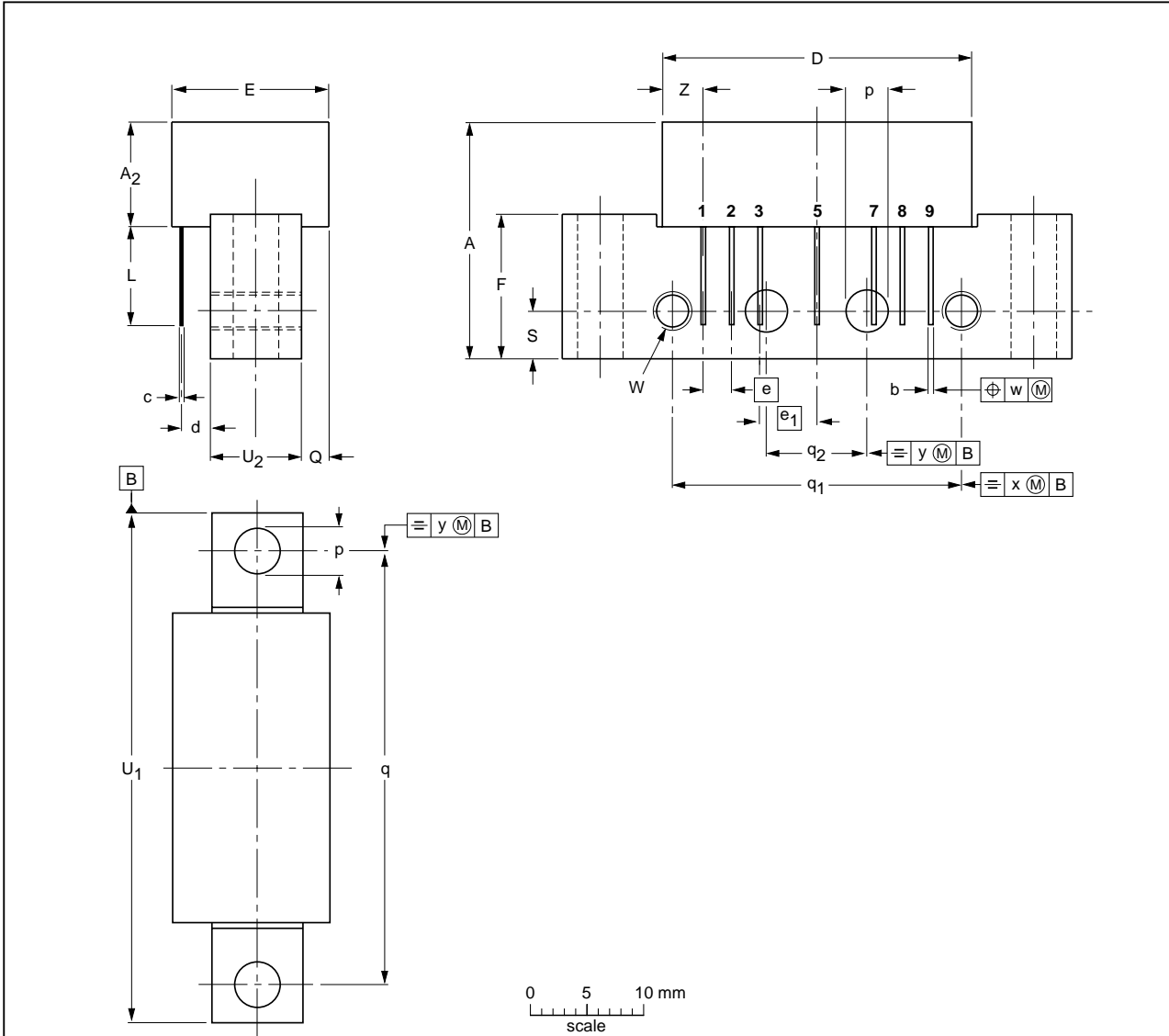
[4] $V_o = 48\text{ dBmV}$.

[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



DIMENSIONS (mm are the original dimensions)

UNIT	A max.	A ₂ max.	b	c	D max.	d max.	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	9.1	0.51 0.38	0.25	27.2	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						99-02-06 04-02-04

Fig 1. Package outline SOT115J

7. Abbreviations

Table 6. Abbreviations

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

8. Revision history

Table 7. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
CGD942C_1	20070607	Product data sheet	-	-

9. Legal information

9.1 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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