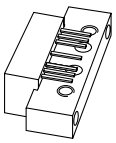


CGD942C

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

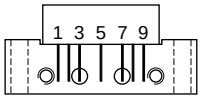
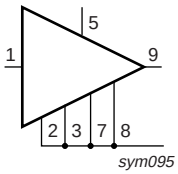
Table 1. Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
G_p	power gain	f = 870 MHz		22	23	24	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	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 V (DC); T_{mb} = 35 °C; unless otherwise specified.

Symbol	Parameter	Conditions		Min	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	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 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).

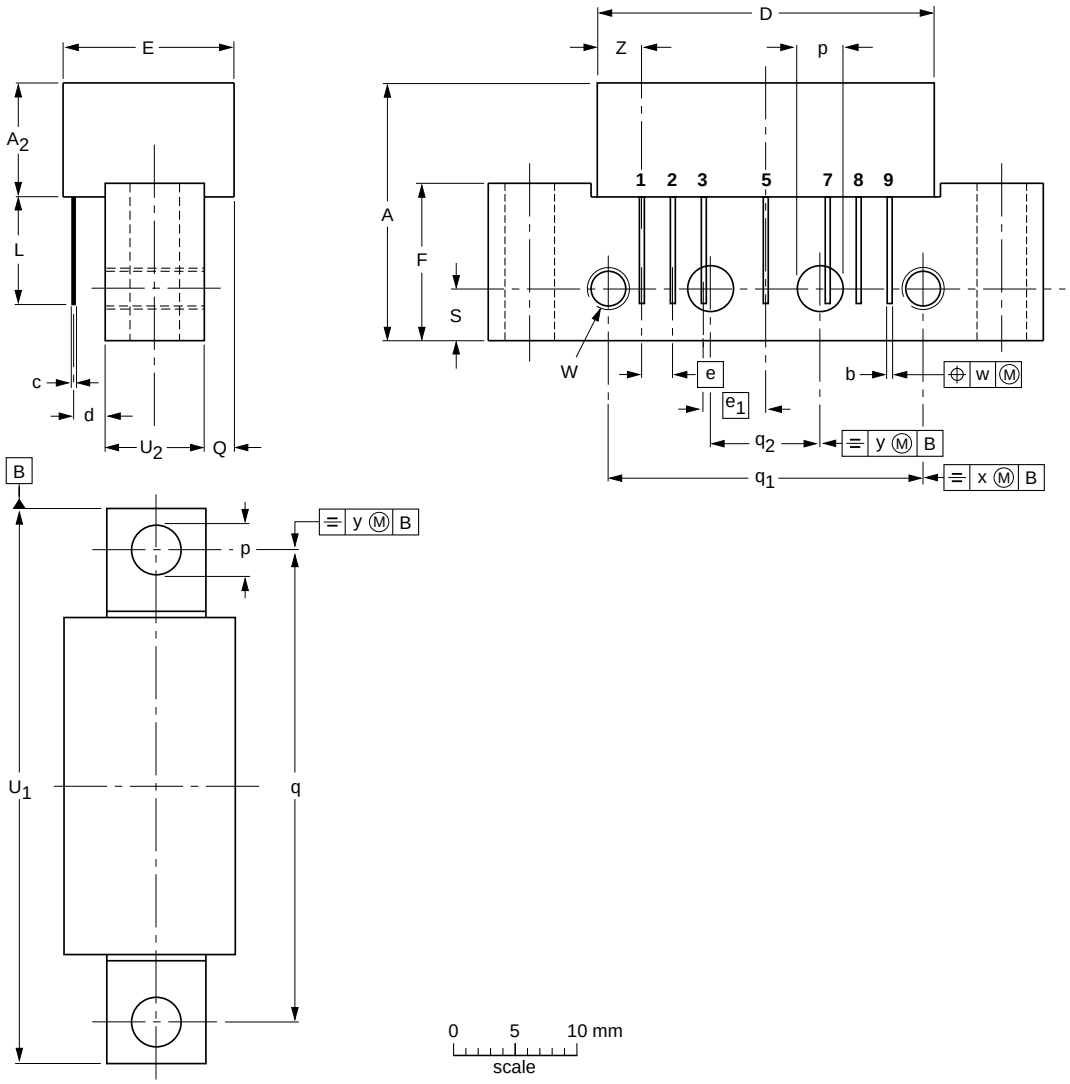
[3] 79 NTSC channels: 55.25 MHz to 547.25 MHz, 48 dBmV output level; + 53 NTSC channels 553.25 MHz to 997.25 MHz, 38 dBmV output level.

[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**



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".

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11. Contents

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