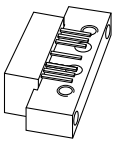


CGD1042H

1 GHz, 23 dB gain high output power doubler

Rev. 3 — 28 September 2010 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 junction 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 and benefits

- High output power capability
- Excellent linearity
- Extremely low noise
- Excellent return loss properties
- Rugged construction
- Unconditionally stable
- Thermal optimized design

1.3 Applications

- CATV systems operating in the 40 MHz to 1000 MHz frequency range

1.4 Quick reference data

Table 1. Quick reference data

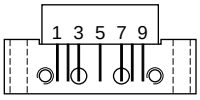
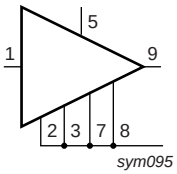
Bandwidth to 1000 MHz; V_B = 24 V (DC); T_{mb} = 35 °C; unless otherwise specified.

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
G_p	power gain	f = 45 MHz		-	21.5	-	dB
		f = 1000 MHz		22.0	23.0	24.0	dB
I_{tot}	total current		[1]	430	450	470	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
CGD1042H	-	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
T_{stg}	storage temperature		−40	+100	°C
T_{mb}	mounting base temperature		−20	+100	°C

5. Characteristics

Table 5. Characteristics

Bandwidth to 1000 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 = 45 MHz		-	21.5	-	dB
		f = 1000 MHz		22.0	23.0	24.0	dB
SL_{sl}	slope straight line	f = 45 MHz to 1000 MHz	[1]	-	1.5	-	dB
FL	flatness of frequency response	f = 45 MHz to 1000 MHz	[2]	-	0.5	-	dB
CTB	composite triple beat	V_o = 55 dBmV at 1000 MHz	[3]	-	–83	-	dBc
		V_o = 59 dBmV at 1000 MHz	[3]	-	–75	–70	dBc
CSO	composite second-order distortion	V_o = 55 dBmV at 1000 MHz	[3]	-	–80	-	dBc
		V_o = 59 dBmV at 1000 MHz	[3]	-	–76	–68	dBc
Xmod	cross modulation	V_o = 55 dBmV at 1000 MHz	[3]	-	–75	-	dB
		V_o = 59 dBmV at 1000 MHz	[3]	-	–67	-	dB
CCN	carrier-to-composite noise	V_o = 55 dBmV at 1000 MHz	[3]	-	65	-	dBc
		V_o = 59 dBmV at 1000 MHz	[3]	55	58	-	dBc
RL_{in}	input return loss	f = 45 MHz to 200 MHz		20.0	-	-	dB
		f = 200 MHz to 550 MHz		17.5	-	-	dB
		f = 550 MHz to 870 MHz		15.0	-	-	dB
		f = 870 MHz to 914 MHz		14.5	-	-	dB
		f = 914 MHz to 1000 MHz		14.0	-	-	dB
RL_{out}	output return loss	f = 45 MHz to 200 MHz		21.0	-	-	dB
		f = 200 MHz to 550 MHz		20.0	-	-	dB
		f = 550 MHz to 870 MHz		18.0	-	-	dB
		f = 870 MHz to 914 MHz		17.5	-	-	dB
		f = 914 MHz to 1000 MHz		17.0	-	-	dB
NF	noise figure	f = 50 MHz to 1000 MHz		-	5.0	5.5	dB
I_{tot}	total current		[4]	430	450	470	mA

[1] G_p at 1000 MHz minus G_p at 45 MHz.

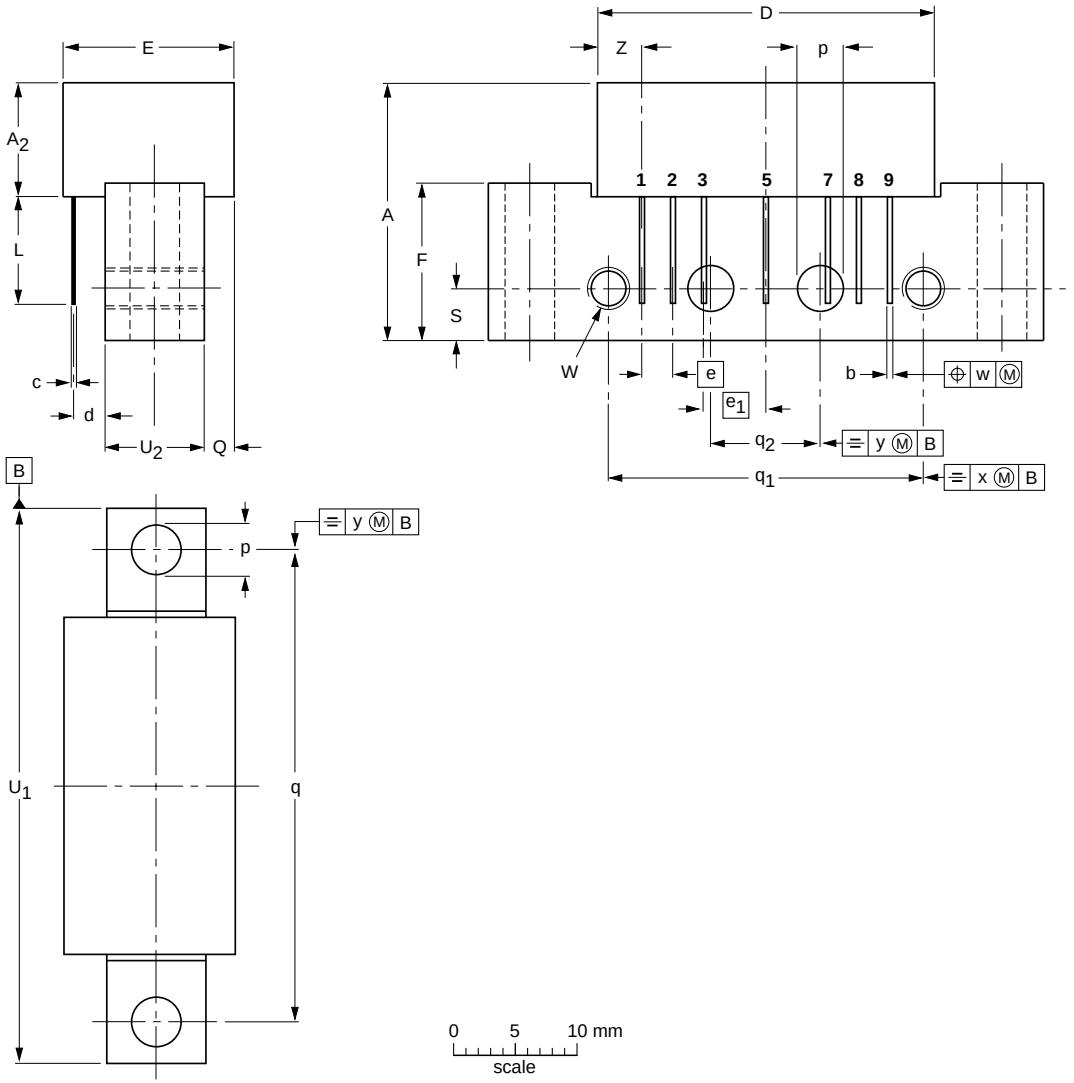
[2] flatness straight line (peak to valley).

[3] 79 NTSC channels + 75 digital channels (–6 dB offset); tilt extrapolated to 18 dB at 1000 MHz.

[4] 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. Abbreviations

Table 6. Abbreviations

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

8. Revision history

Table 7. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
CGD1042H v.3	20100928	Product data sheet	-	CGD1042H v.2
Modifications:	• Package outline drawings have been updated to the latest version. • Legal texts have been updated.			
CGD1042H v.2	20091116	Product data sheet	-	CGD1042H v.1
CGD1042H v.1	20071009	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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