

CGD1044H

1 GHz, 25 dB gain high output power doubler Rev. 3 — 29 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; $V_B = 24 \text{ V (DC)}$; $T_{mb} = 35 \text{ °C}$; unless otherwise specified.

Symbol	Parameter	Conditions	Min	Тур	Max	Unit
G_p	power gain	f = 45 MHz	-	24.0	-	dB
		f = 1000 MHz	24.0	25.0	26.0	dB
I _{tot}	total current		<u>[1]</u> 430	450	470	mA

[1] Direct Current (DC).



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2. Pinning information

Table 2. Pinning

	•	
Pin	Description	Simplified outline Graphic symbol
1	input	
2, 3	common	1 3 5 7 9
5	+V _B	
7, 8	common	12 3 7 8
9	output	sym095
		•

3. Ordering information

Table 3. Ordering information

Type number	Package				
	Name	Description	Version		
CGD1044H	-	rectangular single-ended package; aluminium flange; 2 vertical mounting holes; $2 \times 6-32$ 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

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5. Characteristics

Table 5. Characteristics

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

Symbol	Parameter	Conditions		Min	Тур	Max	Unit
G_p	power gain	f = 45 MHz		-	24.0	-	dB
		f = 1000 MHz		24.0	25.0	26.0	dB
SL _{sl}	slope straight line	f = 45 MHz to 1000 MHz	[1]	-	1.0	-	dB
FL	flatness of frequency response	f = 45 MHz to 1000 MHz	[2]	-	0.5	-	dB
СТВ	composite triple beat	$V_0 = 55 \text{ dBmV at } 1000 \text{ MHz}$	[3]	-	-83	-	dBc
		$V_0 = 59 \text{ dBmV at } 1000 \text{ MHz}$	[3]	-	-75	-70	dBc
CSO	composite second-order distortion	$V_0 = 55 \text{ dBmV at } 1000 \text{ MHz}$	[3]	-	-80	-	dBc
		$V_0 = 59 \text{ dBmV at } 1000 \text{ MHz}$	[3]	-	-76	-68	dBc
Xmod	cross modulation	$V_0 = 55 \text{ dBmV at } 1000 \text{ MHz}$	[3]	-	-75	-	dB
		$V_0 = 59 \text{ dBmV at } 1000 \text{ MHz}$	[3]	-	-67	-	dB
CCN	carrier-to-composite noise	$V_0 = 55 \text{ dBmV at } 1000 \text{ MHz}$	[3]	-	65	-	dBc
		$V_0 = 59 \text{ dBmV at } 1000 \text{ MHz}$	[3]	55	58	-	dBc
RL _{in} 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	mΑ

^[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).

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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

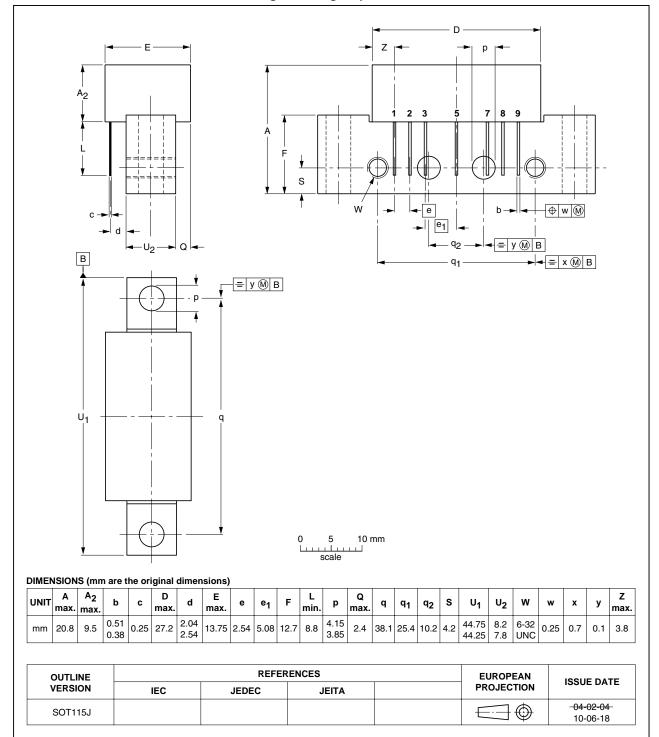


Fig 1. Package outline SOT115J

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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
CGD1044H v.3	20100929	Product data sheet	-	CGD1044H v.2
Modifications:	· ·	ine drawings have been update ave been updated.	ed to the latest version.	
CGD1044H v.2	20091116	Product data sheet	-	CGD1044H v.1
CGD1044H v.1	20071010	Product data sheet	-	-

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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.
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