

# CGY888C

34 dB, 870 MHz GaAs push-pull forward amplifier

Rev. 4 — 28 September 2010

Product data sheet

## 1. Product profile

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### 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 MMIC.

#### CAUTION



This device is sensitive to ElectroStatic Discharge (ESD). Therefore care should be taken during transport and handling.

### 1.2 Features and benefits

- High gain
- Excellent linearity
- Superior levels of ESD protection
- Extremely low noise
- Excellent return loss properties
- Gain compensation over temperature
- Rugged construction
- Unconditionally stable
- Thermally optimized design
- Compliant with Directive 2002/95/EC, regarding Restriction of Hazardous Substances (RoHS)
- Integrated ring wave surge protection

### 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**

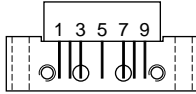
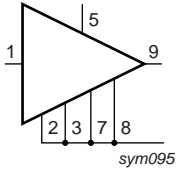
Bandwidth to 870 MHz;  $V_B = 24\text{ V (DC)}$ ;  $T_{mb} = 35\text{ °C}$ ; unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$G_p$	power gain	$f = 45\text{ MHz}$	-	34	-	dB
		$f = 870\text{ MHz}$	34.5	-	36.5	dB
$I_{tot}$	total current		[1] 260	280	300	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		Version
	Name	Description	
CGY888C	-	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	-	70	dBmV
$V_{ESD}$	electrostatic discharge voltage	Human Body Model (HBM); According JEDEC standard 22-A114E	-	2000	V
		Biased; According IEC61000-4-2	-	2000	V
$T_{stg}$	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 <sub>p</sub>	power gain	f = 45 MHz	-	34	-	dB	
		f = 870 MHz	34.5	-	36.5	dB	
SL <sub>sl</sub>	slope straight line	f = 45 MHz to 870 MHz	[1]	-	1.5	dB	
FL	flatness of frequency response	f = 45 MHz to 870 MHz	[2]	-	0.25	dB	
CTB	composite triple beat	112 NTSC channels	[3]	-	-	-65 dBc	
		98 PAL channels	[4]	-	-68	-	dBc
CSO	composite second-order distortion	112 NTSC channels	[3]	-	-	-63 dBc	
		98 PAL channels	[4]	-	-66	-	dBc
Xmod	cross modulation	112 NTSC channels	[3]	-	-72	dB	
RL <sub>in</sub>	input return loss	f = 45 MHz to 320 MHz	20	-	-	dB	
		f = 320 MHz to 870 MHz	18	-	-	dB	
RL <sub>out</sub>	output return loss	f = 45 MHz to 320 MHz	20	-	-	dB	
		f = 320 MHz to 870 MHz	17	-	-	dB	
NF	noise figure	f = 50 MHz	-	3.5	4.0	dB	
		f = 870 MHz	-	4.0	5.0	dB	
I <sub>tot</sub>	total current		[5]	260	280	300	mA

[1] G<sub>p</sub> at 870 MHz minus G<sub>p</sub> at 45 MHz.

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

[3] f = 55.25 MHz to 745.25 MHz; V<sub>o</sub> = 44 dBmV, flat output level.

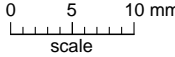
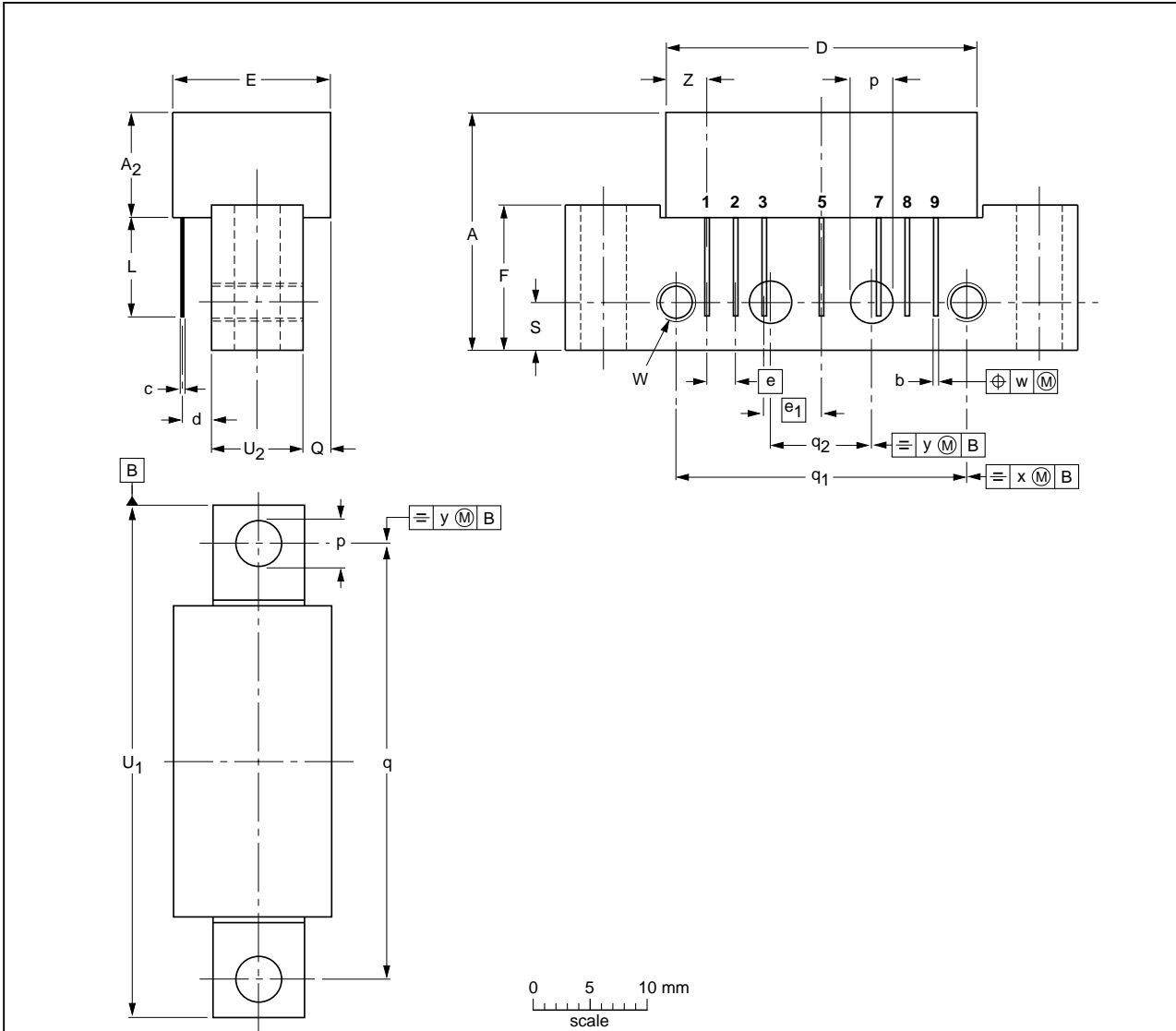
[4] f = 49.75 MHz to 847.25 MHz; V<sub>o</sub> = 44 dBmV, flat output level.

[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 <sub>2</sub> max.	b	c	D max.	d	E max.	e	e <sub>1</sub>	F	L min.	p	Q max.	q	q <sub>1</sub>	q <sub>2</sub>	S	U <sub>1</sub>	U <sub>2</sub>	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
MMIC	Monolithic Microwave Integrated Circuit
NTSC	National Television Standard Committee
PAL	Phase Alternating Line
RF	Radio Frequency
UNC	UNified Coarse

## 8. Revision history

**Table 7. Revision history**

Document ID	Release date	Data sheet status	Change notice	Supersedes
CGY888C v.4	20100928	Product data sheet	-	CGY888C v.3
Modifications:	<ul style="list-style-type: none"> <li>• Package outline drawings have been updated to the latest version.</li> <li>• Legal texts have been updated.</li> </ul>			
CGY888C v.3	20091014	Product data sheet	-	CGY888C v.2
CGY888C v.2	20090921	Product data sheet	-	CGY888C v.1
CGY888C v.1	20080619	Product data sheet	-	-

## 9. Legal information

### 9.1 Data sheet status

Document status <sup>[1][2]</sup>	Product status <sup>[3]</sup>	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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<b>1</b>	<b>Product profile</b> . . . . .	<b>1</b>
1.1	General description . . . . .	1
1.2	Features and benefits . . . . .	1
1.3	Applications . . . . .	1
1.4	Quick reference data . . . . .	2
<b>2</b>	<b>Pinning information</b> . . . . .	<b>2</b>
<b>3</b>	<b>Ordering information</b> . . . . .	<b>2</b>
<b>4</b>	<b>Limiting values</b> . . . . .	<b>2</b>
<b>5</b>	<b>Characteristics</b> . . . . .	<b>3</b>
<b>6</b>	<b>Package outline</b> . . . . .	<b>4</b>
<b>7</b>	<b>Abbreviations</b> . . . . .	<b>5</b>
<b>8</b>	<b>Revision history</b> . . . . .	<b>5</b>
<b>9</b>	<b>Legal information</b> . . . . .	<b>6</b>
9.1	Data sheet status . . . . .	6
9.2	Definitions . . . . .	6
9.3	Disclaimers . . . . .	6
9.4	Trademarks . . . . .	7
<b>10</b>	<b>Contact information</b> . . . . .	<b>7</b>
<b>11</b>	<b>Contents</b> . . . . .	<b>8</b>

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