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CGY888C

34 dB, 870 MHz GaAs push-pull forward amplifier

Rev. 4 — 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 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

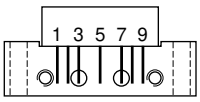
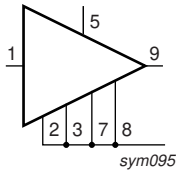
Bandwidth to 870 MHz; V_B = 24 V (DC); T_{mb} = 35 °C; unless otherwise specified.

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
G_p	power gain	f = 45 MHz		-	34	-	dB
		f = 870 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		
	Name	Description	Version
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_p	power gain	f = 45 MHz		-	34	-	dB
		f = 870 MHz		34.5	-	36.5	dB
SL_{sl}	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_{in}	input return loss	f = 45 MHz to 320 MHz		20	-	-	dB
		f = 320 MHz to 870 MHz		18	-	-	dB
RL_{out}	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_{tot}	total current		[5]	260	280	300	mA

[1] G_p at 870 MHz minus G_p at 45 MHz.

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

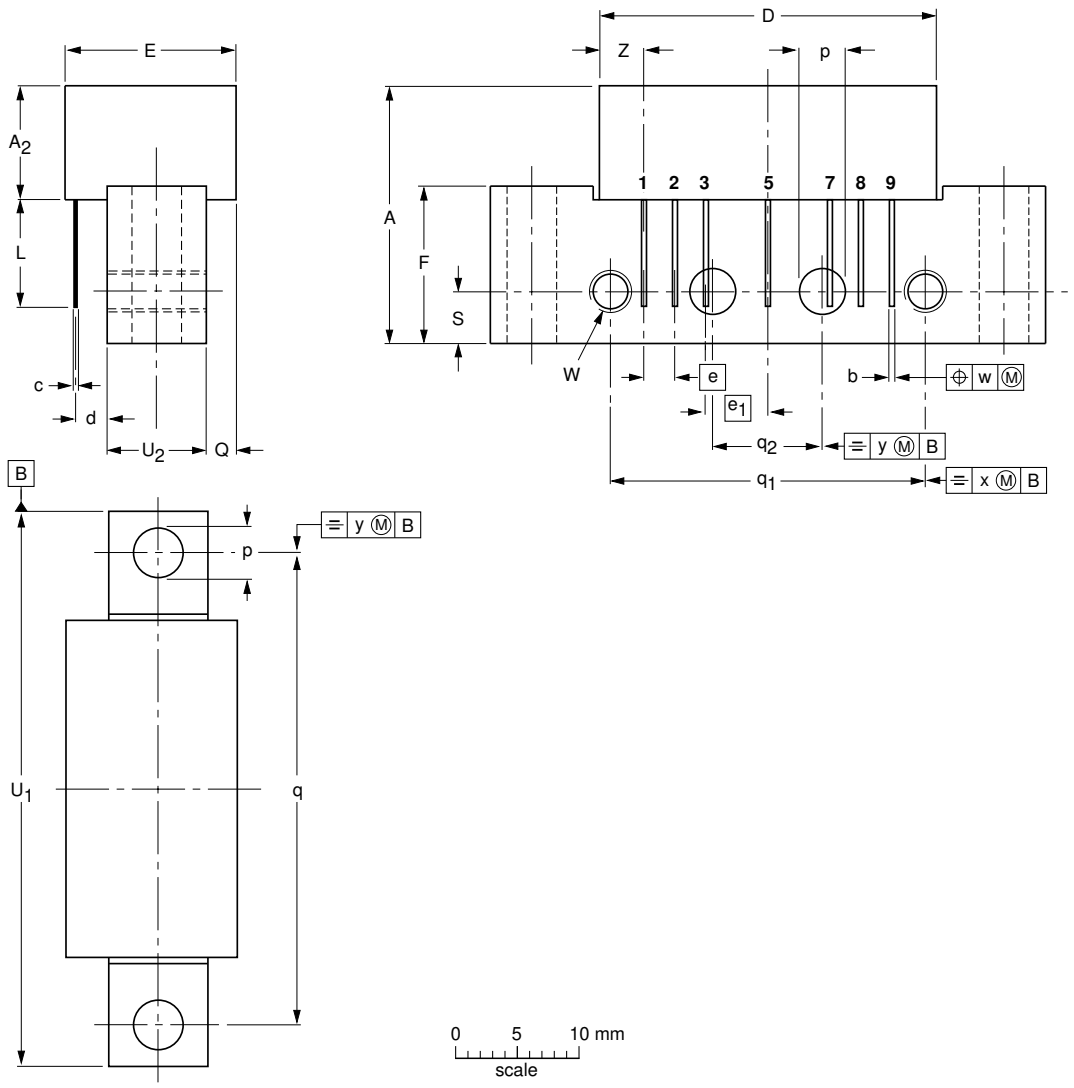
[3] f = 55.25 MHz to 745.25 MHz; V_o = 44 dBmV, flat output level.

[4] f = 49.75 MHz to 847.25 MHz; V_o = 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_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
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:	• Package outline drawings have been updated to the latest version. • Legal texts have been updated.			
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[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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11. Contents

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