

To our customers,

Old Company Name in Catalogs and Other Documents

On April 1st, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

Renesas Electronics website: <http://www.renesas.com>

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

Send any inquiries to <http://www.renesas.com/inquiry>.

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GaAs MULTI-CHIP MODULE
MC-7847

870 MHz CATV 25 dB POWER DOUBLER AMPLIFIER

DESCRIPTION

The MC-7847 is a GaAs Multi-chip Module designed for use in CATV applications up to 870 MHz. This unit has low distortion, low noise figure and return loss across the entire frequency band.

Reliability and performance uniformity are assured by our stringent quality and control procedures.

FEATURES

- Low distortion
- High linear gain $G_L = 25.0 \text{ dB MIN. @ } f = 870 \text{ MHz}$
- Low return loss

<R> **ORDERING INFORMATION**

Part Number	Order Number	Package	Supplying Form
MC-7847	MC-7847-AZ	7-pin special with heatsink (Pb-Free)	25 pcs MAX./Tray

Remark To order evaluation samples, contact your nearby sales office.

Part number for sample order: MC-7847

ABSOLUTE MAXIMUM RATINGS (T_A = +25°C)

Parameter	Symbol	Ratings	Unit
Supply Voltage	V _{DD}	30	V
Input Voltage ^{Note}	V _i	65.0	dBmV
Operating Case Temperature	T _c	-30 to +100	°C
Storage Temperature	T _{stg}	-40 to +100	°C

Note In case of single tone

Caution Observe precautions when handling because these devices are sensitive to electrostatic discharge.

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Not all products and/or types are available in every country. Please check with an NEC Electronics sales representative for availability and additional information.

RECOMMENDED OPERATING CONDITIONS ($Z_s = Z_L = 75 \Omega$)

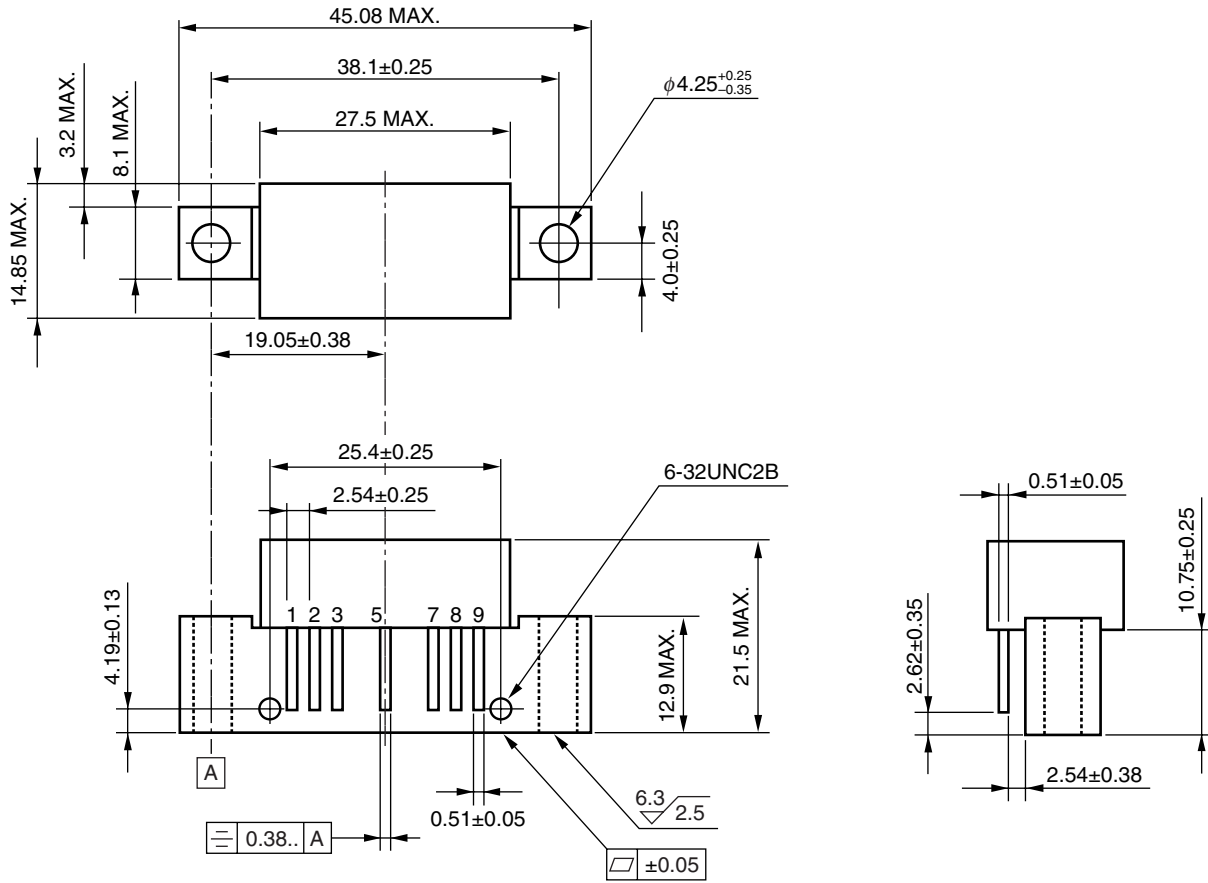
Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Supply Voltage	V_{DD}		23.5	24.0	24.5	V
Input Voltage	V_i	110 channel, 10 dB tilted across the band	–	29.0	32.0	dBmV
Operating Case Temperature	T_c		–30	+25	+85	°C

ELECTRICAL CHARACTERISTICS ($T_c = 30 \pm 5^\circ\text{C}$, $V_{DD} = 24 \text{ V}$, $Z_s = Z_L = 75 \Omega$)

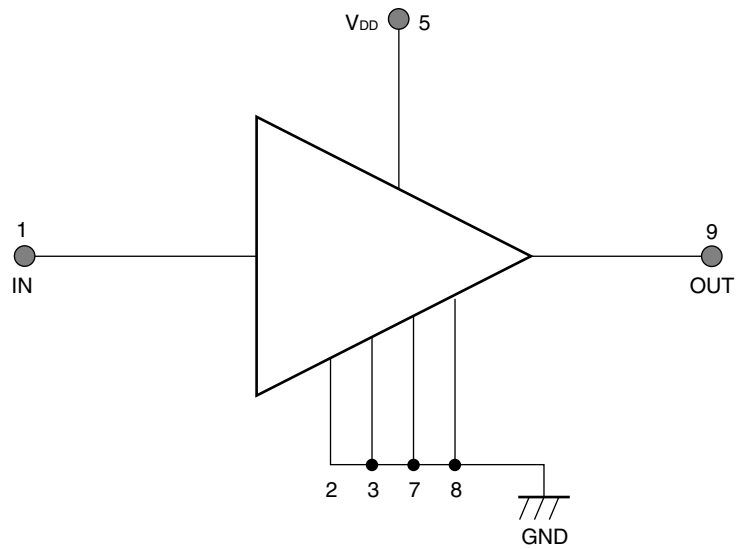
Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Linear Gain	G_L	$f = 870 \text{ MHz}$	25.0	–	26.0	dB
Gain Slope	G_{Slope}	$f = 40 \text{ to } 870 \text{ MHz}$	1.0	1.4	1.8	dB
Gain Flatness	G_{Flatness}	$f = 40 \text{ to } 870 \text{ MHz}$, Peak to valley	–	–	0.6	dB
Noise Figure 1	NF1	$f = 50 \text{ MHz}$	–	–	5.5	dB
Noise Figure 2	NF2	$f = 870 \text{ MHz}$	–	–	6.0	dB
Operating Current	I_{DD}	RF OFF	275	–	375	mA
Composite Triple Beat	CTB	110 channel, $V_o = 50 \text{ dBmV}$ at 745.25 MHz, 10 dB tilted across the band	–	–	–60	dBc
Cross Modulation	XM		–	–	–55	dBc
Composite 2nd Order Beat	CSO		–	–	–63	dBc
Input Return Loss 1	RLi1	$f = 40 \text{ to } 160 \text{ MHz}$	20	–	–	dB
Input Return Loss 2	RLi2	$f = 160 \text{ to } 320 \text{ MHz}$	20	–	–	dB
Input Return Loss 3	RLi3	$f = 320 \text{ to } 640 \text{ MHz}$	19	–	–	dB
Input Return Loss 4	RLi4	$f = 640 \text{ to } 870 \text{ MHz}$	17	–	–	dB
Output Return Loss 1	RLo1	$f = 40 \text{ to } 160 \text{ MHz}$	20	–	–	dB
Output Return Loss 2	RLo2	$f = 160 \text{ to } 320 \text{ MHz}$	20	–	–	dB
Output Return Loss 3	RLo3	$f = 320 \text{ to } 640 \text{ MHz}$	19	–	–	dB
Output Return Loss 4	RLo4	$f = 640 \text{ to } 870 \text{ MHz}$	18	–	–	dB

PACKAGE DIMENSIONS

7-PIN SPECIAL WITH HEATSINK (UNIT: mm)



PIN CONNECTION



NOTE ON CORRECT USE

- (1) The space between PC board and root of the lead should be kept more than 1 mm to prevent undesired stress to the lead and also should be kept less than 4 mm to prevent undesired parasitic inductance. Recommended that space is 2.0 to 3.0 mm typical.
- (2) Recommended torque strength of the screw is 59 to 78 Ncm.
- (3) Form the ground pattern as wide as possible to minimize ground impedance.
(to prevent undesired oscillation)
All the ground pins must be connected together with wide ground pattern to decrease impedance difference.

RECOMMENDED SOLDERING CONDITIONS

This product should be soldered in the following recommended conditions. Other soldering methods and conditions than the recommended conditions are to be consulted with our sales representatives.

Soldering Method	Soldering Conditions	Condition Symbol
Pin Part Heating	Pin area temperature : less than 350°C ^{Note} Hour : Within 3 sec./pin	—

Note The point of pin part heating must be kept more than 1.2 mm distance from the root of lead.

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"Standard": Computers, office equipment, communications equipment, test and measurement equipment, audio and visual equipment, home electronic appliances, machine tools, personal electronic equipment and industrial robots.

"Special": Transportation equipment (automobiles, trains, ships, etc.), traffic control systems, anti-disaster systems, anti-crime systems, safety equipment and medical equipment (not specifically designed for life support).

"Specific": Aircraft, aerospace equipment, submersible repeaters, nuclear reactor control systems, life support systems and medical equipment for life support, etc.

The quality grade of NEC Electronics products is "Standard" unless otherwise expressly specified in NEC Electronics data sheets or data books, etc. If customers wish to use NEC Electronics products in applications not intended by NEC Electronics, they must contact an NEC Electronics sales representative in advance to determine NEC Electronics' willingness to support a given application.

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