PRELIMINARY PRODUCT INFORMATION

NEC

GaAs MULTI-CHIP MODULE
MC-7893

1 GHz CATV 23 dB POWER DOUBLER AMPLIFIER

DESCRIPTION

The MC-7893 is a GaAs Multi-chip Module designed for use in CATV applications up to 1 GHz. 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 = 22.5 dB MIN. @ f = 1 GHz
- Low return loss

ORDERING INFORMATION

Part Number	Package	Supplying Form
MC-7893-AZ	7-pin special with heatsink	50 pcs MAX./Tray

Remark To order evaluation samples, contact your nearby sales office.
Part number for sample order: MC-7893

ABSOLUTE MAXIMUM RATINGS (T_A = +25°C, unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Supply Voltage	V_{DD}	30	V
Input Voltage [Note]	V_i	70.0	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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RECOMMENDED OPERATING CONDITIONS ($Z_S = Z_L = 75\ \Omega$, unless otherwise specified)

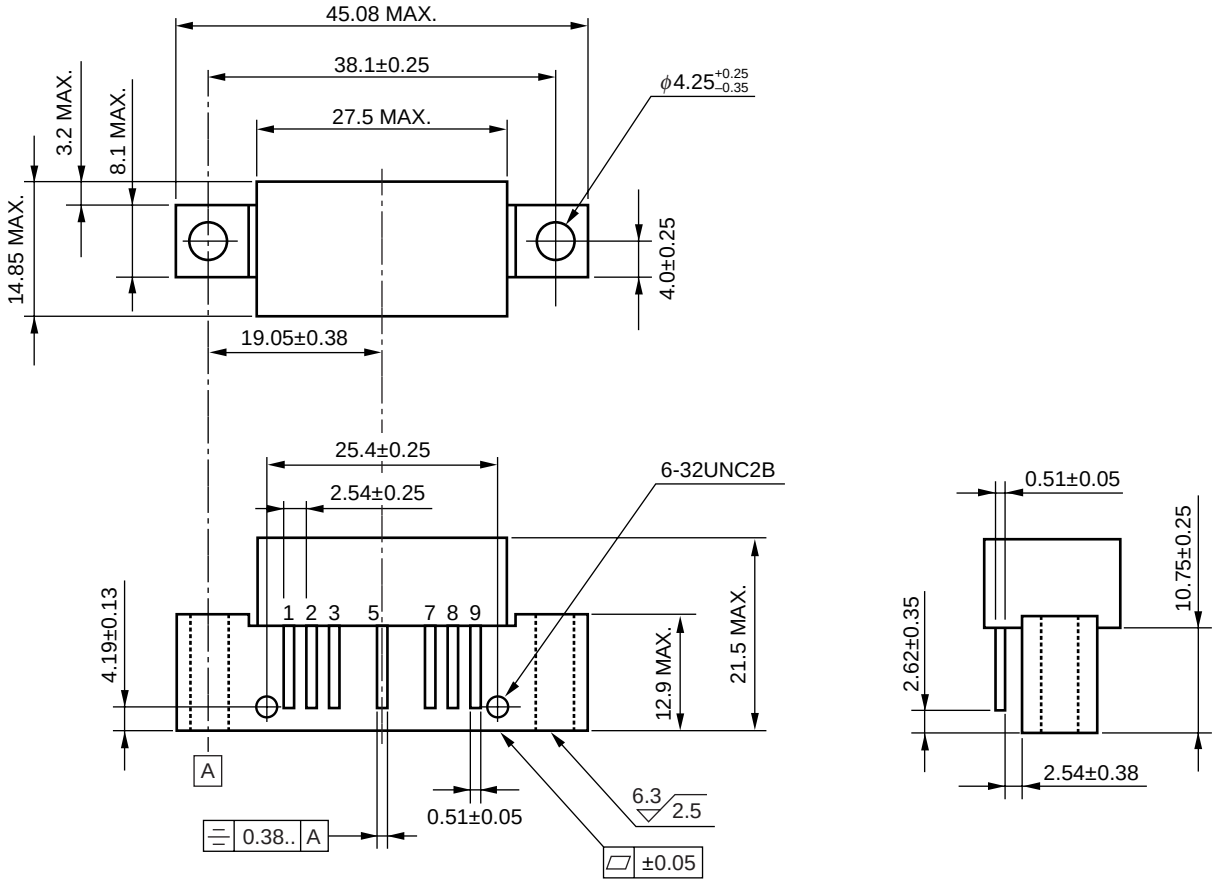
Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Supply Voltage	V_{DD}		23.5	24.0	24.5	V
Input Voltage	V_i	77 channel, 7 dB tilted across the band	–	30.0	36.0	dBmV
Operating Case Temperature	T_C		–30	+25	+85	°C

ELECTRICAL CHARACTERISTICS ($T_C = 30\pm5$°C, $V_{DD} = 24$ V, $Z_S = Z_L = 75\ \Omega$, unless otherwise specified)

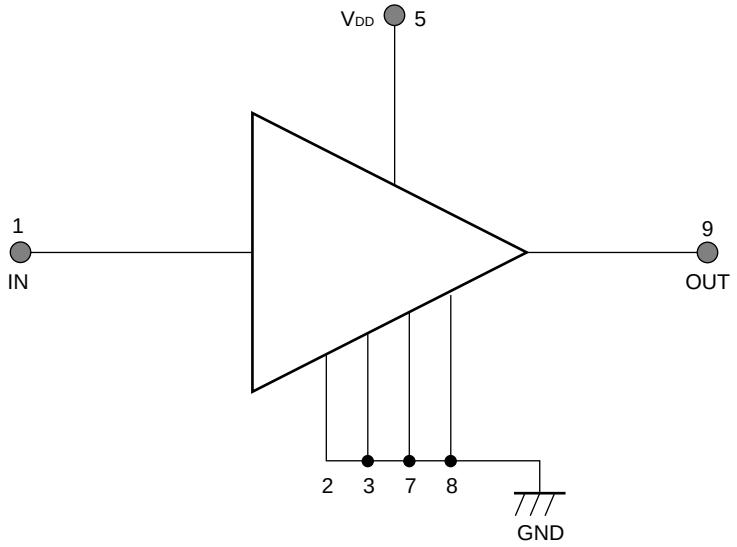
Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Linear Gain 1	G_{L1}	f = 40 MHz	21.0	–	22.0	dB
Linear Gain 2	G_{L2}	f = 1 GHz	22.5	–	24.0	dB
Gain Slope	G_{Slope}	f = 40 MHz to 1 GHz	0.8	–	2.2	dB
Gain Flatness	$G_{Flatness}$	f = 40 MHz to 1 GHz, Peak to valley	–	–	0.6	dB
Noise Figure 1	NF_1	f = 50 MHz	–	–	6.5	dB
Noise Figure 2	NF_2	f = 1 GHz	–	–	7.0	dB
Operating Current	I_{DD}	RF OFF	–	–	385	mA
Composite Triple Beat	CTB	77 channel,	–	–	–63	dBc
Cross Modulation	XM	V_O = 52 dBmV at 547.25 MHz,	–	–	–60	dBc
Composite 2nd Order Beat	CSO	7 dB tilted across the band	–	–	–65	dBc
Input Return Loss 1	RLi_1	f = 40 MHz	20	–	–	dB
Input Return Loss 2	RLi_2	f = 1 GHz	14	–	–	dB
Output Return Loss 1	RLo_1	f = 40 MHz	23	–	–	dB
Output Return Loss 2	RLo_2	f = 1 GHz	17	–	–	dB

PACKAGE DIMENSIONS

7-PIN SPECIAL WITH HEATSINK (UNIT: mm)



PIN CONNECTION



NOTES 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 and mounted under the following recommended conditions. For soldering methods and conditions other than those recommended below, contact your nearby sales office.

Soldering Method	Soldering Conditions	Recommended Condition Symbol
Partial Heating	Peak temperature (pin temperature) : 350°C or below[Note] Soldering time (per pin of device) : 3 seconds or less	–

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

- **The information in this document is current as of June, 2004. The information is subject to change without notice. For actual design-in, refer to the latest publications of NEC's data sheets or data books, etc., for the most up-to-date specifications of NEC semiconductor products. Not all products and/or types are available in every country. Please check with an NEC sales representative for availability and additional information.**
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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)

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  (Note)

  (1) "NEC" as used in this statement means NEC Corporation, NEC Compound Semiconductor Devices, Ltd. and also includes its majority-owned subsidiaries.

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Caution GaAs Products	This product uses gallium arsenide (GaAs). GaAs vapor and powder are hazardous to human health if inhaled or ingested, so please observe the following points. • Follow related laws and ordinances when disposing of the product. If there are no applicable laws and/or ordinances, dispose of the product as recommended below. 1. Commission a disposal company able to (with a license to) collect, transport and dispose of materials that contain arsenic and other such industrial waste materials. 2. Exclude the product from general industrial waste and household garbage, and ensure that the product is controlled (as industrial waste subject to special control) up until final disposal. • Do not burn, destroy, cut, crush, or chemically dissolve the product. • Do not lick the product or in any way allow it to enter the mouth.

►**For further information, please contact**

NEC Compound Semiconductor Devices, Ltd. **http://www.ncsd.necel.com/**
E-mail: salesinfo@ml.ncsd.necel.com (sales and general)
techinfo@ml.ncsd.necel.com (technical)
Sales Division TEL: +81-44-435-1588 FAX: +81-44-435-1579

NEC Compound Semiconductor Devices Hong Kong Limited
E-mail: ncsd-hk@elhk.nec.com.hk (sales, technical and general)
Hong Kong Head Office TEL: +852-3107-7303 FAX: +852-3107-7309
Taipei Branch Office TEL: +886-2-8712-0478 FAX: +886-2-2545-3859
Korea Branch Office TEL: +82-2-558-2120 FAX: +82-2-558-5209

NEC Electronics (Europe) GmbH **http://www.ee.nec.de/**
TEL: +49-211-6503-0 FAX: +49-211-6503-1327

California Eastern Laboratories, Inc. **http://www.cel.com/**
TEL: +1-408-988-3500 FAX: +1-408-988-0279

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