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)

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RENESAS

GaAs INTEGRATED CIRCUIT

MC-7640

900 MHz BAND POWER AMPLIFIER FOR PDC HAND-HELD PHONE

DESCRIPTION

MC-7640 is a 900MHz band GaAs Multi-chip IC which was developed for digital Cellular hand-held phone. The device incorporates new GaAs FETs which was developed for L-band application and realizes high power and low distortion at 3.5 V operation voltage.

FEATURES

- High Power, Low Distortion : P_{out} = +30.5 dBm min. (π/4DQPSK modulation input)
- High Efficiency : 45 % typ. @ P_{out} = +30.5 dBm
- Low Operation Voltage : V_{DD} = 3.5 V
- 0.2cc SMD type Lead-less package (PKG size : 10 × 10 × 2.2 mm)
- Tape & Reel packaging available

ORDERING INFORMATION

PART NUMBER	PACKAGE	PACKING FORM
MC-7640-E1	0.2cc SMD type lead-less	24 mm tape width, 1pin faces toward the open end of the tape, 1000 pcs/Reel

Remark For evaluation sample order, please contact your lacal NEC sales office. (Order number : MC-7640)

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C)

PARAMETERS	SYMBOL	RATINGS	UNIT
Supply Voltage 1, 2	$V_{DD1,2}$	6.0	V
Supply Voltage 3	V_{GG}	−4.0	V
Input Power	P_{in}	+15	dBm
Operating Case Temperature	T_C	−30 to +90	°C
Storage Temperature	T_{stg}	−35 to +120	°C

Caution The IC must be handled with care to prevent static discharge because its circuit composed of GaAs MES FET.

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RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage 1, 2	$V_{DD1,2}$		3.5	4.2	V
Supply Voltage 3	V_{GG}		−2.5		V
Input Power	P_{in}		+10.0	+12.0	dBm

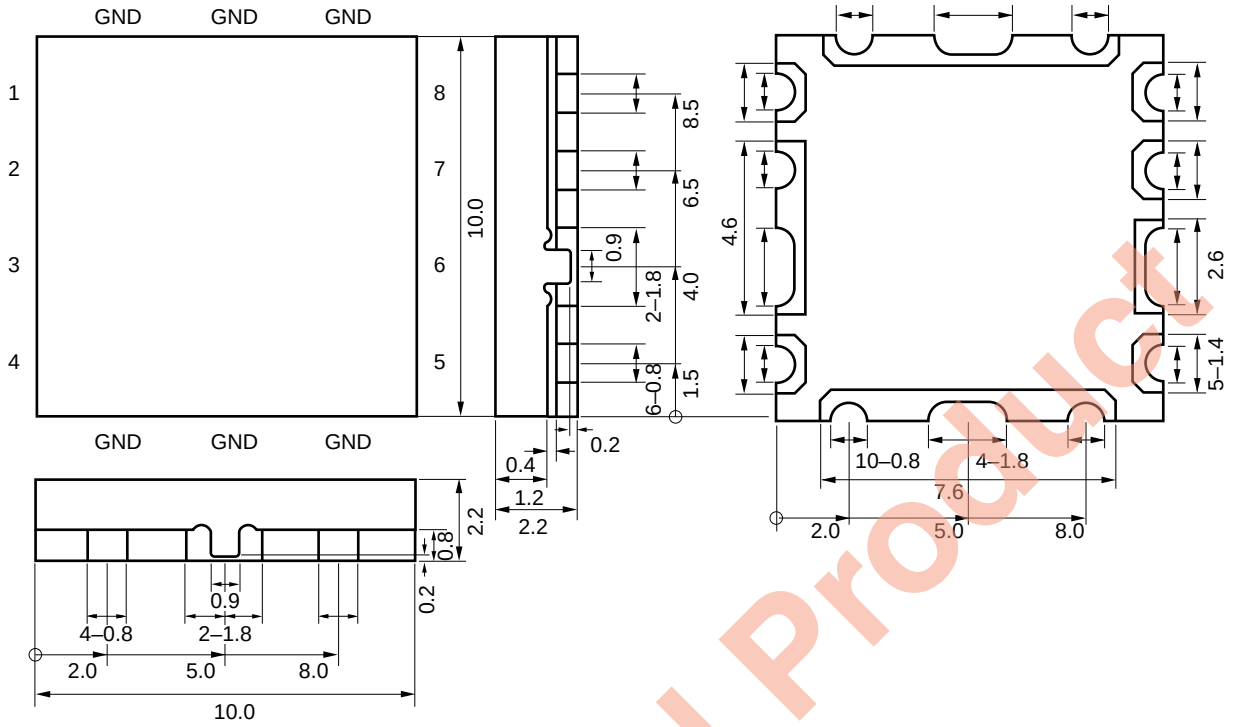
ELECTRICAL CHARACTERISTICS

(Unless otherwise specified, T_A = 25 °C, Z_S = Z_L = 50 Ω, Using NEC standard test fixture.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Frequency	f		925		960	MHz
Input Power	P_{in}	P_{out} = +30.5 dBm, V_{DD1} = V_{DD2} = 3.5 V V_{GG} = −2.5 V		+5.5	+8.0	dBm
Total Current	I_{DD}	P_{out} = +30.5 dBm, V_{DD1} = V_{DD2} = 3.5 V V_{GG} = −2.5 V		710	770	mA
Adjacent Channel Power 1	P_{adj1}	P_{out} = +30.5 dBm, V_{DD1} = V_{DD2} = 3.5 V V_{GG} = −2.5 V, Δf = ±50 kHz		−50	−48	dBc
Adjacent Channel Power 2	P_{adj2}	P_{out} = +30.5 dBm, V_{DD1} = V_{DD2} = 3.5 V V_{GG} = −2.5 V, Δf = ±100 kHz		−64	−62	dBc
Adjacent Channel Power 3	P_{adj3}	P_{out} = +29.2 dBm, V_{DD1} = V_{DD2} = 3.0 V V_{GG} = −2.5 V, Δf = ±50 kHz			−46	dBc
Harmonics	2,3 f_0	P_{out} = +30.5 dBm, V_{DD1} = V_{DD2} = 3.5 V		−35	−30	dBc
Gate Current	I_{GG}	V_{GG} = −2.5 V	−4.0		0	mA
Input VSWR	–				2.5 : 1	–
Stability	–	P_{in} = −13 to +9 dBm, Z_S = 50 Ω V_{DD1} = V_{DD2} = 3.0 to 4.0 V, V_{GG} = −2.5 V LOAD VSWR = 3 : 1, ALL PHASE	No oscillation			
Damage Withstanding	–	P_{in} = +8 dBm, Z_S = 50 Ω, V_{DD1} = V_{DD2} = 3.0 to 4.0 V, V_{GG} = −2.5 V LOAD VSWR = 20 : 1, ALL PHASE LOAD TIME 10 sec.	No damage is allowed			

- Input Signal : π/4DQPSK modulation, Data rate 42 kbps, Filter roll off α = 0.5, PN9
- Spectrum Analyzer Condition
  RBW = 1 kHz, VBW = 3 kHz, BS = 21 kHz, CHSP = 50 kHz, SPAN = 250 kHz, SWEEP TIME = 5 sec.

C3 PACKAGE DIMENSIONS (Unit: mm)



PIN CONNECTIONS

1. P_{in}
2. V_{DD1}
3. GND
4. V_{DD2}
5. P_{OUT}
6. GND
7. GND
8. V_{GG}

Note Electrode tolerance: ±0.1
Unless otherwise specified tolerance: ±0.3

RECOMMENDED SOLDERING CONDITION

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

Soldering method	Soldering conditions	Recommended condition symbol
Infrared ray reflow	Case peak temperature: 240 °C Hour : within 10 s. (more than 230 °C) : within 60 s. (more than 200 °C) Time : 2 times, (the face side and the back side)	Special

For details of recommended soldering conditions, please contact your local NEC sales office.

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Caution

The Great Care must be taken in dealing with the devices in this guide.
The reason is that the material of the devices is GaAs (Gallium Arsenide), which is designated as harmful substance according to the law concerned.
Keep the law concerned and so on, especially in case of removal.

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