To our customers,

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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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GaAs INTEGRATED CIRCUIT

Phase-out/Discontinued

μPG2128TB

L-BAND PA DRIVER AMPLIFIER

DESCRIPTION

The μPG2128TB is GaAs MMIC for PA driver amplifier which were developed for mobile phone and another L-band application. The device can operate with 3.0 V TYP., having the high gain and low distortion.

FEATURES

- Operation frequency : f_{opt} = 1 429 to 1 453 MHz (1 441 MHz TYP.)
- Supply voltage : V_{DD1} = 2.7 to 3.3 V (3.0 V TYP.)
  : V_{DD2} = 2.7 to 4.2 V (3.5 V TYP.)
- Circuit current : I_{DD} = 40 mA TYP. @ V_{DD1} = 3.0 V, V_{DD2} = 3.5 V, V_{AGC} = 2.5 V, P_{out} = +12 dBm
- High power gain : G_P = 28 dB TYP. @ V_{DD1} = 3.0 V, V_{DD2} = 3.5 V, V_{AGC} = 2.5 V, P_{in} = –16 dBm
- Gain control range : GCR = 40 dB TYP. @ V_{DD1} = 3.0 V, V_{DD2} = 3.5 V, V_{AGC} = 0.5 to 2.5 V, P_{in} = –16 dBm
- Low distortion : P_{adj1} = –60 dBc TYP. @ V_{DD1} = 3.0 V, V_{DD2} = 3.5 V, V_{AGC} = 2.5 V, P_{out} = +12 dBm, Δf = ±50 kHz, 21 kHz Bandwidth.
- High-density surface mounting : 6-pin super minimold package (2.0 × 1.25 × 0.9 mm)

APPLICATION

- Digital Cellular: PDC 1.5 GHz etc.

ORDERING INFORMATION

Part Number	Package	Marking	Supplying Form
μPG2128TB-E3	6-pin super minimold	G2M	• Embossed tape 8 mm wide • Pin 1, 2, 3 face the perforation side of the tape • Qty 3 kpcs/reel

Remark To order evaluation samples, contact your nearby sales office.
Part number for sample order: μPG2128TB

Caution Electro-static sensitive devices

Document No. PG10062EJ01V0DS (1st edition)
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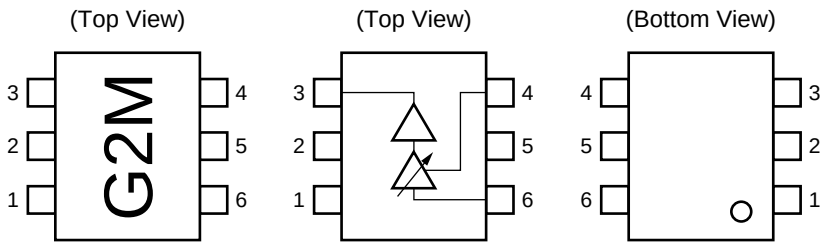
Printed in Japan

PIN CONNECTIONS, MARKING AND INTERNAL BLOCK DIAGRAM



Pin No.	Pin Name
1	V_{DD1}
2	GND
3	OUTPUT/V_{DD2}
4	V_{AGC}
5	GND
6	INPUT

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

Parameter	Symbol	Ratings	Unit
Supply Voltage1, 2	$V_{DD1, 2}$	6.0	V
AGC Control Voltage	V_{AGC}	6.0	V
Input Power	P_{in}	–8	dBm
Power Dissipation	P_D	140 Note	mW
Operating Ambient Temperature	T_A	–30 to +90	°C
Storage Temperature	T_{stg}	–35 to +150	°C

Note Mounted on double copper-clad 50 × 50 × 1.6 mm epoxy glass PWB, T_A = +85°C

RECOMMENDED OPERATING RENGE (T_A = +25°C)

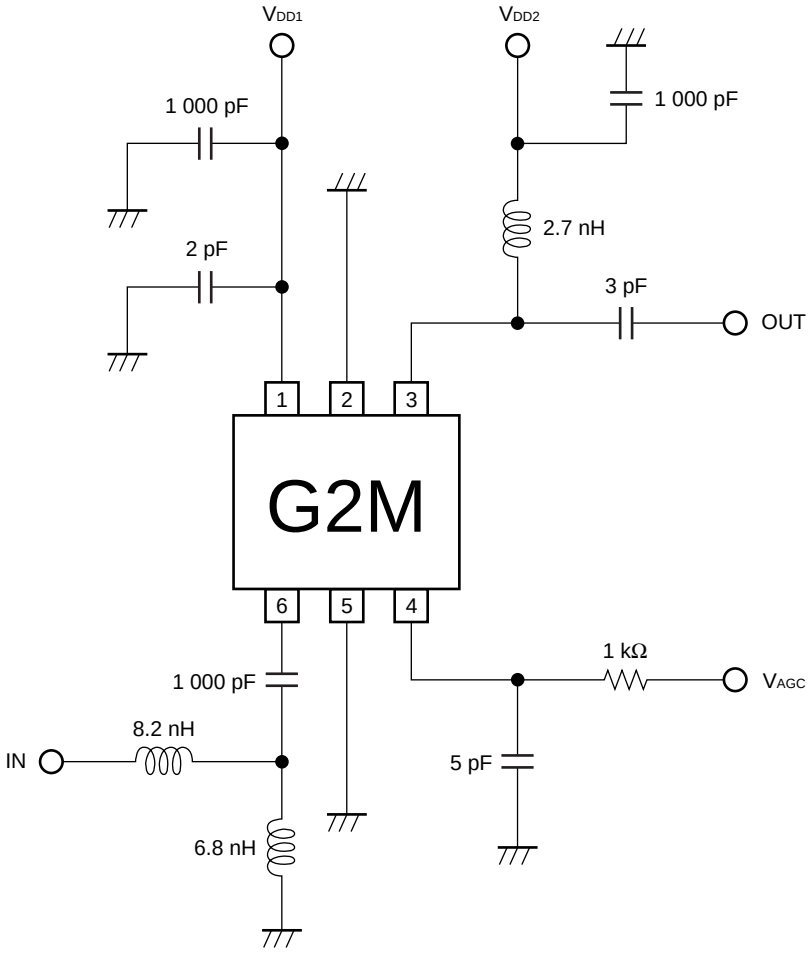
Parameter	Symbol	MIN.	TYP.	MAX.	Unit
Supply Voltage1	V_{DD1}	2.7	3.0	3.3	V
Supply Voltage2	V_{DD2}	2.7	3.5	4.2	V
AGC Control Voltage	V_{AGC}	0	–	2.5	V
Input Power	P_{in}	–	–16	–10	dBm

ELECTRICAL CHARACTERISTICS

(Unless otherwise specified, T_A = +25°C, V_{DD1} = 3.0 V, V_{DD2} = 3.5 V, π/4DQPSK modulated signal input, External input and output matching)

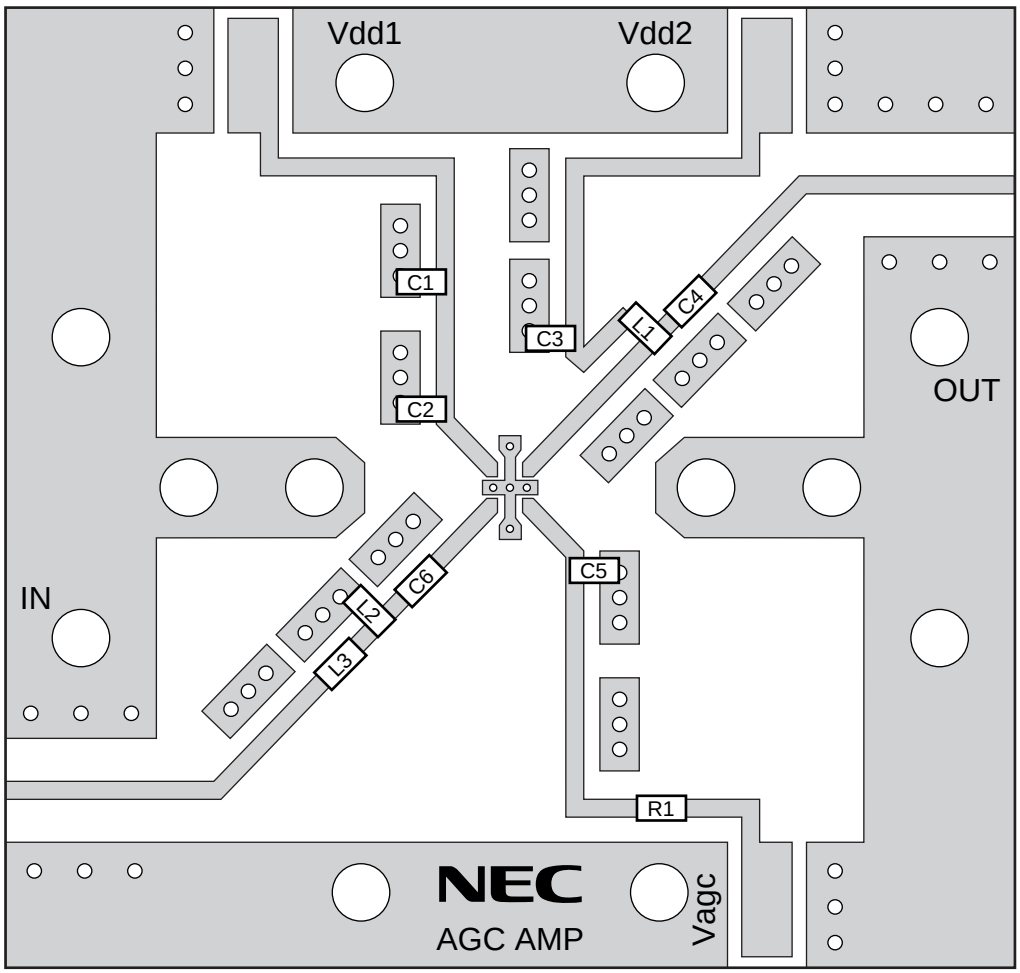
Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Operating Frequency	f_{opt}		1 429	–	1 453	MHz
Circuit Current	I_{DD}	P_{out} = +12 dBm, V_{AGC} = 2.5 V	–	40	48	mA
Power Gain	G_P	P_{in} = –16 dBm, V_{AGC} = 2.5 V	26	28	–	dB
Adjacent Channel Power Leakage 1	P_{adj1}	P_{out} = +12 dBm, V_{AGC} = 2.5 V Δf = ±50 kHz, 21 kHz Bandwidth	–	–60	–55	dBc
Adjacent Channel Power Leakage 2	P_{adj2}	P_{out} = +12 dBm, V_{AGC} = 2.5 V Δf = ±100 kHz, 21 kHz Bandwidth	–	–70	–65	dBc
Gain Control Range	GCR	P_{in} = –16 dBm, V_{AGC} = 0.5 to 2.5 V	35	40	–	dB
Gain Control Current	I_{AGC}	V_{AGC} = 0.5 to 2.5 V	–	250	500	μA

EVALUATION CIRCUIT (V_{DD1} = 3.0 V, V_{DD2} = 3.5 V, f = 1 441 MHz)



The application circuits and their parameters are for reference only and are not intended for use in actual design-ins.

ILLUSTRATION OF THE TEST CIRCUIT ASSEMBLED ON EVALUATION BOARD

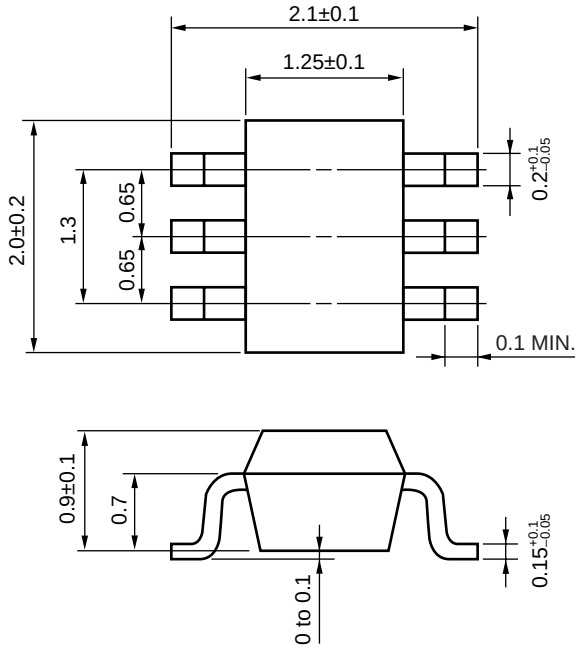


USING THE NEC EVALUATION BOARD

Symbol	Values	Part Number	Maker
L1	2.7 nH	TFL0816-2N7	Susumu
L2	6.8 nH	TFL0816-6N8	Susumu
L3	8.2 nH	TFL0816-8N2	Susumu
C1, C3, C6	1 000 pF	GRM39CH102J50	muRata
C2	2 pF	GRM39CK020C50	muRata
C4	3 pF	GRM39CJ030C50	muRata
C5	5 pF	GRM39CJ050C50	muRata
R1	1 kΩ	RR0816	Susumu

PACKAGE DIMENSIONS

6-PIN SUPER MINIMOLD (UNIT: mm)



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		Condition Symbol
Infrared Reflow	Peak temperature (package surface temperature) Time at peak temperature Time at temperature of 220°C or higher Preheating time at 120 to 180°C Maximum number of reflow processes Maximum chlorine content of rosin flux (% mass)	: 260°C or below : 10 seconds or less : 60 seconds or less : 120±30 seconds : 3 times : 0.2%(Wt.) or below	IR260
VPS	Peak temperature (package surface temperature) Time at temperature of 200°C or higher Preheating time at 120 to 150°C Maximum number of reflow processes Maximum chlorine content of rosin flux (% mass)	: 215°C or below : 25 to 40 seconds : 30 to 60 seconds : 3 times : 0.2%(Wt.) or below	VP215
Wave Soldering	Peak temperature (molten solder temperature) Time at peak temperature Preheating temperature (package surface temperature) Maximum number of flow processes Maximum chlorine content of rosin flux (% mass)	: 260°C or below : 10 seconds or less : 120°C or below : 1 time : 0.2%(Wt.) or below	WS260
Partial Heating	Peak temperature (pin temperature) Soldering time (per side of device) Maximum chlorine content of rosin flux (% mass)	: 350°C or below : 3 seconds or less : 0.2%(Wt.) or below	HS350

Caution Do not use different soldering methods together (except for partial heating).

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M8E 00.4-0110

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▶Business issue

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▶Technical issue

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