

To our customers,

Old Company Name in Catalogs and Other Documents

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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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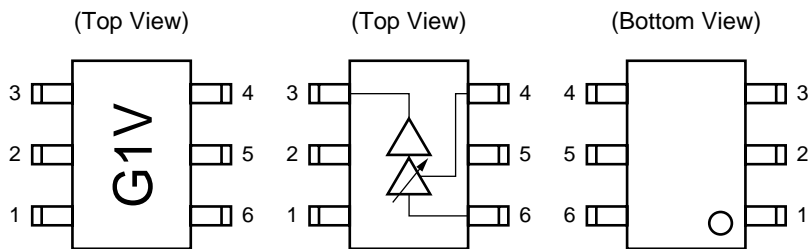
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★ PIN CONNECTIONS AND INTERNAL BLOCK DIAGRAM



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

Caution Marking is an example of μ PG2106TB.

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

Parameter	Symbol	Ratings	Unit
Supply Voltage _{1, 2}	V _{DD1, 2}	6.0	V
Gain 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	-40 to +90	°C
★ Storage Temperature	T _{stg}	-45 to +150	°C

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

RECOMMENDED OPERATING RANGE (T_A = +25°C)

Parameter	Symbol	MIN.	TYP.	MAX.	Unit
Supply Voltage _{1, 2}	V _{DD1, 2}	2.7	3.0	3.3	V
Gain Control Voltage	V _{AGC}	0	-	2.5	V
Input Power	P _{in}	-	-18	-10	dBm

★ ELECTRICAL CHARACTERISTICS

($T_A = +25^\circ\text{C}$, $V_{DD1, 2} = 3.0\text{ V}$, $\pi/4$ DQPSK modulated signal input, with external input and output matching, unless otherwise specified)

μ PG2106TB

Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Operating Frequency	f_{opt}		889	–	960	MHz
Circuit Current	I_{DD}	$P_{out} = +8\text{ dBm}$, $V_{AGC} = 2.5\text{ V}$	–	25	35	mA
Power Gain	GP	$P_{in} = -18\text{ dBm}$, $V_{AGC} = 2.5\text{ V}$	26	30	–	dB
Adjacent Channel Power Leakage 1	P_{adj1}	$P_{out} = +8\text{ dBm}$, $V_{AGC} = 2.5\text{ V}$, $\Delta f = \pm 50\text{ kHz}$, 21 kHz Bandwidth	–	-60	-55	dBc
Adjacent Channel Power Leakage 2	P_{adj2}	$P_{out} = +8\text{ dBm}$, $V_{AGC} = 2.5\text{ V}$, $\Delta f = \pm 100\text{ kHz}$, 21 kHz Bandwidth	–	-70	-65	dBc
Gain Control Range	GCR	$P_{in} = -18\text{ dBm}$, $V_{AGC} = 0.5\text{ to }2.5\text{ V}$	35	40	–	dB
Gain Control Current	I_{AGC}	$V_{AGC} = 0.5\text{ to }2.5\text{ V}$	–	200	500	μA

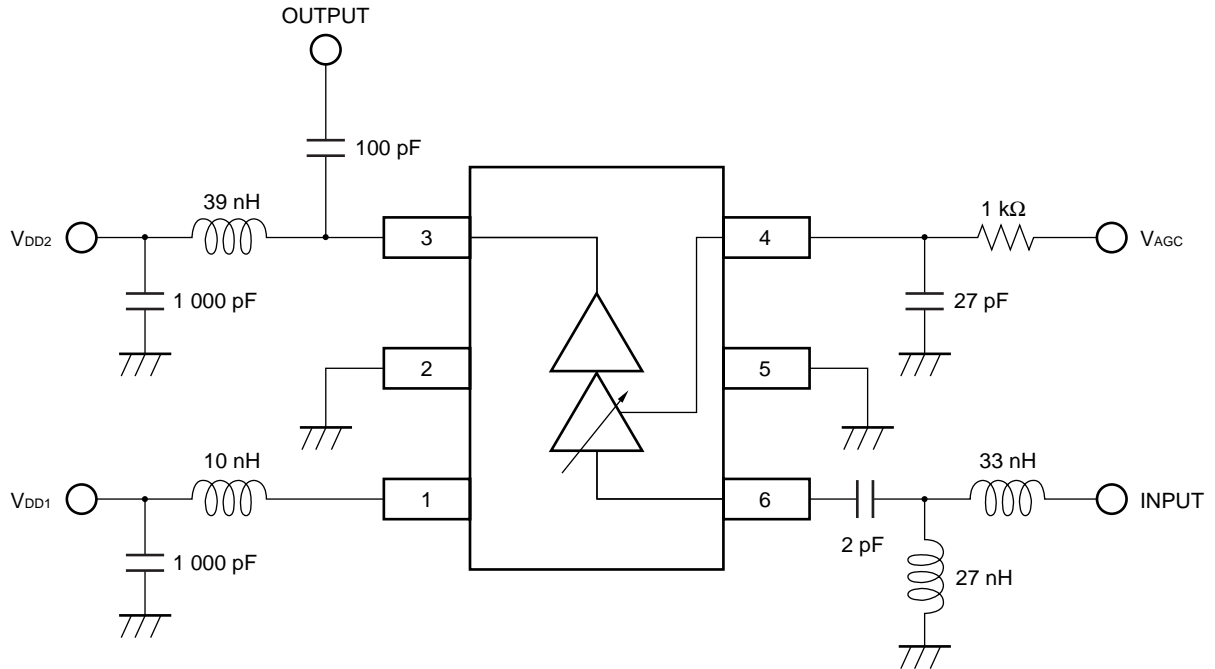
μ PG2110TB

Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Operating Frequency	f_{opt}		1 429	–	1 453	MHz
Circuit Current	I_{DD}	$P_{out} = +8\text{ dBm}$, $V_{AGC} = 2.5\text{ V}$	–	25	35	mA
Power Gain	GP	$P_{in} = -18\text{ dBm}$, $V_{AGC} = 2.5\text{ V}$	24	27	–	dB
Adjacent Channel Power Leakage 1	P_{adj1}	$P_{out} = +8\text{ dBm}$, $V_{AGC} = 2.5\text{ V}$, $\Delta f = \pm 50\text{ kHz}$, 21 kHz Bandwidth	–	-60	-55	dBc
Adjacent Channel Power Leakage 2	P_{adj2}	$P_{out} = +8\text{ dBm}$, $V_{AGC} = 2.5\text{ V}$, $\Delta f = \pm 100\text{ kHz}$, 21 kHz Bandwidth	–	-70	-65	dBc
Gain Control Range	GCR	$P_{in} = -18\text{ dBm}$, $V_{AGC} = 0.5\text{ to }2.5\text{ V}$	35	40	–	dB
Gain Control Current	I_{AGC}	$V_{AGC} = 0.5\text{ to }2.5\text{ V}$	–	200	500	μA

★ EVALUATION CIRCUIT

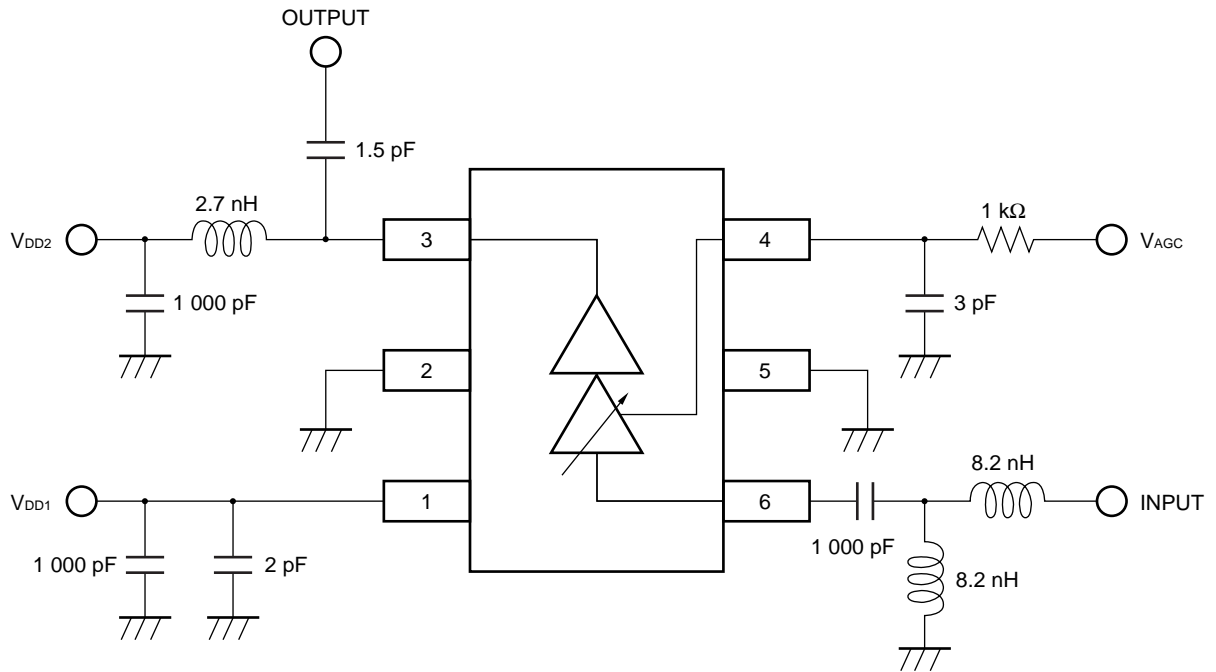
μ PG2106TB

f = 925 MHz, V_{DD1,2} = 3.0 V



μ PG2110TB

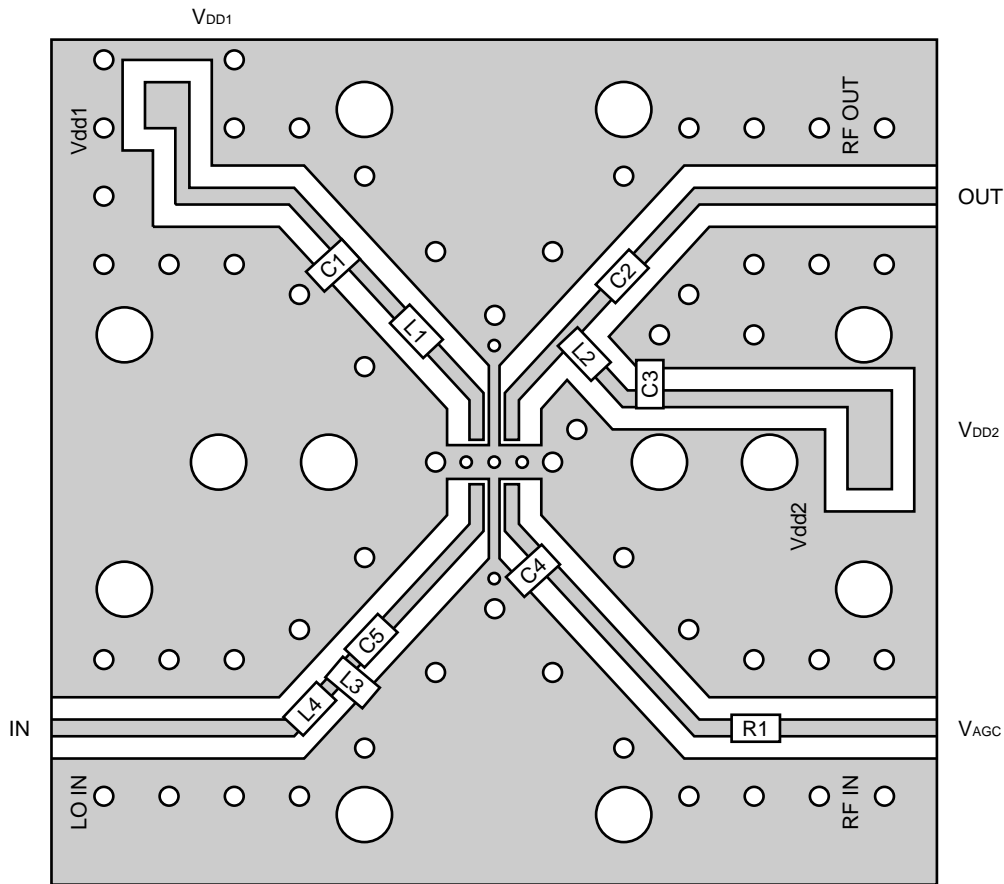
f = 1 441 MHz, V_{DD1,2} = 3.0 V



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

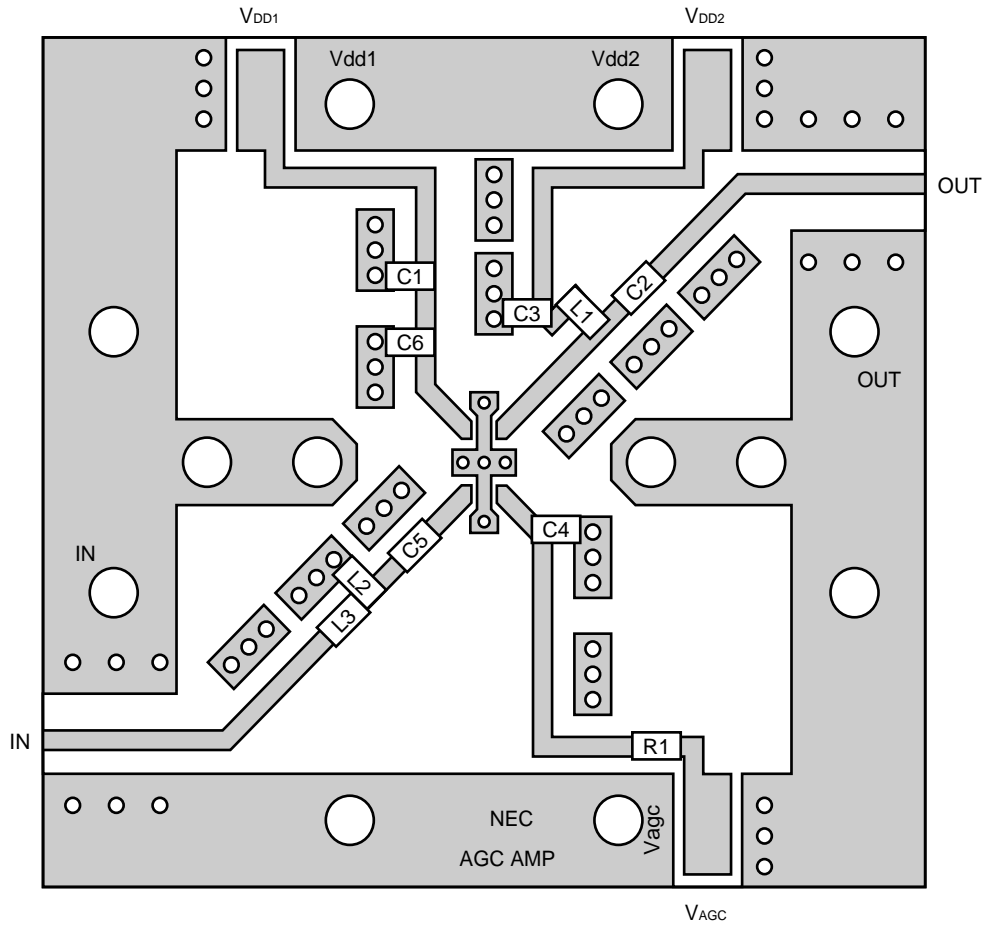
μ PG2106TB



USING THE NEC EVALUATION BOARD

Symbol	Values	Part Number	Maker
C1, C3	1 000 pF	GRM39CH102J25PB	muRata
C2	100 pF	GRM39CH101J50PB	muRata
C4	27 pF	GRM39CH270J50PB	muRata
C5	2 pF	GRM39CH020C50PB	muRata
L1	10 nH	TFL0816-10N	Susumu
L2	39 nH	TFL0816-39N	Susumu
L3	27 nH	TFL0816-27N	Susumu
L4	33 nH	TFL0816-33N	Susumu
R1	1 k Ω	RR0816P-102-D	Susumu

μ PG2110TB



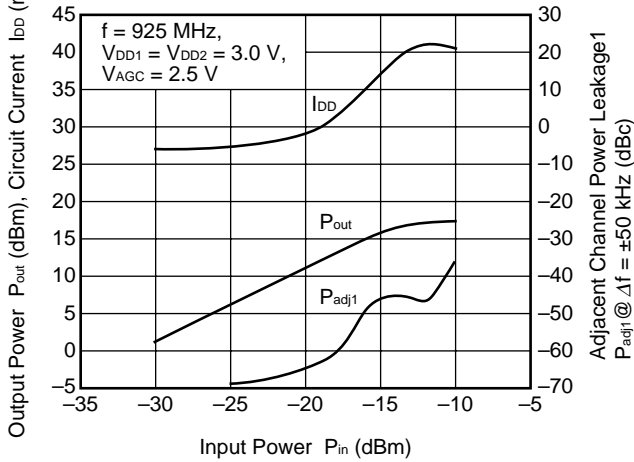
USING THE NEC EVALUATION BOARD

Symbol	Values	Part Number	Maker
C1, C3, C5	1 000 pF	GRM39CH102J25PB	muRata
C2	1.5 pF	GRM39CH1R5C50PB	muRata
C4	3 pF	GRM39CH030C50PB	muRata
C6	2 pF	GRM39CH020C50PB	muRata
L1	2.7 nH	TFL0816-2N7	Susumu
L2, L3	8.2 nH	TFL0816-8N2	Susumu
R1	1 k Ω	RR0816P-102-D	Susumu

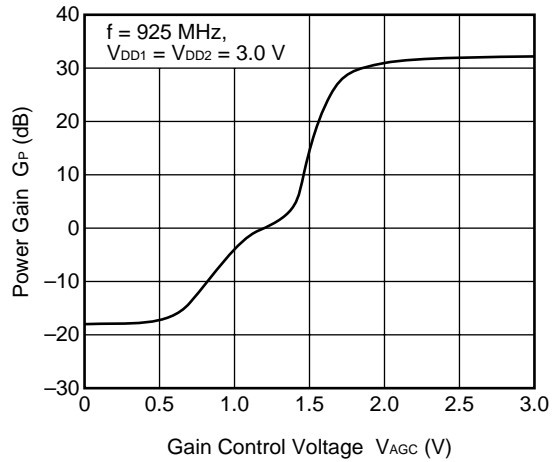
TYPICAL CHARACTERISTICS ($T_A = +25^\circ\text{C}$, unless otherwise specified)

μ PG2106TB

OUTPUT POWER, CIRCUIT CURRENT, ADJACENT CHANNEL POWER LEAKAGE vs. INPUT POWER

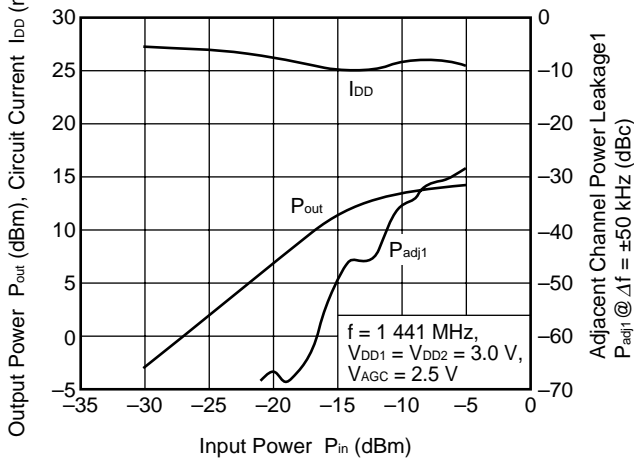


POWER GAIN vs. GAIN CONTROL VOLTAGE

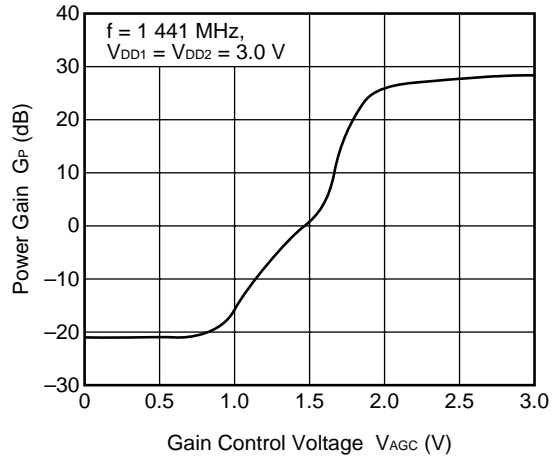


μ PG2110TB

OUTPUT POWER, CIRCUIT CURRENT, ADJACENT CHANNEL POWER LEAKAGE vs. INPUT POWER



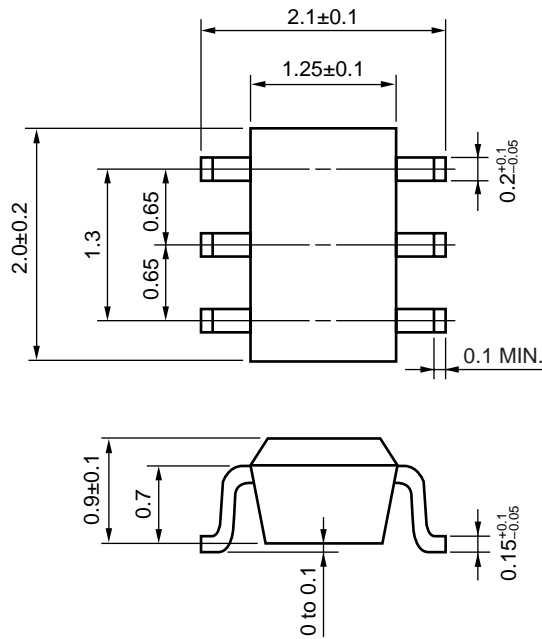
POWER GAIN vs. GAIN CONTROL VOLTAGE



Remark The graphs indicate nominal characteristics.

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

NEC Compound Semiconductor Devices, Ltd.

5th Sales Group, Sales Division TEL: +81-3-3798-6372 FAX: +81-3-3798-6783 E-mail: salesinfo@csd-nec.com

NEC Compound Semiconductor Devices Hong Kong Limited

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: +82-2-528-0301 FAX: +82-2-528-0302

NEC Electron Devices European Operations <http://www.nec.de/>

TEL: +49-211-6503-101 FAX: +49-211-6503-487

California Eastern Laboratories, Inc. <http://www.cel.com/>

TEL: +1-408-988-3500 FAX: +1-408-988-0279

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NEC Compound Semiconductor Devices, Ltd. <http://www.csd-nec.com/>

Sales Engineering Group, Sales Division
 E-mail: techinfo@csd-nec.com FAX: +81-44-435-1918