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DATA SHEET

Part No.	AN26065A
Package Code No.	ALGA011-W-0912ANA

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AN26065A

UMTS Triple Band LNA-IC (Band I, II, IV, IX / V, XIII)

■ Overview

- AN26065A is LNA-IC for triple band (Band I, II, IV, IX / V, XIII) UMTS.
- Realizing high performance by using 0.18 μm SiGeC Bi-CMOS process ($f_T = 90 \text{ GHz}$, $f_{\text{max}} = 140 \text{ GHz}$).
- Each Band is selectable and High/Low Gain-mode is changeable, controlled by integrated CMOS logic circuit.
- Achieving miniaturization by using small size package.

[Unit: MHz]

Band	TX	RX
I	1920 to 1980	2110 to 2170
II	1850 to 1910	1930 to 1990
III	1710 to 1785	1805 to 1880
IV	1710 to 1755	2110 to 2155
V	824 to 849	869 to 894
VI	830 to 840	875 to 885
VII	2500 to 2570	2620 to 2690
VIII	880 to 915	925 to 960
IX	1750 to 1785	1845 to 1880

■ Features

- Low voltage operation +2.85 V typ.
- Low current consumption 4.7 mA typ. (High-Gain mode)
25 μA typ. (Low-Gain mode)
- High gain(Gain) 16.5 dB typ. $f_{\text{RX}} = 2140 \text{ MHz}$ (High-Gain mode)
16.5 dB typ. $f_{\text{RX}} = 881.5 \text{ MHz}$ (High-Gain mode)
16.3 dB typ. $f_{\text{RX}} = 1960 \text{ MHz}$ (High-Gain mode)
- Low noise figure(NF) 1.40 dB typ. $f_{\text{RX}} = 2140 \text{ MHz}$ (High-Gain mode)
1.10 dB typ. $f_{\text{RX}} = 881.5 \text{ MHz}$ (High-Gain mode)
1.40 dB typ. $f_{\text{RX}} = 1960 \text{ MHz}$ (High-Gain mode)
- Low distortion 2.0 dBm typ. $f_{\text{RX}} = 2140 \text{ MHz}$ (High-Gain mode)
(IIP3 +10 MHz offset) 4.0 dBm typ. $f_{\text{RX}} = 881.5 \text{ MHz}$ (High-Gain mode)
2.5 dBm typ. $f_{\text{RX}} = 1960 \text{ MHz}$ (High-Gain mode)
- Small package(WLCSP)

■ Applications

- Triple-band UMTS handset.

■ Package

- 11 pin Wafer level chip size package (WLCSP)
Size : 0.86 mm \times 1.16 mm (0.3 mm pitch)

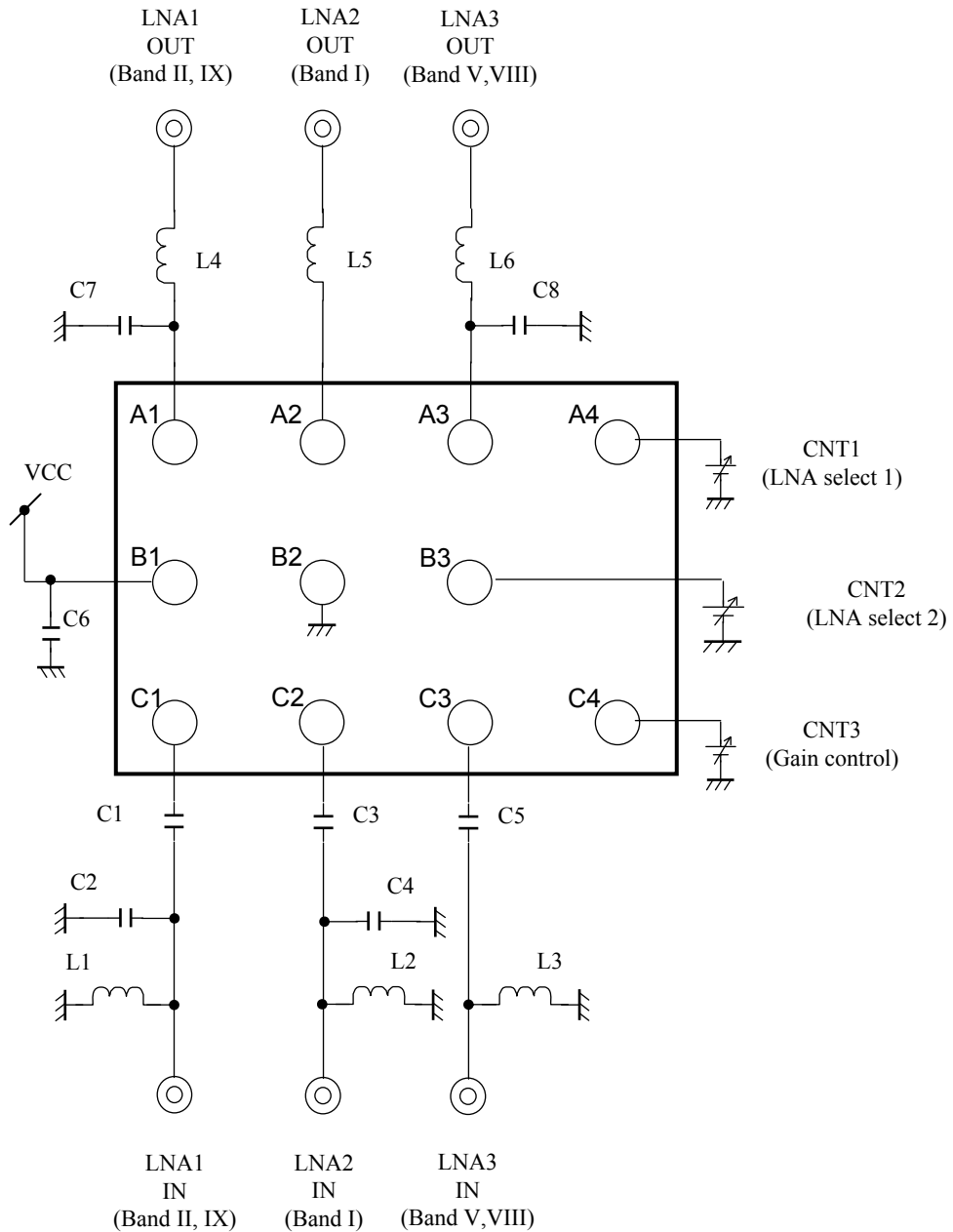
■ Type

- Bi-CMOS IC

■ Application Circuit Example 1 (Block Diagram)

Note) See "External parts 1" on Page47.

(Top View)

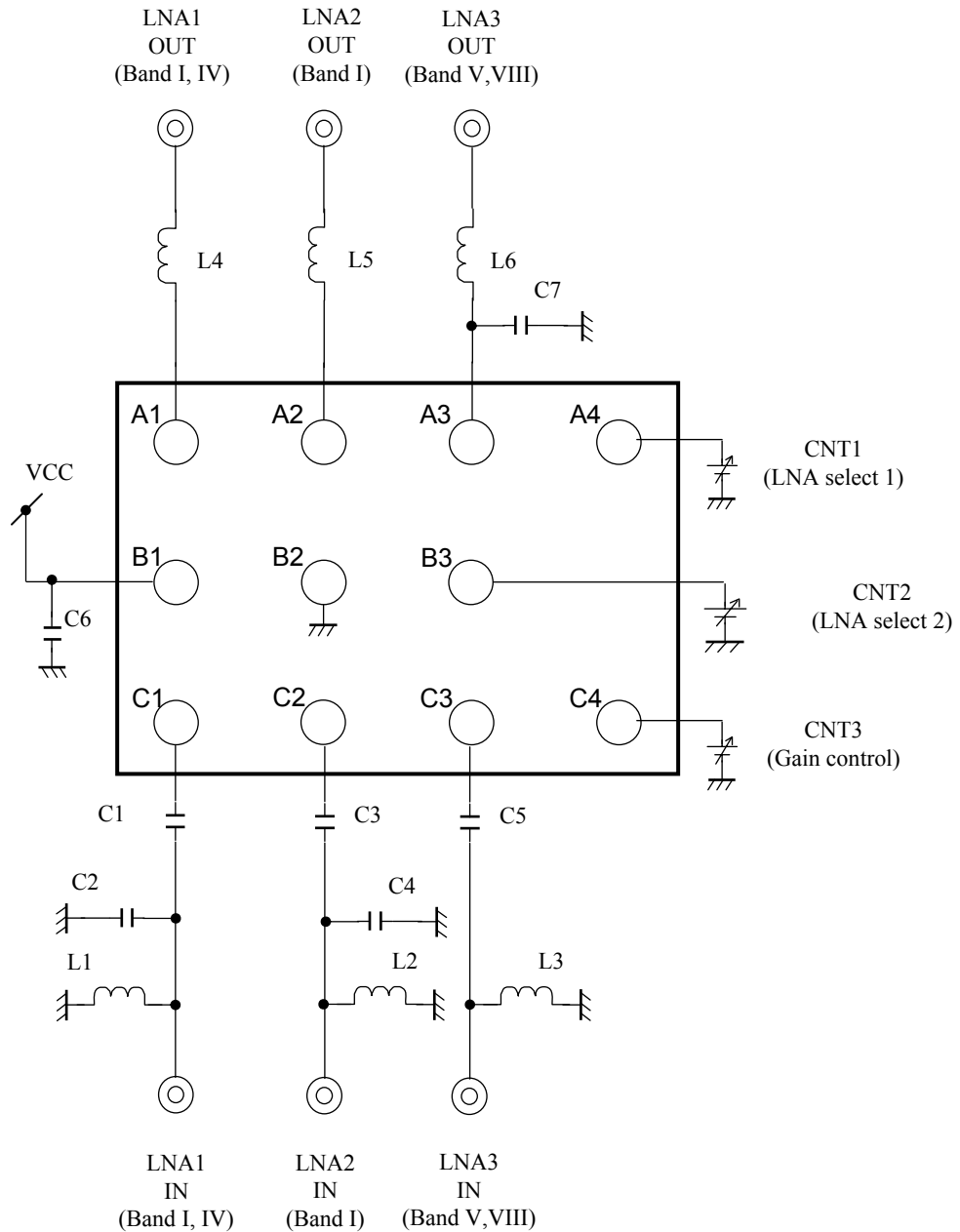


- Notes)
- This application circuit is shown as an example but does not guarantee the design for mass production set.
 - This block diagram is for explaining functions. The part of the block diagram may be omitted, or it may be simplified.

■ Application Circuit Example 2 (Block Diagram)

Note) See "External parts 2" on Page48.

(Top View)



- Notes)
- This application circuit is shown as an example but does not guarantee the design for mass production set.
 - This block diagram is for explaining functions. The part of the block diagram may be omitted, or it may be simplified.

■ Pin Descriptions

Pin No.	Pin name	Type	Description
A1	OUT1	Output	LNA1 RF Output (Band I, II, IV, IX)
A2	OUT2	Output	LNA2 RF Output (Band I)
A3	OUT3	Output	LNA3 RF Output (Band V, VIII)
A4	CNT1	Input	LNA select SW input 1
B1	VCC	Power Supply	V _{CC}
B2	GND	Ground	GND
B3	CNT2	Input	LNA select SW input 2
B4	N.C.	—	N.C.
C1	IN1	Input	LNA1 RF Input (Band I, II, IV, IX)
C2	IN2	Input	LNA2 RF Input (Band I)
C3	IN3	Input	LNA3 RF Input (Band V, VIII)
C4	CNT3	Input	High-Gain / Low-Gain SW input

■ Current and Voltage Ranges for Pins

Note) • The ranges on the list are the voltages of respective pins in relation to GND.

- Do not apply the voltages or the currents from external into the pins which are not on the list.
- The values shows voltage to the GND unless otherwise specified. (+) is inlet current and (-) is outlet current in the circuit.
- Voltage applying exceeding below ratings leads to the malfunction and the damage of the device.
- Below ratings are specified regarding malfunction and stress, not for operation guaranty.

Pin No.	Pin name	Range	Unit	Note
A1	OUT1	- 0.3 to (V_{CC})	V	—
A2	OUT2	- 0.3 to (V_{CC})	V	—
A3	OUT3	- 0.3 to (V_{CC})	V	—
A4	CNT1	- 0.3 to (V_{CC})	V	—
B1	VCC	0 to 3.0	V	—
B2	GND	0	V	*1
B3	CNT2	- 0.3 to (V_{CC})	V	—
B4	N.C.	—	V	—
C1	IN1	—	V	*2
C2	IN2	—	V	*2
C3	IN3	—	V	*2
C4	CNT3	- 0.3 to (V_{CC})	V	—

Notes) *1 : Same as GND pin.

*2 : RF signal input pin. (Maximum input power is 0dBm.) Do not apply DC voltages.

■ Absolute Maximum Ratings

Note) Absolute maximum ratings are limit values which are not destructed, and are not the values to which operation is guaranteed.

A No.	Parameter	Symbol	Rating	Unit	Notes
1	Supply voltage	V_{CC}	3.6	V	*1
2	Supply current	I_{CC}	10	mA	—
3	Power dissipation	P_D	31	mW	*2
4	Operating ambient temperature	T_{opr}	-30 to +85	°C	*3
5	Storage temperature	T_{stg}	-40 to +125	°C	*3

Notes) *1 : The values under the condition not exceeding the above absolute maximum ratings and the power dissipation.

*2 : The power dissipation shown is the value at $T_a = 85^\circ\text{C}$ for the independent (unmounted) IC package without a heat sink.

When using this IC, refer to • $P_D - T_a$ diagram in the ■ Technical Data and design the heat radiation with sufficient margin so that the allowable value might not be exceeded based on the conditions of power supply voltage, load, and ambient temperature.

*3 : Except for the power dissipation, operating ambient temperature, and storage temperature, all ratings are for $T_a = 25^\circ\text{C}$.

■ Operating Supply Voltage Range

Parameter	Symbol	Range	Unit	Notes
Supply voltage range	V_{CC}	2.65 to 3.00	V	*1

Note) *1 : The values under the condition not exceeding the above absolute maximum ratings and the power dissipation.

■ Electrical Characteristics at $V_{CC} = 2.85\text{ V}$

Notes) • All parameters are specified under $T_a = 25^\circ\text{C} \pm 2^\circ\text{C}$ unless otherwise specified.

B No.	Parameter	Symbol	Conditions	Limits			Unit	Notes
				Min	Typ	Max		
DC electrical characteristics								
DC-1	Circuit current HG (LNA2)	IccHa	V_{CC} current at LNA2 High-Gain mode. No input signal	—	4.7	6.3	mA	—
DC-2	Circuit current HG (LNA3)	IccHb	V_{CC} current at LNA3 High-Gain mode. No input signal	—	4.1	5.5	mA	—
DC-3	Circuit current HG (LNA1)	IccHc	V_{CC} current at LNA1 High-Gain mode. No input signal	—	4.7	6.3	mA	—
DC-4	Circuit current LG (LNA2)	IccLa	V_{CC} current at LNA2 Low-Gain mode. No input signal	—	11	60	μA	—
DC-5	Circuit current LG (LNA3)	IccLb	V_{CC} current at LNA3 Low-Gain mode. No input signal	—	25	80	μA	—
DC-6	Circuit current LG (LNA1)	IccLc	V_{CC} current at LNA1 Low-Gain mode. No input signal	—	25	80	μA	—
DC-7	SW voltage (High)	VIH	—	1.60	—	—	V	—
DC-8	SW voltage (Low)	VIL	$V_{IL} = V_{CC} \times 0.20$	0.0	—	0.6	V	—
DC-9	SW current (High)	IIH	Current at CNT pin $V_{IH} = V_{CC}$	—	10	20	μA	—

■ Electrical Characteristics (continued) at $V_{CC} = 2.85\text{ V}$

Notes) • All parameters are specified under $T_a = 25^\circ\text{C} \pm 2^\circ\text{C}$, $f_{RXa} = 2\ 140\text{ MHz}$, $PRX = -30\text{ dBm}$, CW unless otherwise specified.

- Input/output connector & substrate loss (0.34 dB/0.34 dB) included.

B No.	Parameter	Symbol	Conditions	Limits			Unit	Notes
				Min	Typ	Max		
LNA2 : AC electrical characteristics (BAND I)								
A-1	Power Gain HG	GHSa	High-Gain mode $f = f_{RXa}$	15.0	16.5	18.0	dB	—
A-2	Power Gain LG	GLSa	Low-Gain mode $f = f_{RXa}$	-9.0	-7.0	-5.0	dB	—
A-3	IIP3 +10 MHz detuning HG	IIP3H1Sa	High-Gain mode $f1 = f_{RXa} + 10\text{ MHz}$ $f2 = f_{RXa} + 20\text{ MHz}$ Input 2 signals ($f1, f2$)	-2.5	2.0	—	dBm	—
A-4	IIP3 -10 MHz detuning HG	IIP3H2Sa	High-Gain mode $f1 = f_{RXa} - 10\text{ MHz}$ $f2 = f_{RXa} - 20\text{ MHz}$ Input 2 signals ($f1, f2$)	-1.5	3.0	—	dBm	—

■ Electrical Characteristics (continued) at $V_{CC} = 2.85\text{ V}$

Notes) • All parameters are specified under $T_a = 25^\circ\text{C} \pm 2^\circ\text{C}$, $f_{RXb} = 881.5\text{ MHz}$, $PRX = -30\text{ dBm}$, CW unless otherwise specified.

- Input/output connector & substrate loss (0.15 dB/0.15 dB) included.

B No.	Parameter	Symbol	Conditions	Limits			Unit	Notes
				Min	Typ	Max		
LNA3 : AC electrical characteristics (BAND V)								
B-1	Power Gain HG	GHSb	High-Gain mode $f = f_{RXb}$	15.0	16.5	17.7	dB	—
B-2	Power Gain LG	GLSb	Low-Gain mode $f = f_{RXb}$	-7.5	-5.5	-3.5	dB	—
B-3	IIP3 +10 MHz detuning HG	IIP3H1Sb	High-Gain mode $f1 = f_{RXb} + 10\text{ MHz}$ $f2 = f_{RXb} + 20\text{ MHz}$ Input 2 signals ($f1, f2$)	-0.5	4.0	—	dBm	—
B-4	IIP3 -10 MHz detuning HG	IIP3H2Sb	High-Gain mode $f1 = f_{RXb} - 10\text{ MHz}$ $f2 = f_{RXb} - 20\text{ MHz}$ Input 2 signals ($f1, f2$)	-0.5	3.0	—	dBm	—

■ Electrical Characteristics (continued) at $V_{CC} = 2.85\text{ V}$

Notes) • All parameters are specified under $T_a = 25^\circ\text{C} \pm 2^\circ\text{C}$, $f_{RXc} = 1\,960\text{ MHz}$, $PRX = -30\text{ dBm}$, CW unless otherwise specified.

- Input/output connector & substrate loss (0.32 dB/0.32 dB) included.

B No.	Parameter	Symbol	Conditions	Limits			Unit	Notes
				Min	Typ	Max		
LNA1 : AC electrical characteristics (BAND II)								
C-1	Power Gain HG	GHS _c	High-Gain mode $f = f_{RXc}$	14.8	16.3	17.8	dB	—
C-2	Power Gain LG	GLS _c	Low-Gain mode $f = f_{RXc}$	-9.0	-7.0	-5.0	dB	—
C-3	IIP3 +10 MHz detuning HG	IIP3H1S _c	High-Gain mode $f1 = f_{RXc} + 10\text{ MHz}$ $f2 = f_{RXc} + 20\text{ MHz}$ Input 2 signals ($f1, f2$)	-1.5	2.5	—	dBm	—
C-4	IIP3 -10 MHz detuning HG	IIP3H2S _c	High-Gain mode $f1 = f_{RXc} - 10\text{ MHz}$ $f2 = f_{RXc} - 20\text{ MHz}$ Input 2 signals ($f1, f2$)	0.0	2.5	—	dBm	—

■ Electrical Characteristics (Reference values for design) at $V_{CC} = 2.85\text{ V}$

- Notes) • All parameters are specified under $T_a = 25^\circ\text{C} \pm 2^\circ\text{C}$, $f_{RXa} = 2\ 110\text{ MHz}$ to $2\ 170\text{ MHz}$, $PRX = -30\text{ dBm}$, CW unless otherwise specified.
- The characteristics listed below are reference values derived from the design of the IC and are not guaranteed by inspection.
 - If a problem does occur related to these characteristics, Matsushita will respond in good faith to user concerns.
 - Input/output connector & substrate loss (0.34dB/0.34dB) included.

B No.	Parameter	Symbol	Conditions	Reference values			Unit	Notes
				Min	Typ	Max		
LNA2 : AC electrical characteristics (BAND I)								
D-1	Power Gain HG	GHa	High-Gain mode $f = f_{RXa}$	15.0	16.5	18.0	dB	—
D-2	Power Gain LG	GLa	Low-Gain mode $f = f_{RXa}$	-9.0	-7.0	-5.0	dB	—
D-3	Noise figure HG	NFHa	High-Gain mode $f = f_{RXa}$	—	1.40	1.80	dB	—
D-4	Noise figure LG	NFLa	Low-Gain mode $f = f_{RXa}$	—	7.0	10.0	dB	—
D-5	IIP3 +10 MHz detuning HG	IIP3H1a	High-Gain mode $f1 = f_{RXa} + 10\text{ MHz}$ $f2 = f_{RXa} + 20\text{ MHz}$ Input 2 signals ($f1, f2$)	-2.5	2.0	—	dBm	—
D-6	IIP3 -10 MHz detuning HG	IIP3H2a	High-Gain mode $f1 = f_{RXa} - 10\text{ MHz}$ $f2 = f_{RXa} - 20\text{ MHz}$ Input 2 signals ($f1, f2$)	-1.5	3.0	—	dBm	—
D-7	IIP3 +10 MHz detuning LG	IIP3L1a	Low-Gain mode $f1 = f_{RXa} + 10\text{ MHz}$ $f2 = f_{RXa} + 20\text{ MHz}$ $PRX1 = PRX2 = -10\text{ dBm}$ Input 2 signals ($f1, f2$)	20	25	—	dBm	—
D-8	IIP3 -10 MHz detuning LG	IIP3L2a	Low-Gain mode $f1 = f_{RXa} - 10\text{ MHz}$ $f2 = f_{RXa} - 20\text{ MHz}$ $PRX1 = PRX2 = -10\text{ dBm}$ Input 2 signals ($f1, f2$)	20	26	—	dBm	—
D-9	Input P1dB	IP1dBH1a	High-Gain mode $f = f_{RXa}$	-22	-16	—	dBm	—
D-10	Input P1dB TX undesired signal input HG	IP1dBH2a	High-Gain mode $f1 = f_{RXa}$ $PRX1 = -40\text{ dBm}$ $f2 = f_{RXa} - 190\text{ MHz}$ $PRX2 : \text{Var.}$ Input 2 signals ($f1, f2$)	-17	-10	—	dBm	—

■ Electrical Characteristics (Reference values for design) (continued) at $V_{CC} = 2.85\text{ V}$

Notes) • All parameters are specified under $T_a = 25^\circ\text{C} \pm 2^\circ\text{C}$, $f_{RXa} = 2\ 110\text{ MHz}$ to $2\ 170\text{ MHz}$, $PRX = -30\text{ dBm}$, CW unless otherwise specified.

• The characteristics listed below are reference values derived from the design of the IC and are not guaranteed by inspection.

If a problem does occur related to these characteristics, Matsushita will respond in good faith to user concerns.

• Input/output connector & substrate loss (0.34 dB/0.34 dB) included.

B No.	Parameter	Symbol	Conditions	Reference values			Unit	Notes
				Min	Typ	Max		
LNA2 : AC electrical characteristics (BAND I)								
D-11	IIP2	IIP2H1a	High-Gain mode f1 = fRXa – 190 MHz f2 = 190 MHz Input 2 signals (f1, f2)	10	15	—	dBm	—
D-12	IIP2	IIP2H2a	High-Gain mode f1 = fRXa – 190 MHz f2 = 2 × fRXa – 190 MHz Input 2 signals (f1, f2)	10	16	—	dBm	—
D-13	K-factor	KHa	High-Gain mode f = 0 to 6 GHz	2.0	4.0	—	—	—
D-14	Reverse isolation HG	ISOHa	High-Gain mode f = fRXa	—	-30	-20	dB	—
D-15	Reverse isolation LG	ISOLa	Low-Gain mode f = fRXa	—	-7.0	-4.0	dB	—
D-16	Band to band isolation	BISa	LNA1 / LNA3 :High-Gain mode LNA2:off LNA2 input → LNA2 output f = fRXa	—	-30	-27	dB	—
D-17	Input return loss HG	S11Ha	High-Gain mode f = fRXa	6.5	9.5	—	dB	—
D-18	Input return loss LG	S11La	Low-Gain mode f = fRXa	8.5	9.5	—	dB	—
D-19	Output return loss HG	S22Ha	High-Gain mode f = fRXa	8.5	9.5	—	dB	—
D-20	Output return loss LG	S22La	Low-Gain mode f = fRXa	8.5	9.5	—	dB	—
D-21	Gain Changing Time	TCGa	Low → High / High → Low f = 2 170 MHz Gain Error < 1 dB	—	7	16	μs	—
D-22	Band Changing Time	BCGa	LNA3 → LNA2 f = 2 170 MHz LNA1 → LNA2 f = 2 170 MHz High Gain Mode Gain Error < 1 dB	—	7	16	μs	—

■ Electrical Characteristics (Reference values for design) (continued) at $V_{CC} = 2.85\text{ V}$

- Notes) • All parameters are specified $T_a = 25^\circ\text{C} \pm 2^\circ\text{C}$, $f_{RXb1} = 869\text{ MHz}$ to 894 MHz , $PRX = -30\text{ dBm}$, CW unless otherwise specified.
- The characteristics listed below are reference values derived from the design of the IC and are not guaranteed by inspection.
If a problem does occur related to these characteristics, Matsushita will respond in good faith to user concerns.
 - Input/output connector & substrate loss (0.15 dB/0.15 dB) included.

B No.	Parameter	Symbol	Conditions	Reference values			Unit	Notes
				Min	Typ	Max		
LNA3 : AC electrical characteristics (BAND V)								
E-1	Power Gain HG	GHb1	High-Gain mode $f = f_{RXb1}$	15.0	16.5	17.7	dB	—
E-2	Power Gain LG	GLb1	Low-Gain mode $f = f_{RXb1}$	-7.5	-5.5	-3.5	dB	—
E-3	Noise figure HG	NFHb1	High-Gain mode $f = f_{RXb1}$	—	1.10	1.35	dB	—
E-4	Noise figure LG	NFLb1	Low-Gain mode $f = f_{RXb1}$	—	5.5	8.5	dB	—
E-5	IIP3 +10 MHz detuning HG	IIP3H1b1	High-Gain mode $f1 = f_{RXb1} + 10\text{ MHz}$ $f2 = f_{RXb1} + 20\text{ MHz}$ Input 2 signals ($f1, f2$)	-0.5	4.5	—	dBm	—
E-6	IIP3 -10 MHz detuning HG	IIP3H2b1	High-Gain mode $f1 = f_{RXb1} - 10\text{ MHz}$ $f2 = f_{RXb1} - 20\text{ MHz}$ Input 2 signals ($f1, f2$)	-0.5	3.0	—	dBm	—
E-7	IIP3 +10 MHz detuning LG	IIP3L1b1	Low-Gain mode $f1 = f_{RXb1} + 10\text{ MHz}$ $f2 = f_{RXb1} + 20\text{ MHz}$ $PRX1 = PRX2 = -10\text{ dBm}$ Input 2 signals ($f1, f2$)	18	22	—	dBm	—
E-8	IIP3 -10 MHz detuning LG	IIP3L2b1	Low-Gain mode $f1 = f_{RXb1} - 10\text{ MHz}$ $f2 = f_{RXb1} - 20\text{ MHz}$ $PRX1 = PRX2 = -10\text{ dBm}$ Input 2 signals ($f1, f2$)	18	23	—	dBm	—
E-9	Input P1dB	IP1dBH1b1	High-Gain mode $f = f_{RXb1}$	-21	-14	—	dBm	—
E-10	Input P1dB TX undesired signal input HG	IP1dBH2b1	High-Gain mode $f1 = f_{RXb1}$ $PRX1 = -40\text{ dBm}$ $f2 = f_{RXb1} - 45\text{ MHz}$ $PRX2 : \text{Var.}$ Input 2 signals ($f1, f2$)	-20	-13	—	dBm	—

■ Electrical Characteristics (Reference values for design) (continued) at $V_{CC} = 2.85\text{ V}$

- Notes) • All parameters are specified $T_a = 25^\circ\text{C} \pm 2^\circ\text{C}$, $f_{RXb1} = 869\text{ MHz}$ to 894 MHz , $PRX = -30\text{ dBm}$, CW unless otherwise specified.
 • The characteristics listed below are reference values derived from the design of the IC and are not guaranteed by inspection.
 If a problem does occur related to these characteristics, Matsushita will respond in good faith to user concerns.
 • Input/output connector & substrate loss (0.15 dB/0.15 dB) included.

B No.	Parameter	Symbol	Conditions	Reference values			Unit	Notes
				Min	Typ	Max		
LNA3 : AC electrical characteristics (BAND V)								
E-11	IIP2	IIP2H1b1	High-Gain mode $f1 = f_{RXb1} - 45\text{ MHz}$ $f2 = 45\text{ MHz}$ Input 2 signals ($f1, f2$)	12	17	—	dBm	—
E-12	IIP2	IIP2H2b1	High-Gain mode $f1 = f_{RXb1} - 45\text{ MHz}$ $f2 = 2 \times f_{RXb1} - 45\text{ MHz}$ Input 2 signals ($f1, f2$)	-1.5	2.5	—	dBm	—
E-13	K-factor	KHb1	High-Gain mode $f = 0$ to 6 GHz	1.5	2.0	—	—	—
E-14	Reverse isolation HG	ISOHb1	High-Gain mode $f = f_{RXb1}$	—	-24	-18	dB	—
E-15	Reverse isolation LG	ISOLb1	Low-Gain mode $f = f_{RXb1}$	—	-6.0	-3.0	dB	—
E-16	Band to band isolation	BISb1	LNA2 :High-Gain mode LNA3:off LNA3 input → LNA3 output $f = f_{RXb1}$	—	-24	-20	dB	—
E-17	Input return loss HG	S11Hb1	High-Gain mode $f = f_{RXb1}$	8	9.5	—	dB	—
E-18	Input return loss LG	S11Lb1	Low-Gain mode $f = f_{RXb1}$	6	6.5	—	dB	—
E-19	Output return loss HG	S22Hb1	High-Gain mode $f = f_{RXb1}$	8.5	9.5	—	dB	—
E-20	Output return loss LG	S22Lb1	Low-Gain mode $f = f_{RXb1}$	8.5	9.5	—	dB	—
E-21	Gain Changing Time	TCGb1	Low → High / High → Low $f = 960\text{ MHz}$ Gain Error < 1 dB	—	7.5	18	μs	—
E-22	Band Changing Time	TCBb1	LNA2 → LNA3 $f = 960\text{ MHz}$ High Gain Mode Gain Error < 1 dB	—	7.5	18	μs	—

■ Electrical Characteristics (Reference values for design) (continued) at $V_{CC} = 2.85\text{ V}$

- Notes) • All parameters are specified $T_a = 25^\circ\text{C} \pm 2^\circ\text{C}$, $f_{RXb2} = 925\text{ MHz}$ to 960 MHz , $PRX = -30\text{ dBm}$, CW unless otherwise specified.
 • The characteristics listed below are reference values derived from the design of the IC and are not guaranteed by inspection.
 If a problem does occur related to these characteristics, Matsushita will respond in good faith to user concerns.
 • Input/output connector & substrate loss (0.15 dB/0.15 dB) included.

B No.	Parameter	Symbol	Conditions	Reference values			Unit	Notes
				Min	Typ	Max		
LNA3 : AC electrical characteristics (BAND VIII)								
F-1	Power Gain HG	GHb2	High-Gain mode $f = f_{RXb2}$	14.7	16.2	17.4	dB	—
F-2	Power Gain LG	GLb2	Low-Gain mode $f = f_{RXb2}$	-7.5	-5.5	-3.5	dB	—
F-3	Noise figure HG	NFHb2	High-Gain mode $f = f_{RXb2}$	—	1.10	1.35	dB	—
F-4	Noise figure LG	NFLb2	Low-Gain mode $f = f_{RXb2}$	—	5.5	8.5	dB	—
F-5	IIP3 +10 MHz detuning HG	IIP3H1b2	High-Gain mode $f1 = f_{RXb2} + 10\text{ MHz}$ $f2 = f_{RXb2} + 20\text{ MHz}$ Input 2 signals ($f1, f2$)	-1.0	4.0	—	dBm	—
F-6	IIP3 -10 MHz detuning HG	IIP3H2b2	High-Gain mode $f1 = f_{RXb2} - 10\text{ MHz}$ $f2 = f_{RXb2} - 20\text{ MHz}$ Input 2 signals ($f1, f2$)	-0.5	3.0	—	dBm	—
F-7	IIP3 +10 MHz detuning LG	IIP3L1b2	Low-Gain mode $f1 = f_{RXb2} + 10\text{ MHz}$ $f2 = f_{RXb2} + 20\text{ MHz}$ $PRX1 = PRX2 = -10\text{ dBm}$ Input 2 signals ($f1, f2$)	17	22	—	dBm	—
F-8	IIP3 -10 MHz detuning LG	IIP3L2b2	Low-Gain mode $f1 = f_{RXb2} - 10\text{ MHz}$ $f2 = f_{RXb2} - 20\text{ MHz}$ $PRX1 = PRX2 = -10\text{ dBm}$ Input 2 signals ($f1, f2$)	17	22	—	dBm	—
F-9	Input P1dB	IP1dBH1b2	High-Gain mode $f = f_{RXb2}$	-21	-14	—	dBm	—
F-10	Input P1dB TX undesired signal input HG	IP1dBH2b2	High-Gain mode $f1 = f_{RXb2}$ $PRX1 = -40\text{ dBm}$ $f2 = f_{RXb2} - 45\text{ MHz}$ $PRX2 : \text{Var.}$ Input 2 signals ($f1, f2$)	-17	-10	—	dBm	—

■ Electrical Characteristics (Reference values for design) (continued) at $V_{CC} = 2.85\text{ V}$

- Notes) • All parameters are specified $T_a = 25^\circ\text{C} \pm 2^\circ\text{C}$, $f_{RXb2} = 925\text{ MHz}$ to 960 MHz , $PRX = -30\text{ dBm}$, CW unless otherwise specified.
 • The characteristics listed below are reference values derived from the design of the IC and are not guaranteed by inspection.
 If a problem does occur related to these characteristics, Matsushita will respond in good faith to user concerns.
 • Input/output connector & substrate loss (0.15 dB/0.15 dB) included.

B No.	Parameter	Symbol	Conditions	Reference values			Unit	Notes
				Min	Typ	Max		
LNA3 : AC electrical characteristics (BAND VIII)								
F-11	IIP2	IIP2H1b2	High-Gain mode $f1 = f_{RXb2} - 45\text{ MHz}$ $f2 = 45\text{ MHz}$ Input 2 signals ($f1, f2$)	12	17	—	dBm	—
F-12	IIP2	IIP2H2b2	High-Gain mode $f1 = f_{RXb2} - 45\text{ MHz}$ $f2 = 2 \times f_{RXb2} - 45\text{ MHz}$ Input 2 signals ($f1, f2$)	-1.5	3.5	—	dBm	—
F-13	K-factor	KHb2	High-Gain mode $f = 0$ to 6 GHz	1.5	2.0	—	—	—
F-14	Reverse isolation HG	ISOHb2	High-Gain mode $f = f_{RXb2}$	—	-24	-18	dB	—
F-15	Reverse isolation LG	ISOLb2	Low-Gain mode $f = f_{RXb2}$	—	-6.0	-3.0	dB	—
F-16	Band to band isolation	BISb2	LNA2 :High-Gain mode LNA3:off LNA3 input → LNA3 output $f = f_{RXb2}$	—	-24	-20	dB	—
F-17	Input return loss HG	S11Hb2	High-Gain mode $f = f_{RXb2}$	8.5	9.5	—	dB	—
F-18	Input return loss LG	S11Lb2	Low-Gain mode $f = f_{RXb2}$	5.5	6.0	—	dB	—
F-19	Output return loss HG	S22Hb2	High-Gain mode $f = f_{RXb2}$	8.5	9.5	—	dB	—
F-20	Output return loss LG	S22Lb2	Low-Gain mode $f = f_{RXb2}$	8.5	9.5	—	dB	—
F-21	Gain Changing Time	TCGb2	Low → High / High → Low $f = 960\text{ MHz}$ Gain Error < 1 dB	—	7.5	18	μs	—
F-22	Band Changing Time	TCBb2	LNA2 → LNA3 $f = 960\text{ MHz}$ High Gain Mode Gain Error < 1 dB	—	7.5	18	μs	—

■ Electrical Characteristics (Reference values for design) (continued) at $V_{CC} = 2.85\text{ V}$

- Notes) • All parameters are specified $T_a = 25^\circ\text{C} \pm 2^\circ\text{C}$, $f_{RXc1} = 2\ 110\text{ MHz}$ to $2\ 170\text{ MHz}$, $PRX = -30\text{ dBm}$, CW unless otherwise specified.
 • The characteristics listed below are reference values derived from the design of the IC and are not guaranteed by inspection.
 If a problem does occur related to these characteristics, Matsushita will respond in good faith to user concerns.
 • Input/output connector & substrate loss (0.34 dB/0.34 dB) included.

B No.	Parameter	Symbol	Conditions	Reference values			Unit	Notes
				Min	Typ	Max		
LNA1 : AC electrical characteristics (BAND I)								
G-1	Power Gain HG	GHc1	High-Gain mode $f = f_{RXc1}$	14.6	16.1	17.8	dB	—
G-2	Power Gain LG	GLc1	Low-Gain mode $f = f_{RXc1}$	-9.0	-7.0	-5.0	dB	—
G-3	Noise figure HG	NFHc1	High-Gain mode $f = f_{RXc1}$	—	1.50	2.00	dB	—
G-4	Noise figure LG	NFLc1	Low-Gain mode $f = f_{RXc1}$	—	7.0	10.0	dB	—
G-5	IIP3 +10 MHz detuning HG	IIP3H1c1	High-Gain mode $f1 = f_{RXc1} + 10\text{ MHz}$ $f2 = f_{RXc1} + 20\text{ MHz}$ Input 2 signals ($f1, f2$)	-1.5	2.5	—	dBm	—
G-6	IIP3 -10 MHz detuning HG	IIP3H2c1	High-Gain mode $f1 = f_{RXc1} - 10\text{ MHz}$ $f2 = f_{RXc1} - 20\text{ MHz}$ Input 2 signals ($f1, f2$)	0.0	2.5	—	dBm	—
G-7	IIP3 +10 MHz detuning LG	IIP3L1c1	Low-Gain mode $f1 = f_{RXc1} + 10\text{ MHz}$ $f2 = f_{RXc1} + 20\text{ MHz}$ $PRX1 = PRX2 = -10\text{ dBm}$ Input 2 signals ($f1, f2$)	19	24	—	dBm	—
G-8	IIP3 -10 MHz detuning LG	IIP3L2c1	Low-Gain mode $f1 = f_{RXc1} - 10\text{ MHz}$ $f2 = f_{RXc1} - 20\text{ MHz}$ $PRX1 = PRX2 = -10\text{ dBm}$ Input 2 signals ($f1, f2$)	20	25	—	dBm	—
G-9	Input P1dB	IP1dBH1c1	High-Gain mode $f = f_{RXc1}$	-21	-14	—	dBm	—
G-10	Input P1dB TX undesired signal input HG	IP1dBH2c1	High-Gain mode $f1 = f_{RXc1}$ $PRX1 = -40\text{ dBm}$ $f2 = f_{RXc1} - 190\text{ MHz}$ $PRX2 : \text{Var.}$ Input 2 signals ($f1, f2$)	-16	-9	—	dBm	—

■ Electrical Characteristics (Reference values for design) (continued) at $V_{CC} = 2.85\text{ V}$

- Notes) • All parameters are specified $T_a = 25^\circ\text{C} \pm 2^\circ\text{C}$, $f_{RXc1} = 2\ 110\text{ MHz}$ to $2\ 170\text{ MHz}$, $PRX = -30\text{ dBm}$, CW unless otherwise specified.
- The characteristics listed below are reference values derived from the design of the IC and are not guaranteed by inspection.
If a problem does occur related to these characteristics, Matsushita will respond in good faith to user concerns.
 - Input/output connector & substrate loss (0.34 dB/0.34 dB) included.

B No.	Parameter	Symbol	Conditions	Reference values			Unit	Notes
				Min	Typ	Max		
LNA1 : AC electrical characteristics (BAND I)								
G-11	IIP2	IIP2H1c1	High-Gain mode f1 = $f_{RXc1} - 190\text{ MHz}$ f2 = 190 MHz Input 2 signals (f1, f2)	11	19	—	dBm	—
G-12	IIP2	IIP2H2c1	High-Gain mode f1 = $f_{RXc1} - 190\text{ MHz}$ f2 = $2 \times f_{RXc1} - 190\text{ MHz}$ Input 2 signals (f1, f2)	10	18	—	dBm	—
G-13	K-factor	KHc1	High-Gain mode f = 0 to 6 GHz	1.5	2.0	—	—	—
G-14	Reverse isolation HG	ISOHc1	High-Gain mode f = f_{RXc1}	—	-30	-20	dB	—
G-15	Reverse isolation LG	ISOLc1	Low-Gain mode f = f_{RXc1}	—	-7.0	-4.0	dB	—
G-16	Band to band isolation	BISc1	LNA2 :High-Gain mode LNA1:off LNA1 input → LNA1 output f = f_{RXc1}	—	-26	-23	dB	—
G-17	Input return loss HG	S11Hc1	High-Gain mode f = f_{RXc1}	8.5	9.5	—	dB	—
G-18	Input return loss LG	S11Lc1	Low-Gain mode f = f_{RXc1}	8.5	9.5	—	dB	—
G-19	Output return loss HG	S22Hc1	High-Gain mode f = f_{RXc1}	8.5	9.5	—	dB	—
G-20	Output return loss LG	S22Lc1	Low-Gain mode f = f_{RXc1}	8.5	9.5	—	dB	—
G-21	Gain Changing Time	TCGc1	Low → High / High → Low f = 2170 MHz Gain Error < 1 dB	—	7	16	μs	—
G-22	Band Changing Time	TCBc1	LNA2 → LNA1 f = 2170 MHz High Gain Mode Gain Error < 1 dB	—	7	16	μs	—

■ Electrical Characteristics (Reference values for design) (continued) at $V_{CC} = 2.85 \text{ V}$

- Notes) • All parameters are specified $T_a = 25^\circ\text{C} \pm 2^\circ\text{C}$, $f_{RXc2} = 1\,930 \text{ MHz}$ to $1\,990 \text{ MHz}$, $PRX = -30 \text{ dBm}$, CW unless otherwise specified.
 • The characteristics listed below are reference values derived from the design of the IC and are not guaranteed by inspection.
 If a problem does occur related to these characteristics, Matsushita will respond in good faith to user concerns.
 • Input/output connector & substrate loss (0.32 dB/0.32 dB) included.

B No.	Parameter	Symbol	Conditions	Reference values			Unit	Notes
				Min	Typ	Max		
LNA1 : AC electrical characteristics (BAND II)								
H-1	Power Gain HG	GHc2	High-Gain mode $f = f_{RXc2}$	14.8	16.3	17.8	dB	—
H-2	Power Gain LG	GLc2	Low-Gain mode $f = f_{RXc2}$	-9.0	-7.0	-5.0	dB	—
H-3	Noise figure HG	NFHc2	High-Gain mode $f = f_{RXc2}$	—	1.40	1.80	dB	—
H-4	Noise figure LG	NFLc2	Low-Gain mode $f = f_{RXc2}$	—	7.0	10.0	dB	—
H-5	IIP3 +10 MHz detuning HG	IIP3H1c2	High-Gain mode $f1 = f_{RXc2} + 10 \text{ MHz}$ $f2 = f_{RXc2} + 20 \text{ MHz}$ Input 2 signals ($f1, f2$)	-1.5	2.5	—	dBm	—
H-6	IIP3 -10 MHz detuning HG	IIP3H2c2	High-Gain mode $f1 = f_{RXc2} - 10 \text{ MHz}$ $f2 = f_{RXc2} - 20 \text{ MHz}$ Input 2 signals ($f1, f2$)	0.0	2.5	—	dBm	—
H-7	IIP3 +10 MHz detuning LG	IIP3L1c2	Low-Gain mode $f1 = f_{RXc2} + 10 \text{ MHz}$ $f2 = f_{RXc2} + 20 \text{ MHz}$ $PRX1 = PRX2 = -10 \text{ dBm}$ Input 2 signals ($f1, f2$)	19	24	—	dBm	—
H-8	IIP3 -10 MHz detuning LG	IIP3L2c2	Low-Gain mode $f1 = f_{RXc2} - 10 \text{ MHz}$ $f2 = f_{RXc2} - 20 \text{ MHz}$ $PRX1 = PRX2 = -10 \text{ dBm}$ Input 2 signals ($f1, f2$)	19	24	—	dBm	—
H-9	Input P1dB	IP1dBH1c2	High-Gain mode $f = f_{RXc2}$	-20	-13	—	dBm	—
H-10	Input P1dB TX undesired signal input HG	IP1dBH2c2	High-Gain mode $f1 = f_{RXc2}$ $PRX1 = -40 \text{ dBm}$ $f2 = f_{RXc2} - 80 \text{ MHz}$ $PRX2 : \text{Var.}$ Input 2 signals ($f1, f2$)	-18	-11	—	dBm	—

■ Electrical Characteristics (Reference values for design) (continued) at $V_{CC} = 2.85\text{ V}$

- Notes) • All parameters are specified $T_a = 25^\circ\text{C} \pm 2^\circ\text{C}$, $f_{RXc2} = 1\,930\text{ MHz}$ to $1\,990\text{ MHz}$, $PRX = -30\text{ dBm}$, CW unless otherwise specified.
- The characteristics listed below are reference values derived from the design of the IC and are not guaranteed by inspection.
If a problem does occur related to these characteristics, Matsushita will respond in good faith to user concerns.
 - Input/output connector & substrate loss (0.32 dB/0.32 dB) included.

B No.	Parameter	Symbol	Conditions	Reference values			Unit	Notes
				Min	Typ	Max		
LNA1 : AC electrical characteristics (BAND II)								
H-11	IIP2	IIP2H1c2	High-Gain mode $f1 = f_{RXc2} - 80\text{ MHz}$ $f2 = 80\text{ MHz}$ Input 2 signals ($f1, f2$)	20	26	—	dBm	—
H-12	IIP2	IIP2H2c2	High-Gain mode $f1 = f_{RXc2} - 80\text{ MHz}$ $f2 = 2 \times f_{RXc2} - 80\text{ MHz}$ Input 2 signals ($f1, f2$)	12	19	—	dBm	—
H-13	K-factor	KHc2	High-Gain mode $f = 0$ to 6 GHz	1.5	2.0	—	—	—
H-14	Reverse isolation HG	ISOHc2	High-Gain mode $f = f_{RXc2}$	—	-30	-20	dB	—
H-15	Reverse isolation LG	ISOLc2	Low-Gain mode $f = f_{RXc2}$	—	-7.0	-4.0	dB	—
H-16	Band to band isolation	BISc2	LNA2 :High-Gain mode LNA1:off LNA1 input → LNA1 output $f = f_{RXc2}$	—	-29	-26	dB	—
H-17	Input return loss HG	S11Hc2	High-Gain mode $f = f_{RXc2}$	7.5	9.5	—	dB	—
H-18	Input return loss LG	S11Lc2	Low-Gain mode $f = f_{RXc2}$	8.5	9.5	—	dB	—
H-19	Output return loss HG	S22Hc2	High-Gain mode $f = f_{RXc2}$	8.5	9.5	—	dB	—
H-20	Output return loss LG	S22Lc2	Low-Gain mode $f = f_{RXc2}$	8.5	9.5	—	dB	—
H-21	Gain Changing Time	TCGc2	Low → High / High → Low $f = 1\,990\text{ MHz}$ Gain Error < 1 dB	—	7	16	μs	—
H-22	Band Changing Time	TCBc2	LNA2 → LNA1 $f = 1\,990\text{ MHz}$ High Gain Mode Gain Error < 1 dB	—	7	16	μs	—

■ Electrical Characteristics (Reference values for design) (continued) at $V_{CC} = 2.85\text{ V}$

- Notes) • All parameters are specified $T_a = 25^\circ\text{C} \pm 2^\circ\text{C}$, $f_{RXc3} = 2\ 110\text{ MHz}$ to $2\ 155\text{ MHz}$, $PRX = -30\text{ dBm}$, CW unless otherwise specified.
 • The characteristics listed below are reference values derived from the design of the IC and are not guaranteed by inspection.
 If a problem does occur related to these characteristics, Matsushita will respond in good faith to user concerns.
 • Input/output connector & substrate loss (0.34 dB/0.34 dB) included.

B No.	Parameter	Symbol	Conditions	Reference values			Unit	Notes
				Min	Typ	Max		
LNA1 : AC electrical characteristics (BAND IV)								
I-1	Power Gain HG	GHc3	High-Gain mode $f = f_{RXc3}$	14.6	16.1	17.8	dB	—
I-2	Power Gain LG	GLc3	Low-Gain mode $f = f_{RXc3}$	-9.0	-7.0	-5.0	dB	—
I-3	Noise figure HG	NFHc3	High-Gain mode $f = f_{RXc3}$	—	1.50	2.00	dB	—
I-4	Noise figure LG	NFLc3	Low-Gain mode $f = f_{RXc3}$	—	7.0	10.0	dB	—
I-5	IIP3 +10 MHz detuning HG	IIP3H1c3	High-Gain mode $f1 = f_{RXc3} + 10\text{ MHz}$ $f2 = f_{RXc3} + 20\text{ MHz}$ Input 2 signals ($f1, f2$)	-1.5	2.5	—	dBm	—
I-6	IIP3 -10 MHz detuning HG	IIP3H2c3	High-Gain mode $f1 = f_{RXc3} - 10\text{ MHz}$ $f2 = f_{RXc3} - 20\text{ MHz}$ Input 2 signals ($f1, f2$)	0.0	2.5	—	dBm	—
I-7	IIP3 +10 MHz detuning LG	IIP3L1c3	Low-Gain mode $f1 = f_{RXc3} + 10\text{ MHz}$ $f2 = f_{RXc3} + 20\text{ MHz}$ $PRX1 = PRX2 = -10\text{ dBm}$ Input 2 signals ($f1, f2$)	19	24	—	dBm	—
I-8	IIP3 -10 MHz detuning LG	IIP3L2c3	Low-Gain mode $f1 = f_{RXc3} - 10\text{ MHz}$ $f2 = f_{RXc3} - 20\text{ MHz}$ $PRX1 = PRX2 = -10\text{ dBm}$ Input 2 signals ($f1, f2$)	19	24	—	dBm	—
I-9	Input P1dB	IP1dBH1c3	High-Gain mode $f = f_{RXc3}$	-21	-14	—	dBm	—
I-10	Input P1dB TX undesired signal input HG	IP1dBH2c3	High-Gain mode $f1 = f_{RXc3}$ $PRX1 = -40\text{ dBm}$ $f2 = f_{RXc3} - 400\text{ MHz}$ $PRX2 : \text{Var.}$ Input 2 signals ($f1, f2$)	-21	-14	—	dBm	—

■ Electrical Characteristics (Reference values for design) (continued) at $V_{CC} = 2.85 \text{ V}$

- Notes) • All parameters are specified $T_a = 25^\circ\text{C} \pm 2^\circ\text{C}$, $f_{RXc3} = 2110 \text{ MHz}$ to 2155 MHz , $PRX = -30 \text{ dBm}$, CW unless otherwise specified.
- The characteristics listed below are reference values derived from the design of the IC and are not guaranteed by inspection.
If a problem does occur related to these characteristics, Matsushita will respond in good faith to user concerns.
 - Input/output connector & substrate loss (0.34 dB/0.34 dB) included.

B No.	Parameter	Symbol	Conditions	Reference values			Unit	Notes
				Min	Typ	Max		
LNA1 : AC electrical characteristics (BAND IV)								
I-11	IIP2	IIP2H1c3	High-Gain mode $f_1 = f_{RXc3} - 400 \text{ MHz}$ $f_2 = 400 \text{ MHz}$ Input 2 signals (f_1, f_2)	7	12	—	dBm	—
I-12	IIP2	IIP2H2c3	High-Gain mode $f_1 = f_{RXc3} - 400 \text{ MHz}$ $f_2 = 2 \times f_{RXc3} - 400 \text{ MHz}$ Input 2 signals (f_1, f_2)	9	14	—	dBm	—
I-13	K-factor	KHc3	High-Gain mode $f = 0$ to 6 GHz	1.5	2.0	—	—	—
I-14	Reverse isolation HG	ISOHc3	High-Gain mode $f = f_{RXc3}$	—	-30	-20	dB	—
I-15	Reverse isolation LG	ISOLc3	Low-Gain mode $f = f_{RXc3}$	—	-7.0	-4.0	dB	—
I-16	Band to band isolation	BISc3	LNA2 : High-Gain mode LNA1: off LNA1 input → LNA1 output $f = f_{RXc3}$	—	-27	-24	dB	—
I-17	Input return loss HG	S11Hc3	High-Gain mode $f = f_{RXc3}$	8.5	9.5	—	dB	—
I-18	Input return loss LG	S11Lc3	Low-Gain mode $f = f_{RXc3}$	8.5	9.5	—	dB	—
I-19	Output return loss HG	S22Hc3	High-Gain mode $f = f_{RXc3}$	8.5	9.5	—	dB	—
I-20	Output return loss LG	S22Lc3	Low-Gain mode $f = f_{RXc3}$	8.5	9.5	—	dB	—
I-21	Gain Changing Time	TCGc3	Low → High / High → Low $f = 2170 \text{ MHz}$ Gain Error < 1 dB	—	7	16	μs	—
I-22	Band Changing Time	TCBc3	LNA2 → LNA1 $f = 2170 \text{ MHz}$ High Gain Mode Gain Error < 1 dB	—	7	16	μs	—

■ Electrical Characteristics (Reference values for design) (continued) at $V_{CC} = 2.85\text{ V}$

- Notes) • All parameters are specified $T_a = 25^\circ\text{C} \pm 2^\circ\text{C}$, $f_{RXc4} = 1\,845\text{ MHz}$ to $1\,880\text{ MHz}$, $PRX = -30\text{ dBm}$, CW unless otherwise specified.
 • The characteristics listed below are reference values derived from the design of the IC and are not guaranteed by inspection.
 If a problem does occur related to these characteristics, Matsushita will respond in good faith to user concerns.
 • Input/output connector & substrate loss (0.32 dB/0.32 dB) included.

B No.	Parameter	Symbol	Conditions	Reference values			Unit	Notes
				Min	Typ	Max		
LNA1 : AC electrical characteristics (BAND IX)								
J-1	Power Gain HG	GHc4	High-Gain mode $f = f_{RXc4}$	15.1	16.6	17.8	dB	—
J-2	Power Gain LG	GLc4	Low-Gain mode $f = f_{RXc4}$	-9.0	-7.0	-5.0	dB	—
J-3	Noise figure HG	NFHc4	High-Gain mode $f = f_{RXc4}$	—	1.40	1.80	dB	—
J-4	Noise figure LG	NFLc4	Low-Gain mode $f = f_{RXc4}$	—	7.0	10.0	dB	—
J-5	IIP3 +10 MHz detuning HG	IIP3H1c4	High-Gain mode $f1 = f_{RXc4} + 10\text{ MHz}$ $f2 = f_{RXc4} + 20\text{ MHz}$ Input 2 signals ($f1, f2$)	-1.5	2.5	—	dBm	—
F-6	IIP3 -10 MHz detuning HG	IIP3H2c4	High-Gain mode $f1 = f_{RXc4} - 10\text{ MHz}$ $f2 = f_{RXc4} - 20\text{ MHz}$ Input 2 signals ($f1, f2$)	-0.5	2.5	—	dBm	—
J-7	IIP3 +10 MHz detuning LG	IIP3L1c4	Low-Gain mode $f1 = f_{RXc4} + 10\text{ MHz}$ $f2 = f_{RXc4} + 20\text{ MHz}$ $PRX1 = PRX2 = -10\text{ dBm}$ Input 2 signals ($f1, f2$)	19	24	—	dBm	—
J-8	IIP3 -10 MHz detuning LG	IIP3L2c4	Low-Gain mode $f1 = f_{RXc4} - 10\text{ MHz}$ $f2 = f_{RXc4} - 20\text{ MHz}$ $PRX1 = PRX2 = -10\text{ dBm}$ Input 2 signals ($f1, f2$)	19	25	—	dBm	—
J-9	Input P1dB	IP1dBH1c4	High-Gain mode $f = f_{RXc4}$	-21	-14	—	dBm	—
J-10	Input P1dB TX undesired signal input HG	IP1dBH2c4	High-Gain mode $f1 = f_{RXc4}$ $PRX1 = -40\text{ dBm}$ $f2 = f_{RXc4} - 95\text{ MHz}$ $PRX2 : \text{Var.}$ Input 2 signals ($f1, f2$)	-19	-12	—	dBm	—