

Caution for Safety

 **DANGER**

■ Gallium arsenide material (GaAs) is used in this product.

Therefore, do not burn, destroy, cut, crush, or chemically decompose the product, since gallium arsenide material in powder or vapor form is harmful to human health.

Observe the relevant laws and regulations when disposing of the products. Do not mix them with ordinary industrial waste or household refuse when disposing of GaAs-containing products.

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 - Any applications other than the standard applications intended.
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Even when the products are used within the guaranteed values, take into the consideration of incidence of break down and failure mode, possible to occur to semiconductor products. Measures on the systems such as redundant design, arresting the spread of fire or preventing glitch are recommended in order to prevent physical injury, fire, social damages, for example, by using the products.
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■ MMICs for Low Noise Amplifier(LNA)

Application	Part No.	Function	f (GHz)	V _{DD} (V)	I _{DD} (mA)	RF Characteristics (typ.)	Package	No.	Page
PDC	GN01154B NEW	2-Stage Down-Mixer with 3-Stage Low Noise Amplifier	0.8/1.5	2.8	8.0	CG : 27.5 dB, NF : 1.6 dB	QFN-20JP0304-N3	2	4
CDMA	GN01096B	Low Noise Amplifier with AGC	0.8	2.9	6.5	PG : 15 dB, NF : 1.4 dB	SMINI6-G1	1	6, 7
	GN01121B	Low Noise Amplifier with Through Pass Switch			10.0	IIP3 : 7.5 dBm, NF : 0.9 dB			6, 7, 16

■ MMICs for Mixers

Application	Part No.	Function	f (GHz)	V _{DD} (V)	I _{DD} (mA)	RF Characteristics (typ.)	Package	No.	Page
PDC	GN02029B	Down-Mixer with Local Amplifier	0.8/1.5	3.0	4.4	CG : 13 dB/12 dB, OIP3 : 10 dBm	SMini6-G1	1	5
	GN02034B	2-Input, 1-Output Down-Mixer with Local Amplifier	0.8		4.0	CG : 12.5 dB, IIP3 : 1 dBm			—
J-CDMA	GN02039B	Down-Mixer with Local Amplifier			8.0	CG : 10 dB, IIP3 : 5.8 dBm			6, 7, 17
K-CDMA	GN02037B				7.5	CG : 10 dB, IIP3 : 5.3 dBm			6, 7

■ MMICs for Power Amplifier Module Driver

Application	Part No.	Function	f (GHz)	V _{DD} (V)	I _{DD} (mA)	RF Characteristics (typ.)	Package	No.	Page
PDC	GN01125B	1-Stage Driver Amplifier	0.8	3.0	15.0	PG : 18 dB	SMINI6-G1	1	15
	GN01105B	2-Stage Driver Amplifier	1.5		25.0	PG : 30.5 dB			5
	GN01140B NEW	2-Stage Driver Amplifier with AGC (1-Input, 2-Output type)	0.8			PG : 34 dB, DR : 46 dB			4
	GN01157S NEW	2-Stage Driver Amplifier with AGC	1.5	2.8/3.5	35.0	PG : 30 dB, DR : 48 dB			5, 14
	GN01165S NEW				33.0	PG : 24 dB, DR : 47 dB			4
W-CDMA	GN01153S NEW	2-Stage Driver Amplifier with AGC	2.0	2.8	30.0	PG : 24.5 dB(ACLR : -53 dBc) DR : 47dB	ESONF10D-G1	4	8
CDMA	GN01106B		0.8			PG : 29 dB, DR : 48 dB	SMINI6-G1	1	6, 7
PCS	GN01081B	2-Stage Driver Amplifier	1.9	3.0	50.0	PG : 25 dB(P _{OUT} = 11 dBm)	ESOF10D-G1	3	7

■ MMICs for Switch

Application	Part No.	Function	f (GHz)	V _{DD} (V)	I _{DD} (mA)	RF Characteristics (typ.)	Package	No.	Page
PDC	GN04033N NEW	High-Power SPDT Switch	1.5	3.0	0.01	LOSS : 0.20 dB, ISO : 28 dB	SMINI6-G1	1	5
	GN04038N NEW		0.8/1.5			LOSS : 0.19 dB, ISO : 28 dB			4
W-CDMA/PCS	GN04022N		2.0			LOSS : 0.25 dB, ISO : 23 dB			8, 19
	GN04041N NEW					LOSS : 0.25 dB, ISO : 23 dB			8
CDMA	GN04017N	High-Power DPDT Switch	0.8	2.8	0.6	LOSS : 0.20 dB, ISO : 23 dB	QFN-20JP0304-N3	2	6, 7, 18
	GN04028N NEW					LOSS : 0.25 dB, ISO : 23 dB			6, 7
GSM/DCS	GN04019N NEW	High-Power SP4T Switch	0.9/1.8	2.8	0.6	LOSS : 0.40 dB, ISO : 30 dB	QFN-20JP0304-N3	2	9

■ Power Amplifier Modules

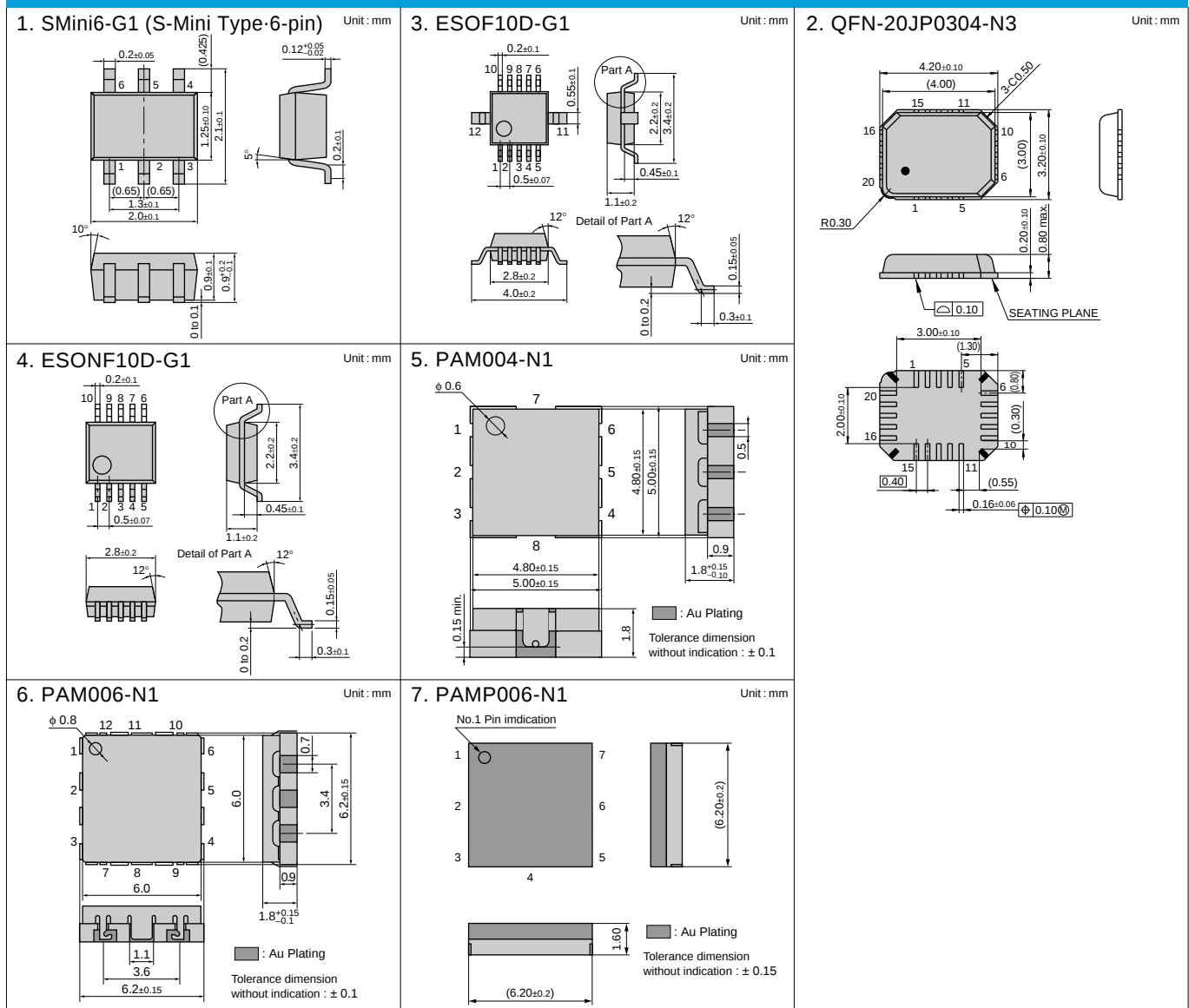
Application	Part No.	f (GHz)	V _{DD} (V)	V _{GG} (V)	P _O (dBm)	PG (dB)	Efficiency	Package	No.	Page
PDC	UN0432H NEW	1.5	3.5	- 2.5	31	24	59%	PAM004-N1	5	5, 10
J-CDMA	UN0374N NEW			—	27	27	38%	PAM006-N1	6	6, 7, 11
CDMA/AMPS	UN0371C NEW	0.8	3.4	—	28	29	35%	PAMP006-N1	7	6, 7, 12
PCS	UN0371P NEW	1.9				26	33%			6, 7, 13
W-CDMA	UN0371W NEW	2.0	3.5	—	26	25	41%	PAM006-N1	6	8

■ Appearance



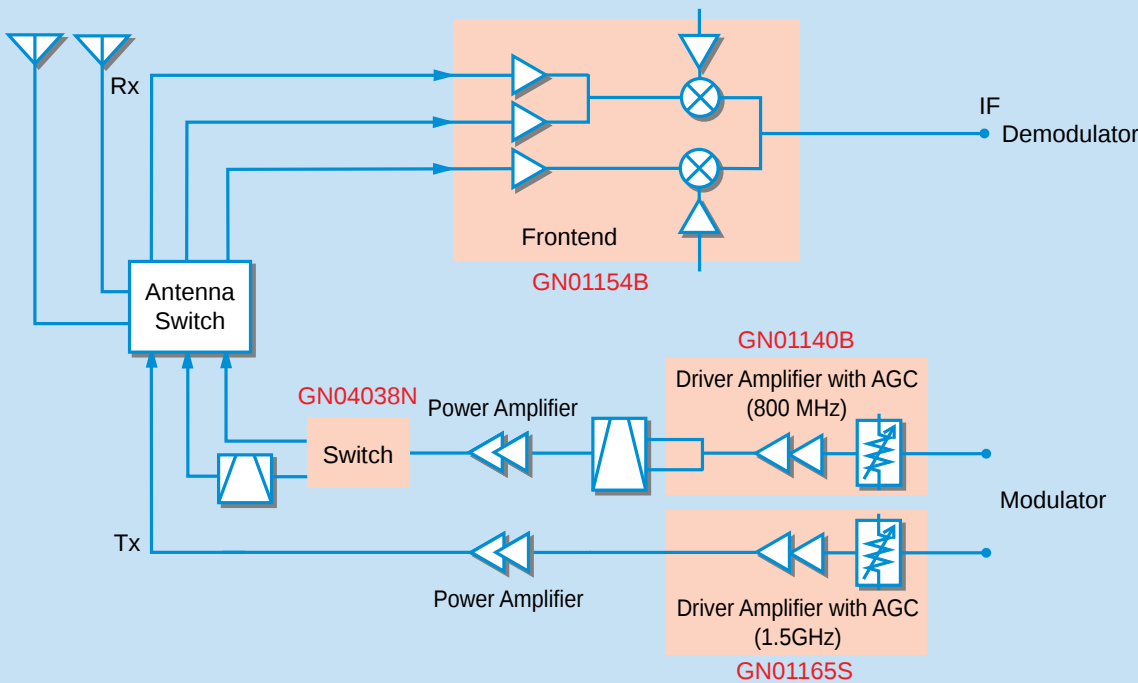
Note) The package size is half of photograph

■ Package Outline



GaAs MMIC/Power Amplifier Module for 800 MHz/1.5 GHz-Band PDC

Block Diagrams

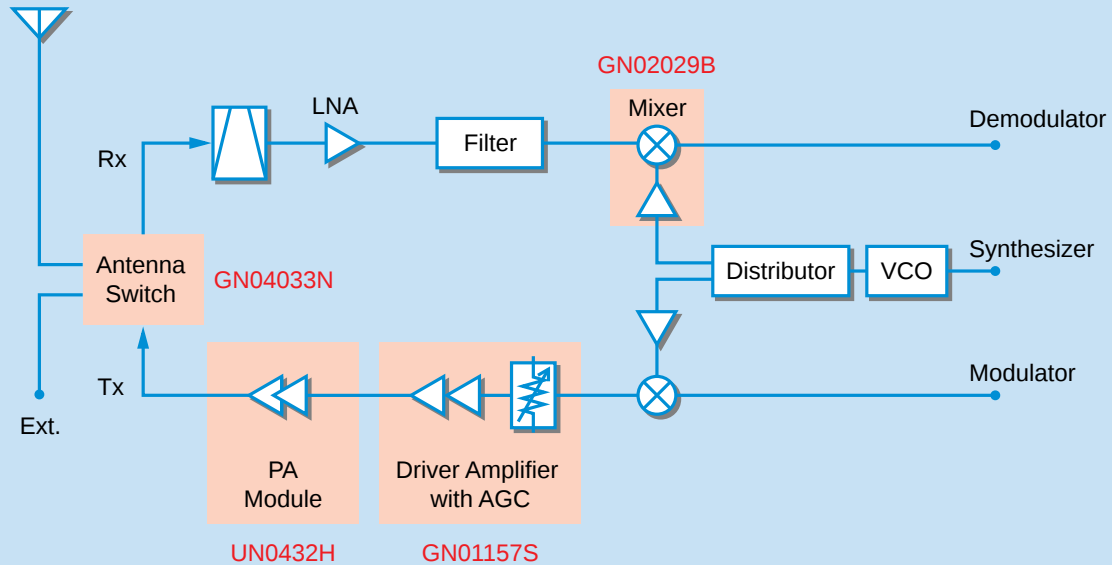


MMIC Lineup

Block	Part No.	Function	f (GHz)	V _{DD} (V)	I _{DD} (mA)	RF Characteristics (typ.)	Package	No.
Driver Amplifier	GN01140B NEW	2-Stage Driver Amplifier with AGC (1-Input, 2-Output type)	0.8	2.8/3.5	25.0	PG : 34 dB, DR : 46 dB	SMini6-G1	1
	GN01165S NEW	2-Stage Driver Amplifier with AGC	1.5		33.0	PG : 24 dB, DR : 47 dB		
Frontend	GN01154B NEW	2 Down-Mixer with 3 Low Noise Amplifier	0.8/1.5	2.8	8.0	CG : 27.5 dB, NF = 1.6 dB	QFN-20JP0304-N3	2
Antenna Switch	GN04038N NEW	High-Power SPDT Switch		3.0	0.01	LOSS : 0.19 dB, ISO : 28 dB	SMini6-G1	1

GaAs MMIC/Power Amplifier Module for 1.5 GHz-Band PDC

Block Diagrams



MMIC Lineup

Block	Part No.	Function	f (GHz)	V _{DD} (V)	I _{DD} (mA)	RF Characteristics (typ.)	Package	No.
Mixer	GN02029B	Down-Mixer with Local Amplifier	0.8/1.5		4.4	CG : 13 dB/12 dB, OIP3 : 10 dBm	SMINI6-G1	1
Driver Amplifier	GN01105B	2-Stage Driver Amplifier (Matching Circuit Built-in)	1.5	3.0	25.0	PG : 30.5 dB		
	GN01157S NEW	2-Stage Driver Amplifier with AGC		2.8/3.5	35.0	PG : 30 dB, DR : 48 dB		
Antenna Switch	GN04033N NEW	High-Power SPDT Switch		3.0	0.01	LOSS : 0.20 dB, ISO : 28 dB		

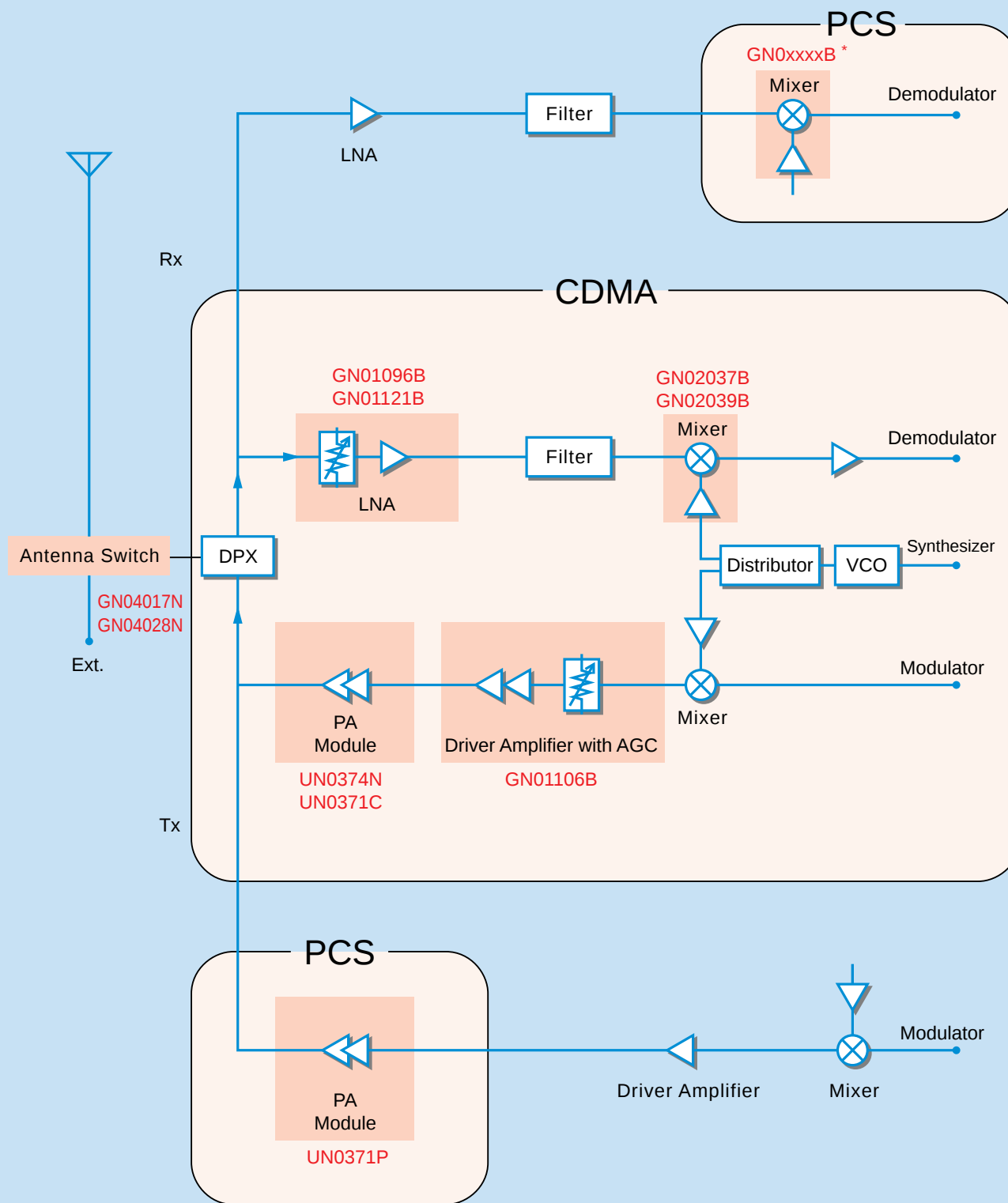
Power Amplifier Module Lineup

Application	Part No.	f (GHz)	V _{DD} (V)	V _{GG} (V)	P _{OUT} (dBm)	PG (dB)	Efficiency	Package	No.
1.5 GHz PDC	UN0432H NEW	1.5	3.5	-2.5	31	24	59%	PAM004N-1	5



GaAs MMIC/Power Amplifier Module for CDMA-PCS

Block Diagrams



Note) * : Under development

■ MMIC Lineup for CDMA

Block		Part No.	Function	f (GHz)	V _{DD} (V)	I _{DD} (mA)	RF Characteristics (typ.)	Package	No.
Low Noise Amplifier		GN01096B	Low Noise Amplifier with AGC	0.8	2.9	6.5	PG : 15 dB, NF : 1.4 dB	SMINI6-G1	1
		GN01121B	Low Noise Amplifier with Through Pass Switch			10.0	IIP3 : 7.5 dBm, NF : 0.9 dB		
Mixer	(For Japan)	GN02039B	Down-Mixer with Local Amplifier		3.0	8.6	CG : 10 dB, IIP3 : 5.8 dBm		
	(For Korea)	GN02037B				7.5	CG : 10 dB, IIP3 : 5.3 dBm		
Driver Amplifier		GN01106B	2-Stage Driver Amplifier with AGC		2.8	30.0	PG : 29 dB, DR : 48 dB		
Antenna Switch		GN04017N	High-Power SPDT Switch		3.0	0.01	LOSS : 0.20 dB, ISO : 23 dB		
		GN04028N NEW	High-Power DPDT Switch				LOSS : 0.25 dB, ISO : 23 dB		

■ Power Amplifier Module Lineup for CDMA

Application	Part No.	f (GHz)	V _{DD} (V)	V _{GG} (V)	P _{OUT} (dBm)	PG (dB)	Efficiency	Package	No.
US-CDMA	UN0371C NEW	0.8	3.4	—	28	29	35%	PAMP006-N1	7
J-CDMA	UN0374N NEW		3.5	—	27	27	38%	PAMP006-N1	6

■ MMIC Lineup for PCS

Block	Part No.	Function	f (GHz)	V _{DD} (V)	I _{DD} (mA)	RF Characteristics (typ.)	Package	No.
Driver Amplifier	GN01081B	2-Stage Driver Amplifier	1.9	3.0	50.0	PG : 25 dB (P _{OUT} = 11 dBm)	ESOF10D-G1	3
Antenna Switch	GN04028N NEW	High-Power DPDT Switch	0.8		0.01	LOSS : 0.25 dB, ISO : 23 dB	SMINI6-G1	1

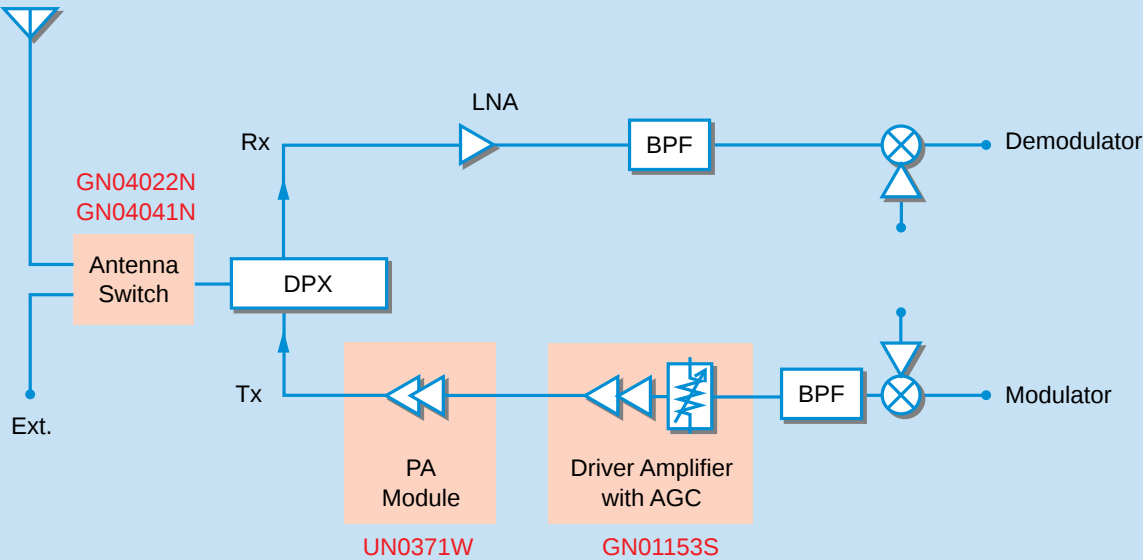
■ Power Amplifier Module Lineup for PCS

Application	Part No.	f (GHz)	V _{DD} (V)	V _{GG} (V)	P _{OUT} (dBm)	PG (dB)	Efficiency	Package	No.
US-PCS	UN0371P NEW	1.9	3.4	—	28	26	33%	PAMP006-N1	7



GaAs MMIC/Power Amplifier Module for W-CDMA

Block Diagrams



MMIC Lineup

Block	Part No.	Function	f (GHz)	V _{DD} (V)	I _{DD} (mA)	RF Characteristics (typ.)	Package	No.
Driver Amplifier	GN01153S NEW	2-Stage Driver Amplifier with AGC	2.0	2.8	30.0	PG : 24.5 dB(ACLR : -53 dBc) DR : 47 dB	ESONF10D-G1	4
Antenna Switch	GN04022N	High-Power SPDT Switch		3.0	0.01	LOSS : 0.25 dB, ISO : 23 dB	SMini6-G1	1
	GN04041N NEW					LOSS : 0.25 dB, ISO : 23 dB		

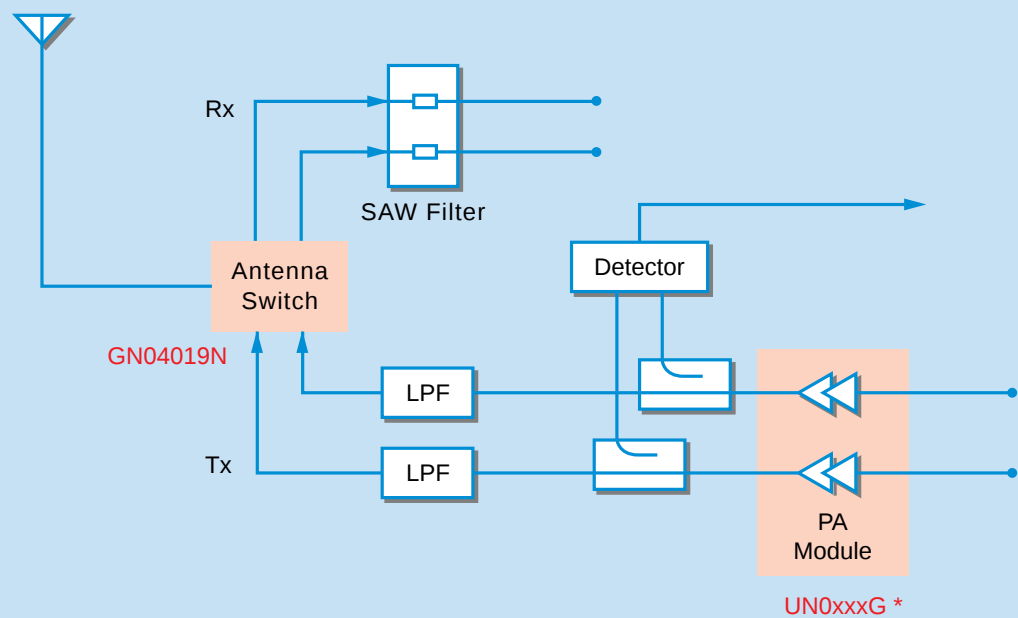
Power Amplifier Module Lineup

Application	Part No.	f (GHz)	V _{DD} (V)	V _{GG} (V)	P _{OUT} (dBm)	PG (dB)	Efficiency	Package	No.
W-CDMA	UN0371W NEW	2.0	3.5	—	26	25	41%	PAM006-N1	6



GaAs MMIC/Power Amplifier Module for GSM-DCS

■ Block Diagrams



Note) * : Under development

■ MMIC Lineup

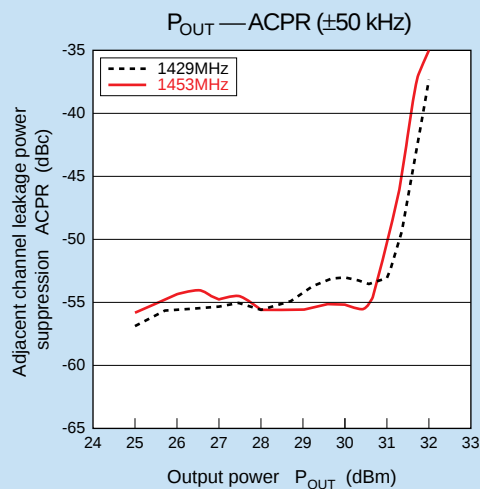
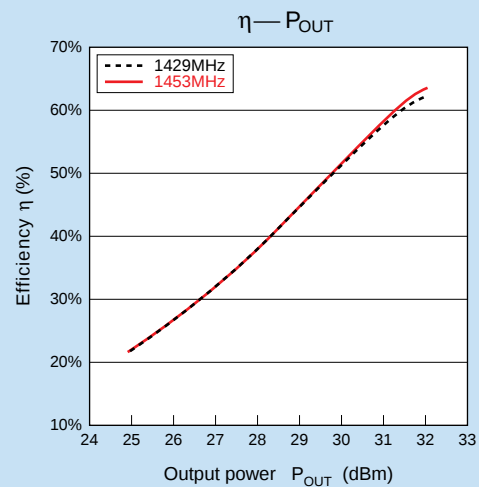
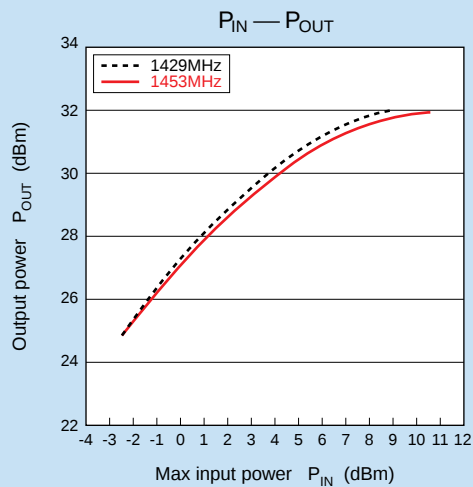
Block	Part No.	Function	f (GHz)	V _{DD} (V)	I _{DD} (mA)	RF Characteristics (typ.)	Package	No.
Antenna Switch	GN04019N NEW	High-Power SP4T Switch	0.9/1.8	2.8	0.6	LOSS : 0.40 dB, ISOL : 30 dB	QFN-20JP0304-N3	2

UN0432H**Power Amplifier Module for 1.5 GHz-Band PDC**

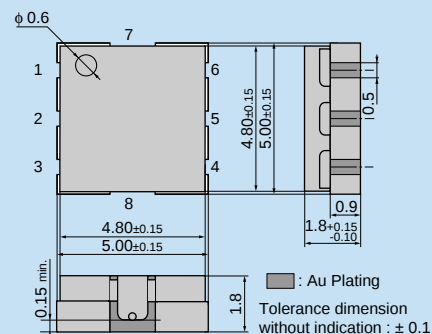
■ Features

- Low consumption current
- High efficiency : $\eta = 59\%$
- High gain : $PG = 24\text{ dB}$
- High output power : $P_{OUT} = 31\text{ dBm}$
- Super miniature package(PAM004-N1 : 0.04 cc)

■ Characteristics Diagram

 $(V_{DD1} = V_{DD2} = 3.5\text{ V}, V_{GG} = -2.5\text{ V})$ 

■ Package Outline



PAM004-N1

UN0374N

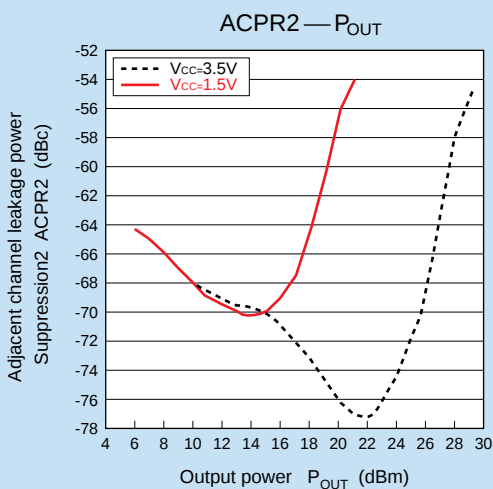
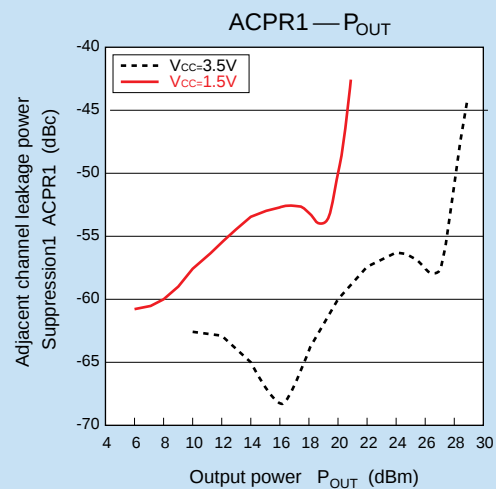
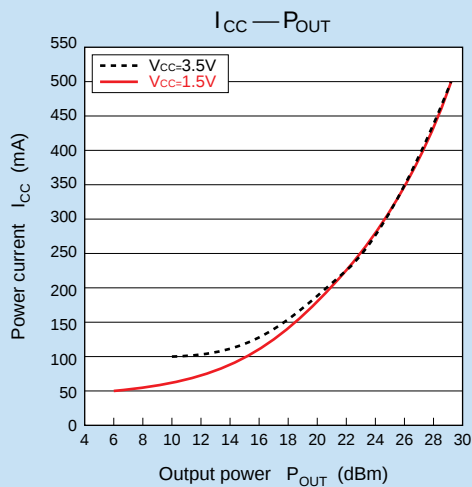
Power Amplifier Module for J-CDMA

■ Features

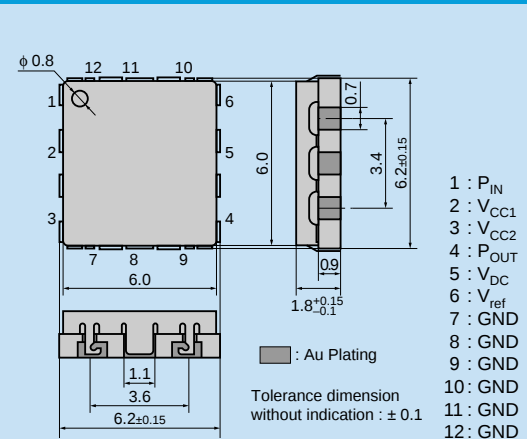
- High efficiency : $\eta = 38\%$ ($P_{OUT} = 27 \text{ dBm}$, $V_{CC} = 3.5\text{V}$)
 $\eta = 20\%$ ($P_{OUT} = 15 \text{ dBm}$, $V_{CC} = 1.5\text{V}$)
- High gain : $PG = 27 \text{ dB}$
- Super miniature package(PAM006-N1 : 0.06 cc)

■ Characteristics Diagram

($V_{CC1} = V_{CC2} = 3.4 \text{ V}$, $V_{REF} = 2.8 \text{ V}$)



■ Package Outline



PAM006-N1

UN0371C

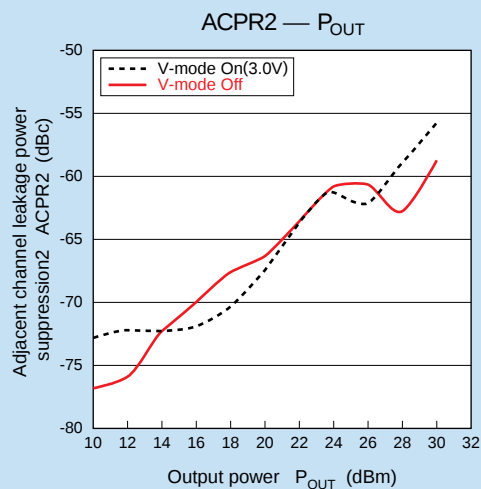
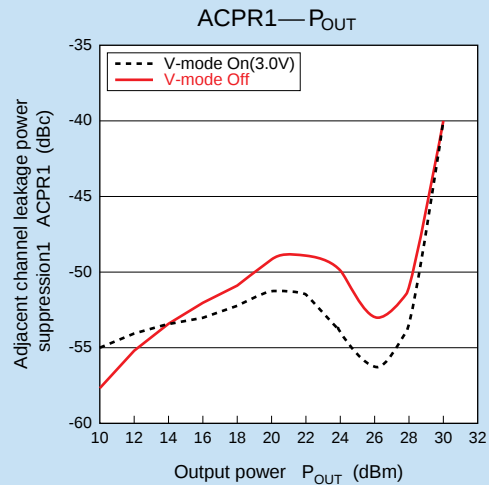
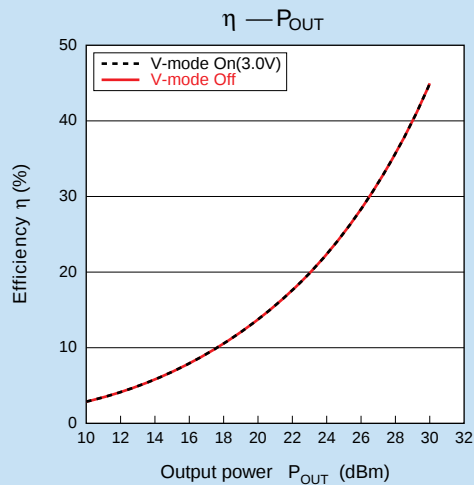
Power Amplifier Module for CDMA-AMPS

Features

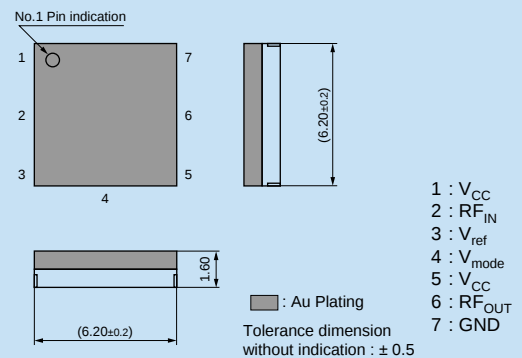
- Low consumption current
- High efficiency : $\eta = 35\%$ (CDMA)
- High gain : PG = 29 dB
- High output power : $P_{OUT} = 28$ dBm
- Super miniature package (PAMP006-N1 : 0.06 cc)

Characteristics Diagram

($V_{CC1} = V_{CC2} = 3.4$ V, $V_{REF} = 3.0$ V)



Package Outline



PAMP006-N1

UN0371P

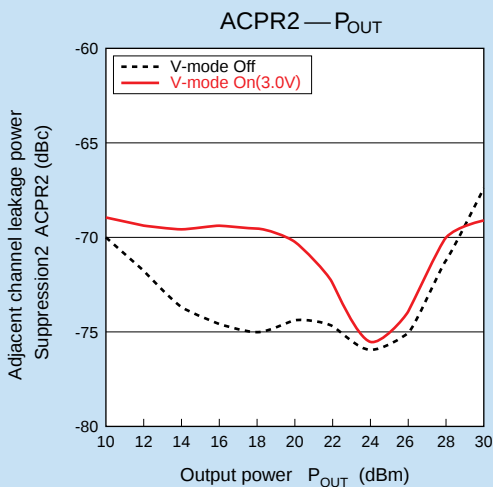
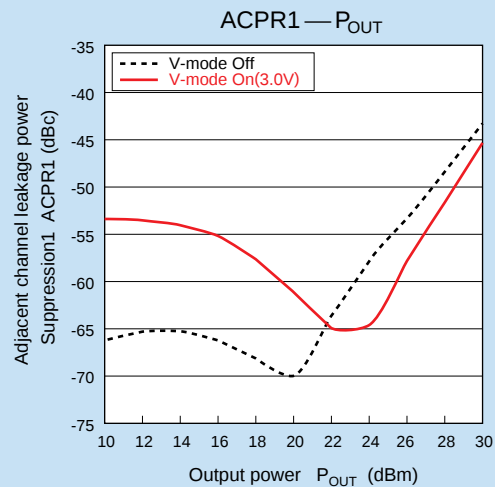
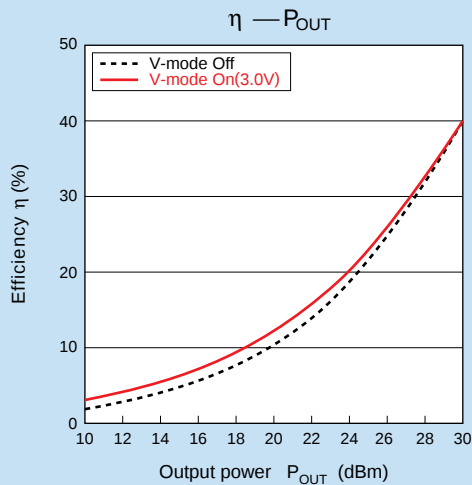
Power Amplifier Module for PCS

Features

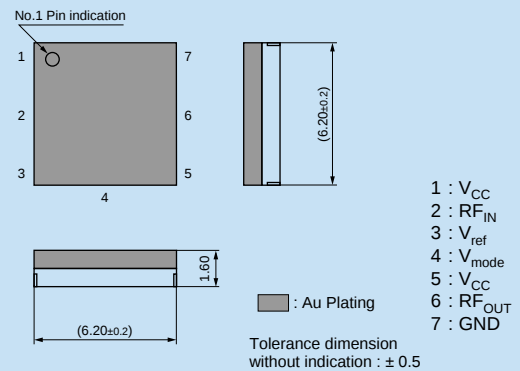
- Low consumption current
- High efficiency : $\eta = 33\%$
- High gain : $PG = 26\text{ dB}$
- High output power : $P_{OUT} = 28\text{ dBm}$
- Super miniature package(PAMP006-N1 : 0.06 cc)

Characteristics Diagram

($V_{CC1} = V_{CC2} = 3.4\text{ V}$, $V_{REF} = 3.0\text{ V}$)



Package Outline



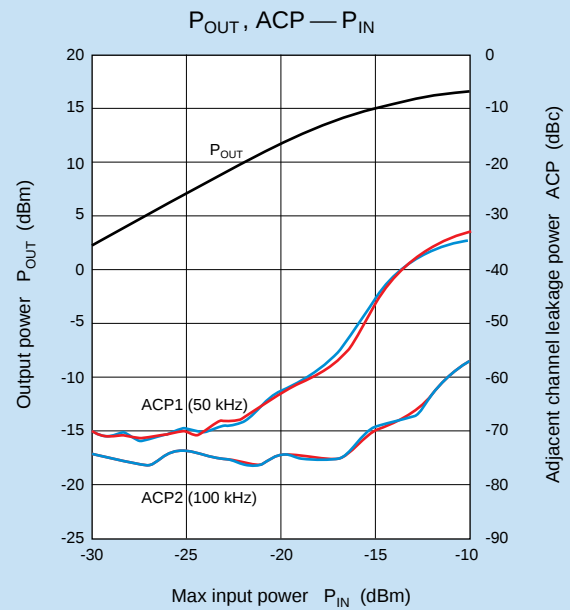
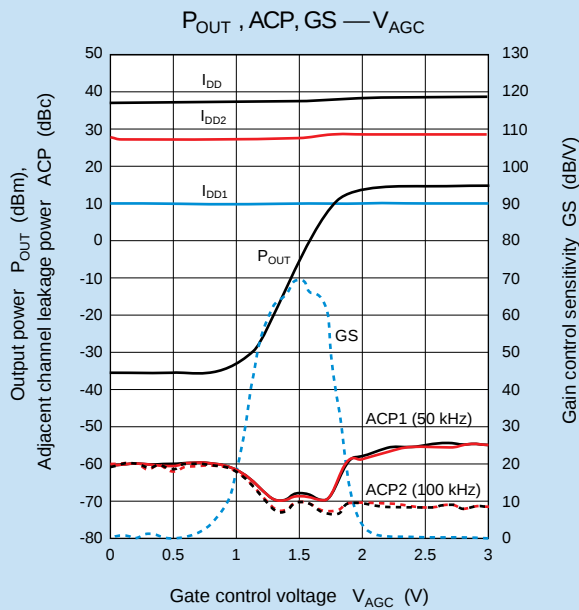
PAMP006-N1

GN01157S**Driver Amplifier with AGC for 1.5 GHz-Band PDC**

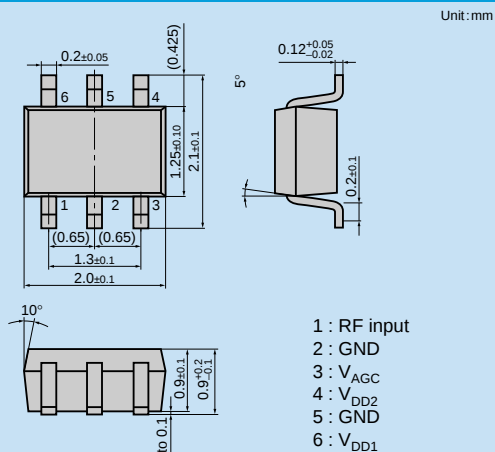
■ Features

- 2-Stage Amplifier with High Output Auto Gain Controllable
- Low consumption current : $I_{DD} = 35 \text{ mA}$
- High gain : $PG = 30 \text{ dB}$
- Dynamic range : $DR = 48 \text{ dB}$
- Small package : S-Mini Type · 6-pin

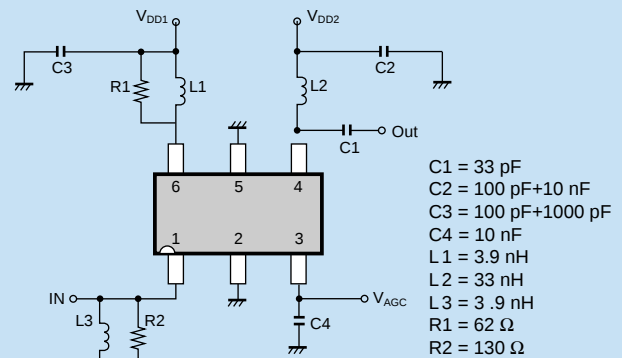
■ Characteristics Diagram



■ Package Outline



■ Measurement Circuit Diagram



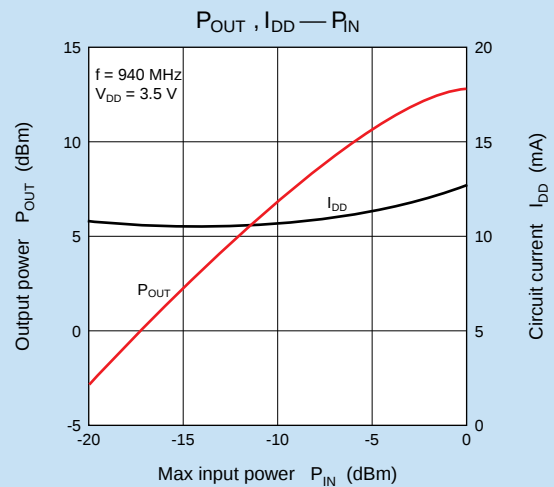
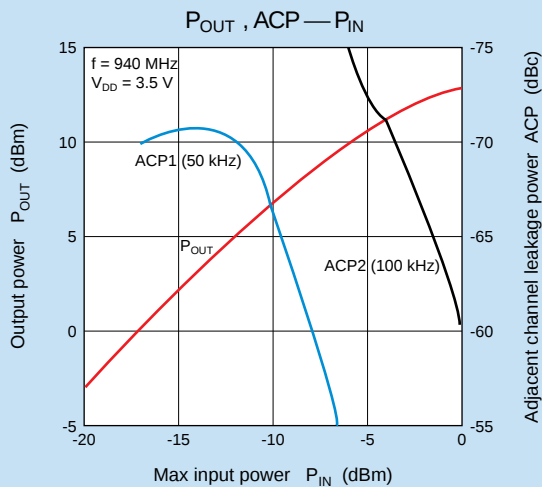
GN01125B

Driver Amplifier for 800 MHz-Band PDC

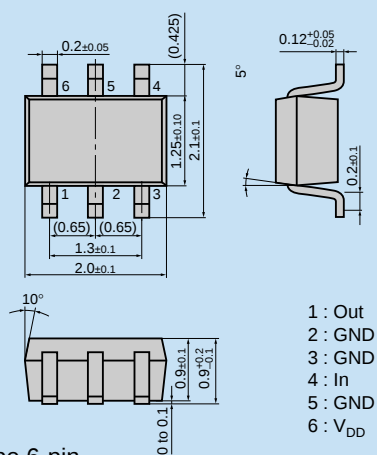
■ Features

- Matching circuit built-in(Input-side,Output-side)
- Low consumption current : $I_{DD} = 15 \text{ mA}$
- High gain : $PG = 18 \text{ dB}$
- Small package : S-Mini Type · 6-pin

■ Characteristics Diagram

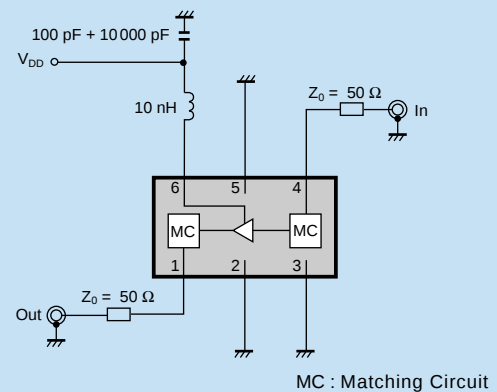


■ Package Outline



S-Mini Type-6-pin

■ Measurement Circuit Diagram



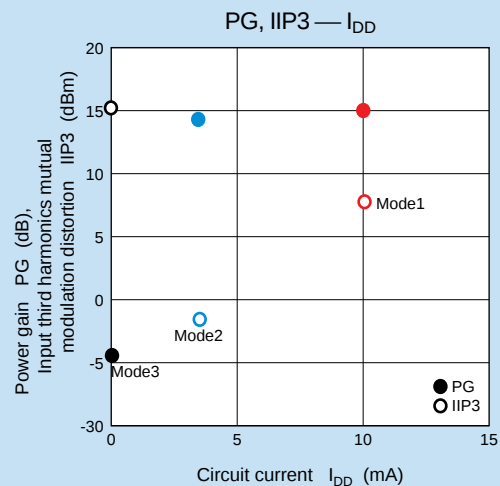
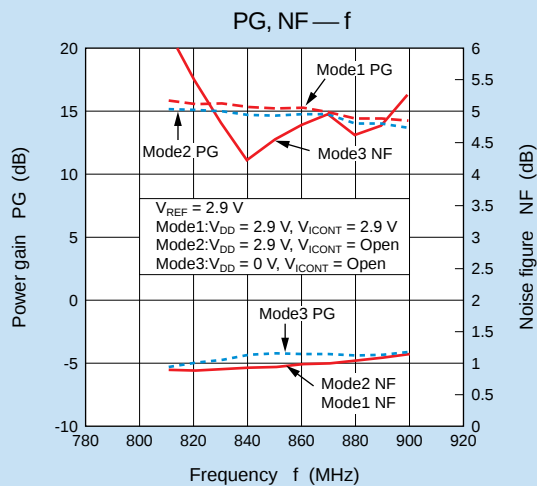
GN01121B

Low Noise Amplifier with through pass switch for CDMA

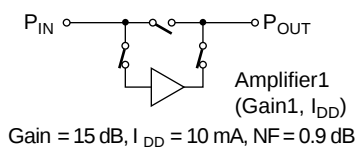
Features

- Low consumption current(power save mode)
- Low distortion : IIP3 = 7.5 dBm
- Low noise : NF = 0.9 dB(@f = 850 MHz)

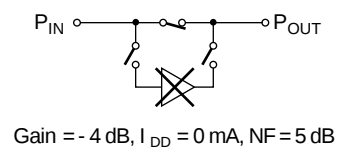
Characteristics Diagram



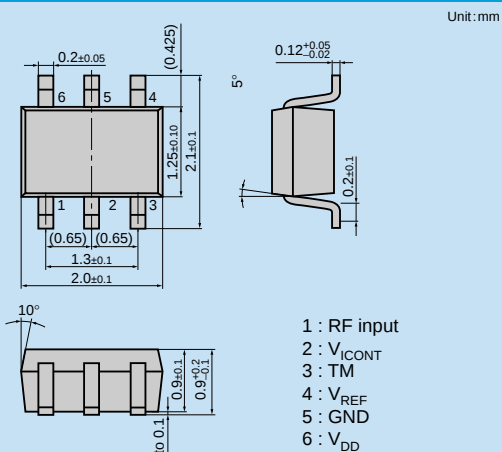
- Mode1 : Low input mode



- Mode3 : Through pass operation

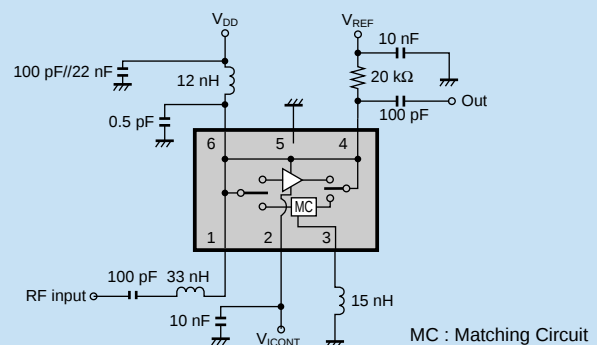


Package Outline



S-Mini Type-6-pin

Measurement Circuit Diagram



Note) In the case of using for overseas' models, please apply smaller inductance than 33nH at IN terminal (pin 1) and than 12nH at V_{DD} terminal(pin 6).

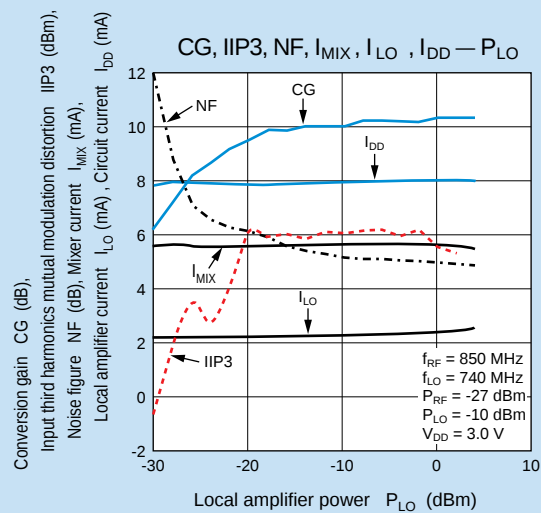
GN02039B

Down-Mixer with Local Amplifier for CDMA

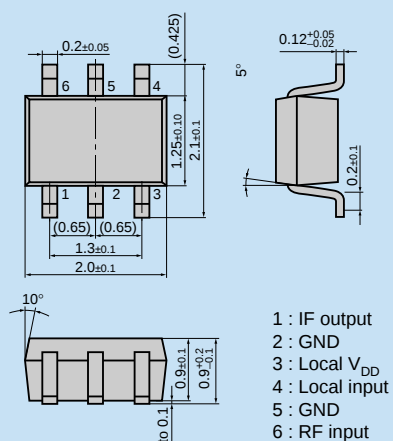
Features

- Down-Mixer for J-CDMA
- Low distortion : IIP3 = 5.8 dBm
- Local filter-less
- Small package : S-Mini Type · 6-pin

Characteristics Diagram

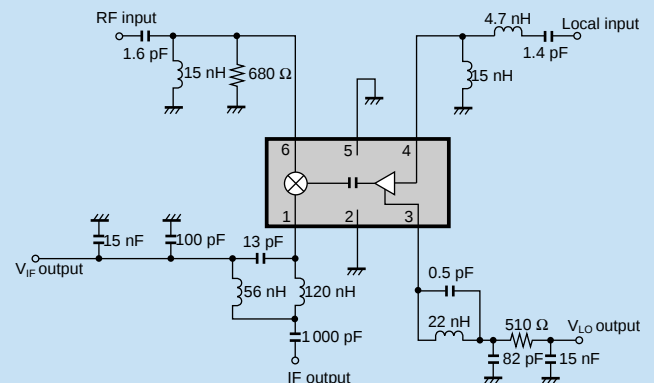


Package Outline



S-Mini Type-6-pin

Measurement Circuit Diagram



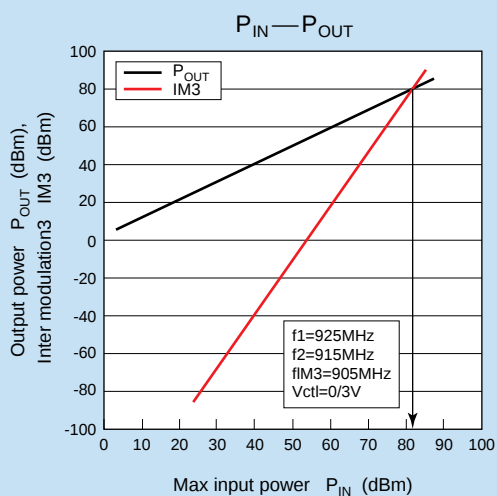
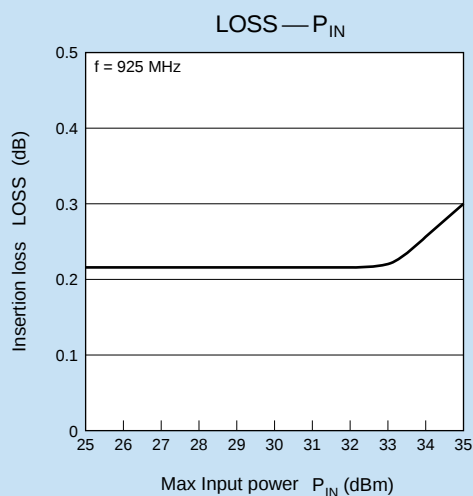
GN04017N

Antenna Switch for CDMA

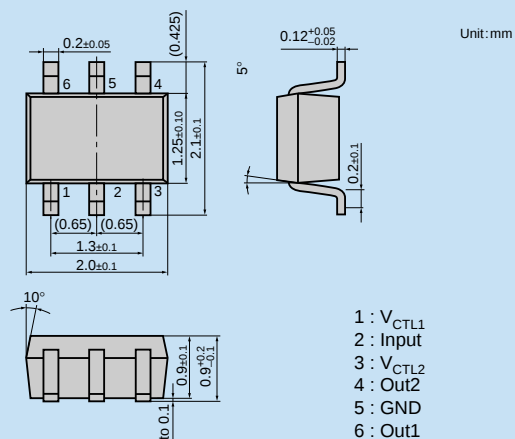
Features

- Low insertion loss : LOSS = 0.2 dB
- High isolation : ISO = 23 dB
- Low distortion
- Small package : S-Mini Type · 6-pin

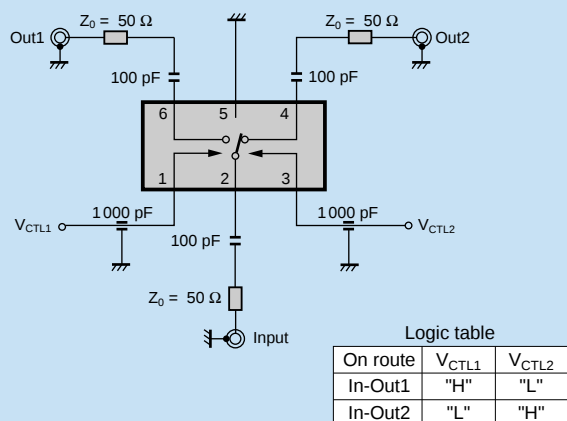
Characteristics Diagram



Package Outline



Measurement Circuit Diagram



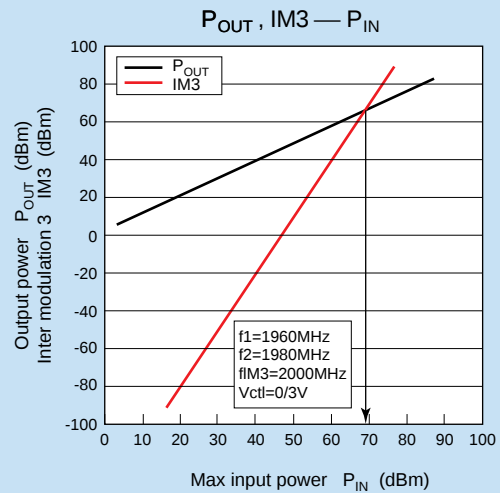
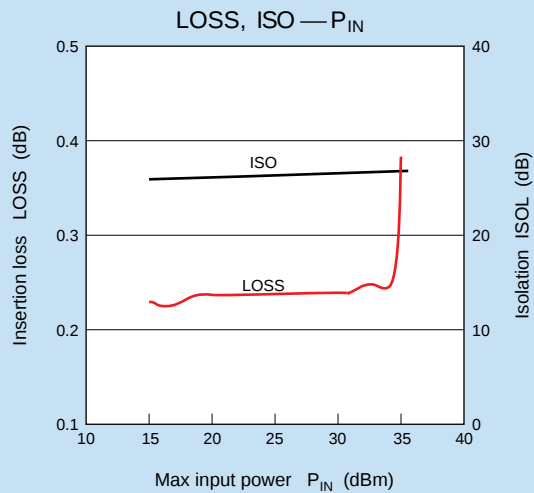
GN04022N

Driver Amplifier for PCS

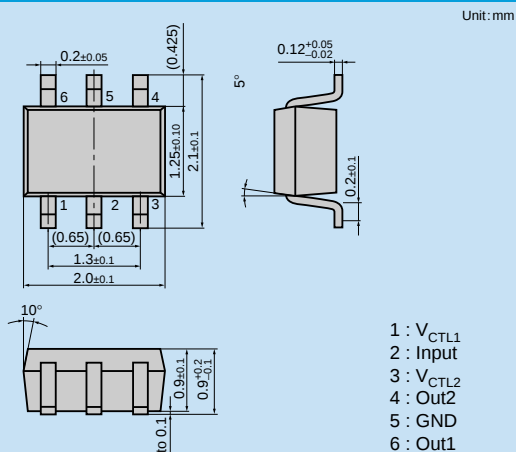
■ Features

- Low insertion loss : LOSS = 0.25 dB
- High isolation : ISO = 23 dB
- Low distortion
- Small package : S-Mini Type · 6-pin

■ Characteristics Diagram



■ Package Outline



S-Mini Type-6-pin

■ Measurement Circuit Diagram

