

RF Amplifier

InGaP HBT MMIC Amplifier
High Reliability
High Linearity Performance

APPLICATION

Gain Blocks
Mobile Infrastructure
Cellular, PCS, WCDMA, GSM
WLAN, DMB, CATV, WiBro, WiMAX

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Prewell CATV solution

2008/Mar



PW125 : Specifications

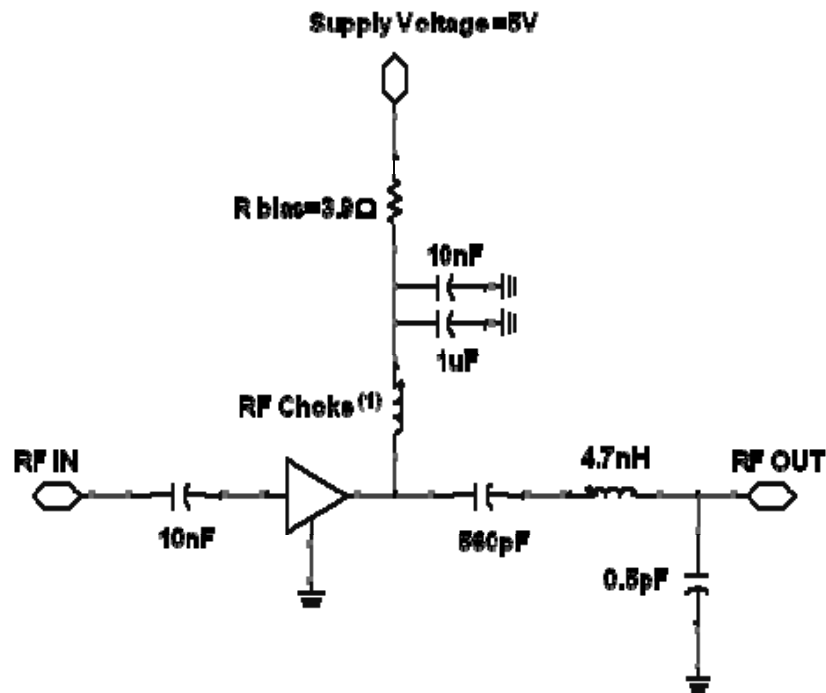
Specifications

Symbol	Parameters	Units	Freq.	Min.	Typ.	Max.
S21	Gain	dB	50 MHz 450 MHz 870 MHz		21.7 21.8 21.2	
S11	Input Return Loss	dB	50 MHz 450 MHz 870 MHz		-25 -14 -12	
S22	Output Return Loss	dB	50 MHz 450 MHz 870 MHz		-18 -19 -14	
CSO	Composite Second Order	dBc	50 MHz 450 MHz 870 MHz		56 55 60	
CTB	Composite Triple Beat	dBc	50 MHz 450 MHz 870 MHz		83 74 70	
XMOD	Cross Modulation	dBc	50 MHz 450 MHz 870 MHz		74 75 71	
NF	Noise Figure	dB	50 MHz 450 MHz 870 MHz		2.7 2.8 2.8	
V / I	Device voltage / current	V/mA			4.5/120	
Rth	Thermal Resistance	°C/W			80	
Tj	Junction Temperature	°C			130	

Test Conditions : T=25°C, Supply Voltage=+5V, Rbias=3.9ohm, 75ohm System, 132 channels, 50-870MHz, +30dBmV/channel flat loading

PW125 : Circuit and Bias value

45 -1000MHz CATV Application Circuit

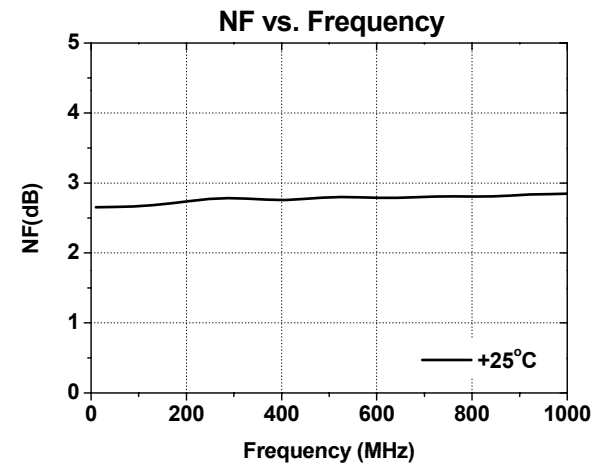
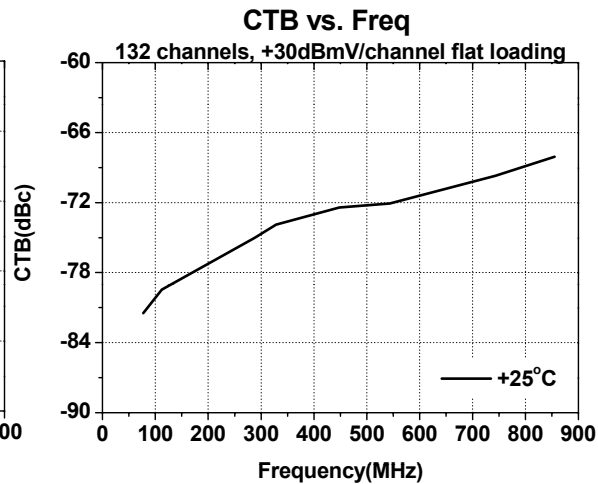
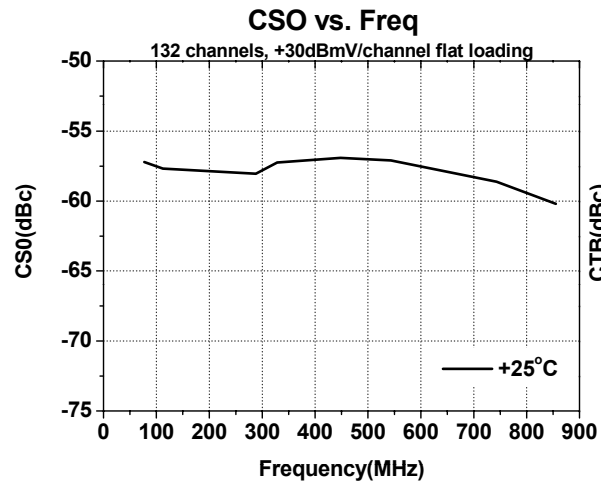
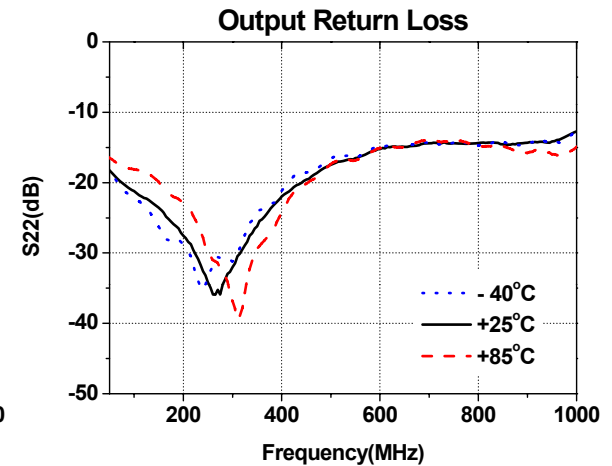
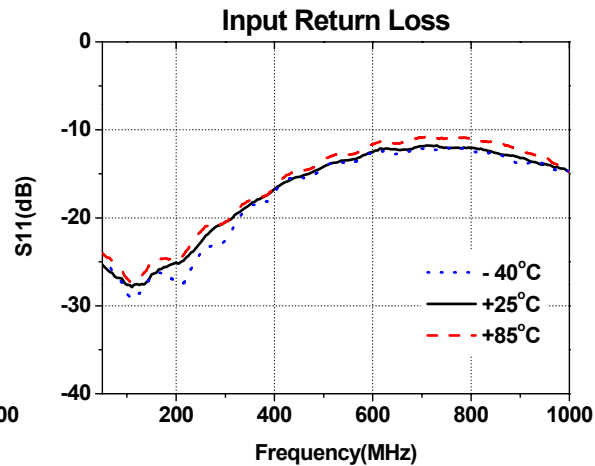
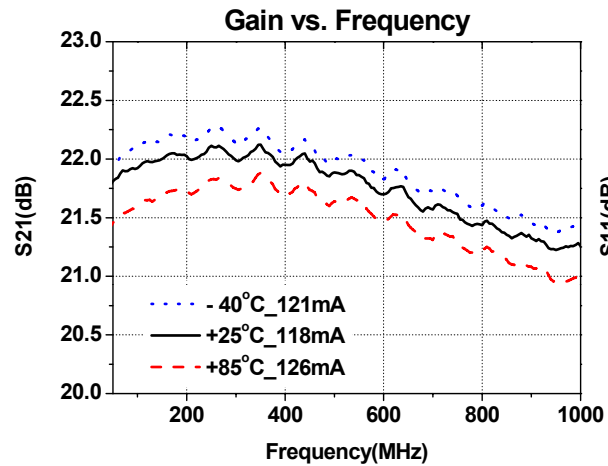


Recommended Bias Values

Supply Voltage	R bias Value	Size
5 V	3.9 Ω	0805
5.3 V	6.4 Ω	0805
6 V	12.3 Ω	0805
7 V	20.6 Ω	1210
8 V	28.9 Ω	1210
9 V	37.3 Ω	2010
10 V	45.6 Ω	2010
12 V	62.3 Ω	2512

1. RF Choke is about 4uH. We recommend that wire of 0.2 phi radius wind 4 turns on toroidal core(size:4.0x1.5x2.0)
2. Measurement for our datasheet was made on 1.6mm thick FR-4 Board. And 75 ohm microstrip line

PW125 : Performance



Prewell's Device Key Features

- **PW125 :**
 - ✓ High Linearity / High Reliability
 - ✓ Low Noise / Good multi-tone performance
 - ✓ High Gain / Good VSWR(In/Out)
- **Temperature compensated bias circuit is included**
- **Power consumption down design**
- **100% DC & RF Tested**
- **ESD protected**
- **Cost effective solution**



Prewell's CATV Solutions

Parameter	Units	PREWELL(PW120)		PREWELL(PW125)		PREWELL(PW450)		PREWELL(PW470)		PREWELL(PW510)		PREWELL(PW550)	
		Typical	Condition	Typical	Condition	Typical	Condition	Typical	Condition	Typical	Condition	Typical	Condition
Frequency	MHz	45 ~ 1000		45 ~ 1000		45 ~ 1000		45 ~ 1000		45 ~ 1000		45 ~ 1000	
Supply Voltage	V	8.0		5.0		6.0		6.0		6.0		6.0	
Current	mA	68		120		70		70		85		85	
S21-Gain	dB	19.8	@50MHz	21.7	@50MHz	18.1	@50MHz	15.7	@50MHz	20.8	@50MHz	18.2	@50MHz
S21-Gain	dB	19.5	@450MHz	21.8	@450MHz	18.2	@450MHz	15.9	@450MHz	20.9	@450MHz	18.4	@450MHz
S21-Gain	dB	19.3	@870MHz	21.2	@870MHz	18.0	@870MHz	15.9	@870MHz	20.6	@870MHz	18.4	@870MHz
S11 Input Loss	dB	-23	@45MHz	-25	@45MHz	-14	@45MHz	-10	@45MHz	-10	@45MHz	-9	@45MHz
S22 Output Loss	dB	-17		-18		-15		-12		-11		-10	
Noise Figure	dB	2.8		2.7		3.5		3.5		3.5		3.4	
CSO	dBc	-54		-55		-54		-55		-52		-53	
CTB	dBc	-71	+25dBmV/ 132ch Flat	-70	+30dBmV/ 132ch Flat	-72	+25dBmV/ 132ch Flat	-74	+25dBmV/ 132ch Flat	-72	+30dBmV/ 132ch Flat	-74	+30dBmV/ 132ch Flat
XMD	dBc	-71		-71		-67		-71		-71		-71	



Cross Reference

Parameter	Unit	PREWELL(PW120)		PREWELL(PW125)		Anadigics (ADA10000)		RFHIC(AP112)		WJ(AH2)		Sirenza(CGB-1089Z)		MA-COM (MAAMSS0041)	
		Typical	Condition	Typical	Condition	Typical	Condition	Typical	Condition	Typical	Condition	Typical	Condition	Typical	Condition
Frequency	MHz	45 ~1000		45 ~ 1000		50 ~ 1000		3 ~ 2500		50 ~1000		50 ~ 1000		50 ~ 1000	
Min. Voltage	V	8.0		5.0		8.0		5.0		5.0		5.0		8.0	
Current	mA	68		120		150		110		150		80		100	
S21-Gain	dB	19.8	@50MHz	21.7	@50MHz	15.5	@50MHz	18	@50MHz	14.5	@100MHz	16.3	@50MHz	14.8	@50MHz
S21-Gain	dB	19.5	@450MHz	21.8	@450MHz	15.6	@450MHz	18	@450MHz	14.5	@450MHz	16	@500MHz	15.0	@450MHz
S21-Gain	dB	19.3	@870MHz	21.2	@870MHz	15.6	@870MHz	17.5	@870MHz	13.2	@860MHz	15.5	@850MHz	15.2	@870MHz
S11 Input Loss	dB	-23	@45MHz	-25	@45MHz	-25	@45MHz	-12	@45MHz	-11.1	@45MHz	-21		19	
S22 Output Loss	dB	-17		-18		-18		-12		-9.5		-19		15	
Noise Figure	dB	2.8		2.7		1.6 ~ 2.8		3.5		3.5		3.5		2.7	
CSO	dBc	-54		-55		-60	+17dBmV /160ch	-53		-48		-65		-70	+23dBmV /132ch
CTB	dBc	-71	+25dBmV /132ch Flat	-70	+30dBmV /132ch Flat	-65	Flat	-67	+30dBmV /135 ch Flat	-71	+34dBmV /77ch Flat	-77	+25dBmV /79ch Flat	-80	Flat
XMD	dBc	-71		-71				-65		-65		-76			