Plerow™ ALN2400

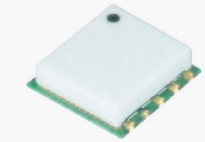
Low Noise Amplifier

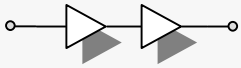
Features

- 25 dB Gain at 2400 MHz
- 18 dBm P1dB
- 35 dBm Output IP3
- 1.1 dB Noise Figure
- Operating at Single 5 V Supply
- 80 mA Current Consumption

Description

The plerow™ ALN-series is the compactly designed surface-mount module for the use of the LNA with or without the following gain blocks in the infrastructure equipment of the mobile wirelss (CDMA, GSM, PCS, PHS, WCDMA, DMB, WLAN, WiBro, WiMAX), GPS, satellite communication terminals and so on. It has an exceptional performance of low noise figure, high gain, high OIP3, and low bias current. The stability factor is always kept less than unity over the application band in order to confirm its unconditionally stable implementation to the application system environment. The surface-mount module package including the completed matching circuit and other components necessary just in case allows very simple and convenient implementation onto the system board in mass production level.





2-stage Single Type

Specifications

Parameter	Unit	Specification
Frequency Range	MHz	2300 ~ 2500
Gain	dB	25
Gain Flatness	dB	± 0.5
Noise Figure	dB	1.1
Output IP3	dBm	35
S11 / S22	dB	-18 / -10
Output P1dB	dBm	18
Supply Current	mA	80
Supply Voltage	V	5
Impedance	Ω	50
Max. RF Input Power @WCDMA 4FA, Bluetooth	dBm	5 , 14
Package Type & Size	mm	SMT, 13Wx13Lx3.8H

1) Measurement conditions are as follows: T = 25°C, V_{CC} = 5 V, Freq. = 2400 MHz, 50 ohm system.
2) OIP3 is measured with two tones at an output power of 10 dBm / tone separated by 1 MHz.
3) Note: We recommend that the VSWR toward a source and load be less than 1:4 to avoid an unwanted oscillation.

More Information

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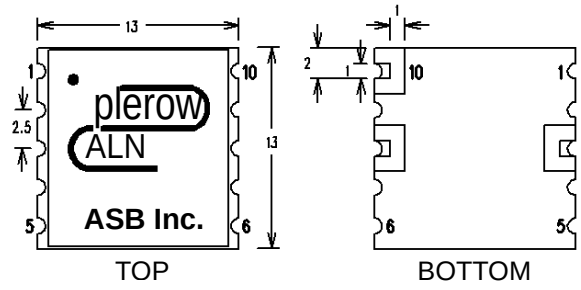
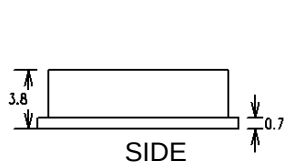
Outline Drawing

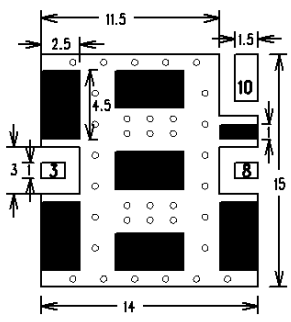




: Soldering area

○ :ϕ0.4 plated thru holes to ground plane

(Unit: mm)

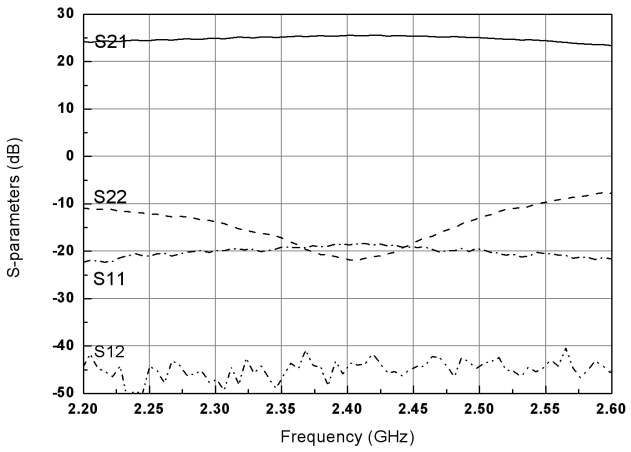


SUGGESTED FOOTPRINT

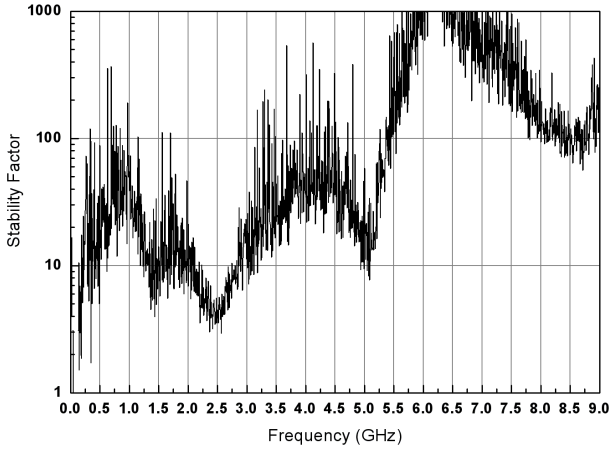
Pin Number	Function
3	RF In
8	RF Out
10	+Vcc
Others	Ground

Note: 1. The number and size of ground via holes in a circuit board is critical for thermal RF grounding considerations.
2. We recommend that the ground via holes be placed on the bottom of all ground pins for better RF and thermal performance, as shown in the drawing at the left side.

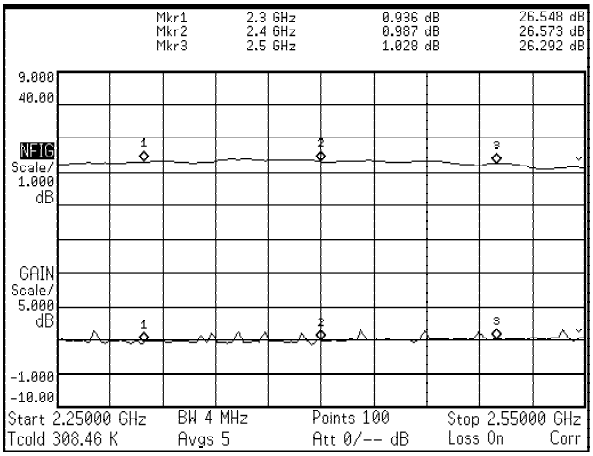
S-parameters



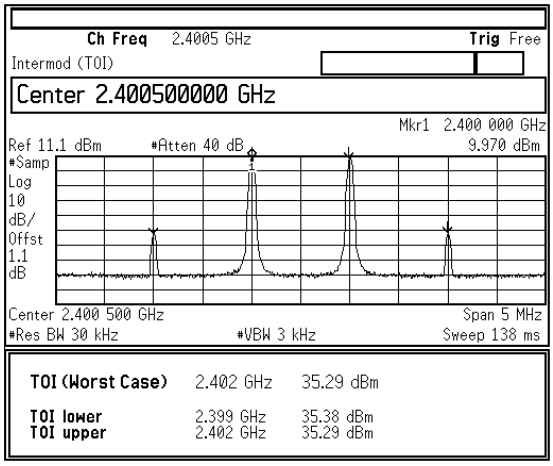
Stability Factor (K)



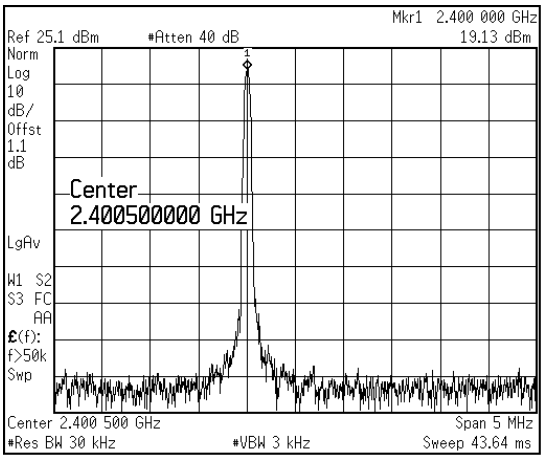
Noise Figure & Gain Flatness



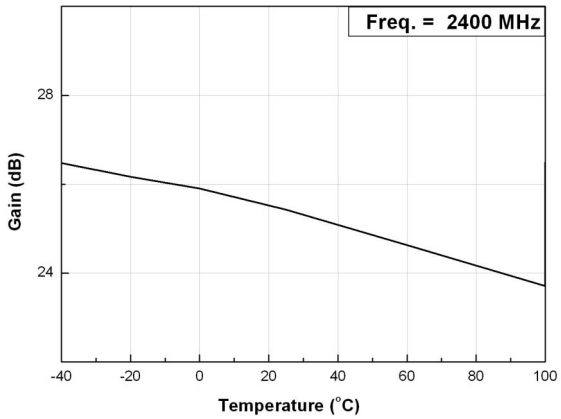
OIP3

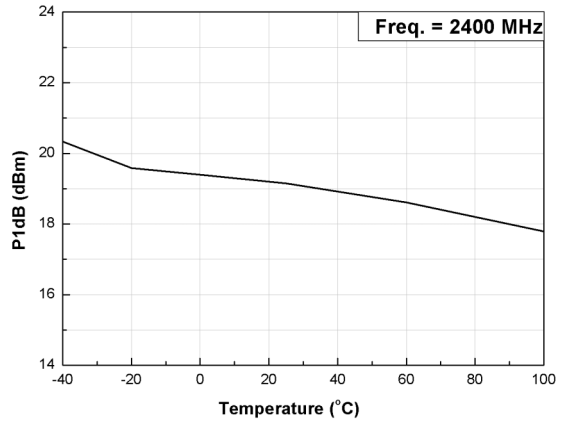


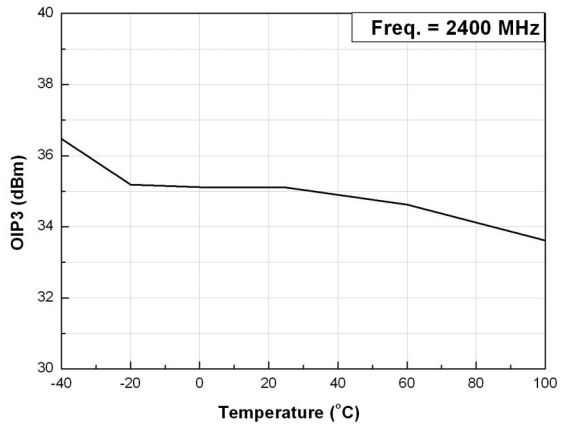
P1dB


Mkr1 2.400 000 GHz
Ref 25.1 dBm
#Atten 40 dB
19.13 dBm
Norm
Log
10
dB/
Offst
1.1
dB
Center
2.400500000 GHz
LgAv
W1 S2
S3 FC
AA
£(f):
f>50k
Swp
Center 2.400 500 GHz
Span 5 MHz
#Res BW 30 kHz
#VBW 3 kHz
Sweep 43.64 ms

Gain, P1dB, and OIP3 with Temperature (-40℃ ~ 100℃)

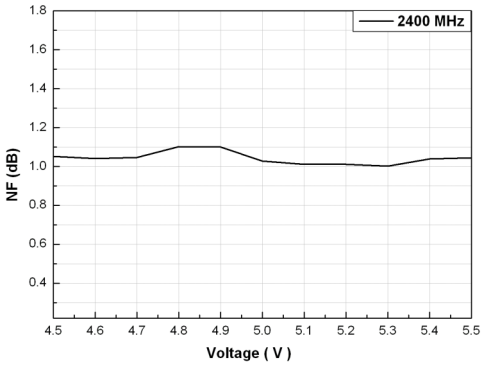


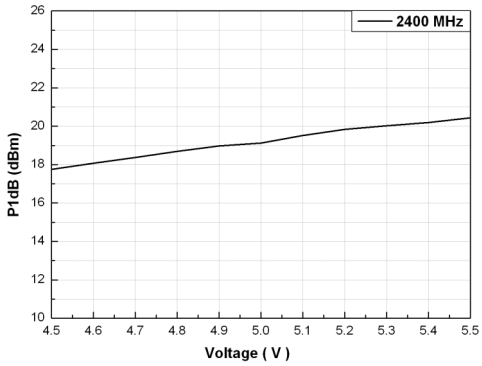


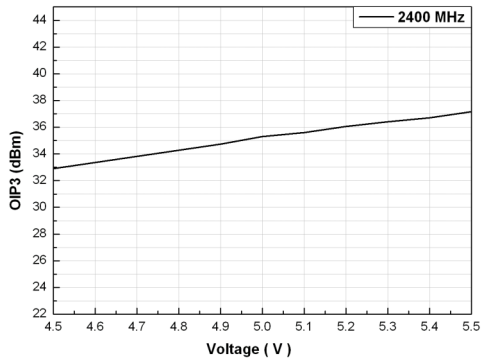


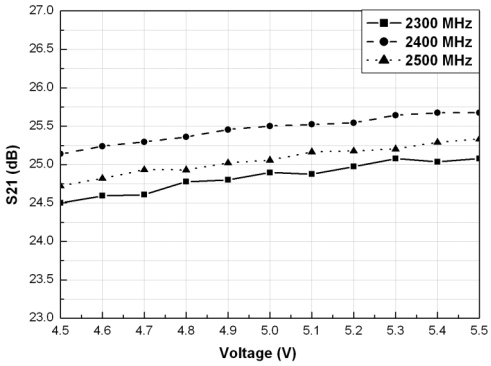
NF, P1dB, OIP3, and S-parameters with Voltage Change (4.5 V ~ 5.5 V)

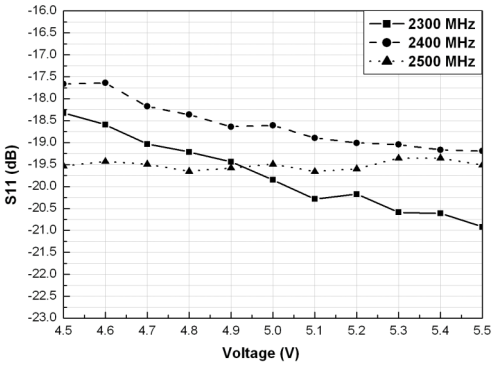
	Voltage (V)	Current (mA)	S21 (dB)			S11 (dB)			S22 (dB)			P1dB (dBm)	OIP3 (dBm)	NF (dB)
			2300 MHz	2400 MHz	2500 MHz	2300 MHz	2400 MHz	2500 MHz	2300 MHz	2400 MHz	2500 MHz			
	4.5	70	24.502	25.138	24.723	-18.325	-17.665	-19.532	-14.302	-22.089	-12.609	17.75	32.91	1.053
	4.6	72	24.594	25.239	24.82	-18.589	-17.641	-19.429	-14.252	-22.037	-12.738	18.07	33.36	1.042
	4.7	74	24.608	25.296	24.933	-19.032	-18.175	-19.49	-14.111	-21.827	-12.807	18.37	33.83	1.047
	4.8	76	24.777	25.36	24.93	-19.212	-18.364	-19.654	-14.063	-21.735	-12.889	18.69	34.27	1.103
	4.9	78	24.802	25.456	25.023	-19.434	-18.638	-19.577	-13.887	-21.923	-13.012	18.98	34.73	1.101
	5	80	24.896	25.501	25.057	-19.847	-18.608	-19.492	-13.749	-21.735	-13.015	19.13	35.29	1.028
	5.1	82	24.877	25.522	25.166	-20.285	-18.892	-19.658	-13.841	-21.568	-13.067	19.52	35.6	1.012
	5.2	84	24.974	25.544	25.177	-20.172	-19.007	-19.597	-13.638	-21.463	-13.263	19.83	36.05	1.012
	5.3	86	25.078	25.642	25.203	-20.589	-19.043	-19.354	-13.545	-21.482	-13.189	20.02	36.4	1.003
	5.4	88	25.036	25.673	25.29	-20.612	-19.165	-19.35	-13.544	-21.342	-13.338	20.2	36.7	1.039
	5.5	90	25.08	25.675	25.331	-20.919	-19.193	-19.512	-13.338	-21.148	-13.413	20.43	37.17	1.044
Variation	1	20	0.578	0.537	0.608	2.594	1.528	0.02	0.964	0.941	0.804	2.68	4.26	0.009

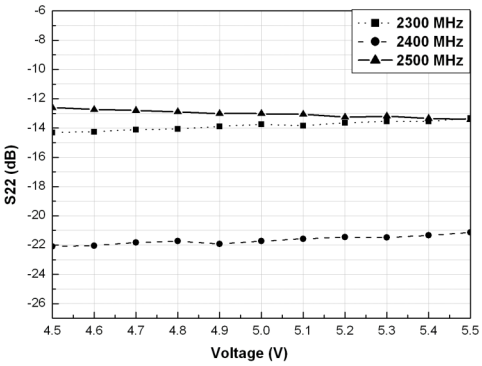












Recommended Soldering Reflow Process