DEM NBLNA33 and NBLNA23
Low Noise Amplifier

Specifications:

Model:	NBLNA33	NBLNA23
Gain:	17dB nominal	16dB nominal
Frequency Range	902-928 MHz	1280 – 1300 MHz
Noise Figure:	<0.5dB	<0.5dB
P1dB without Damage	+13dBm output	+13dBm output
Input VSWR:	>6dB 500 - 3500 MHz	>6dB 500 - 3500 MHz
Output VSWR:	>10dB @ design frequency	>10dB @ design frequency
Voltage:	+7 - +22 VDC	+7 - +22 VDC
Current Drain	70 mA nominal	70 mA nominal

Description:

The DEM NBLNA33 and NBLNA23 is a new design utilizing the combination of PHEMT and SAW filter technology to produce a LNA that is very immune to out of band interference. The active component is the QORVO TQP3M9037 MMIC amplifier. The difference between the two models is the selection of the Band Pass filters. The LNA's do not offer any RF bypass switching for transceiver operation and therefore may only be utilized in receive only applications. It is offered with a robust machined enclosure and various types of RF connectors and connector combinations to allow any LNA to be "dropped in" to any pre-existing system or is ready to be a component in a newly developed receive system.

Installation and Operation:

Depending on your application, the LNA may be installed anywhere in your system to increase gain. To maintain or improve the systems noise figure requires the LNA to be installed as close to the systems antenna as possible. If you plan to utilize this LNA in a transceive system with transmit bypass relays, be sure of their isolation characteristics and transmit power handling capabilities before transmitting. Use only interconnecting cables and/or adapters that are rated for use at or above the intended frequency of use. Inadequate cabling or cables with

poor shielding may cause system instabilities, signal loss, or undesirable intermittent operation. Test any sequenced scheme before applying transmit power to avoid mishaps.

The connector marked **IN** (Input)**,** is to be connected to the antenna side of the system. The **OUT** (Output) is connected to the receiver side of the system. Expected performance with the LNA correctly installed should be overall improvement in gain and system noise figure of the receive system. The proper installation of an LNA becomes more important if you make this installation in a harsh RF environment. The gain bandwidth of the LNA is just wide enough at the specified operating frequency to obtain a low noise figure. This still may result in the passing of strong but “close in frequency” out of band signals that may cause the overloading of your receiver resulting in increased inter-modulation. This new design utilizes a SAW band pass filter in the output circuit that will eliminate all but the strongest of interferences.

Be sure both input and output ports are terminated before applying DC voltage to the LNA. If you desire to pre-test the LNA in a test bench environment before installation, because of the SAW filters dissipation factor, do not apply more than -10dBm to the input if testing linear response. At levels above -10dBm, expect some gain compression. The input is protected with a DC path to ground to eliminate static build up from rain or wind but may not survive levels of EMP developed by lightning. Please use standard lightning protection for all installations.

Schematic Diagram and Layout: