



## DEM 13ULNA - 2.3 - 2.45 GHz. Ultra Low Noise Amplifier

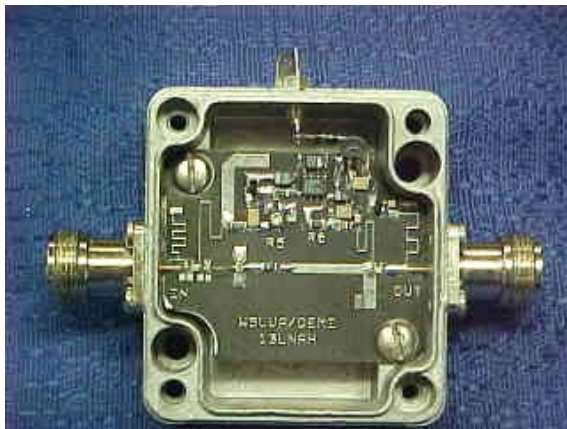
### Specifications:

Gain:	16dB minimum
Noise Figure:	<0.7dB maximum
P1dB:	+5dBm output
Input VSWR:	>6dB @ design frequency
Output VSWR:	>10dB DC - 3 GHz.
Voltage:	+7 - +16 VDC



### Product Description:

The DEM 13ULNA is one of a series of **Ultra Low Noise Amplifiers** that was designed by W5LUA and produced by Down East Microwave Inc. The ULNA series utilizes the latest in PHEMT technology and is designed for receive systems such as EME stations and satellite reception that requires the lowest noise figure possible. All of the ULNAs do not provide any RF bypass switching circuitry. Standard gain of the 13ULNA may range from 16 to 18 dB. The noise figure is FET dependant and may vary from an minimum of 0.4 dB to a maximum of 0.7 dB. The ULNAs are adjusted on an individual basis for the best performance possible. Each ULNA may be biased through the coax or from the external DC feed through. The internal power supply provides external power supply isolation for the FET DC supply.



Our ULNA design incorporates low loss microstrip circuitry and resistive loading to accomplish all RF matching. During testing, the input circuit is optimized for gain and noise figure. The resistive loaded output circuit, is adjusted to control the gain and is tested for a constant wide bandwidth output impedance. This resistive load impedance absorbs products caused by reflections from band pass filters or high Q receiver front ends. We do not use tuned output circuits or baluns in our ULNA designs. Tuned output circuits and baluns do not offer constant output impedances over wide bandwidths and may cause out of band instabilities from

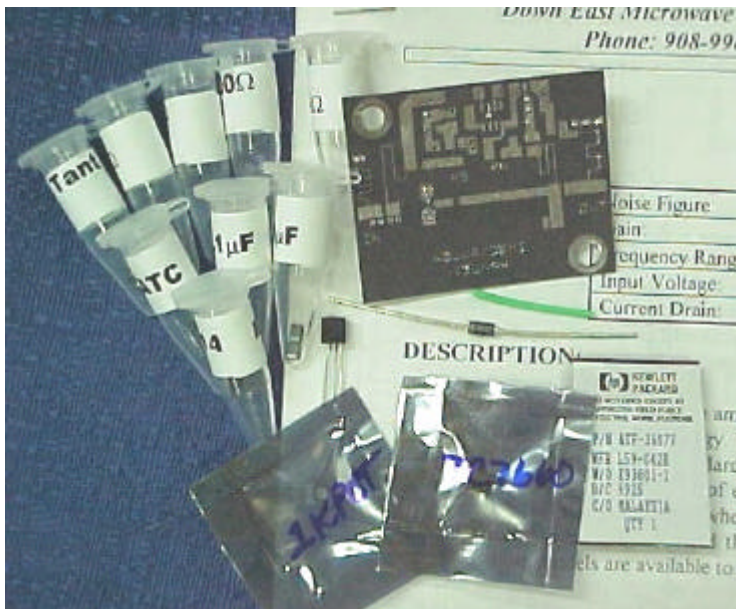
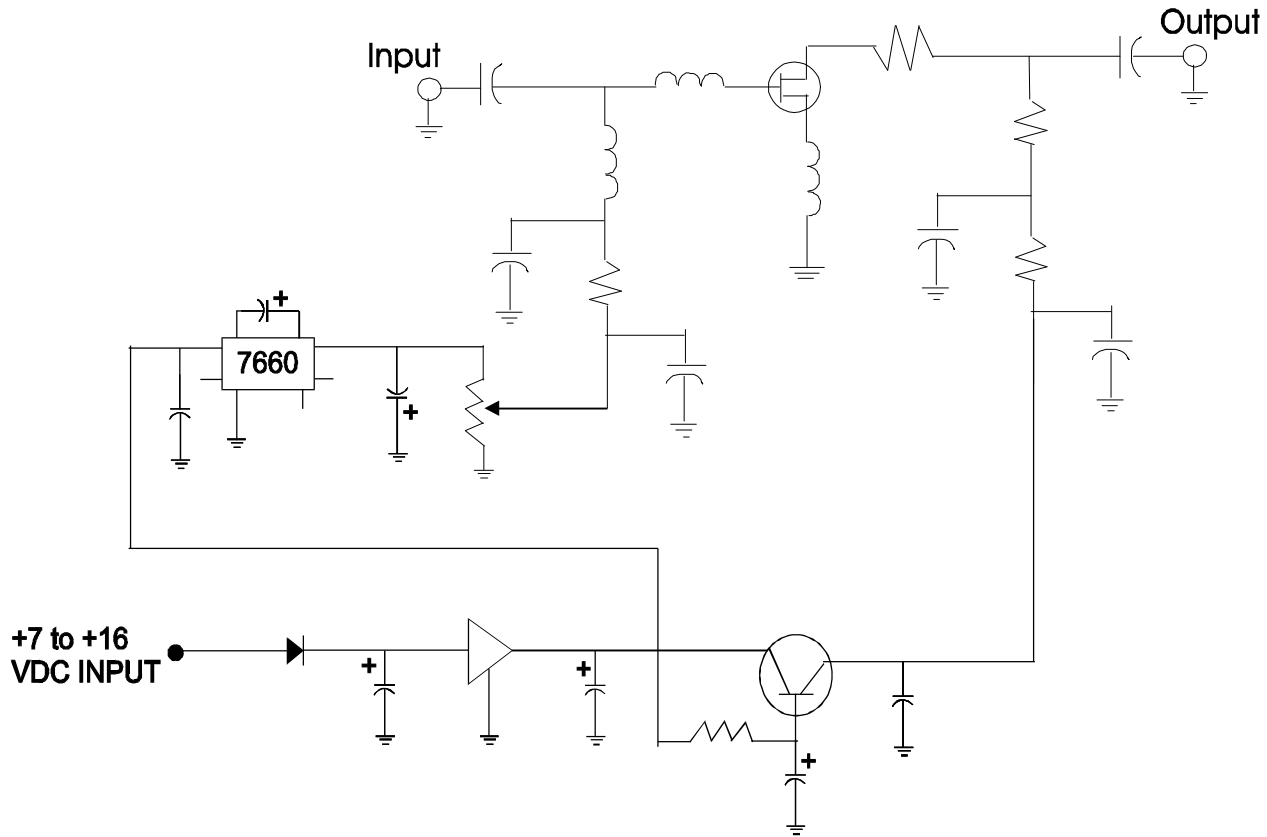
reflected signals. Tuned circuits may also require returning if a cable length or the tuning of a filter that is connected to the output of a tuned circuit LNA is changed.

This ULNA design is provided with type "N" or SMA connectors that are mounted on a weather proof die cast aluminum enclosure that measures 2.5" L x 2.25" W x 1.375" H. This enclosures enhances RF insusceptibility and protects against stray external EMI. DC power is either applied through a Pi-circuit feed through filter connector which is a simple solder connection that attenuates frequencies through 18 GHz. or it may be applied through the coax depending on the model ordered. Specify preference at the time of order. The ULNA design is also offered in kit form as a PCB kit or complete kit depending on you requirements.

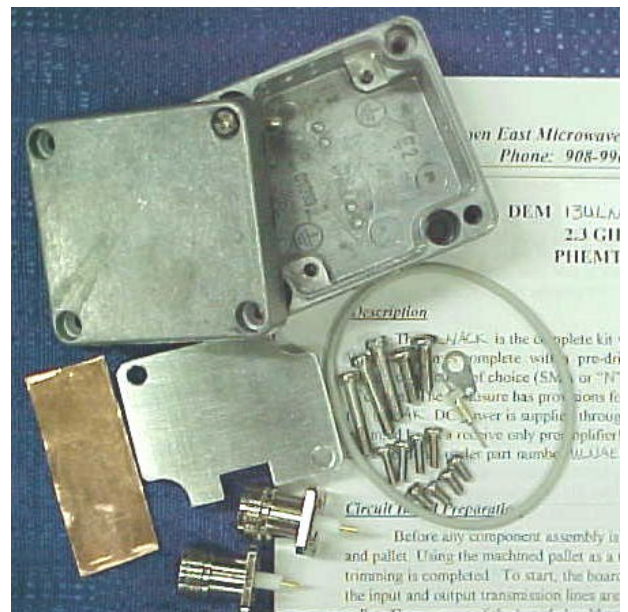
ULNAs with operating frequencies, configurations, gains and noise figures not found on our price list or product descriptions can be designed by Down East Microwave Inc. and produced

with relatively short delivery times. Please contact us with your specifications and/or requirements.

**Schematic Diagram of ULNA Design:**



**13ULNAK-PC Board Parts Kit Hardware**



**13ULNACK-Contains Parts Kit and Hardware**