SMN7103H

1/2 Inch Surface Mount Amplified Noise Source — 100 Hz to 500 kHz

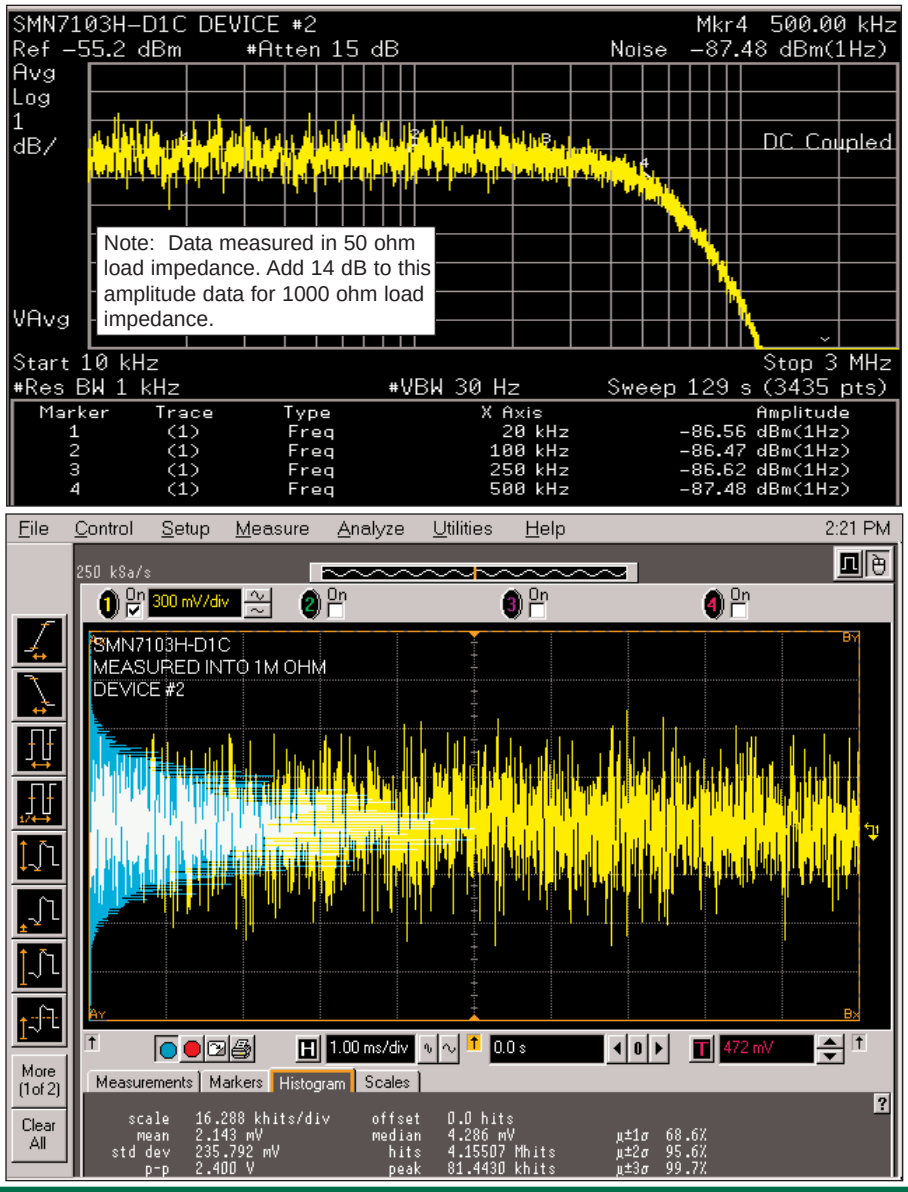
Description

The SMN7103H noise module is designed for a wide range of applications. It features high noise output amplitude for uses ranging from encryption to baseband signal simulation. All biasing and amplification circuitry is built-in making it easy to design into your system. It features a built-in voltage regulator for highly stable output even if your DC supply lines are not.

Suitable for High Volume Products:

The SMN7103H noise sources being surface mount, having a small footprint and available on tape and reel, make them ideal for production manufacturing. Traditionally packaged noise sources have been large and costly rendering them less suitable for all but the more expensive, exotic systems. Noise can now be thought of as lower cost, more reliable, smaller and an easier to implement alternative to costly microprocessor based solutions such as PN generators, arbtrary waveform generators and DSP processors.

SMN7103 Typical Data



Specifications

- Frequency: 100 Hz to 500 kHz
- Impedance: 1100 ohm
- Noise Power (N): -8 dBm
- Bias: 12 Vdc (Internally Regulated)
- Peak Factor: 5:1
- Amplitude: V_{P-P} = 2.0 (min), 2.4 (typ)
  V_{RMS} = 100mV (min)
  120mV_{RMS} (typ)
- Current Draw: 15mA (max)
- Operating Temp: -55 to +85 C
- Storage Temp: -55 to +125 C

Application Note

Common Noise Applications

1. Baseband Signal Simulation:
Signal impariments can be modeled by using a noise source where ever a Gaussian process is required. By feeding the output of the noise source into the control lines of devices such as attenuators, phase shifters or the LO port of a mixer, one can simulate various impairments such as rain fade, Rayleigh fading, etc....

2. Random Number Generation for Encryption:
Noise sources being truly random (not pseudorandom) give the ultimate in secure communication because of their ability to generate a truly random number pattern. This can be used to seed an encryption key for authentication. The noise signal can be fed directly into an A/D converter for sampling or a simpler techniques might use a comparator. Further shaping of the noise is often employed whether by analog techniques if in front of the A/D converter or afterwards using DSP.

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How To Order

Model # S M N 7 1 0 3 H- D 1 C

Indicate Bulk or Tape and Reel when ordering in quantity

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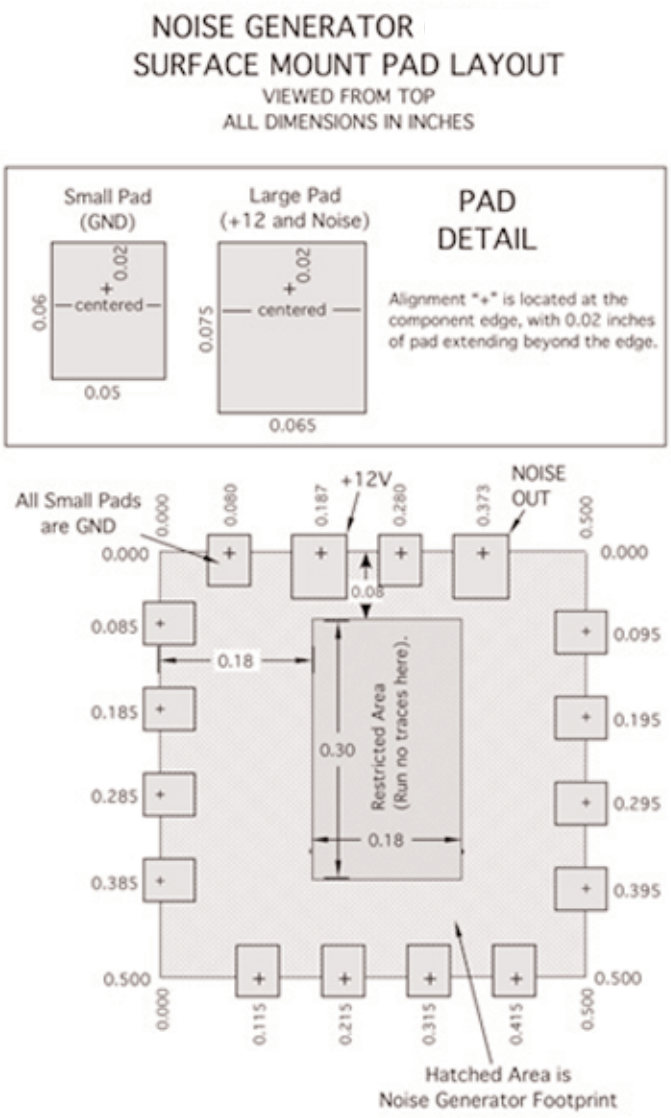
For populated evaluation board

Package Outline Drawing



Useful Noise Equations

Converting ENR to noise spectral density (N_0):

0 dB ENR = -174 dBm/Hz

Calculating noise power in a given bandwidth (BW) from noise spectral density:

Power (dBm)=N_0+10Log(BW)

Calculating V_{RMS} from noise power and impedance:

$V_{RMS}=10^{[N + 10Log(R)-30dB]/20}$

Calculating noise power from V_{RMS} and impedance:

N=20Log (V_{RMS})-10Log(R)+30 dB

Where:

N=Power in dBm
R=Impedance in ohms
BW=Bandwidth in Hz
N_0=Power Spectral Density in dBm/Hz

MICRONETICS NOISE PRODUCTS

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