Wenzel Associates, Inc.

"Quietly the Best"

LNDD

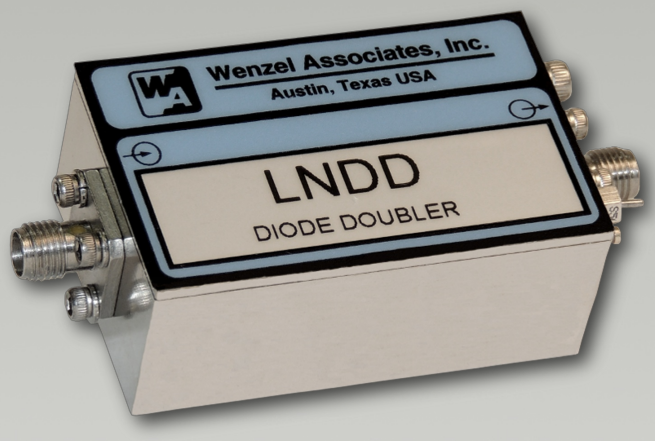
Blue Tops RF Modules > Low Noise Diode Doubler

Features:

- Output Frequency to 1 GHz
- Multiplication Factor: x2
- 0 dB Conversion Loss, Typical
- Intrinsic Phase Noise to -176 dBc/Hz
- Integral Filter and Amplifiers

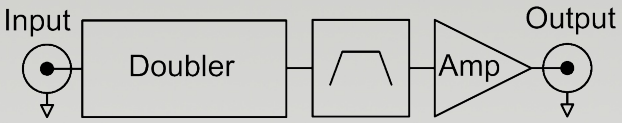
Applications:

- Synthesizer Building Block
- Communication Systems
- Radar Systems
- Electronic Warfare Systems



Description:

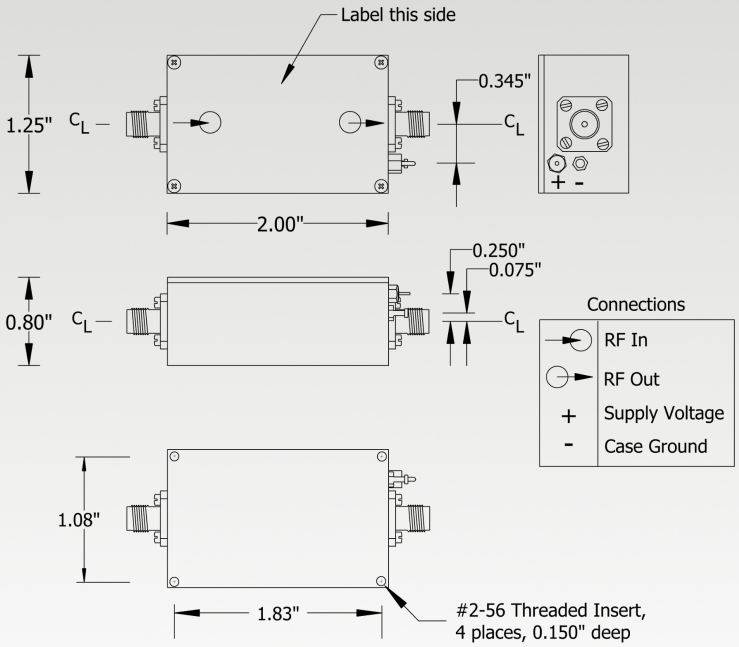
The LNDD is a frequency doubler that provides excellent phase noise performance for outputs to 1 GHz with low conversion loss. This module features a Schottky Diode doubler with an integrated bandpass filter to control unwanted multiplier products and a low noise amplifier to provide close to 0 dB conversion loss. The diode doubler is designed for a typical input level of +12 dBm to ensure optimal performance. Common amplifiers are offered for flexibility in configuring input/output levels (see amplifier selection table). Please consult our technical staff for assistance in configuring a multiplier to suit your input and output requirements.



Electrical Specifications	
Input Frequency	5 MHz to 500 MHz, fixed
Multiplication Factor	x2
Input Level	+12 dBm to +15 dBm, fixed (±1 dB)
Output Frequency	to 1 GHz
Conversion Loss	0 dB, typical (±2 dB)
Phase Noise Floor (Intrinsic, Input Referred; Amplifier Dependent)	to -176 dBc/Hz
Harmonics	≤ -25 dBc
Sub-Harmonics	≤ -45 dBc
Spurious (Excluding Supply Line Related Spurs)	≤ -80 dBc
Supply Voltage	+15 VDC ±2%
Current Draw (Amplifier Dependent)	50 to 100 mA
Operating Temperature	0 to +50°C
Storage Temperature	-40 to +85°C
Mechanical	
Dimensions	2" x 1.25" x 0.8"
DC Supply	Feed Thru Capacitor Solder Pin
Ground	Turret Terminal Solder Pin
RF Input / Output	SMA female *

NOTE: See amplifier selection chart for internal amplifier options or consult factory.

* SMA female connectors are used unless otherwise specifed. Other options include SMA male, right angle SMAs, BNC female and others. Contact factory for custom configurations.



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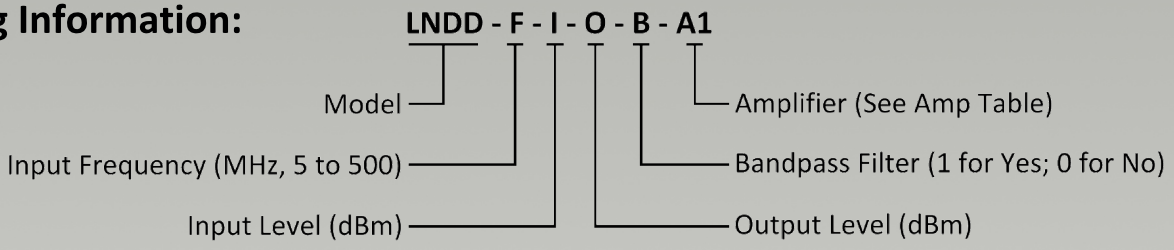
Ordering Information:



Standard P/N **	Input Frequency	Multiplier Factor	Input Level	Output Level	Output Frequency	Input Referred Residual Phase Noise (100 kHz offset)	Supply Voltage
LNDD-50-13-13-1-BT	50 MHz	x2	+13 dBm	+13 dBm	100 MHz	≤ -170 dBc/Hz	+15 VDC
LNDD-50-13-13-1-AU	50 MHz	x2	+13 dBm	+13 dBm	100 MHz	≤ -176 dBc/Hz	+15 VDC
LNDD-80-13-13-1-BT	80 MHz	x2	+13 dBm	+13 dBm	160 MHz	≤ -170 dBc/Hz	+15 VDC
LNDD-80-13-13-1-AU	80 MHz	x2	+13 dBm	+13 dBm	160 MHz	≤ -176 dBc/Hz	+15 VDC
LNDD-100-13-13-1-BT	100 MHz	x2	+13 dBm	+13 dBm	200 MHz	≤ -170 dBc/Hz	+15 VDC
LNDD-100-13-13-1-AU	100 MHz	x2	+13 dBm	+13 dBm	200 MHz	≤ -176 dBc/Hz	+15 VDC
LNDD-250-13-13-1-BT	250 MHz	x2	+13 dBm	+13 dBm	500 MHz	≤ -170 dBc/Hz	+15 VDC
LNDD-250-13-13-1-AU	250 MHz	x2	+13 dBm	+13 dBm	500 MHz	≤ -176 dBc/Hz	+15 VDC
LNDD-500-13-13-1-BT	500 MHz	x2	+13 dBm	+13 dBm	1000 MHz	≤ -170 dBc/Hz	+15 VDC
LNDD-500-13-13-1-CK	500 MHz	x2	+13 dBm	+13 dBm	1000 MHz	≤ -176 dBc/Hz	+15 VDC

** These part numbers are a few common configurations. Use the Ordering Information guide and the Amplifier Selection Table for additional amplifier options or consult the factory for assistance.

Standard Amplifier Options:

Amplifier ***	Frequency Range		Gain (dB)		P1dB (dBm)		Input Referred Residual Phase Noise (dBc/Hz), typical				Supply Voltage (VDC)	Current Draw (mA)
	Min.	Max.	Min.	Max.	Min.	Max.	100 Hz	1 kHz	10 kHz	100 kHz		
AA	50 MHz	1.3 GHz	10	12	15	17	-155	-165	-170	-170	+8, , +10, +12 or +15	60
AB	DC	4 GHz	16	20	16	18	-155	-165	-170	-170	+5, +8, +10, +12 or +15	65
AC	5 MHz	500 MHz	12	14	19	21	-158	-168	-175	-175	+15	90
AD	5 MHz	1 GHz	10	12	18	20	-158	-168	-175	-175	+15	90
AE	10 MHz	1 GHz	11	13	23	26	-156	-166	-173	-173	+15	205
AU	5 MHz	500 MHz	12	14	20	22	-158	-168	-175	-175	+15	88
AV	5 MHz	300 MHz	12	14	19	21	-158	-168	-175	-175	+15	85
BA	100 MHz	2 GHz	9	11	24	26	-156	-166	-172	-172	+15	175
BP	10 MHz	200 MHz	7	8	18	20	-158	-168	-178	-178	+15	30
BT	DC	4 GHz	13	18	16	18	-155	-165	-170	-170	+5, +8, +10, +12 or +15	65
CK	10 MHz	1.5 GHz	12	13	21	23	-156	-166	-172	-172	+15 VDC	195
CT	DC	4 GHz	9	10	14	16	-155	-165	-170	-170	+5, +8, +10, +12 or +15	70
CZ	DC	6 GHz	23	25	17	19	-155	-165	-170	-170	+8, +10, +12 or +15	80
DB	30 MHz	200 MHz	7	8	18	20	-158	-168	-178	-178	+12	30

*** See the complete Amplifier Selection Table for additional amplifier options.

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