

## 20 GHz, 250 W CW, PPM FOCUSING, HIGH POWER GAIN

### GENERAL DESCRIPTION

The NEC LD7261 is a PPM-focused traveling wave tube designed for use as final amplifier in the earth-to-satellite communications transmitter.

This is capable of delivering an output power of 250 W over the range of 18.0 to 21.7 GHz and provides a power gain of more than 40 dB at 250 W.

Furthermore, its rugged and reliable design offers long-life service.



### FEATURES

- High Power Gain  
The power gain is typically 40 dB at 250 W level.
- Simple Cooling System  
All the tubes are forced-air-cooled, so that the cooling systems are greatly simplified.
- PPM Focusing  
The tube is PPM (Periodic Permanent Magnet) -focused, eliminating entirely the focusing power supplies and interlock circuits.
- Rugged Construction  
The tube is designed to be rugged, therefore it is suitable for transportable systems.
- Long Life and High Stability  
The tube employs an advanced impregnated cathode with a low operating temperature for long life.
- Microdischarge Free  
The tube is carefully designed to be free from microdischarge in the electron gun for long term operation, therefore it is suitable for digital communication service.

**For safe use of microwave tubes, refer to NEC document "Safety instructions to all personnel handling electron tubes" (ET0048EJ\*V\*UM00)**

The information in this document is subject to change without notice.

**GENERAL CHARACTERISTICS**

**ELECTRICAL**

Frequency .....	18.0 to 21.7 GHz
Output Power .....	250 W
Heater Voltage .....	6.3 V
Heater Current .....	1.42 A
Type of Cathode .....	Indirectly heated, Impregnated
Cathode Warm-up Time .....	300 s

**MECHANICAL**

Dimensions .....	See Outline
Weight .....	6.0 kg approx.
Focusing .....	Periodic Permanent Magnet
Mounting Position .....	Any
Electrical Connections .....	Flying Leads
RF Connections	
Input .....	SMA Female
Output .....	Mates with WR-51 waveguide (see outline)
Cooling .....	Forced Air

**ABSOLUTE RATINGS (Note 1, 2 and 3 )**

**ELECTRICAL**

	Min.	Max.	Unit
Heater Voltage .....	6.0	6.6	V
Heater Surge Current .....	-	2.5	A
Heater Current .....	-	1.8	A
Heater Warm-up Time .....	300	-	s
Helix Voltage .....	9.5	10.8	kV
Helix Current .....	-	15.0	mA
Anode Voltage .....	8.0	10.25	kV
Anode Current .....	-	0.5	mA
Collector Voltage .....	4.0	5.8	kV
Collector Current .....	-	350	mA
Cathode Current .....	-	350	mA
RF Drive Power .....	-	25	mW
RF Output Power .....	-	400	W
Load VSWR .....	-	1.2 : 1	-

**ENVIRONMENTAL**

	Min.	Max.	Unit
Temperature at output Flange .....	-40	+110	°C
Air Flow .....	195	-	kg/hour
Ambient Temperature			
Storage .....	-40	+80	°C
Operation .....	-10	+50	°C

TYPICAL OPERATION (Note 2, 3, 4 and 5)

		Unit
Frequency .....	20.0	GHz
Output Power .....	250	W
Heater Voltage (Note 4) .....	6.3	V
Heater Current .....	1.42	A
Helix Voltage .....	10.6	kV
Helix Current .....	0.7	mA
Anode Voltage .....	8.6	kV
Anode Current .....	0.01	mA
Collector Voltage .....	5.0	kV
Collector Current .....	264	mA
Cathode Current .....	265	mA
Power Gain at 25 W .....	49	dB
at 250 W .....	46	dB
Gain Variation at 25 W .....	5	dB
Gain Slope at 25 W .....	0.012	dB/MHz
AM-PM Conversion		
at 25 W .....	1.5	deg./dB
at 250 W .....	6.0	deg./dB
3rd Order Intermodulation .....	-30	dBc
(two equal carries, 25 W total)		

**Note 1 :** Absolute rating should not be exceeded under continuous or transient conditions. A single absolute rating may be the limitation and simultaneous operation at more than one absolute rating may not be possible.

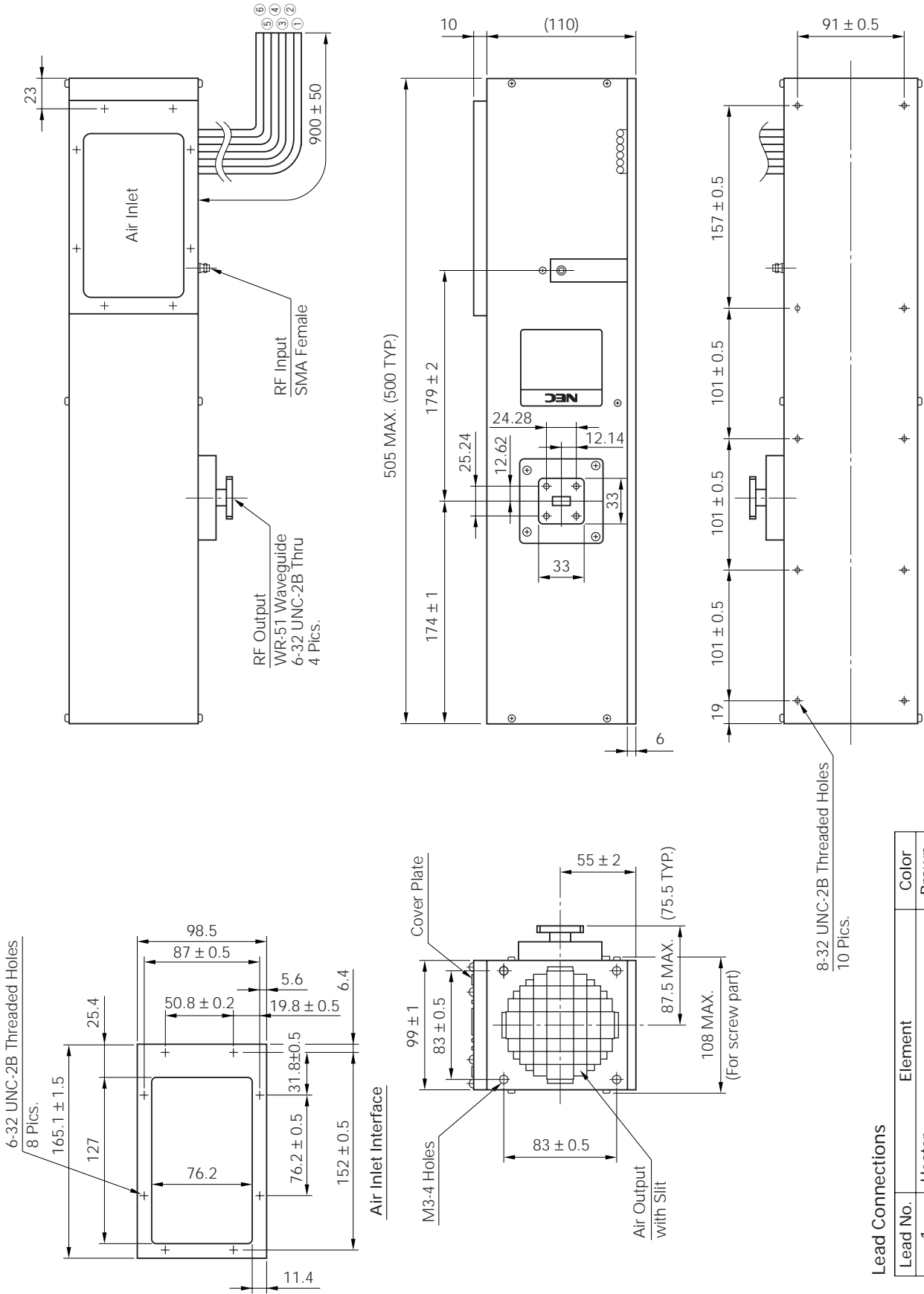
**Note 2 :** The tube body is at ground potential in operation.

**Note 3 :** All voltages are referred to the cathode potential except the heater voltage.

**Note 4 :** The optimum operating parameters are shown on a test performance sheet for each tube.

**Note 5 :** These characteristics and operating values may be changed as a result of additional information or product improvement. NEC should be consulted before using this information for equipment design. This data sheet should not be referred to a contractual specification.

LD7261 OUTLINE (Unit in mm)



Lead Connections

Lead No.	Element	Color
1	Heater	Brown
2	Heater-Cathode	Yellow
3	Anode	Blue
4	Collector	Red
5	Helix (GROUND)	Black
6	Thermal Protection (Normal Close)	White



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Anti-radioactive design is not implemented in this product.