

HIGH POWER TRAVELING WAVE TUBE FOR GROUND TERMINALS LD7246A

14 GHz, 123 W CW, CONDUCTION COOLING, MINIMUM SIZE

GENERAL DESCRIPTION

NEC LD7246A is 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 130 W over the range of 13.75 to 14.5 GHz.

It provides a high power gain of 53 dB at 123 W output power.

Furthermore, this is of rugged and reliable design offering long-life services.



FEATURES

- Light weight, Compact and Efficient
The tube has dual-depressed collectors and is designed to operate at high efficiency across wide power output range. It features state-of the art techniques to optimize size and efficiency.
- High Power Gain
The power gain is typically 53 dB at 123 W level.
- Simple Cooling System
The tube is conduction-cooled, so that the cooling system is greatly simplified.
- PPM Focusing
The tube is PPM (Periodic Permanent Magnet) -focused, eliminating entirely focusing power supplies and inter-lock 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	13.75 to 14.5 GHz
Output Power	123 W
Heater Voltage	4.5 V
Heater Current	1.0 A
Type of Cathode	Indirectly heated, Impregnated
Cathode Warm-up Time	180 s

MECHANICAL

Dimensions	See Outline
Weight	1.3 kg approx.
Focusing	Periodic Permanent Magnet
Mounting Position	Any
Electrical Connections	Flying Leads
Heater, Heater-Cathode, Helix, Collector-1, Collector-2	
RF Connections	
Input	SMA-Female
Output	Mates with UBR-120 Flange
Cooling	Conduction

ABSOLUTE RATINGS (Note 1, 2 and 3)

ELECTRICAL

	Min.	Max.	Unit
Heater Voltage	4.2	4.8	V
Heater Surge Current	-	2.5	A
Heater Current	-	1.3	A
Heater Warm-up Time	180	-	s
Helix Voltage	6.0	6.4	kV
Helix Current	-	5.0	mA
Collector-1 Voltage	3.1	3.3	kV
Collector-2 Voltage	1.5	1.7	kV
Cathode Current	-	140	mA
RF Drive Power	-	1.0	dBm
Load VSWR	-	1.5 : 1	

MECHANICAL

	Min.	Max.	Unit
Baseplate Temperature			
Storage	-30	+110	°C
Operation	-30	+110	°C

TYPICAL OPERATION (Note 2, 3 and 5)

		Unit
Frequency	13.75 to 14.5	GHz
Output Power	130	W
Heater Voltage (Note 4)	4.5	V
Heater Current	1	A
Helix Voltage	6.2	kV
Helix Current	3	mA
Collector Voltage-1	3.2	kV
Collector Current-1	80	mA
Collector Voltage-2	1.6	kV
Collector Current-2	42	mA
Cathode Current	125	mA
Power Gain at 6 W	58	dB
at 130 W	53	dB
Gain Variation at 13 W	2	dB/750 MHz
Gain Slope at 13 W	0.03	dB/MHz
AM-PM Conversion at 130 W	3.5	deg./dB
3rd Order Intermodulation (two equal carriers, 13 W total)	-32	dBc
Efficiency	38	%

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.

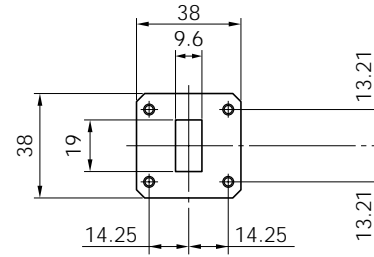
Note 2 : The tube body is at ground potential in operation.

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

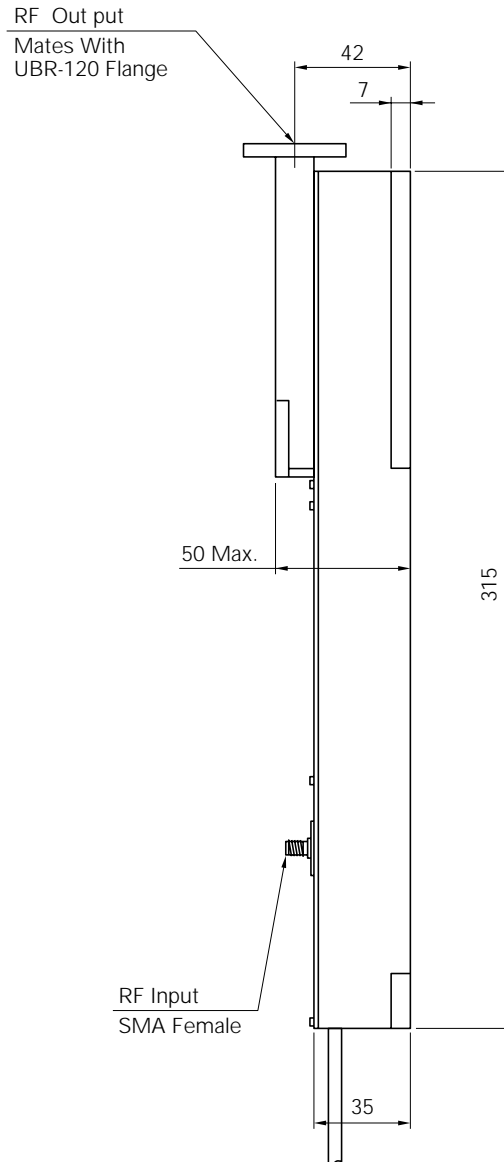
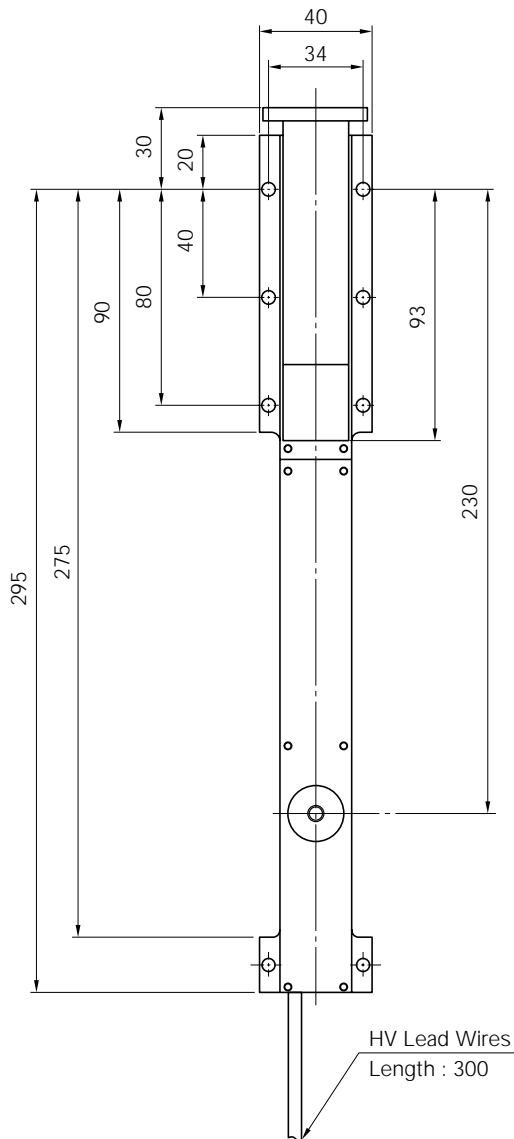
Note 4 : The optimum operating parameters are shown on a test performance sheet for each tube.

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.

LD7246A OUTLINE (Unit in mm)



Output Flange



NEC Corporation does not assume any liability for infringement of patents, copyrights or other intellectual property rights of third parties by or arising from use of a device described herein or any other liability arising from use of such device. No license, either express, implied or otherwise, is granted under any patents, copyrights or other intellectual property rights of NEC Corporation or others.