NEC

HIGH POWER TRAVELING WAVE TUBE FOR COMMUNICATIONS

LD7263

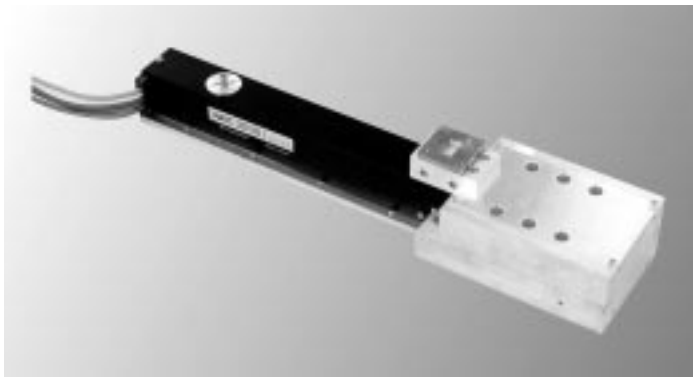
14 GHz, 750 W CW, CONDUCTION COOLING, HIGH POWER GAIN

GENERAL DESCRIPTION

The NEC LD7263 is a PPM-focused traveling wave tube designed for use as final amplifiers in the earth-to-satellite communications transmitter.

This is capable of delivering an output power of 750 W over the range of 1 3.75 to 14.5 GHZ and provides a power gain of more than 47 dB at 750 W level.

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



FEATURES

- ○ Lightweight, Compact and Efficient
  The tube has dual-depressed collectors and designed to operate at high efficiency across the power output range. It features state-of-the-art techniques to optimize size and efficiency.
- ○ Low Distortion
  Distortion is a very important factor in multiplex digital signals transmission. NEC has developed techniques for the correction of non-linear distortion and phase generated in a TWT. As a result, the TWT has an optimum performance across a broad power range and is ideally suited for multi-carrier transmission systems.
- ○ Simple Cooling System
  The tube is conduction cooled, so that the cooling system is simplified.
- ○ Rugged Construction
  The power gain 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.
- ○ Micro-discharge 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)

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GENERAL CHARACTERISTICS

ELECTRICAL

Frequency	13.75 to 14.5 GHz
Output Power	750 W
Heater Voltage	6.3 V
Heater Current	1.4 A
Type of Cathode	Indirectly heated, Impregnated
Cathode Warm-up Time	180 s

MECHANICAL

Dimensions	See Outline
Weight	3.5 kg approx.
Focusing	Periodic Permanent Magnet
Mounting Position	Any
Electrical Connections	Flying Leads
RF Connections	
Input	Type SMA Female
Output	WR75, UBR-120 Flange
Cooling	Conduction

ABSOLUTE RATINGS (Note 1, 2 and 3)

ELECTRICAL

	Min.	Max.	Unit
Heater Voltage	6.0	6.6	V
Heater Surge Current	–	3.0	A
Heater Current	–	2.0	A
Heater Warm-up Time	180	–	s
Helix Voltage	10.2	11.7	kV
Helix Current	–	15.0	mA
Collector-1 Voltage	5.3	6.8	kV
Collector-1 Current	–	320	mA
Collector-2 Voltage	2.3	3.4	kV
Collector-2 Current	–	450	mA
RF Drive Power	–	15	dBm
Load VSWR	–	1.5 : 1	–

ENVIRONMENTAL

	Min.	Max.	Unit
Base Plate Temperature	–40	+105	˚C
Storage Temperature	–50	+85	˚C

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

		Unit
Frequency	14.25	GHz
Output Power	780	W
Heater Voltage (Note 4)	6.3	V
Heater Current	1.4	A
Collector Voltage-1	6.0	kV
Collector Current-1	275	mA
Collector Voltage-2	2.9	kV
Collector Current-2	132	mA
Cathode Current	410	mA
Helix Voltage	11.0	kV
Helix Current	3.0	mA
Power Gain (SSG)	58	dB
(LSG)	53	dB
Gain Variation at 75 W	1.0	dB/60MHz
Gain Slope at 75 W	0.01	dB/MHz
AM-PM Conversion		
at 75 W	1.0	deg./dB
at 750 W	5.0	deg./dB
3rd Order Intermodulation (two equal carriers, 75 W total)	–31	dBc
Spurious	–60	dBc
Noise Figure	28	dB
Overall Efficiency	37.6	%

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.

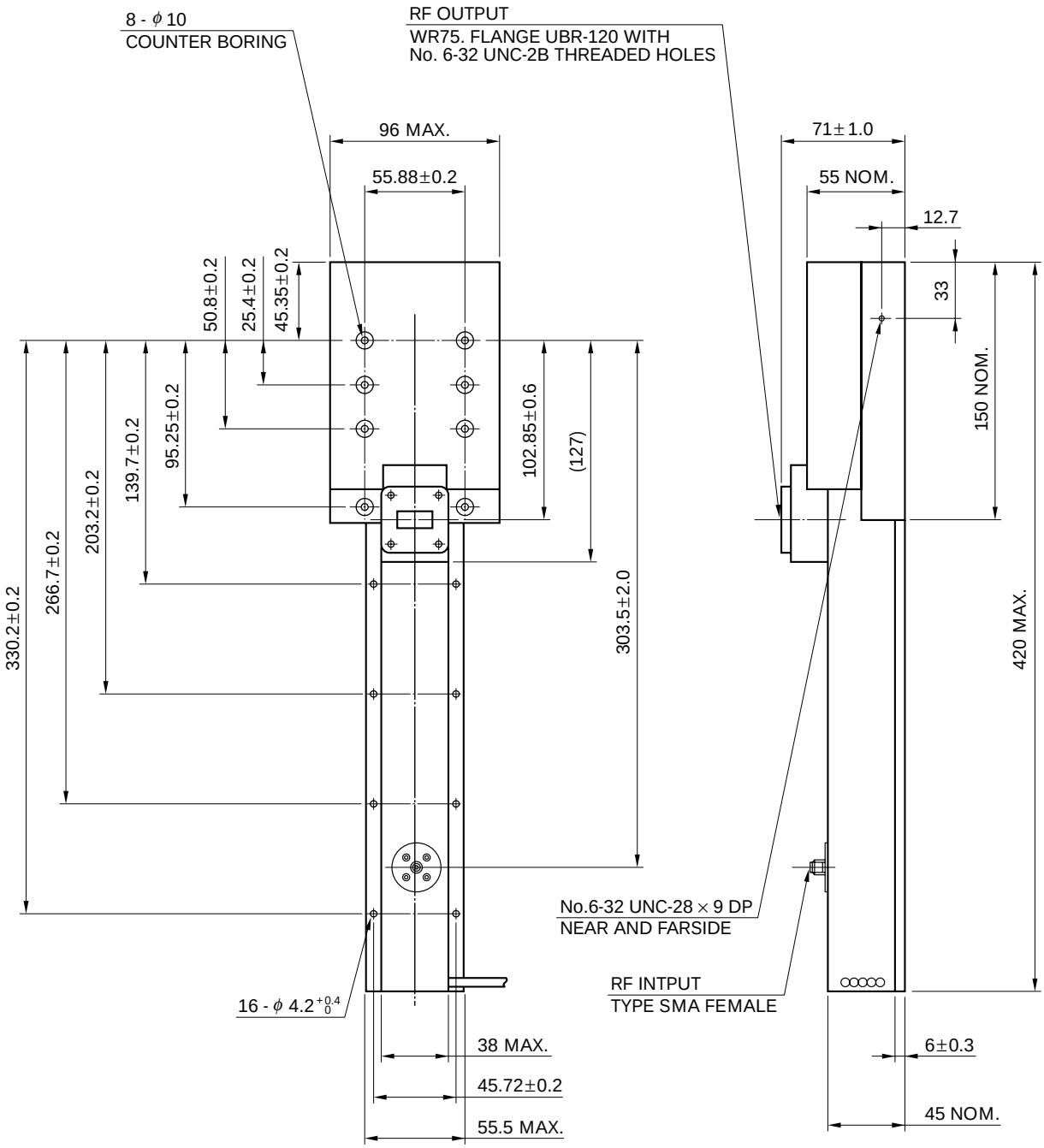
Note 2 : The tube body is at ground potential in operation.

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.

LD7263 OUTLINE (Unit in mm)



LEAD COLOR	LEAD CONNECTIONS	LENGTH
BROWN	HEATER	500 mm MIN.
YELLOW	HEATER-CATHODE	500 mm MIN.
ORANGE	COLLECTOR-1	500 mm MIN.
BLUE	COLLECTOR-2	500 mm MIN.
GREEN	HELIX (GROUND)	500 mm MIN.