

## HIGH POWER TRAVELING WAVE TUBE FOR DBS GROUND TERMINALS **LD7237**

### DBS Band, 400 W CW, PPM FOCUSING, HIGH POWER GAIN

#### GENERAL DESCRIPTION

NEC LD7237 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 400 W over the range of 17.3 to 18.1 GHz and provides a high power gain of 53 dB at 400 W output power.

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

LD7237 is fully compatible with TH3694B.



#### FEATURES

- High Power Gain  
The power gain is typically 53dB at 400 W level.
- Simple Cooling System  
The tube is 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 the 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 .....	17.3 to 18.1 GHz
Output Power .....	400 W
Heater Voltage .....	6.3 V
Heater Current .....	1.4 A
Type of Cathode .....	Indirectly heated, Impregnated
Cathode Warm-up Time .....	300 s

**MECHANICAL**

Dimensions .....	See Outline Drawing
Weight .....	6.0 kg approx.
Focusing .....	Periodic Permanent Magnet
Mounting Position .....	Any
Electrical Connections .....	AMP 861647-8 multi-pin connector
Heater, Heater-Cathode	
Helix, Anode, Collector	
and Thermal Protection	
RF Connections	
Input .....	Mates with SMA-Female
Output .....	Mates with UBR-140 Flange
Cooling .....	Forced Air

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

**ELECTRICAL**

	Min.	Max.	Unit
Heater Voltage .....	6.0	6.6	V
Heater Surge Current .....	-	4.5	A
Heater Current .....	-	3.0	A
Heater Warm-up Time .....	300	-	s
Helix Voltage .....	9.5	10.75	kV
Helix Current .....	-	15	mA
Anode Voltage .....	8.55	10.25	kV
Anode Current .....	-	0.5	mA
Collector Voltage .....	4.0	5.5	kV
Cathode Current .....	-	350	mA
RF Drive Power .....	-	25	mW
Load VSWR .....	-	1.5	

**MECHANICAL**

	Min.	Max.	Unit
Temperature at output Flange .....	-	100	°C
Air Flow .....	195	-	kg/hr
Ambient Temperature			
Storage .....	-40	+80	°C
Operation .....	-10	+50	°C

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

		Unit
Frequency .....	17.3 to 18.1	GHz
Output Power .....	400	W
Heater Voltage (Note 4) .....	6.3	V
Heater Current .....	1.4	A
Helix Voltage .....	10	kV
Helix Current .....	2	mA
Anode Voltage .....	9.5	kV
Anode Current .....	0.1	mA
Collector Voltage .....	4.7	kV
Cathode Current .....	290	mA
Power Gain		
at small signal .....	58	dB
at rated output power .....	53	dB
Gain Variation at small signal .....	2	dB/800 MHz
Gain Slope at small signal .....	0.01	dB/MHz
AM-PM Conversion		
at small signal .....	0.5	°/dB
at rated output power .....	2.0	°/dB
3rd Order Intermodulation		
(two equal carriers, 40 W total) .....	-32	dBc
Cooling Air Flow .....	195	kg/hr
Pressure Drop .....	650	Pa

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.

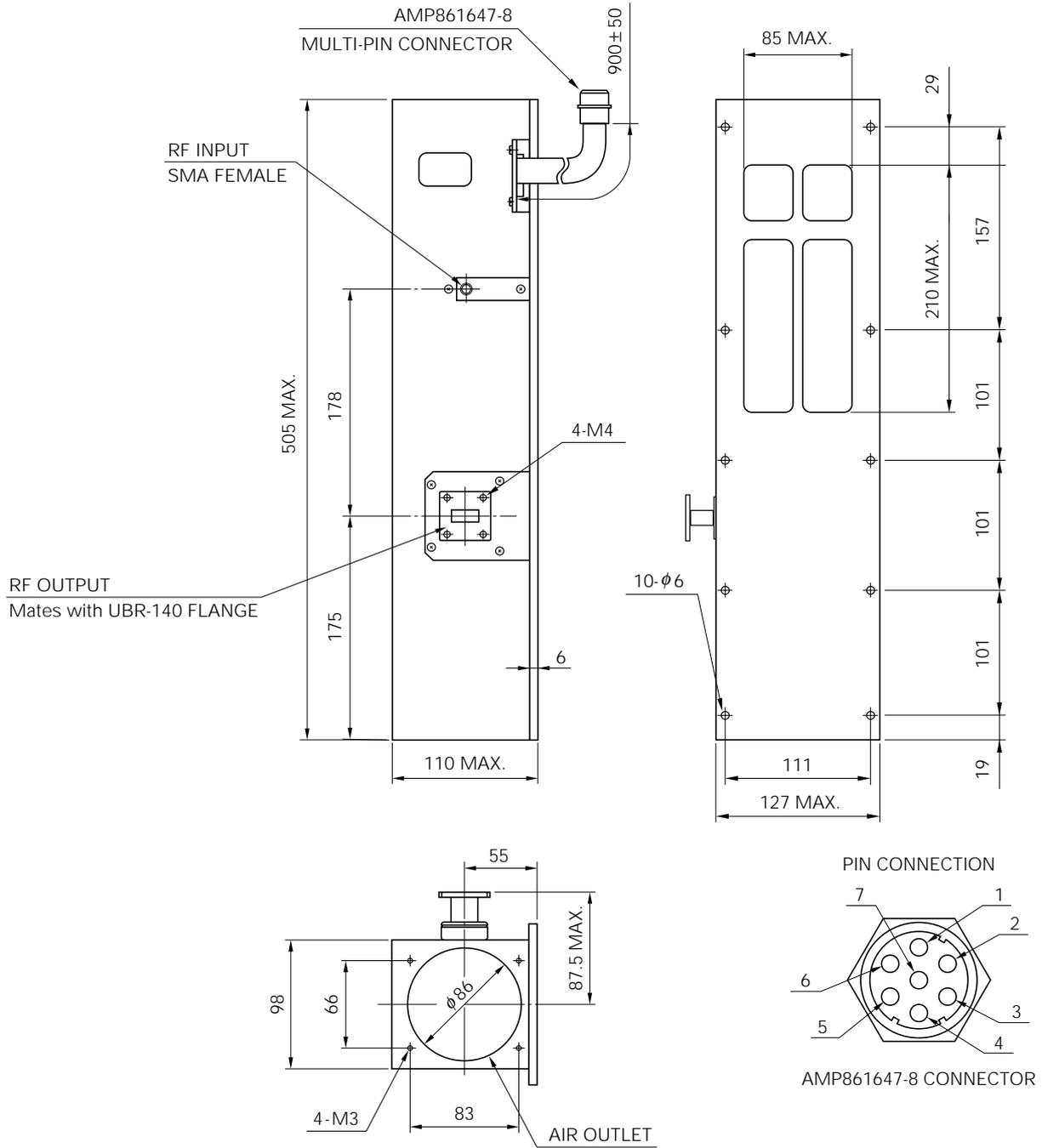
Note 3 : All voltages are referred to the cathode potential except the heater voltage.

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.

LD7237 OUTLINE (Unit in mm)



**PIN ASSIGNMENT**

Pin No.	LEAD NAME
1	HEATER / CATHODE
2	HEATER
3	COLLECTOR
4	THERMAL PROTECTION
5	OPEN (NO CONNECTION)
6	HELIX (GROUND)
7	ANODE

NOTE THERMAL PROTECTION : N/C (Normally Closed) CONTACT





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Anti-radioactive design is not implemented in this product.