

MICROWAVE POWER MODULE FOR GROUND TERMINALS LD79U04K

14 GHz, 40 W CW, LIGHT WEIGHT, COMPACT, EFFICIENT

GENERAL DESCRIPTION

NEC Microwave Power Module (MPM) LD79U04K is a microwave power device in which a traveling wave tube (TWT) and an electric power conditioner (EPC) are combined, so that both components can accomplish each full performance.

LD79U04K delivers an output power of 40 W over the range of 13.75 to 14.5 GHz with a gain of 25 dB.

The TWT in the LD79U04K has been designed and developed upon the NEC's advanced technology and enormous experience on a number of TWTs used in satellite ground terminals and terrestrial microwave links.

The very small and light weight EPC designed with sophisticated and experienced circuit technology ensures higher reliability, reduced maintenance costs and improved technical performance.

The LD79U04K is most suitable for a power amplifier in digital communication systems.

A configuration of separated TWT and EPC can offer superior flexibility of design for high power section of transmitters.



FEATURES

- Light weight, Compact, and Efficient

The TWT has a dual-depressed collector and is designed to operate at high efficiency across the power output range. The EPC features state-of-the-art techniques to optimize size and efficiency and the combination results in a unit significantly smaller and with less power consumption than a comparable solid state amplifier.

- Low Distortion

NEC has developed techniques for the correction of non-linear distortion of gain and phase generated in a TWT. As a result, the MPM has optimum performance across a broad power range and is ideally suited for multi-carrier transmission systems.

- Long Life

The TWT in NEC's MPM is designed to have a lifetime of 100,000 hours or more, which is comparable to that of a solid state amplifier in actual usage.

- Ideal for Digital Systems

A mini-arcing in the electron gun have been eliminated in the TWT used in the MPM.

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.

TYPICAL OPERATIONS

Frequency Range	13.75 – 14.5 GHz
Power Output	40 W minimum
Instantaneous Bandwidth	750 MHz
Gain Variation	2.0 dB / 750 MHz
Gain	25 dB (at Po = 40 W) 35 dB (at small signal)
Gain Stability	±0.25 dB / 24 h (25°C±10°C)
Gain Slope	0.02 dB / MHz
Harmonic Output	15 dB below at rated output power
Spurious Output	-90 dBW in any 4 kHz band in the 13.75 to 14.5 GHz
AM to PM Conversion	4.5°/ dB at rated power
Intermodulation	28 dB below each of two equal carriers (total 8 W)
Group Delay	
Linear component	0.1 ns / MHz
Parabolic component	0.01 ns / MHz ²
Ripple component	1.0 ns (p-p) in any 40 MHz band
RF Input	
Connector	Mates with Type SMA Female
VSWR	2.0 : 1 maximum
Load VSWR	Operate into 1.5 : 1 maximum
RF Output	
Connector	Mates with Type SMA Female
VSWR	2.0 : 1 maximum
Load VSWR	Operate into 1.5 : 1 maximum
Primary Power	-48 V ± 10%
Power Consumption	163 W
Electrical Connection	DA-9-N D-Sub Connector
Dimensions	
TWT	178 × 33 × 25 mm
EPC	220 × 140 × 47 mm
Weight	2.5 kg (both TWT and EPC)

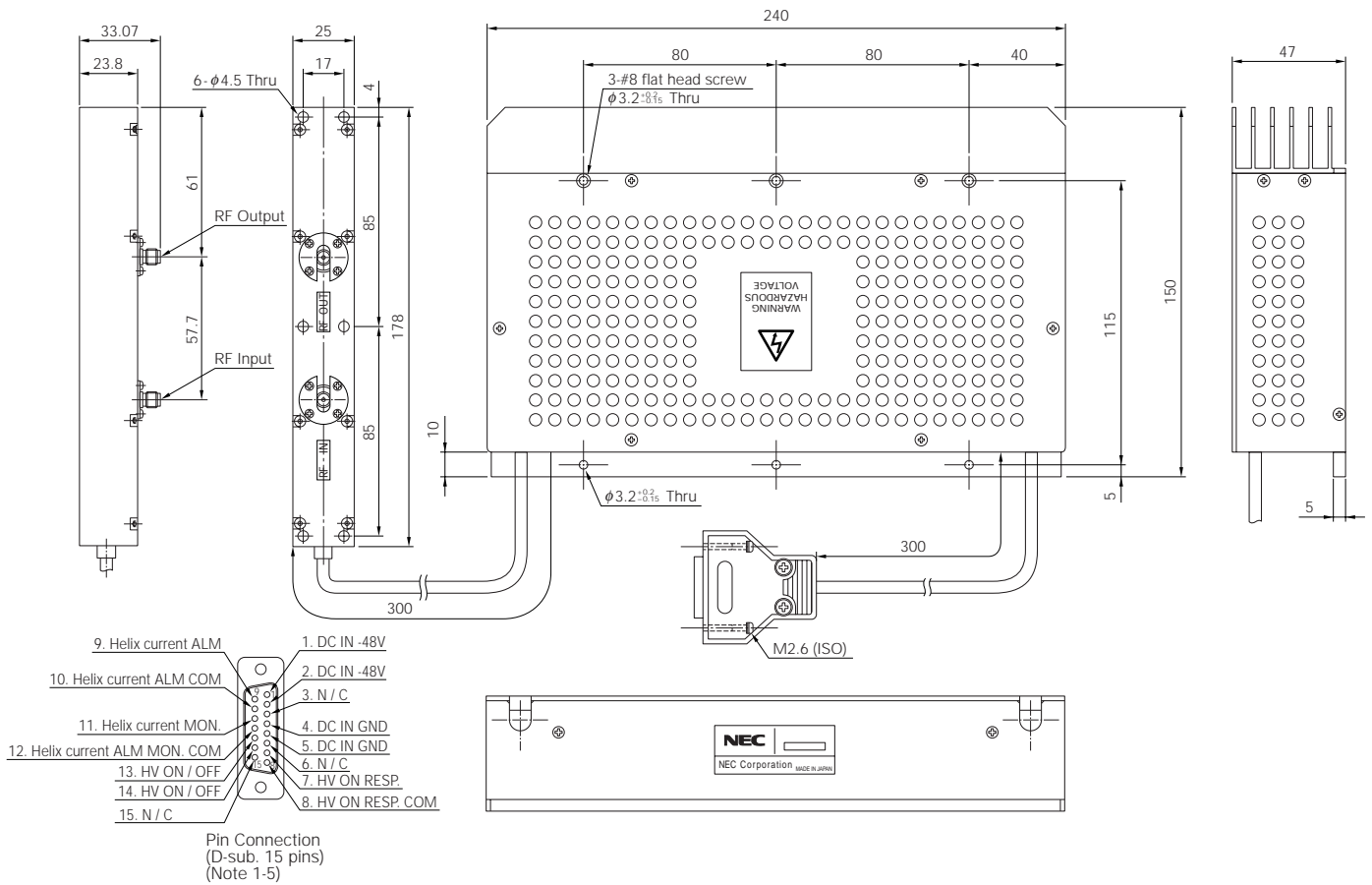
ENVIRONMENTAL CONDITIONS

- Ambient Temperature
 - 15°C to +50°C (operating)
 - 30°C to +70°C (non operating, storage)
- Relative Humidity
 - 90% maximum (non dewing)
- Base Plate Temperature of the TWT
 - +90°C maximum

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 : 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.

LD79U04K OUTLINE (Unit in mm)



- Note**
1. DC IN -48 V : No.1 and NO.2 are Connecting
DC IN GROUND : No.4 and NO.5 are Connecting
 2. HV ON/OFF RESPONSE SIGNAL : Photocoupler Interface (No.7: Collector, No.8: Emitter)
HV ON : No.7 and No.8 conduct
 3. Hel ALM Signal : Photocoupler Interface (No.9: Collector, No.10: Emitter)
Hel ALM Signal ON : No.9 and No.10 conduct
 4. Hel Monitor (No.11, No.12) : 1 V/mA
 5. HV ON : When No.13 and No.14 conduct, TWT will be ready to amplify

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.