

30 GHz, 20 W CW, LIGHT WEIGHT, COMPACT, EFFICIENT**GENERAL DESCRIPTION**

MPM stands for Microwave Power Module and is the solution introduced by NEC for a microwave power source with high efficiency and the most compact size.

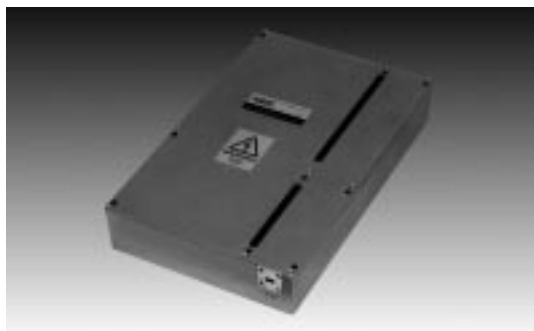
The MPM consists of a miniaturized traveling wave tube (TWT) and an electronic power conditioner (EPC). All the potential interface problems are taken care of by NEC and the user simply connects the MPM to his RF output and plugs in the DC supply.

LD79A02K is a complete integrated unit and can deliver an output power of 20 W over the range of 27.5 to 30.0 GHz with a gain of 40 dB.

The TWT of RF section in the LD79A02K 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 LD79A02K is most suitable for a power amplifier in LMDS and Multimedia Satellite communication systems.

**FEATURES**

- Light weight, Compact, and Efficient

The TWT built in the MPM 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 is designed to have a lifetime of 80,000 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.

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

TYPICAL OPERATIONS

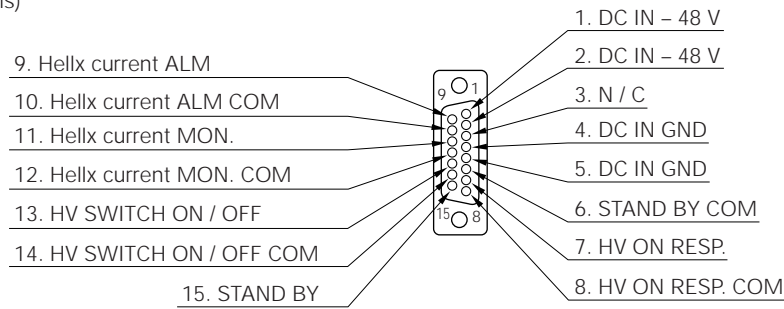
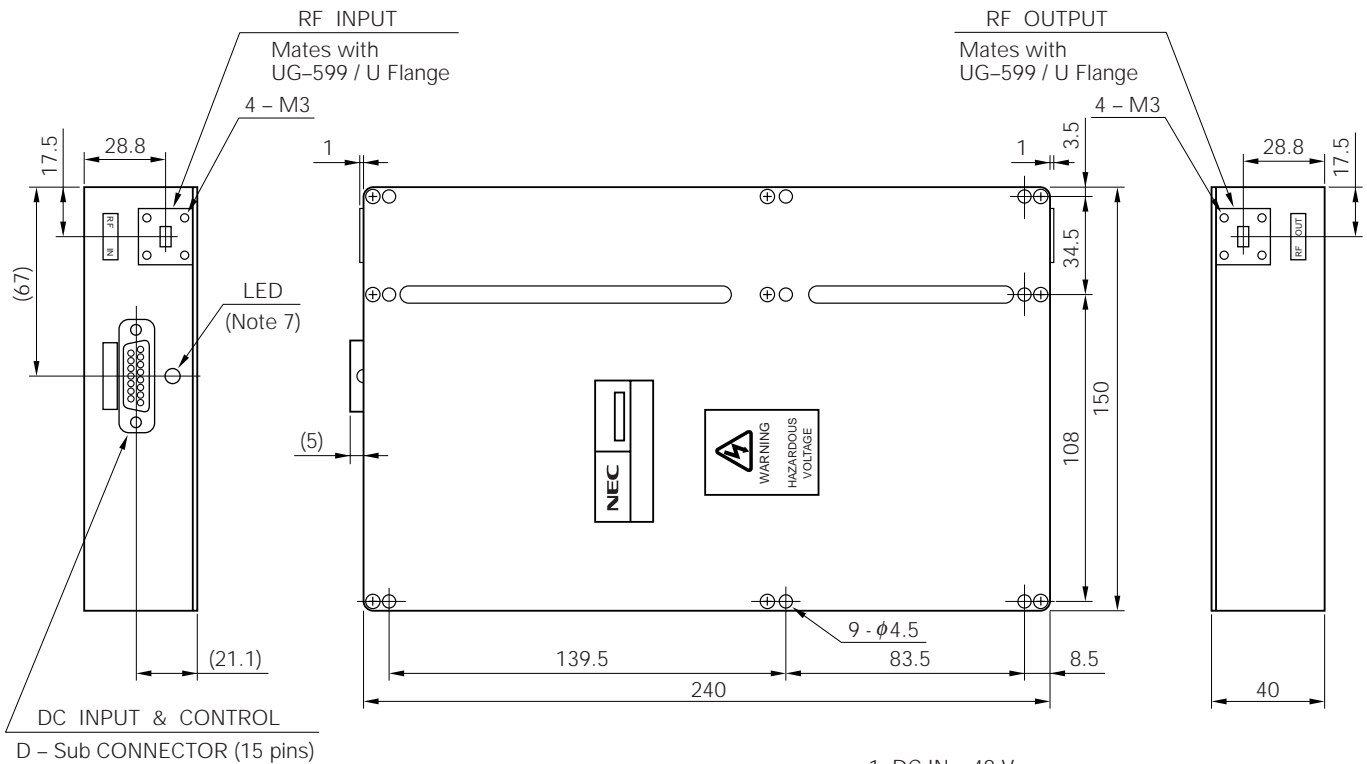
Frequency Range	27.5–30.0 GHz
Power Output	20 W minimum
Gain Variation	2.5 dB / 2.5 GHz
Gain	43 dB (at Po = 20 W) 50 dB (at small signal)
Gain Stability	±0.25 dB/24 hr (25°C±10°C)
Gain Slope	0.02 dB / MHz
Harmonic Output	15 dB below at rated output power
Spurious Output	–70 dBW in any 4 kHz band in the 27.5 to 30.0 GHz
AM to PM Conversion	4°/ dB at rated power
Intermodulation	30 dB below each of two equal carriers (total 2 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	
Waveguide	Mates with UG-599 / U Flange
VSWR	2.0 : 1 maximum
Load VSWR	Operate into 1.5 : 1 maximum
RF Output	
Waveguide	Mates with UG-599 / U Flange
VSWR	2.0 : 1 maximum
Load VSWR	Operate into 1.5 : 1 maximum
Primary Power	–48 V ± 10%
Power Consumption	86 W
Efficiency	25% approx.
Dimensions	240 × 150 × 40 mm
Weight	2.1 kg approx.

ENVIRONMENTAL CONDITIONS

- Ambient Temperature
–30°C to +70°C (non operating, storage)
- Relative Humidity
90% maximum (non dewing)
- Base Plate Temperature
–15°C to +65°C maximum

Note 1 : 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.

LD79A02K 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.** Ihel ALM Signal : Photocoupler Interface (No.9 : Collector, No.10 : Emitter)
Ihel ALM Signal ON : No.9 and No.10 conduct.
- 4.** Ihel Monitor (No.11, No.12) : 1 V/mA
- 5.** HV ON : When No.13 and No.14 conduct, TWT will be ready to amplify.
- 6.** STANDBY : After the heater warms up, No.6 and No.15 will conduct.
- 7.** HV ON : LED (Red)

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Anti-radioactive design is not implemented in this product.