

## Wide Band Power Amplifier 0.02GHz ~ 6GHz



### Features

- Gain: 35dB Typical
- P1dB Output Power: 30dBm Min
- Supply Voltage: +12V

### Typical Applications

- Wireless Infrastructure
- Military & Aerospace
- Test and Measurement

Electrical Specifications,  $T_A = +25^\circ\text{C}$ ,  $V_{CC} = +12\text{V}$

Parameter	Min.	Typ.	Max.	Units
Frequency Range	0.02		6	GHz
Gain	33	35		dB
Gain Flatness		$\pm 2.0$	$\pm 3.0$	dB
Gain Variation Over Temperature ( $-40^\circ\text{C} \sim +85^\circ\text{C}$ )		$\pm 2.0$		dB
Input VSWR		1.5		: 1
Output Power 1dB Compression Point (P1dB)	30	31		dBm
Saturated Output Power (Psat)		34		dBm
2 <sup>nd</sup> Harmonic @P1dB		-15		dBc
Supply Voltage	10	12	15	V
Supply Current ( $V_{CC}=+12\text{V}$ )		450	2000	mA
Power Added Efficiency		20		%
Isolation S12		-55		dB
Output Mismatch, all phase angles	VSWR = 6:1, No Device Damage			
Weight	11.5 Max.			ounces
Impedance	50			Ohms
Input / Output Connectors	SMA-Female / N-Female			
Finish	Nickel Plated			
Material	Aluminum			
Package Sealing	Epoxy Sealed (Standard)			
	Hermetically Sealed (Optional)			

**Absolute Maximum Ratings**

Operating Voltage	+15V
RF Input Power	+2dBm

**Biasing Up Procedure**

Step 1	Connect Ground Pin
Step 2	Connect input and Output
Step 3	Connect +12V biasing
<b>Power OFF Procedure</b>	
Step 1	Turn off +12V biasing
Step 2	Remove RF connection
Step 3	Remove Ground.

**Environmental Specifications and Test Standards**

Parameter	Description
Operational Temperature	-40°C~+85°C (Case Temperature)
Storage Temperature	-50°C~+105°C
Thermal Shock	-40°C → +85°C (5 Cycles / 10 hours)
Random Vibration	MIL-STD-202G Table 214-I, Test Condition Letter C 1.5 Hours Per Axis
High Temperature Burn In	Temperature +85°C for 72 Hours
Shock	1. Weight >20g, 50g half sine wave for 11ms, Speed variation 3.44m/s 2. Weight <=20g, 100g Half sine wave for 6ms, Speed variation 3.75m/s 3. Total 18 times (6 directions, 3 repetitions per direction).
Altitude	Standard: 30,000 Ft (Epoxy Sealed Controlled Environment) Optional: Hermetically Sealed (60,000 ft. 1.0 PSI min)
Hermetically Sealed (Optional)	MIL-STD-883 (For Hermetically Sealed Units)

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**Ordering Information**

Part No.	Description
RFLUPA02M06GA	0.02-6GHz Power Amplifier

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**Amplifier Use**

Ensure that the amplifier input and output ports are safely terminated into a proper 50 ohm load before turning on the power. Never operate the amplifier without a load. A proper 50 ohm load is defined as a load with impedance less than 1.9:1 or return loss larger than 10dB relative to 50 Ohm within the specified operating band width.

Power Supply Requirements

Power supply must be able to provide adequate current for the amplifier. Power supply should be able to provide 1.5 times the typical current or 1.2 times the maximum current (whichever is greater).

In most cases, RF - Lambda amplifiers will withstand severe mismatches without damage. However, operation with poor loads is discouraged. If prolonged operation with poor or unknown loads is expected, an external device such as an isolator or circulator should be used to protect the amplifier.

Ensure that the power is off when connecting or disconnecting the input or output of the amp.

Prevent overdriving the amplifier. Do not exceed the recommended input power level.

Adequate heat-sinking required for RF amplifier modules. Please inquire.

Amplifiers do not contain Thermal protection, Reverse DC polarity or Over voltage protection with the exception of a few models. Please inquire.

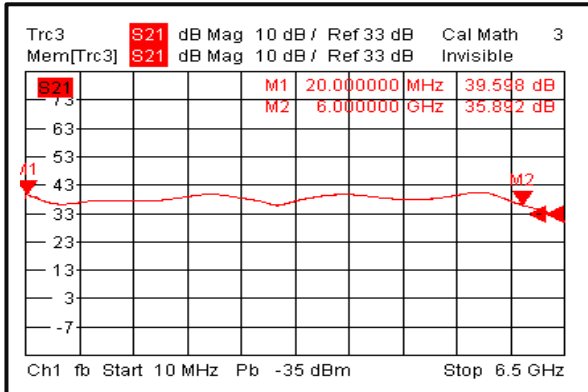
Proper electrostatic discharge (ESD) precautions are recommended to avoid performance degradation or loss of functionality.

What is not covered with warranty?

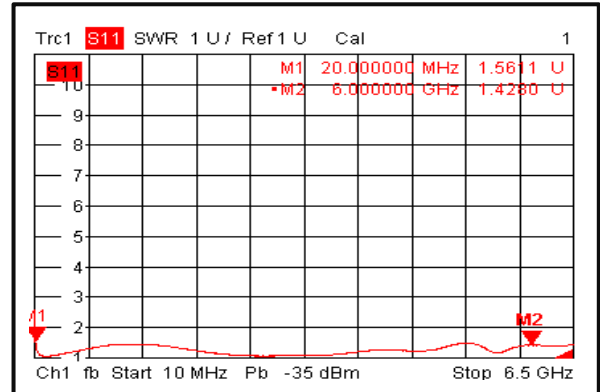
Each RF - Lambda amplifier will go through power and temperature stress testing. Since the die, ICs or MMICs are fragile, these are not covered by warranty. Any damage to these will NOT be free to repair.

Typical Performance Plots

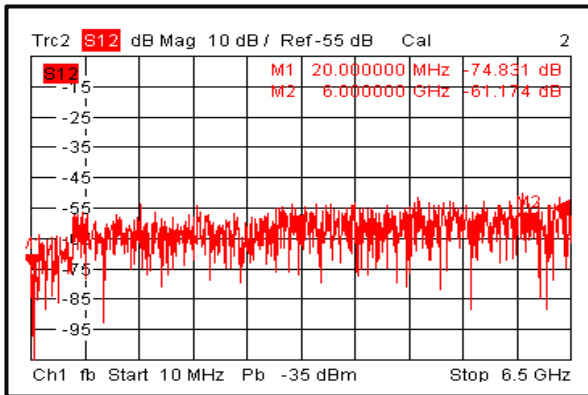
**Gain@+25°C**



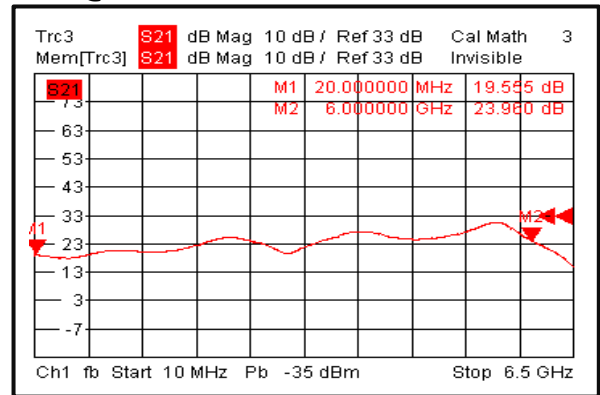
**Input VSWR@+25°C**



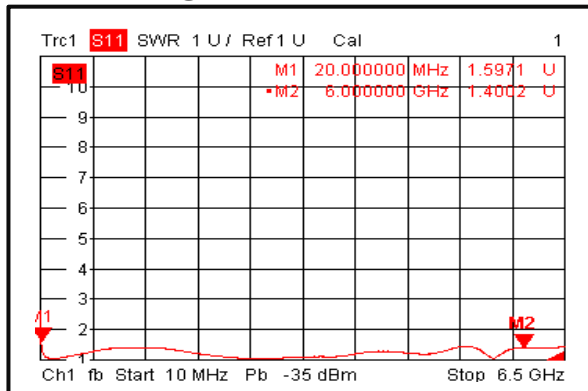
**Isolation@+25°C**



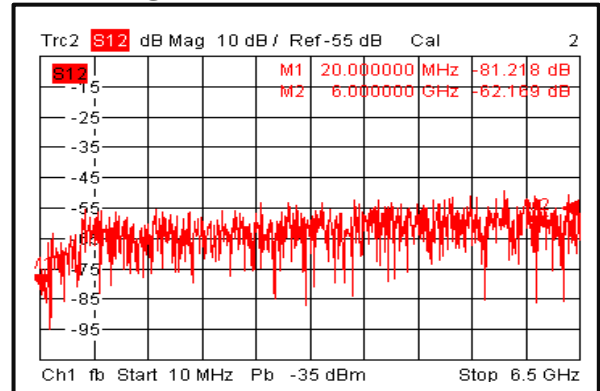
**Gain@-40°C**



**Input VSWR@-40°C**

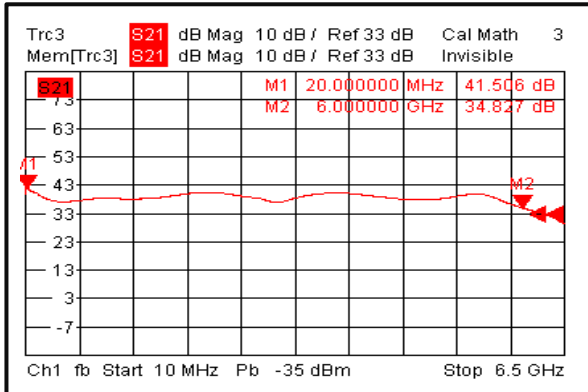


**Isolation@-40°C**

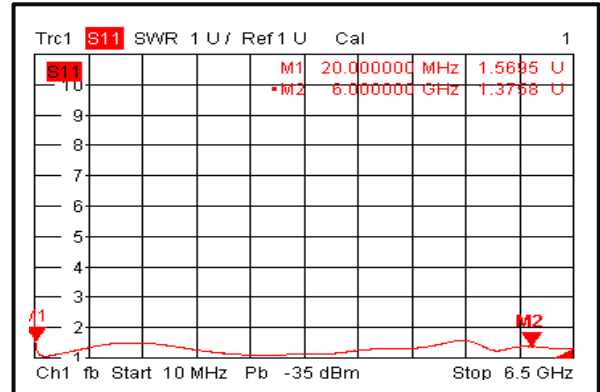


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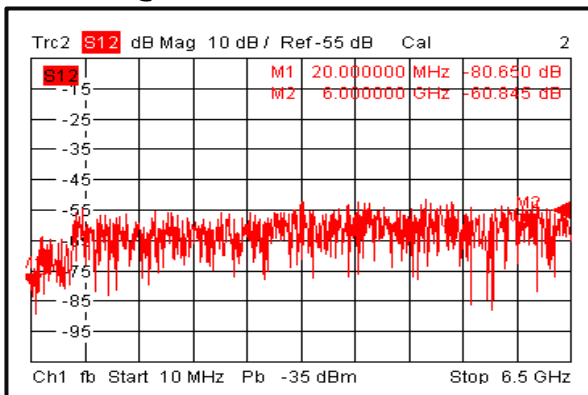
**Gain@+85°C**



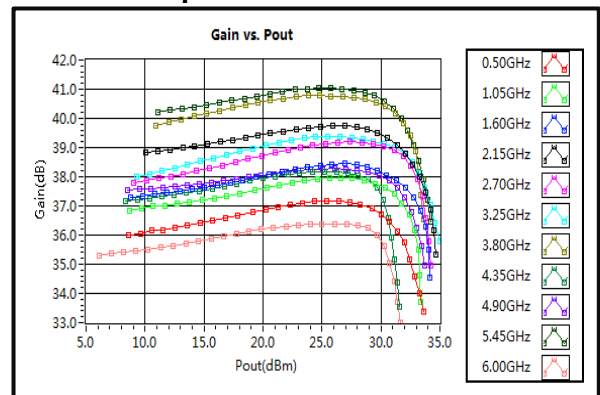
**Input VSWR@+85°C**



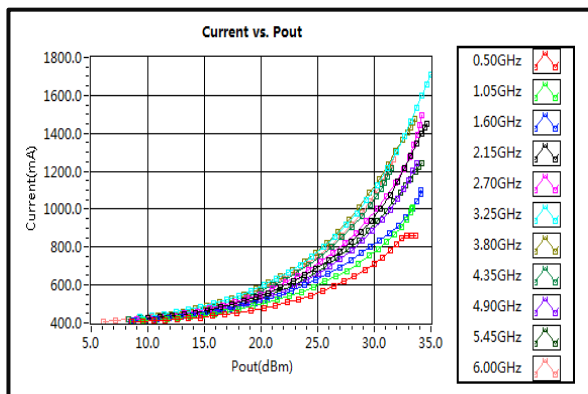
**Isolation@+85°C**



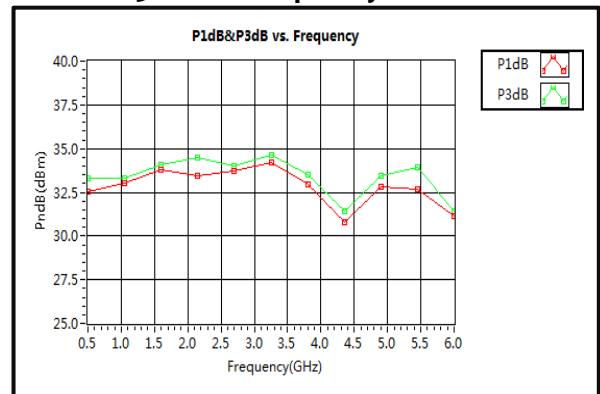
**Gain vs. Output Power**



**Current**

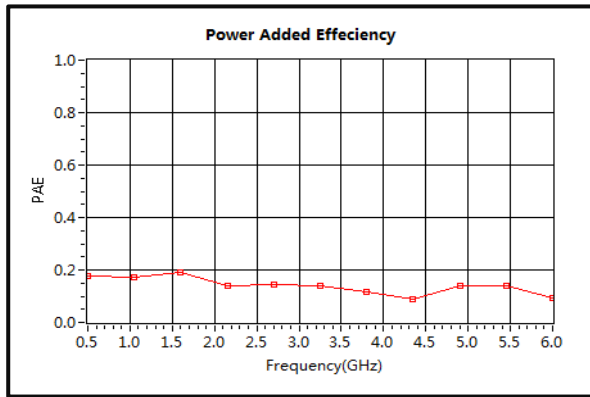


**P1dB & P3dB vs. Frequency**

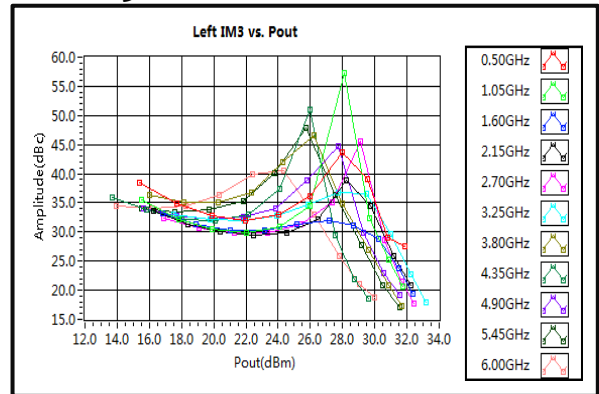


**Wide Band Power Amplifier 0.02GHz ~ 6GHz**

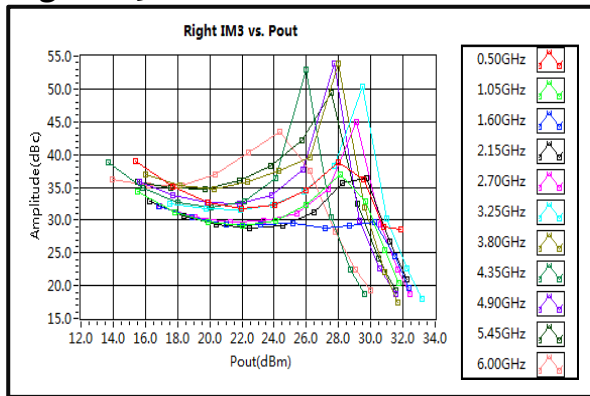
**Power Added Efficiency**



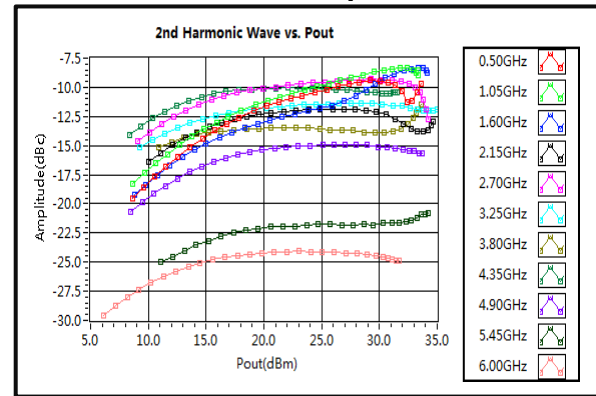
**Left IM3 vs. Pout**



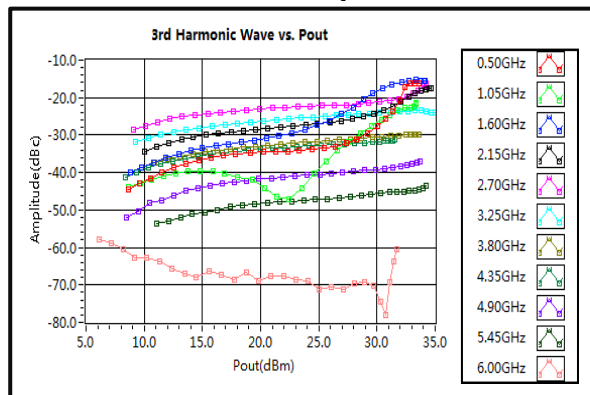
**Right IM3 vs. Pout**



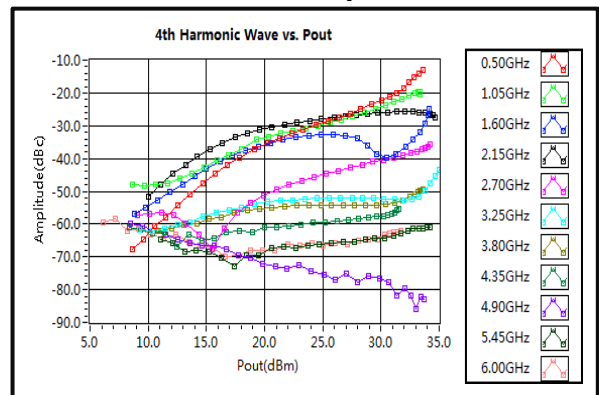
**2nd Harmonic Wave Output Power**



**3rd Harmonic Wave Output Power**



**4th Harmonic Wave Output Power**



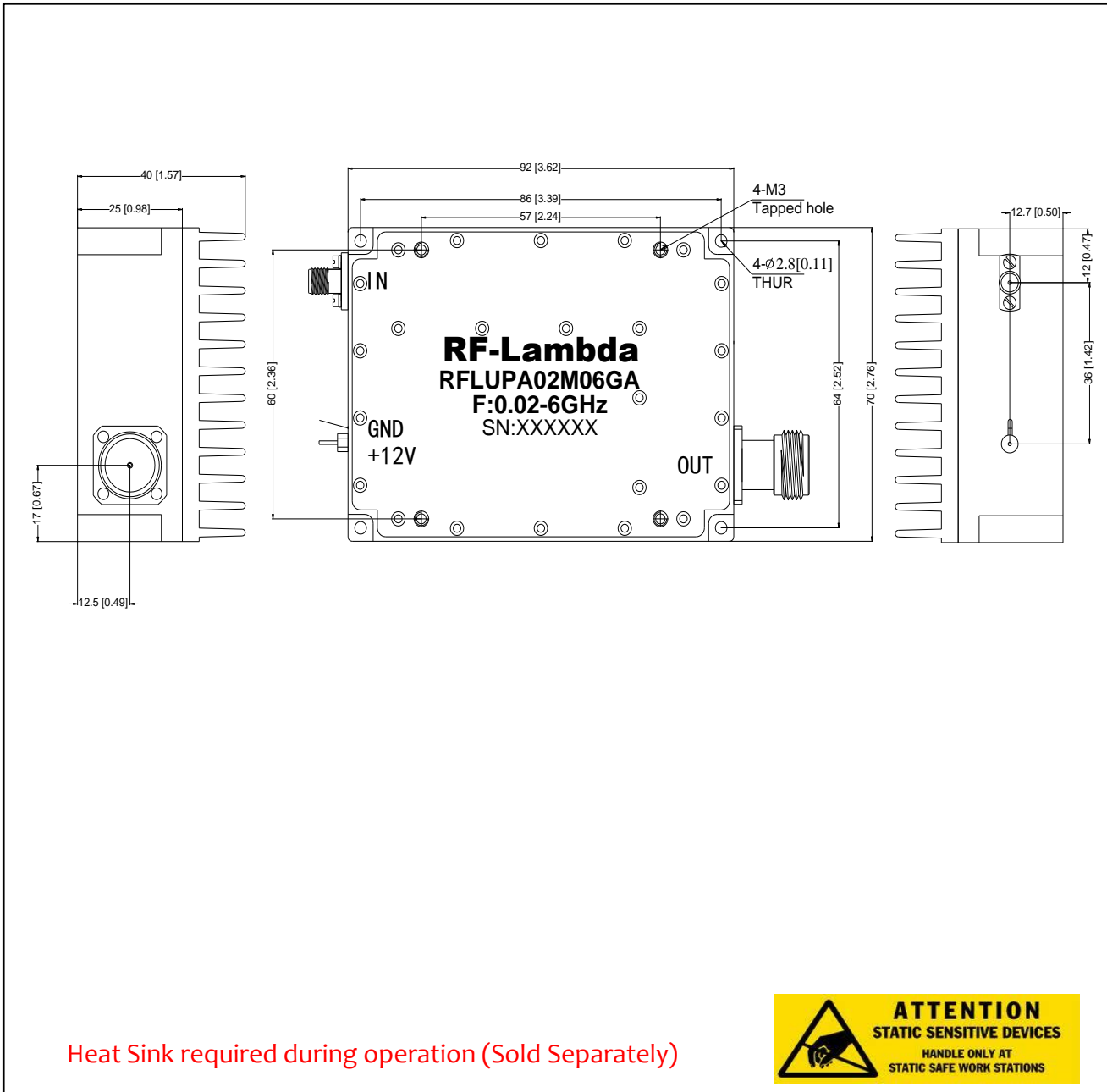
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**Outline Drawing:**

All Dimensions in mm [inches]

Tolerances  $\pm 0.2$  [0.008]

(Excl Heat Sink)



Heat Sink required during operation (Sold Separately)



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**Important Notice**

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