



## 20W Solid State Power Amplifier 6-18GHz



### Features

- Psat: +43.5dBm
- Gain: 51 dB
- Supply Voltage: +36V
- 50 Ohm Matched
- Short Haul / High Capacity Links
- Military & Aerospace Applications



Electrical Specifications, TA = +25°C Vcc = +36V

Parameter	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency Range	6 ~ 12		12 ~ 18				GHz
Gain		52			51		dB
Gain Flatness		±5			±4		dB
Gain Variation Over Temperature (-45 ~ +85)		±3			±3		dB
Input Return Loss		15			13		dB
Output Return Loss		25			22		dB
Saturated Output Power (Psat)		43			43		dBm
Supply Current (Vcc=+36V)		2.0			2.0		A
Isolation S12		65			65		dB
Max Input Power (No Damage)	Psat - Gain		Psat - Gain				dBm
Weight	3000						g
Impedance	50						Ohms
Input / Output Connectors	SMA-Female						
Power / Control Connector	D-sub COMBO 3POS						
Finishing	Standard: Nickel 220 micron thickness						
Material	Aluminum / Copper						
Package Sealing	Epoxy and Screw tight Sealing (Standard)						
	Hermetically Sealed (Option with extra charge)						

\* P1dB, P3dB and Psat power testing signal: 200µs pulse width with 10% duty cycle.

\* For average CW testing, power must be backed off by 5dB from Psat is required unless water/oil cooling system is applied.



# RF-LAMBDA

The power beyond expectations

RFLUPA0618GB

Absolute Maximum Ratings	
Supply Voltage	+40Vdc
RF Input Power (RFIN) Pin max = Psat - Gain	Psat - Gain
Storage Temperature (°C)	-50 to +125

Note: Maximum RF input power is set to assure safety of amplifier. Input power may be increased at own risk to achieve full power of amplifier. Please reference gain and power curves.

Biasing Up Procedure	
Step 1	Connect Ground Pin
Step 2	Connect input and output with 50 Ohm source/load. ( VSWR<1.9:1 or >10dB return loss)
Step 4	Connect +36V biasing
Power OFF Procedure	
Step 2	Turn off +36V biasing
Step 3	Remove RF connection
Step 4	Remove Ground.

Environmental Specifications	
Operational Temperature (°C)	-45 ~ +85 (Case Temperature must be less than 85C at all times)
Altitude	30,000 ft. (Epoxy Seal Controlled environment)
	60,000 ft 1.0psi min (Hermetically Seal Un-controlled environment) ( Optional )
Vibration	25g RMS (15 degrees 2KHz) endurance, 1 hour per axis
Humidity	100% RH at 35c, 95%RH at 40°c
Shock	20G for 11msec half sine wave, 3 axis both directions

Note: The operating temperature for the unit is specified at the package base. It is the user's responsibility to ensure the part is in an environment capable of maintaining the temperature within the specified limits.

Ordering Information		
Part No.	ECCN	Description
RFLUPA0618GB	3A001.b.4.b.4	6GHz~18GHz Power Amplifier

## 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.

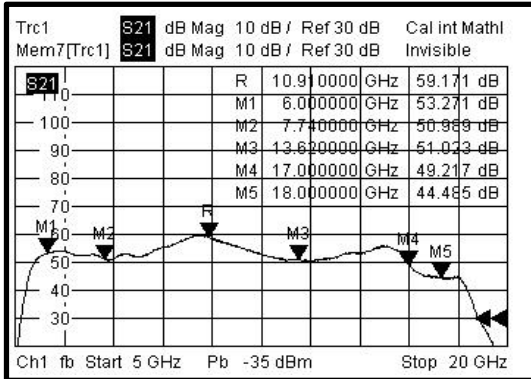
Proper electrostatic discharge (ESD) precautions are recommended to avoid performance degradation or loss of functionality.

What is not covered with warranty?

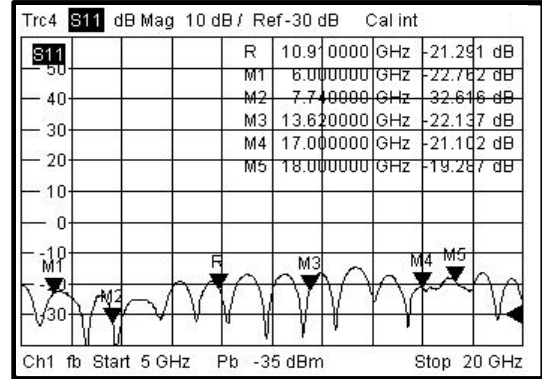
Each of RF-Lambda amplifiers will go through power and temperature stress testing. Due to fragile of the die, IC or MMIC, those are not covered by warranty. Any damage to those will NOT be free to repair.



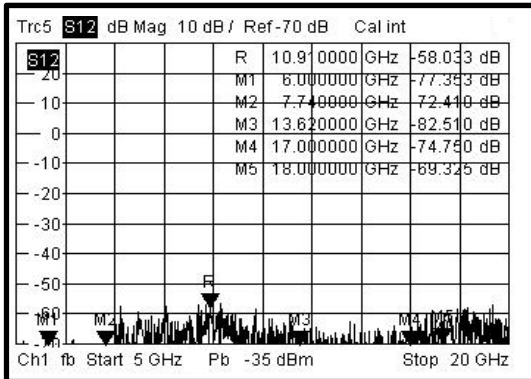
### Gain vs. Frequency



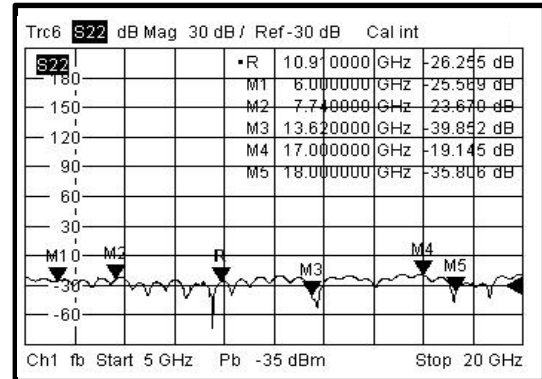
### Input Return Loss



### Isolation



### Output Return Loss



Note: Input/output return loss measurements include attenuators to protect equipment

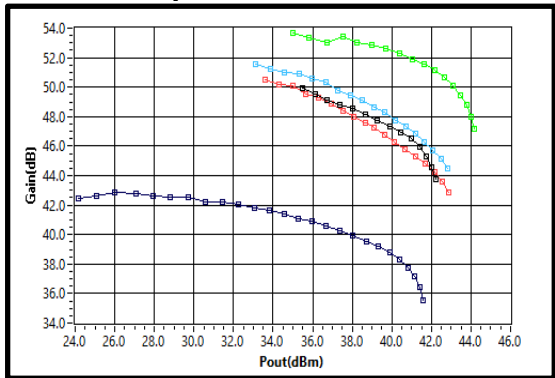


# RF-LAMBDA

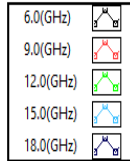
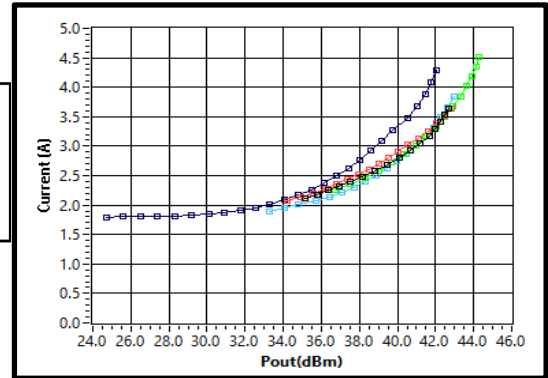
The power beyond expectations

RFLUPA0618GB

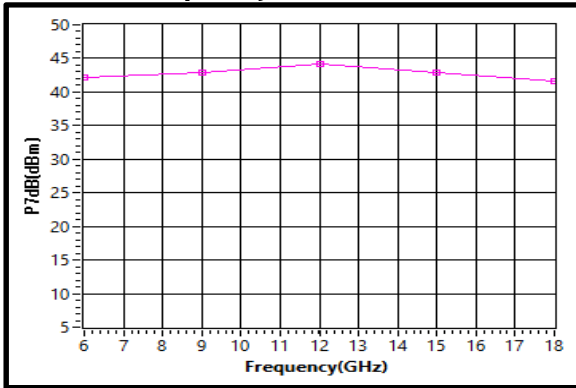
### Gain vs. Output Power



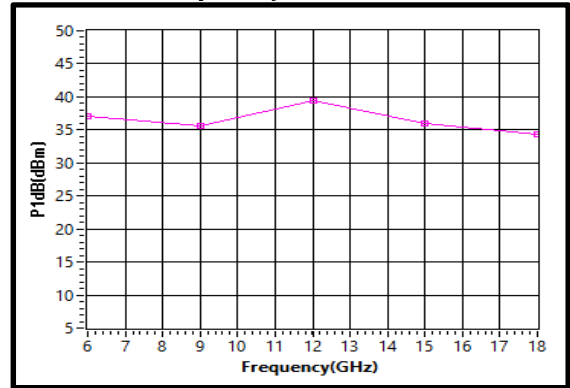
### Current vs. Pout



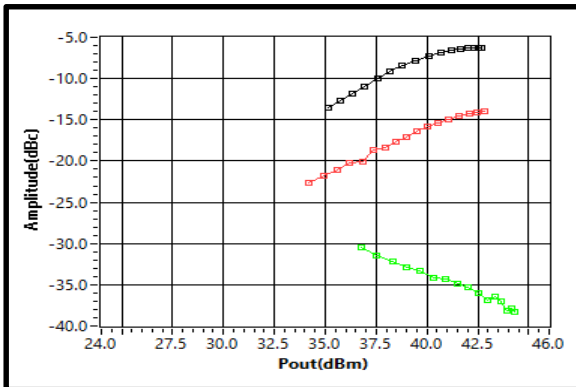
### P7dB vs. Frequency



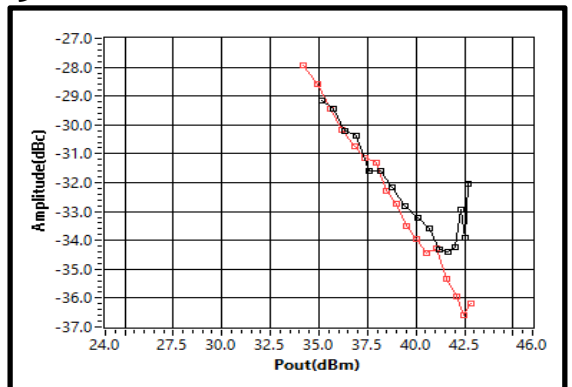
### P1dB vs. Frequency



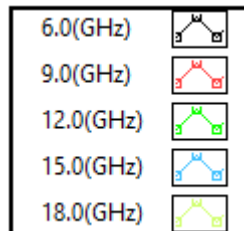
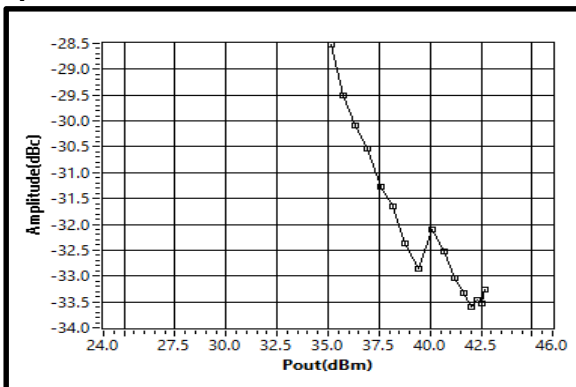
### 2<sup>nd</sup> Harmonic Wave vs. Pout



### 3<sup>rd</sup> Harmonic Wave vs. Pout



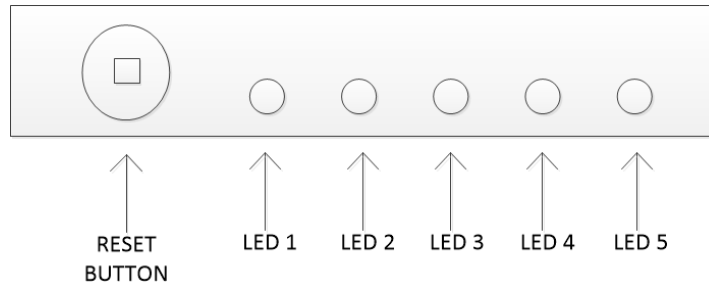
### 4<sup>th</sup> Harmonic Wave vs. Pout



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## Alarm Status Panel:



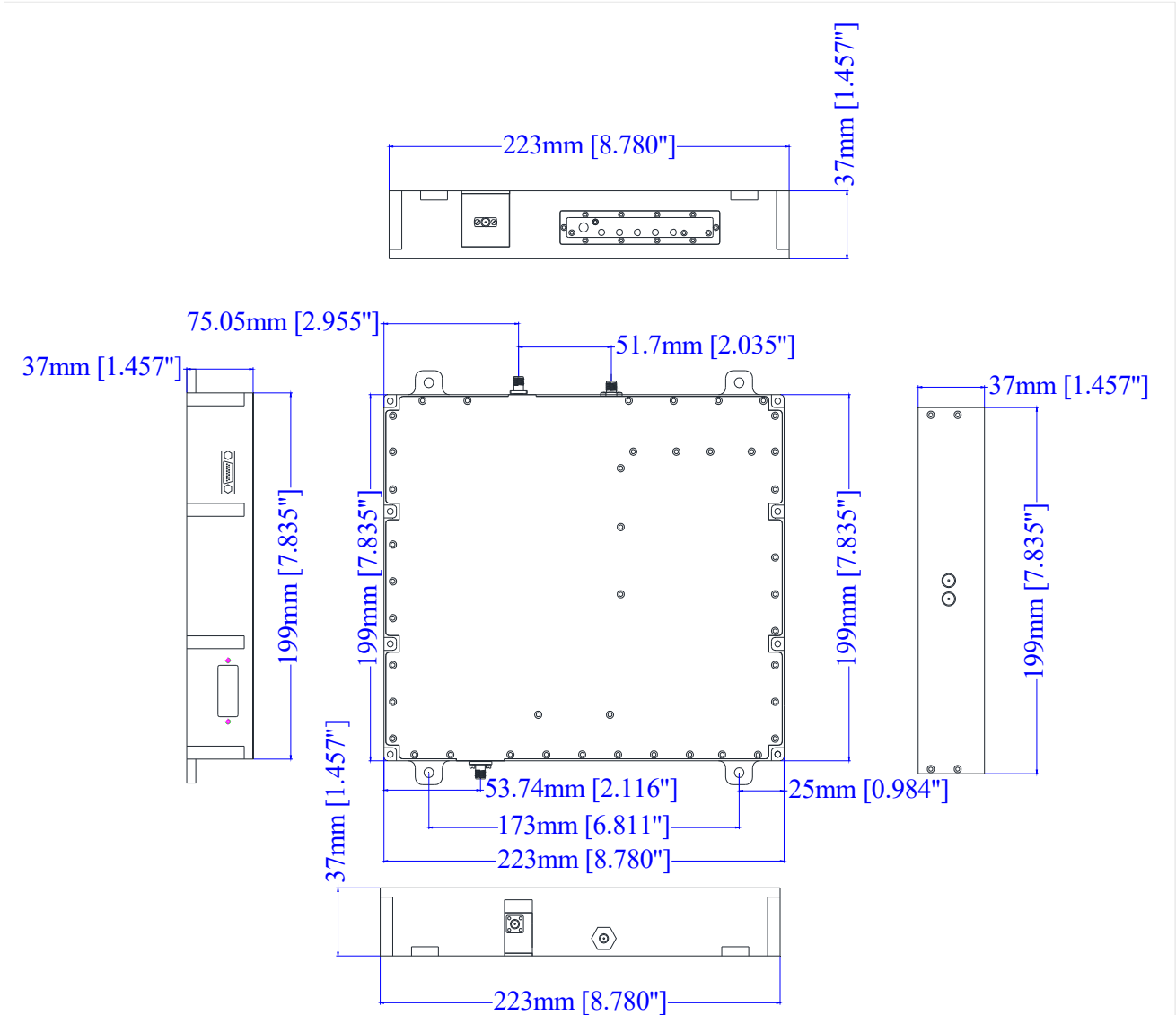
	Name	Function	Initial State	Description	Applied
	RESET	Control		Manual reset button to reset PA	Yes
LED 1	POWER	Indicator	RED Color	LED will light to <u>RED</u> color when supply power is applied	Yes
LED 2	RF IN	Indicator	GREEN Color	PA will shut down and latch this LED to a <u>RED</u> color when input signal is over limit *	Yes
LED 3	VSWR	Indicator	GREEN Color	PA will shut down and latch this LED to a <u>RED</u> color when output reflection is over limit *	Yes
LED 4	ID	Indicator	GREEN Color	PA will shut down and latch this LED to a <u>RED</u> color when an imbalance in the drain current of the combining branches occurs or if a drain current limit is reached *	Yes
LED 5	TEMP	Indicator	GREEN Color	PA will shut down and latch this LED to a <u>RED</u> color when driven over temperature *	Yes

\*LED needs to be manually reset to initial state by pressing RESET button

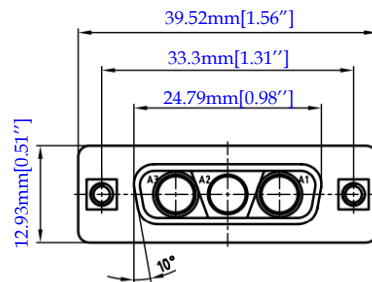


### Amplifier Outline Drawing:

All Dimensions in mm [inches]



### Power Supply Connector Drawing:



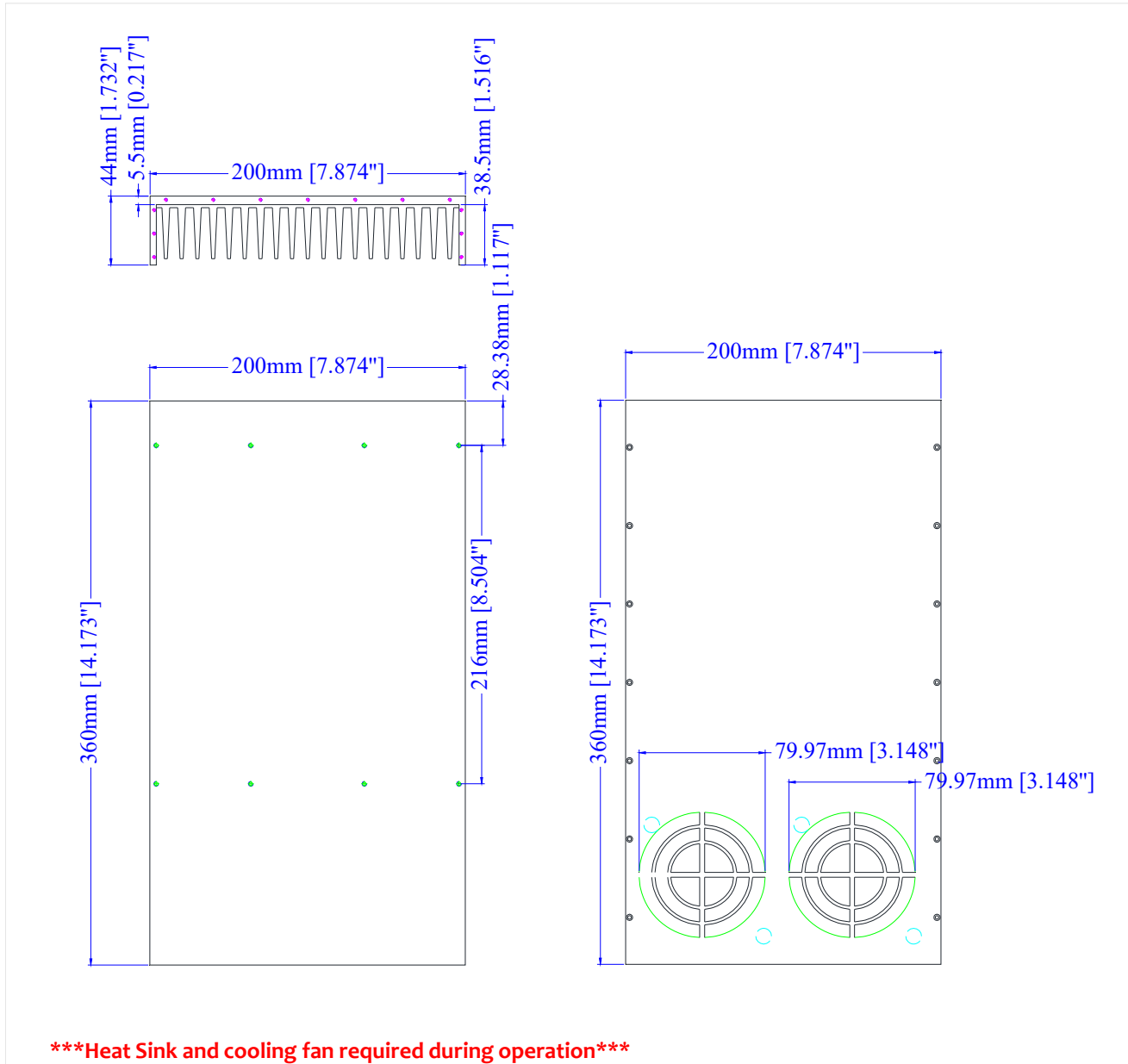
\*\*\*Heat Sink and cooling fan required during operation\*\*\*





### Air Cooling Outline Drawing:

All Dimensions in mm [inches]



### Important Notice

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