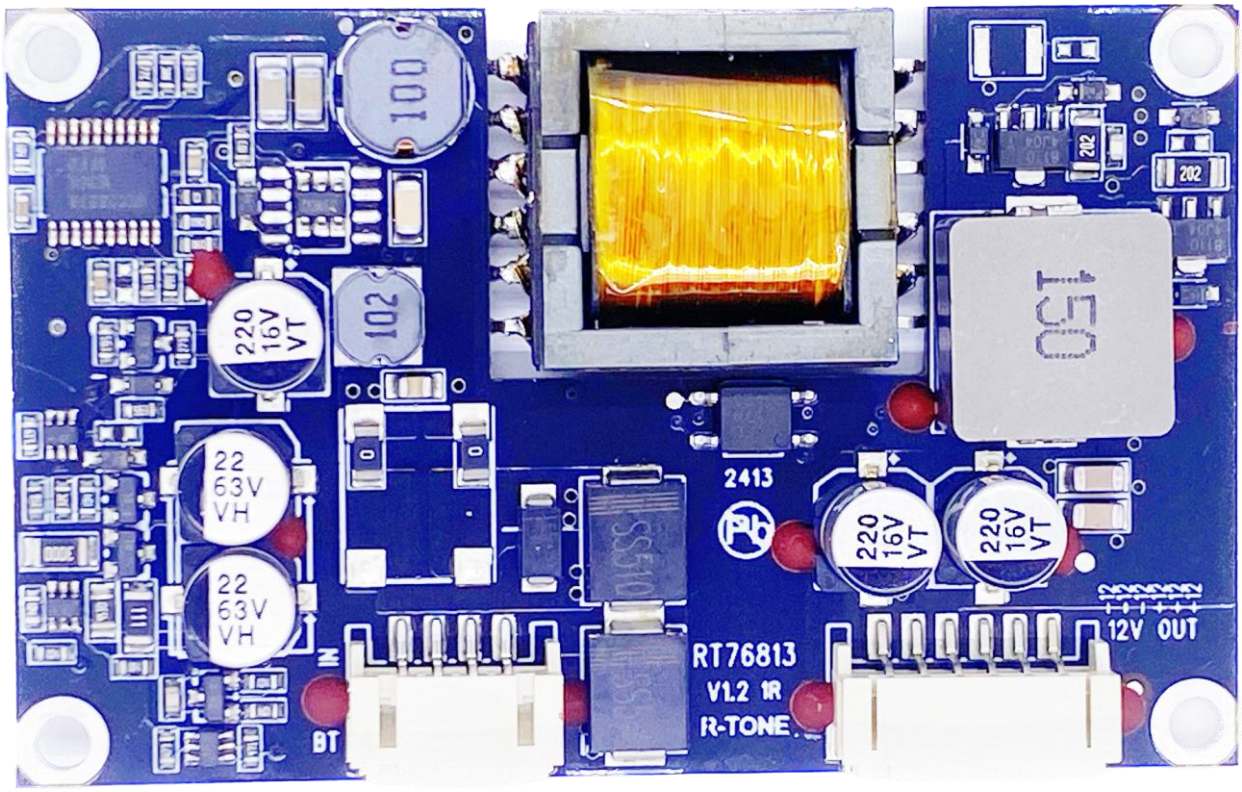
RING&TONE

RT76813

60W BT POE Ultra Module (Isolation Model)

Product Description



Version	Date	Author	Approved By	Remarks
RT76813 V1.0	20240512	LI xiao yan	Rock	

Features：

- IEEE802.3af ,IEEE802.3at ,IEEE802.3bt(Draft V3.2) compliant
- Maximum 60W 12v or 24voutput power
- Input voltage range 52V to 57V(60W) ,
- Integral high efficiency DC/DC converter.
- Low output ripple and noise
- High performance with low price
- Short-circuit protection
- Transformer isolation ,1500V isolation (input to output)
- Easy to use, with a minimum number of external components.
- IEC 61000-4-2 Level 4 (8KV/15KV) ESD protection
- IEC 61000-4-5 Level 3 SURGE LEVEL :10/700μs 40ohm 4KV---Optional

Applications：

- IP Cameras
- Wireless access point
- Security and alarm systems
- Point of sale network terminal equipment
- WiMAX access points,
- PTZ cameras,
- notebook computers and thin client terminals.

Description：

The RT76813 is a High Power over Ethernet (PoE Ultra, BT) module that can deliver up to 60 Watts of output power.

The RT76813 series of modules are designed to extract power from a conventional twisted pair Category 5 Ethernet cable, conforming to the IEEE 802.3af and IEEE 802.3at and IEEE 802.3bt Power-over-Ethernet(PoE) standard.

The RT76813 signature and control circuit provides the PoE compatibility signature and power classification required by the Power Sourcing Equipment (PSE) before applying up to 60W power to the port. It has been designed to work with existing high power PSE’s from leading manufacturers.

The DC/DC converter operates over a wide input voltage range and provides a regulated output. The DC/DC converter also has built-in short-circuit output protection.

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● RT76813 Product Selector

Part Number	Nominal Output	Maximum Output Power*	Marking	Package	
RT76813	12V	60W	RT76813	CON	Pin header connection

*At 25°C with VIN = 52V

60W need forced air or metal heatsink/ enclosure

● Pin Description

Pin #	Name	2.0mm 4pin Description
J1-1	VA1	The centre tap of the transformer connected to pins 1&2 of the RJ45 connector it is not polarity sensitive.
J1-2	VA2	The centre tap of the transformer connected to pins 3&6 of the RJ45 connector it is not polarity sensitive.
J1-3	VB1	The centre tap of the transformer connected to pins 4&5 of the RJ45 connector it is not polarity sensitive.
J1-4	VB2	The centre tap of the transformer connected to pins 7&8 of the RJ45 connector it is not polarity sensitive.

Pin #	Name	2.0mm 6pin Description
J2-1	Vout-	Ground. The ground return for the output.
J2-2	Vout-	
J2-3	Vout-	
J2-4	Vout+	DC Output 12V. This pin provides the main regulated output from the DC/DC converter.
J2-5	Vout+	
J2-6	Vout+	

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● Absolute Maximum Ratings

	Parameter	Symbol	Min	Max	Units
1	DC Supply Voltage	VCC	-0.3	60	V
2	DC Supply Voltage Surge for 1ms	VSURGE	-0.6	80	V
3	Storage Temperature	TS	-40	100	°C

Note 1: Exceeding the above ratings may cause permanent damage to the product. Functional operation under these conditions is not implied. Maximum ratings assume free airflow.

● Recommended Operating Conditions

	Parameter	Symbol	Min	Typ	Max	Units
	Input Supply Voltage1					
	@20W		36	48	57	
	@40W		52	54	57	
1	@60W	VIN	55	56	57	V
2	Under Voltage Lockout	VLOCK	30		36	V
3	Operating Temperature2	TOP	-20	25	70	Ta / °C

Note ** Extended use close to, or at the maximum operating temperature can reduce the life time of the device.

● DC Electrical Characteristics

	DC Characteristic	Sym	Min	Typ1	Max	Units	Test Comments
1	Nominal Output Voltage	+VDC	11.5	12.0	12.5	V	
2	Line Regulation	VLINE		0.1		%	@ 50% Load
3	Load Regulation	VLOAD		1		%	@ VIN=48V
4	Output Ripple and Noise	VRN		110		mVp-p	@ Max load2
5	Minimum Load	RLOAD	100			mA	
6	Short-Circuit Duration3	TSC			∞	sec	
7	Efficiency @ 80% Load	EFF		87		%	Vin = 54V 50% Load
8	Isolation Voltage (I/O)	VISO		1500		VPK	Impulse Test
9	Temperature Coefficient	TC		0.02		%	Per °C

Note 1: Typical figures are at 25°C with a nominal 48V supply and are for design aid only. Not Guaranteed

2: The output ripple and noise can be reduced with an external filter, see application note.

3: Continuous short circuit duration is applicable at 25'C ambient temperature in free air. At higher temperatures or with restricted

airflow (e.g. in a sealed enclosure) the duration will need to be limited to avoid overheating.

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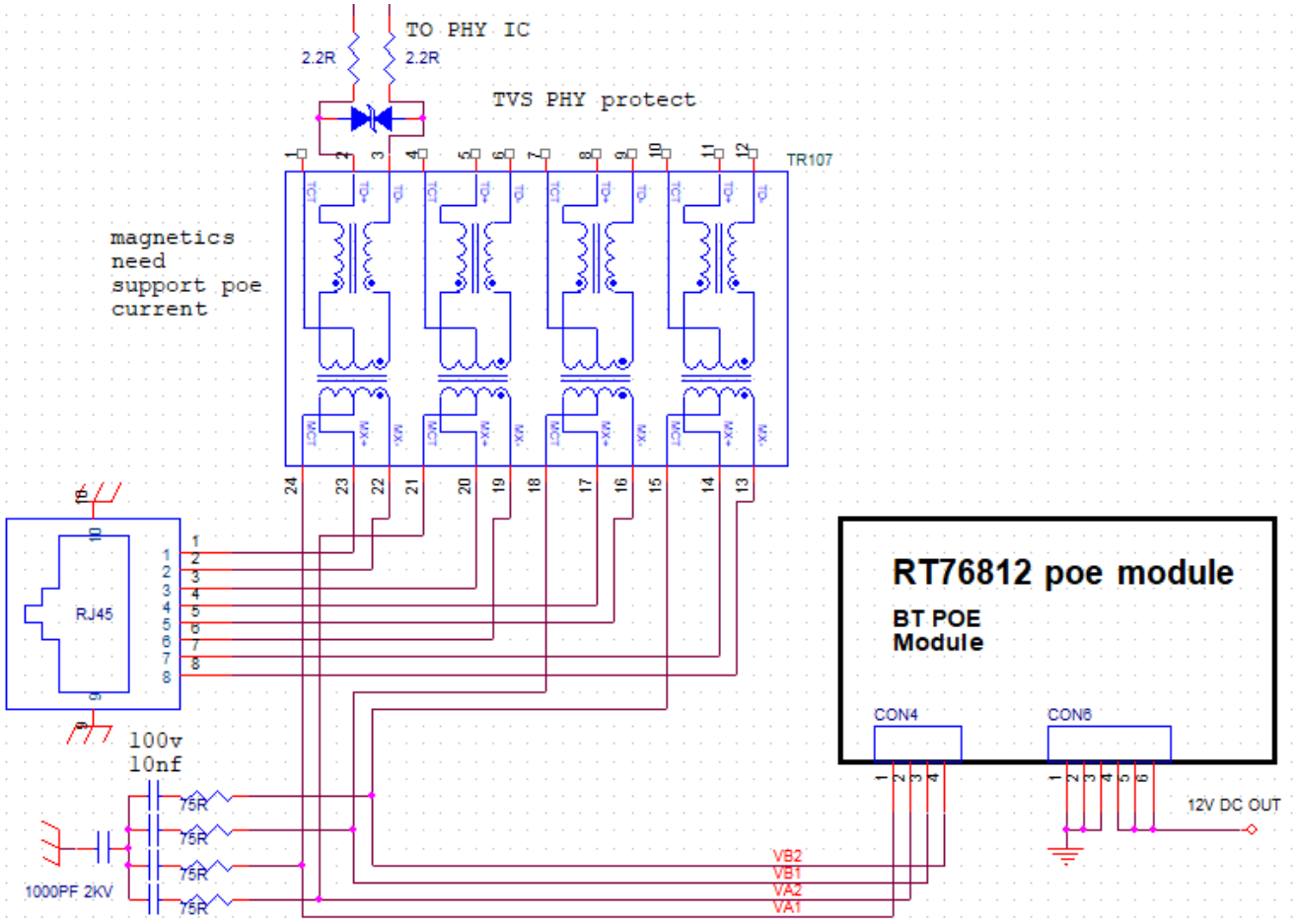
- **RT76813-CON Typical Connection Diagram 1000M Ethernet :**



Power Classification

The RT76813 is Type 4 - Class 8 PD requesting the highest nominal amount of power from an IEEE802.3bt PSE If the RT76813 is connected to an IEEE802.3at PSE, the PSE will recognise the initial Class 4 pulse from the as a Type 2 PD and provide ~25W.

PD Signature

The RT76813 input complies with the IEEE802.3af specification. When the inputs are connected to a Power Sourcing Equipment (PSE), they will automatically present a Powered Device (PD) signature to the PSE (when requested). The equipment will then recognise that a PD is connected to that line and supply power.

Operating Temperature Range

It is important to remember that RT76813 is a power supply, and as such careful consideration should be taken over the mechanical design of the host product, with provision for heat sinking and/or forced air cooling.

At full power the RT76813 will generate heat. The device has been designed to be used with heatsink plate or thermally connected to the chassis of the host equipment, or cooled with forced air.

About cooling

RT76813 Usually air convection is good for heat dissipation, but if it is necessary to reduce the temperature of the module,,need forced air or metal heatsink/ enclosure.

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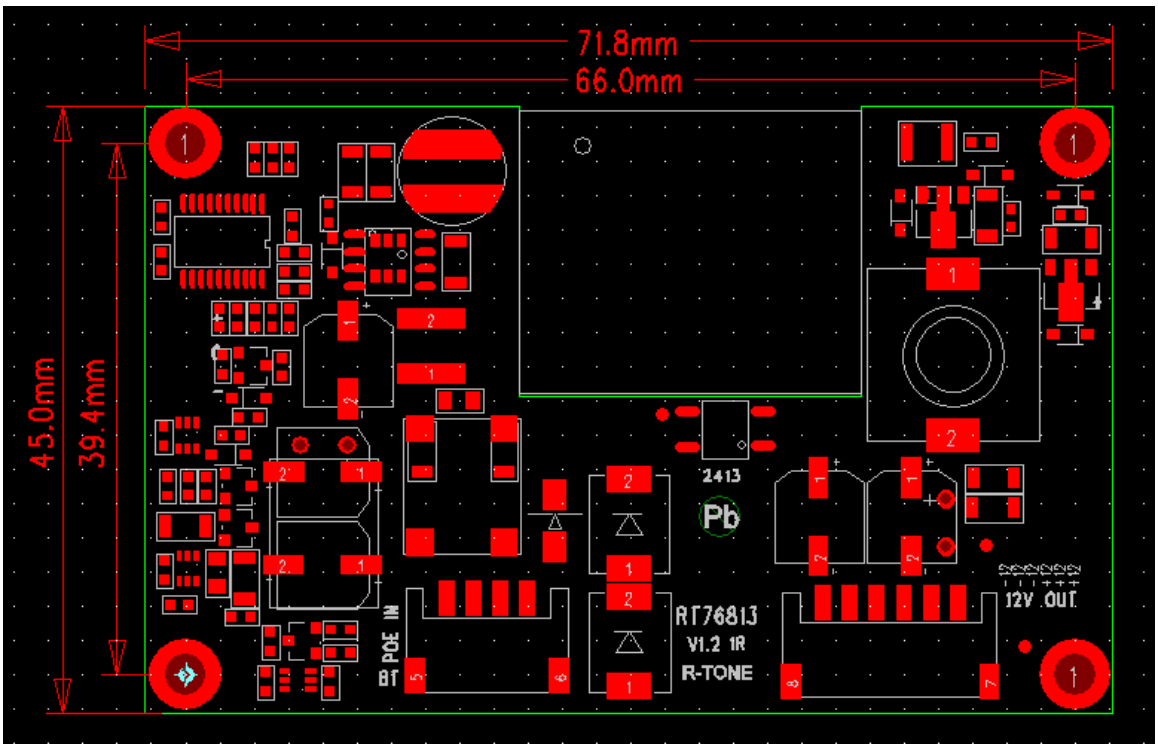
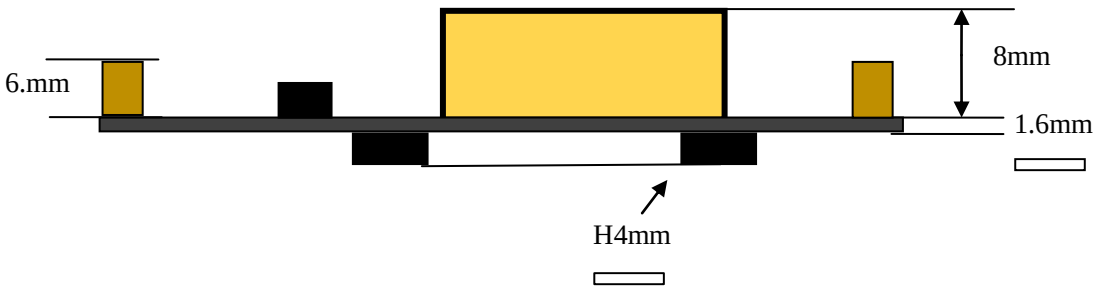
- **Package ： (mm ±0.3mm)**



- **RT76813-CON Package Size： (mm ±0.3mm)**



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