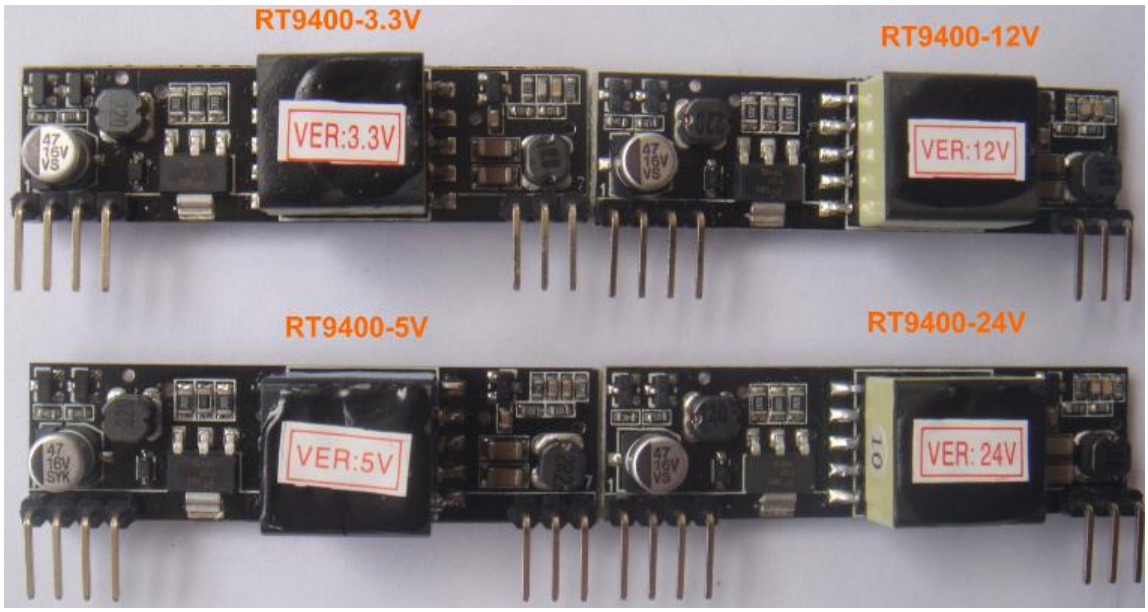
RING&TONE

RT9400

13W POE PD Module (Isolation Model)

Product Description



Version	Date	Author	Approved By	Remarks
V1.0	2013/10/14	LI xiao yan	Rock	
V4.3	2014/12/01	LI xiao yan	Rock	

Features：

·IEEE802.3af compliant
·Input voltage range 36V to 57V
·Integral high efficiency DC/DC converter.
·Low output ripple and noise
·High performance with low price
·Short-circuit protection
·Adjustable Output
·Optional multi-voltage output 3.3V 5V 12V 24V
·Transformer isolation ,1500V isolation (input to output)
·Easy to use, with a minimum number of external components.

Applications：

·IP Cameras
·Wireless access point
·Security and alarm systems
·VOIP telephone
·Point of sale network terminal equipment

Description：

The RT9400 series of modules are designed to extract power from a conventional twisted pair Category 5 Ethernet cable, conforming to the IEEE 802.3af Power-over-Ethernet(PoE) standard.

The RT9400 signature and control circuit provides the PoE compatibility signature and power classification required by the Power Sourcing Equipment (PSE) before applying up to 15W power to the port. The RT9400 provides a Class 0 signature.

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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l RT9400 Product Selector

Part Number	Nominal Output Voltage	Maximum Output Power*	Marking	Package
RT9400-3.3V	3.3V	6.6W	3.3V	SIL
RT9400 -5V	5V	10W	5V	SIL
RT9400 -12V	12V	12W	12V	SIL
RT9400 -24V	24V	12W	24V	SIL

*At 25°C with VIN = 48V

l Pin Description:

Pin #	Name	Description
1	VA1	RX Input (1). This input pin is used in conjunction with VA2 and connects to the centre tap of the transformer connected to pins 1 & 2 of the RJ45 connector (RX) - it is not polarity sensitive.
2	VA2	TX Input (2). This input pin is used in conjunction with VA1 and connects to the centre tap of the transformer connected to pins 3 & 6 of the RJ45 connector (TX) - it is not polarity sensitive.
3	VB1	Direct Input (1). This input pin is used in conjunction with VB2 and connects to pin 4 & 5 of the RJ45 connector - it is not polarity sensitive.
4	VB2	Direct Input (2). This input pin is used in conjunction with VB1 and connects to pin 7 & 8 of the RJ45 connector - it is not polarity sensitive.
5	-VDC	DC Return. This pin is the return path for the +VDC output.
6	+VDC	DC Output. This pin provides the regulated output from the DC/DC converter.
7	ADJ	Output Adjust. The output voltage can be adjusted from is nominal value, by connecting an external resistor from this pin to either the +VDC pin or the -VDC pin.

l 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	^{O}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.

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I Recommended Operating Conditions

	Parameter	Symbol	Min	Typ	Max	Units
1	Input Supply Voltage1	VIN	36	48	57	V
2	Under Voltage Lockout	VLOCK	30		36	V
3	Operating Temperature2	TOP	-20	25	70	Ta / ^{O}C

Note 1: With minimum load

2: See Section Operating Temperature Range

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

I DC Electrical Characteristics

	DC Characteristic	Sym	Min	Typ1	Max	Units	Test Comments
			3.1	3.3	3.5	V	RT9400-3.3V
			4.75	5.0	5.25	V	RT9400-5V
			11.5	12.0	12.5	V	RT9400-12V
1	Nominal Output Voltage	+VDC	23.5	24.0	24.5	V	RT9400-24V
	Output Current (V_{IN} = 48V)				2	A	
					2	A	
					1.0	A	
2		PWR			0.5	A	
3	Line Regulation	VLINE		0.1		%	@ 50% Load
4	Load Regulation	VLOAD		1		%	@ VIN=48V
5	Output Ripple and Noise	VRN		100		mVp-p	@ Max load2
			200			mA	RT9400-3.3V
			200			mA	RT9400-5V
			100			mA	RT9400-12V
6	Minimum Load	RLOAD	50			MA	RT9400-24V
7	Short-Circuit Duration3	TSC			∞	sec	
				79		%	RT9400-3.3V
				84		%	RT9400-5V
				87		%	RT9400-12V
8	Efficiency @ 80% Load	EFF		87		%	RT9400-24V
9	Isolation Voltage (I/O)	VISO		1500		V_{PK}	Impulse Test
10	Temperature Coefficient	TC		0.02		%	Per ^{O}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

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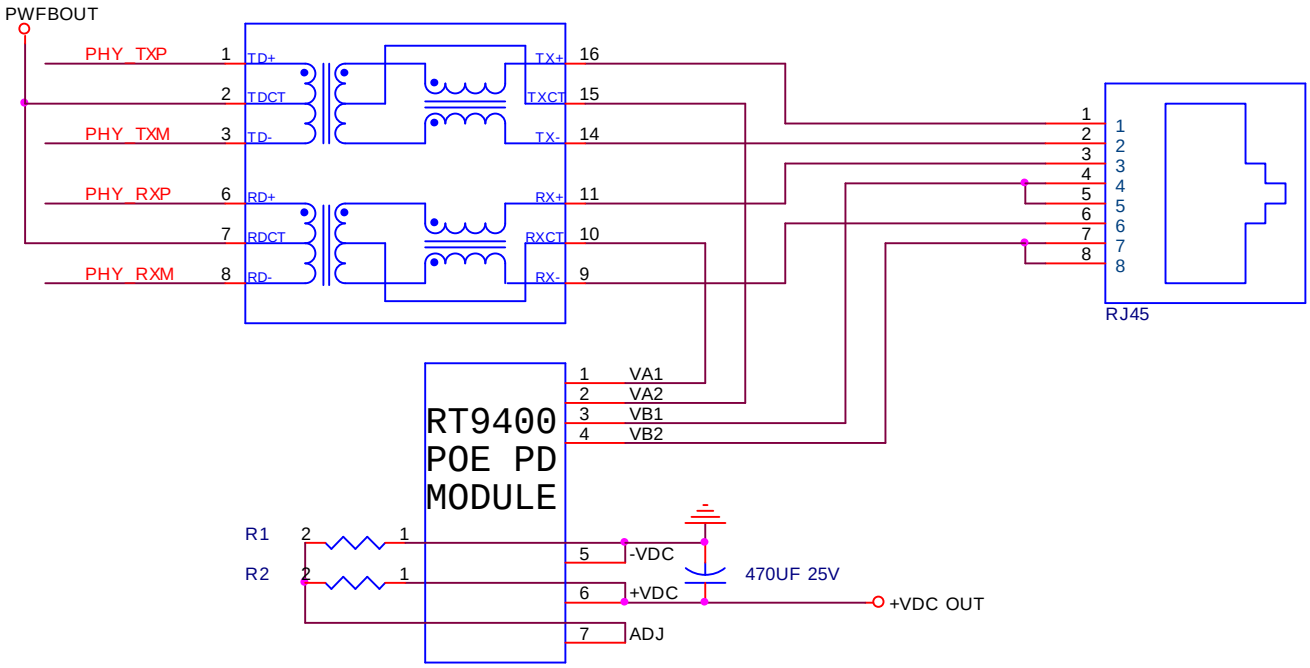
airflow (e.g. in a sealed enclosure) the duration will need to be limited to avoid overheating.

I RT9400 Typical Connection Diagram:



Reducing the output voltage, connect R2 between ADJ and +VDC				
	R2 Value	output voltage	R2 Value	output voltage
RT9400-3.3V	open	3.3V	0R	2.8V
RT9400-5V	open	5V	0R	4.4V
RT9400-12V	open	12V	0R	9.9V
RT9400-24V	open	24V	30K	18.2V

Increasing the output voltage, connect R1 between ADJ and -VDC				
	R1 Value	output voltage	R1 Value	output voltage
RT9400-3.3V	open	3.3V	0R	3.7V
RT9400-5V	open	5V	0R	5.7V
RT9400-12V	open	12V	0R	12.8V
RT9400-24V	open	24V	0R	25.5V

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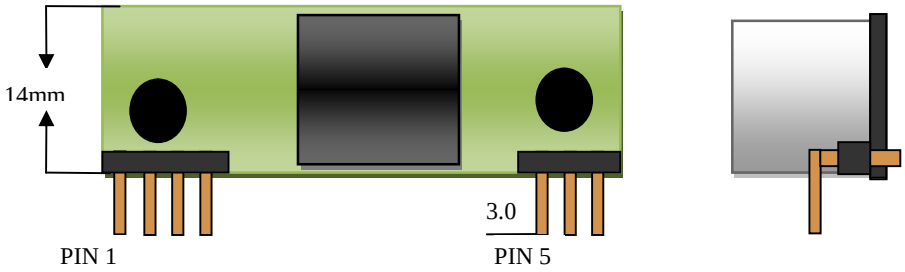
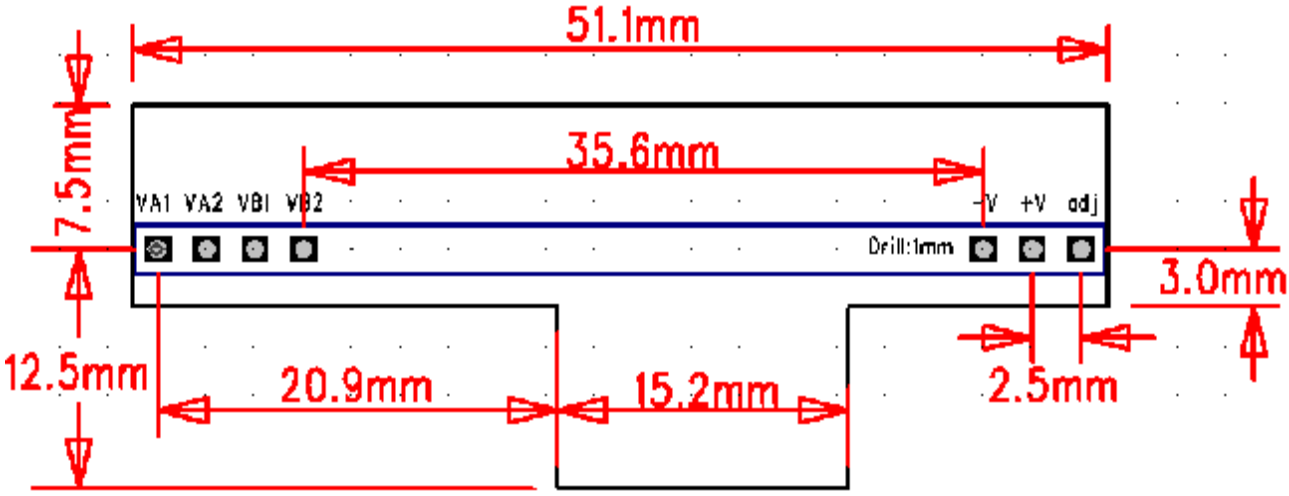
l Package Size： (mm ±0.3mm)



l PCB Decal ： (mm ±0.3mm)



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