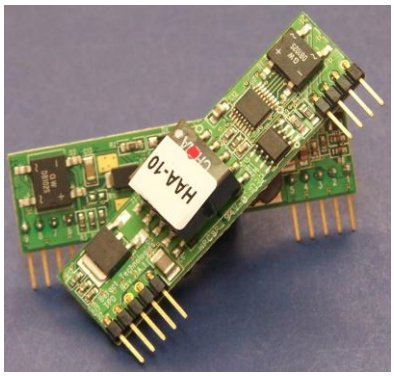
Max. Load 12W Isolated PoE Powered Device (PD) Module



BEFACT TECHNOLOGIES High Efficiency Embedded Tiny PD Module

1. Description

The TPD series of modules are designed as embedded isolated PD solutions. TPD modules extract power from Power Source Equipment (PSE) via conventional Category 5 Ethernet cable.

The TPD modules compliant with IEEE 802.3af power classification, Class 0 to Class 3, signature and support PSE Alternative A and Alternative B connections. Tiny size, 60mm(L) x 19.7mm(W)X16mm(H), wide input voltage range, 39Vdc to 55Vdc and less external components needed, one output decoupling capacitor. The operating temperature is from -15^{o}C to 55^{o}C @ Full load.

TPD modules support three different output voltage modules - 3.3Vdc, 5Vdc and 12Vdc with 12W maximum load.

2. Feature

- IEEE802.3af compliant.
- Support PoE applications in both of Fast / Gigabit Ethernet environments.
- Support wide input voltage range- 39Vdc to 55Vdc.
- Thermal cut off.
- Short circuit protection.
- High efficiency DC/DC converter.
- Less external component – one output decoupling capacitor.
- Isolation level 1.5KVrms.
- Internal build in 2 channel bridge rectifiers support end-point and mid-span mode.

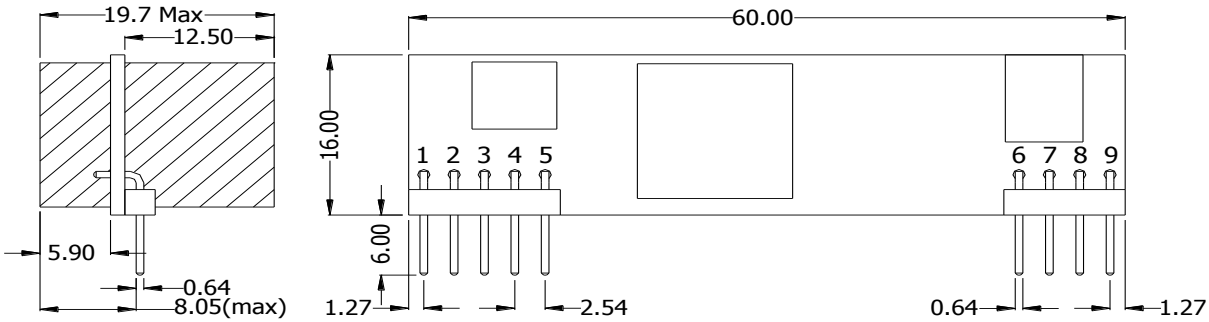
3. Applications

- Wireless Access Point (AP)
- VoIP Phone
- Surveillance System
- IP Camera
- Security System
- Fingerprint Identification
- WiMAX Base Station
- PoE Clock
- Network Attached Storage (NAS)
- Remote Display Board
- Point of Sale (POS) System
- Media Converter
- Stand Alone PoE Splitter
- Isolated DC/DC Converter

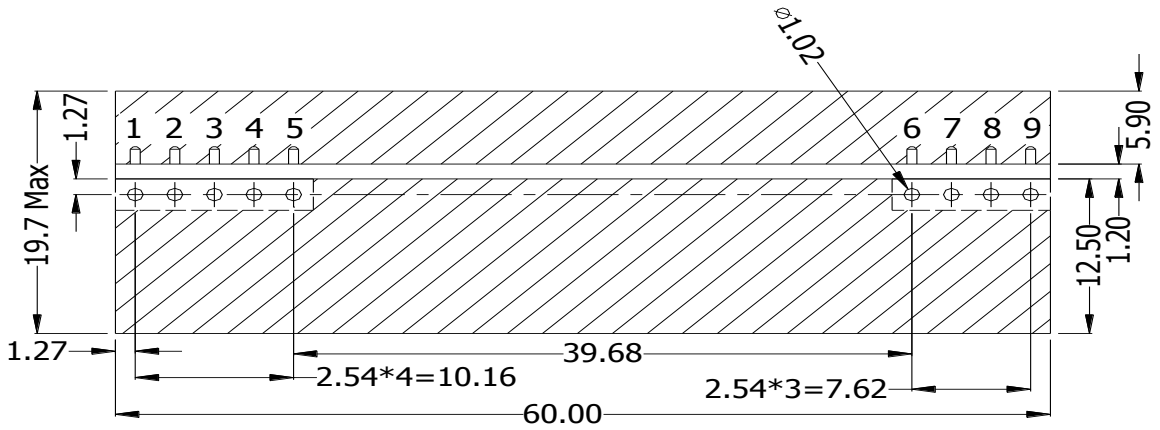
4. TPD Series Product List

Part Number	Nominal Output Voltage / Current	Maximum Output Power	Nominal Input Voltage	Marking
TPD-33	3.3Vdc / 3.63A	12W @ 25˚C	48Vdc	Blue dot
TPD-50	5Vdc / 2.4A	12W @ 25˚C	48Vdc	Green dot
TPD-12	12Vdc / 1A	12W @ 25˚C	48Vdc	Red dot

5. Package



Dimensions in mm

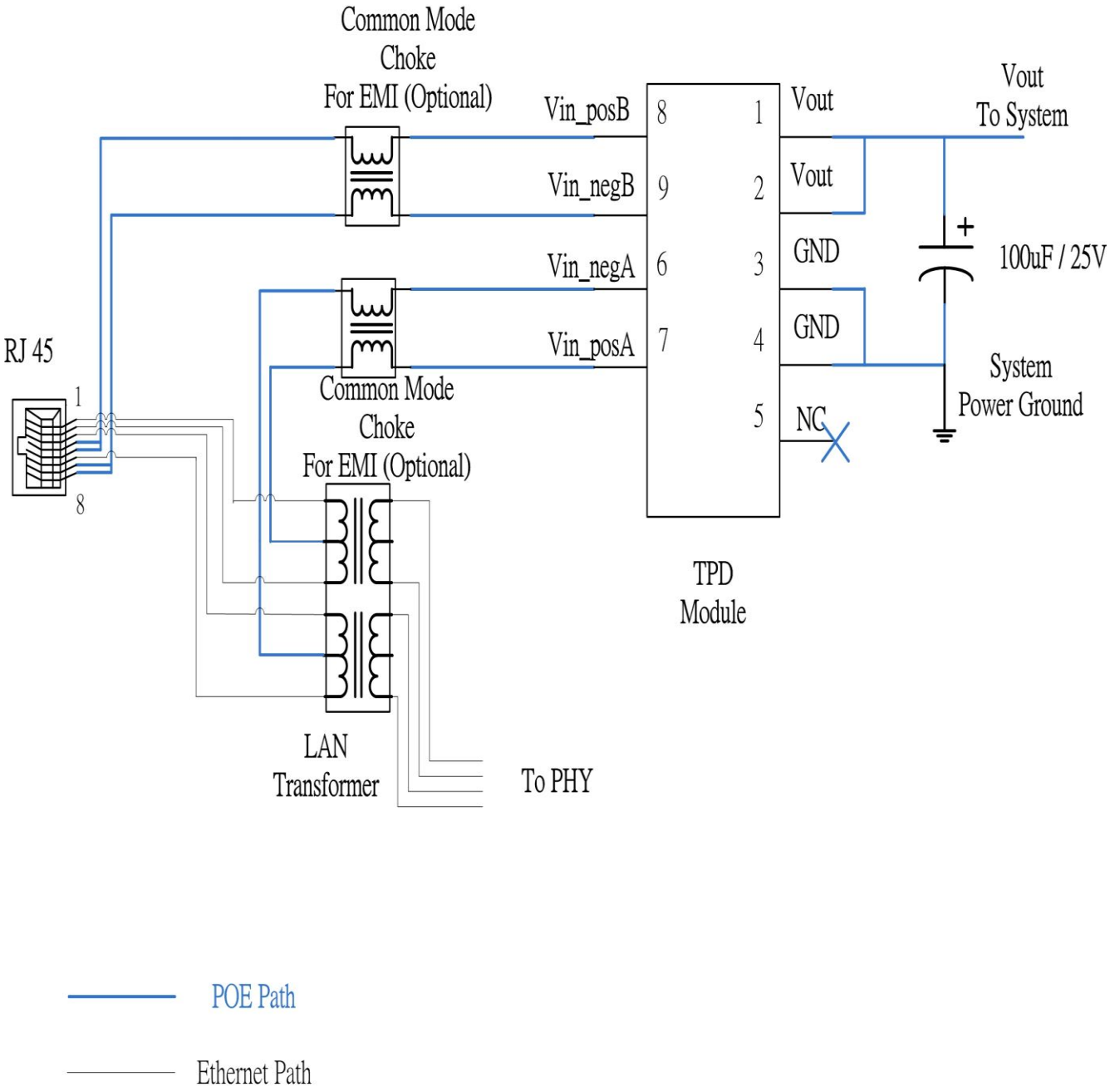


Dimensions in mm

6. Pin Definition

Pin Number	Symbol	Description
1	Vout	**Regulated DC Output.** TPD (secondary side) DC power output pin (3.3Vdc / 5Vdc /12Vdc). Connect to system positive power input.
2	Vout	**Regulated DC Output.** TPD (secondary side) DC power output pin (3.3Vdc / 5Vdc /12Vdc). Connect to system positive power input.
3	GND	**TPD Power Ground.** TPD (secondary side) power ground. Connect to system power ground.
4	GND	**TPD Power Ground.** TPD (secondary side) power ground. Connect to system power ground.
5	NC	**No Connection.** Left it floating, do not connect to this pin
6	Vin_negA	**Power Interface Negative Input A (Alternative A mode).** TPD High voltage (primary side) negative voltage input A. Connect to central tap (primary side) of LAN transformer which is connected to pin 3 & 6 of the RJ45 connector. Vin_negA and Vin_posA are not polarity sensitive.
7	Vin_posA	**Power Interface Positive Input A (Alternative A mode).** TPD High voltage (primary side) positive voltage input A. Connect to central tap (primary side) of LAN transformer which is connected to pin 1 & 2 of the RJ45 connector. Vin_negA and Vin_posA are not polarity sensitive.
8	Vin_posB	**Power Interface Positive Input B (Alternative B mode).** TPD High voltage (primary side) positive voltage input B. Connect to pin 4 & 5 of the RJ45 connector. Vin_negB and Vin_posB are not polarity sensitive.
9	Vin_negB	**Power Interface Negative Input B (Alternative B mode).** TPD High voltage (primary side) negative voltage input B. Connect to pin 7 & 8 of the RJ45. Vin_negB and Vin_posB are not polarity sensitive.

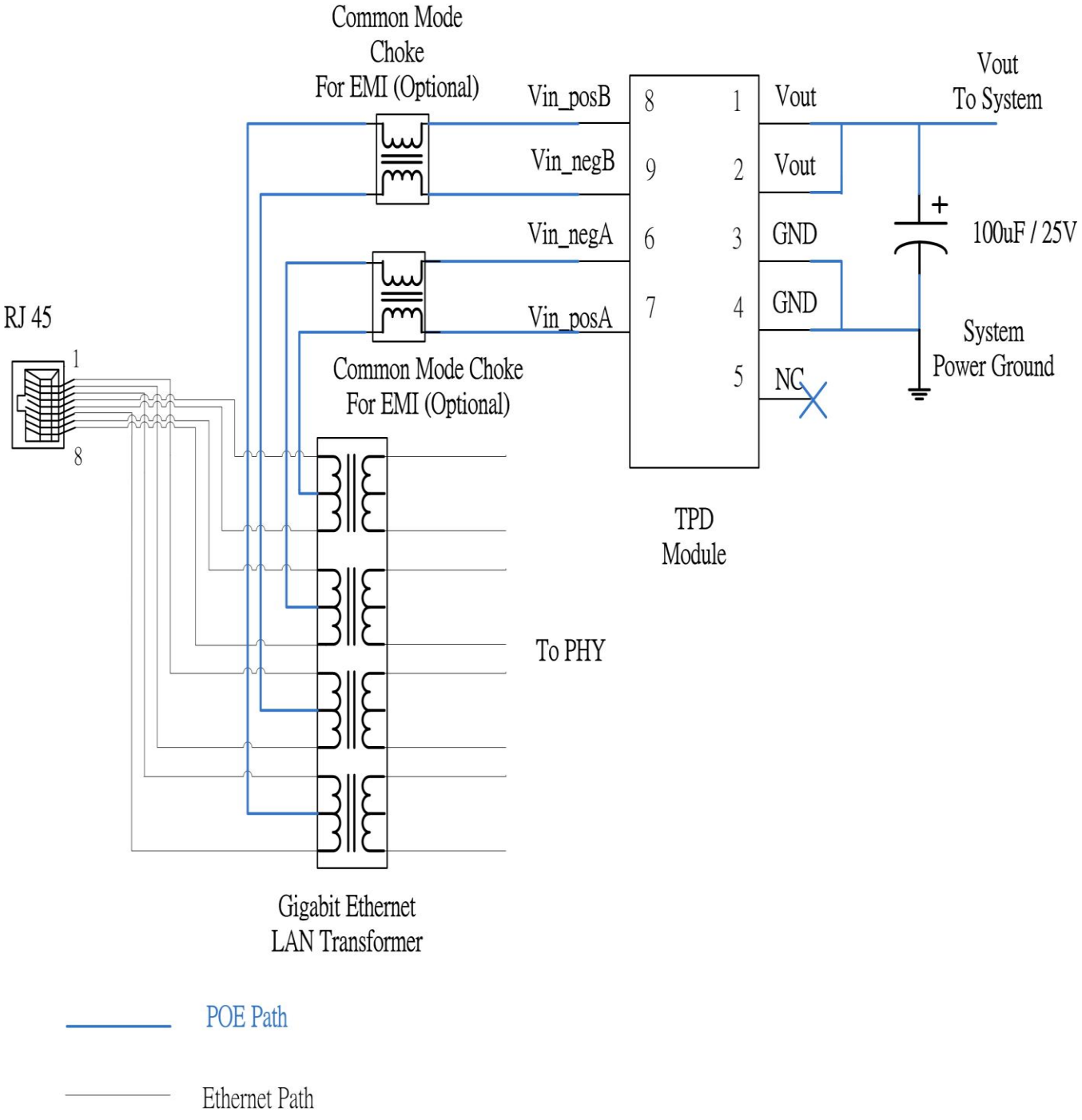
7. Fast Ethernet Typical Application



Note

Common mode choke can eliminate EMI effect which is optional component.

8. Gigabit Ethernet Typical Application



Note

Common mode choke can eliminate EMI effect which is optional component.

9. Electrical Characteristics

Item	DC Characteristic	Symbol	Min.	Typ.	Max.	Unit	Comment
1	Power Interface input Voltage	Vin_pos – Vin_neg	39	48	55	V	
2	Under Voltage Lockout	VLock out	33		39	V	
3	Output Voltage	Vout	3.14 4.75 11.4	3.3 5 12	3.46 5.25 12.6	V V V	TPD-33 TPD-50 TPD-12 (Vrms)
4	Maximum Output Power (V_{in} = 48Vdc)	Pout			12	W	
5	Maximum Output Current (V_{in} = 48Vdc)	Iout			3.63 2.4 1	A A A	TPD-33 TPD-50 TPD-12
6	Maximum Input Current Consumption (V_{in} = 48Vdc)	Iin_max			420	mA	
7	Vout Reverse Voltage	Vr			20	V	
8	DC/DC Converter Efficiency	EFF		81% 86% 89%			TPD-33 TPD-50 TPD-12 @Full Load
9	Isolation Level	ISO		1.5		KV	
10	Operating Temperature	T_{OP}	-15		55	˚C	@Full Load
11	Storage Temperature	TStorage	-20	25	60	˚C	

Note

1. Test ambient condition is 25˚C.
2. Maximum output power and efficiency depends on ambient temperature. Maximum output power and efficiency maybe decay in high ambient temperature environment.