

## Data Sheet

### BV2021-8

#### LonWorks FT/LP Compatible Communications Transformer

##### Description

The *BV2021-8* is a Communications Transformer compatible with LonWorks Free Topology and Link Power networks using the ISO/IEC 14908-1 (ANSI/CTA-709.1-D or EN 14908-1) Control Network Protocol.

Originally, the *BV2021-8* was designed to be used with the Echelon FT 5000 Smart Transceiver. However, it can be used with the FT 6050 Smart Transceiver as well as with current state-of-the-art microcontrollers that incorporate the FetLON stack.

Due to its very small size the *BV2021-8* may be used as an alternative to the FT-X3 Communications Transformer in a broad range of applications, especially within products where a small footprint of the whole LonWorks interface is a major product requirement.

The *BV2021-8* has been designed and tested according to the Echelon compatibility specification.

As a tribute to the small size of this surface-mounted part, the following deviations from the FT-X3 compatibility specification have to be observed:

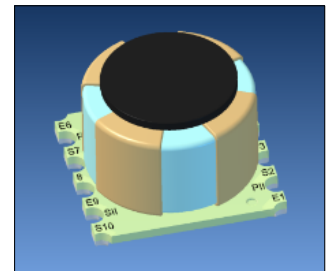
- **HiPot:** The isolation test voltage of the *BV2021-8* between network and the Free Topology communications controller is restricted to maximum 1500 VAC, 50/60 Hz, 60 seconds according to EN 60650 <sup>1</sup>.
- **Coupling Capacitance:** The maximum coupling capacitance between primary and secondary winding of the *BV2021-8* is 8 pF at 10 kHz and therefore exceeds the Echelon compatibility limit. This may cause ramifications for EMC which must be verified during EMC testing of the product.
- **Operating Temperature:** The *BV2021-8* is designed for a nominal operating temperature range of 0 ... +55°C which is sufficient for most indoor applications.

The maximum usable operating temperature range of this part is restricted to -25 ... +85°C.

##### Application Notes

While the *BV2021-8* is suitable for numerous of applications, e.g. building automation purposes, the customer has to verify and to decide if this part fits his specific product and application requirements due to the restrictions mentioned above.

Further design details of the *BV2021-8* are shown on the drawings on the next pages.

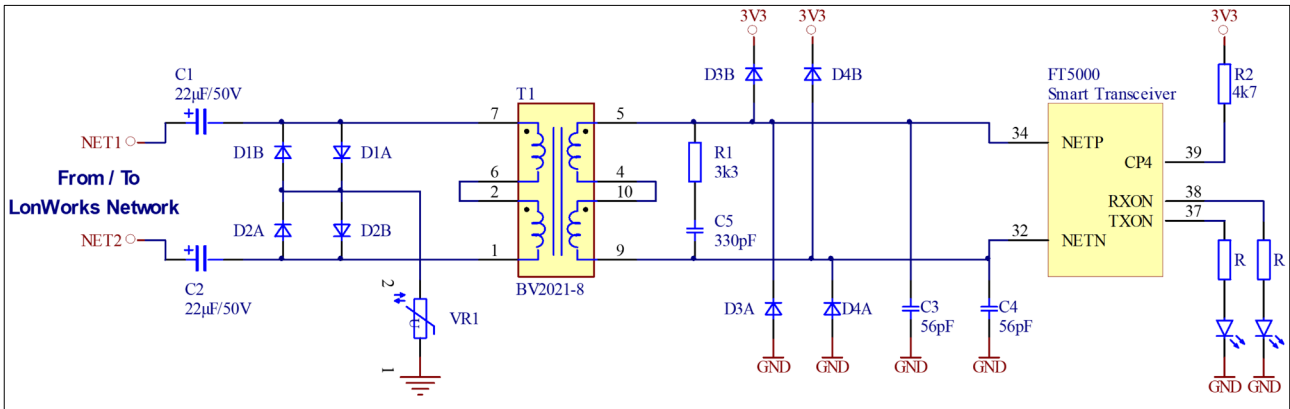


<sup>1</sup> As specified for the FT-X3 safety agency hazardous voltage barrier requirements are not supported.

Item number

BV2021-8

946-3-01-08-00



Name	Value	Description
VR1	470 V MOV, 5 mm, 40 pF (typical)	VARISTOR 300V RMS 3225 SMD, CU3225K300 or equivalent
C1, C2	22 µF, ≥ 50 V, polar	DC blocking capacitors
D1, D2		Differential network clamping diodes:
	BAV99, or 2 × 1N4148-equivalent	For up to 2 kV surge protection
	1N4934, 1N4935, FR1D, RS1D, RS1DB	For up to 6 kV surge protection
D3, D4	BAV99, or 2 × 1N4148-equivalent	ESD transient clamping diodes
R2	4.7 kΩ or 4.99 kΩ	Pull-up resistor
C3, C4	56 pF / 50 V	Common-mode noise immunity capacitors for EN 61000-4-6 Level 3
R1	3.3 kΩ	Recommendation:
C5	330 pF / 50 V	Use R1 and C5 for adaptation of the node's input impedance to the minimum value of locally powered nodes according to ISO/IEC 14908-2. A higher input impedance decreases the immunity to conducted high frequency interference (EN 61000-4-6), which may result in a loss of communication.

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