

GIGABIT DUAL TRANSFORMERS

For Use with 150 Ω Twinax Cable



- Compliant with ANSI X3T9.5, FC-PH-3 Fibre Channel Physical Layer Specification
- Compliant with IEEE 802.3z PMD
- Designed for fast rise-time and a low frequency cutoff of 2.5 MHz
- IC grade transfer-molded package withstands 235°C peak temperature profile

Electrical Specifications @ 25°C — Operating Temperature 0°C to 70°C

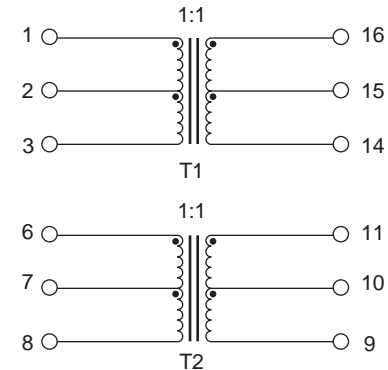
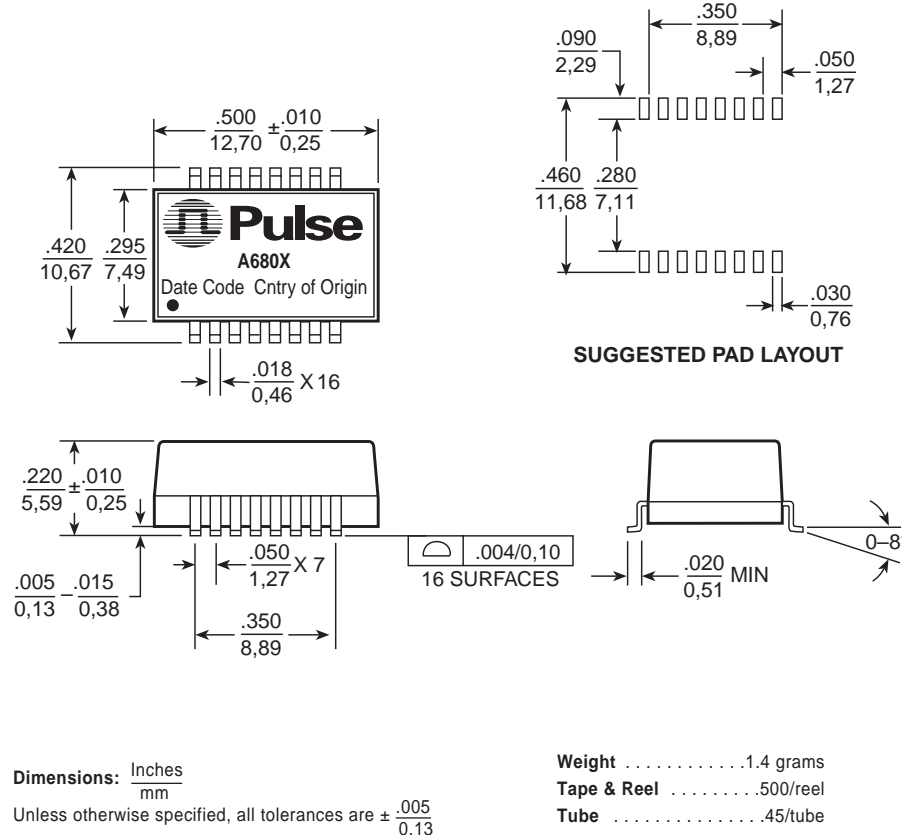
Part Number	Turns Ratio (±6%)	Primary Inductance OCL (μH MIN) (@ 20 mVrms, 100 kHz)	DCR (Ω MAX)	Hi-Pot (Vrms)	Rise Time (ps MAX) 20-80%	Low Frequency Cutoff (-3 dB)
A6801	1CT:1CT	5.50	0.21	1500	350	≤ 2.5 MHz
A6802	1:1	5.50	0.21	1500	280	≤ 2.5 MHz

Mechanical

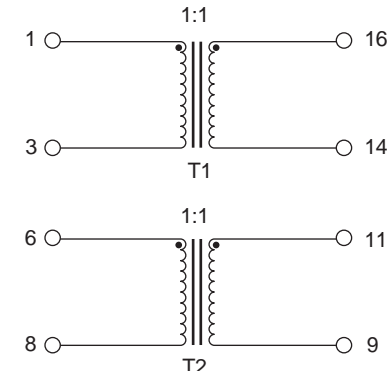
Schematics

A680X

A6801



A6802



NOTE: For lower speed Fibre Channel applications, please refer to application note on data sheet A101.

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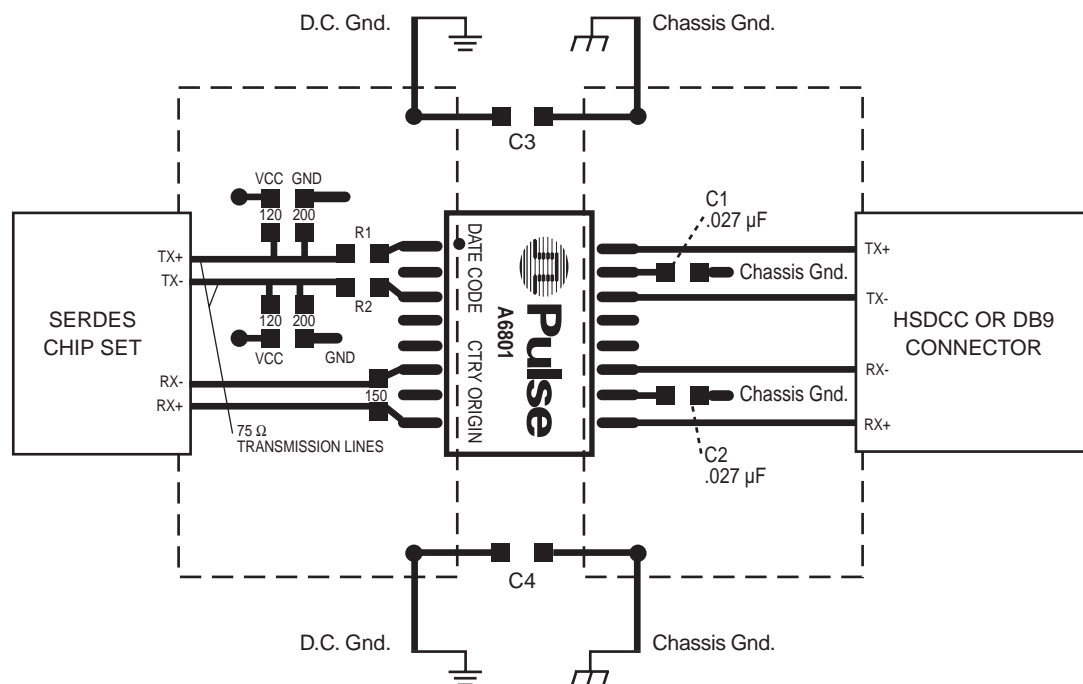
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Application Notes:

Pulse has designed Gigabit Dual Transformers specifically for point to point coupling to 150 Ω Twinax cable. The isolation transformers protect the station from static charges that may develop on the cable and prevent ground loop currents from being transferred between stations. The devices have also been designed to provide common mode rejection within the transmission band and

thus reduce EMI. The bandwidth of these devices minimizes data dependent jitter by providing fast signal rise times. The dual package allows connection of both the transmit and receive channels as shown in the application circuit below. Surface mount packaging also allows a cost effective solution. The transformers are available in either tubes or Tape & Reel packaging.



1. R1 and R2 values should be based upon the transmit amplitude required for the system. Placing a short (0 Ω) will result in maximum amplitude. However, doing so will result in distortion on the output due to impedance mismatch. For optimum design, R1 and R2 should be approximately 68 Ω for each leg. This will result in a -6.0 dB insertion loss (transmitter section). If this is too much insertion loss, then at least a 15 Ω for R1 and R2 is recommended.

Insertion Loss of Transmitter:

$$R_{eq} = R1 + R2 \text{ and } Z_0 = 150 \Omega$$

$$\text{Insertion Loss} = 20 \log [Z_0 / R_{eq} + Z_0]$$

2. When designing PCB layout, transmission line methods must be utilized to maintain return loss and signal integrity. Transformer should be located within 1" of cable connector.
3.
$$tr_{\text{transformer}} = \sqrt{[(tr_{\text{out}})^2 - (tr_{\text{in}})^2]}$$
4. The typical application circuit shown above is a suggested layout. Actual board layout may vary based upon individual applications and EMC concerns.

NOTE:

These gigabit dual transformers are packaged in tubes unless Tape & Reel is specified. When ordering, add the suffix "T" (i.e. A6801T) for "Tape & Reel" packaging in increments of 500.

For More Information :

Corporate

12220 World Trade Drive
San Diego, CA 92128
Tel: 619 674 8100
FAX: 619 674 8262
<http://www.pulseeng.com>
Quick-Facts: 619 674 9672

Europe

1 & 2 Huxley Road
The Surrey Research Park
Guildford, Surrey GU2 5RE
United Kingdom
Tel: 44 1483 401700
FAX: 44 1483 401701

Asia

150 Kampong Ampat
#07-01/02
KA Centre
Singapore 368324
Tel: 65 287 8998
FAX: 65 280 0080

Distributor

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