

**LINE MATCHING TRANSFORMER****P1200****Features**

- \* Industry Standard
- \* 12.6mm (0.5") seated height
- \* Vacuum encapsulated
- \* IEC 950, UL 1950 and EN 60950 Certified
- \* UL Recognized Component
- \* BAPT Certificate of Recognition

**Applications**

- \* V.32bis and V.22bis modems
- \* Line Matching
- \* Set Top Boxes
- \* Instrumentation
- \* Portable computers
- \* Fax / modems
- \* Voice

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**DESCRIPTION**

P1200 is the transformer of choice in medium-speed applications where good performance in a robust resin encapsulated package is required at a most competitive price.

P1200 meets international safety standards, being vacuum encapsulated and 100% tested to withstand 6.5kV DC.

P1200 is ideal for voice telecommunications applications and for data communications to V.32 bis (14,400 bits/second) data rates. With care, P1200 may be used for V.34 applications to 28,800 bits/second.

P1200 is specifically designed to be easily matched to both 600 ohm and complex impedance telephone lines, using a minimum of external components.

P1200 is certified to IEC 950, EN 60950, UL1950 and EN 41003. P1200 is a UL Recognized Component and is supported by a BAPT Certificate of Recognition and an IEC CB Test Certificate.



to Electronic Techniques  
(Anglia) Limited

## SPECIFICATIONS

### Electrical

At T = 25°C and as circuit fig. 2 unless otherwise stated.

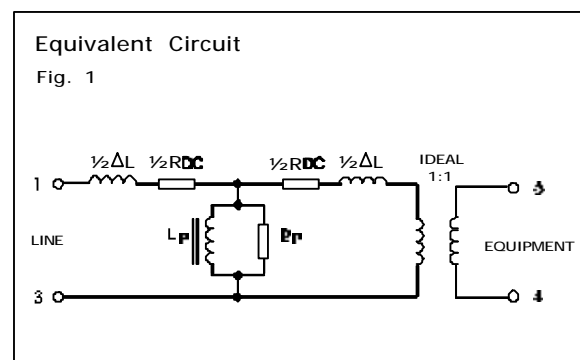
Parameter	Conditions	Min	Typ	Max	Units
Insertion Loss	f = 2kHz, R <sub>L</sub> = 560Ω	-	-	1.5	dB
Frequency response	LF-3dB cutoff	-	-	50	Hz
	HF-3dB cutoff	10	-	-	kHz
	200Hz - 4kHz	-	-	±0.2	dB
Return Loss	200Hz - 4kHz	18	-	-	dB
Third Harmonic Distortion <sup>(1)</sup>	450Hz 0dBm	-	-72	-60	dBm
Balance	DC – 5kHz Method TG25	80	-	-	dB
Saturation	Excitation 50Hz 250V rms. Output voltage across line	-	-	10	V rms
		-	-	65	V peak
Voltage isolation <sup>(2)</sup>	50Hz	3.88	-	-	kVrms
	DC	5.5	-	-	kV
Operating range:	Ambient temperature	-	-	-	-
Functional		0	-	+70	°C
Storage		-40	-	+125	°C

Lumped equivalent circuit parameters as Fig. 1

DC resistance, R <sub>DC</sub> <sup>(3)</sup>	Sum of windings	120	-	148	Ω
Leakage inductance ΔL		14.5	-	18	mH
Shunt inductance L <sub>p</sub> <sup>(4)</sup>	-43dBm 200Hz	2.8	4	7	H
	-43dBm 1kHz	-	2	-	H
Shunt loss R <sub>p</sub> <sup>(4)</sup>	-43dBm 200Hz	5	-	-	kΩ
	-43dBm 1kHz	7	-	-	kΩ

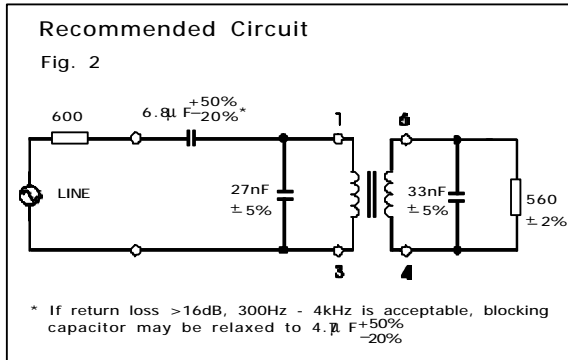
### Notes

1. Third harmonic typically exceeds other harmonics by 20dB.
2. Components are 100% tested at 6.5kV DC.
3. Caution: do not pass DC through windings. Telephone line current, etc. must be diverted using choke or semiconductor line hold circuit.
4. At signal levels greater than -20dBm, L<sub>p</sub> will increase and R<sub>p</sub> will decrease slightly but the effect is usually favourable to the return loss characteristic.



## MATCHING RECOMMENDATIONS

### 600Ω MATCH



### EUROPEAN CTR21 COMPLEX MATCH

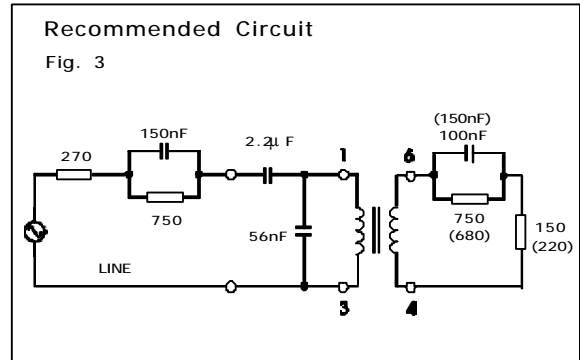
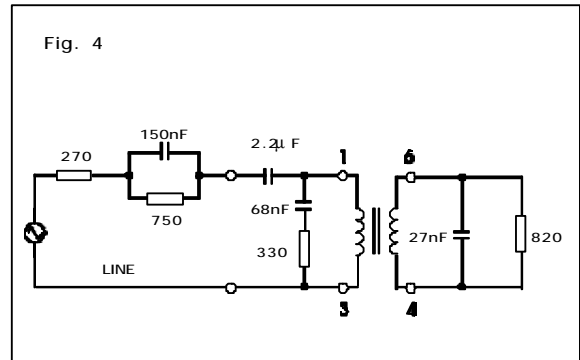
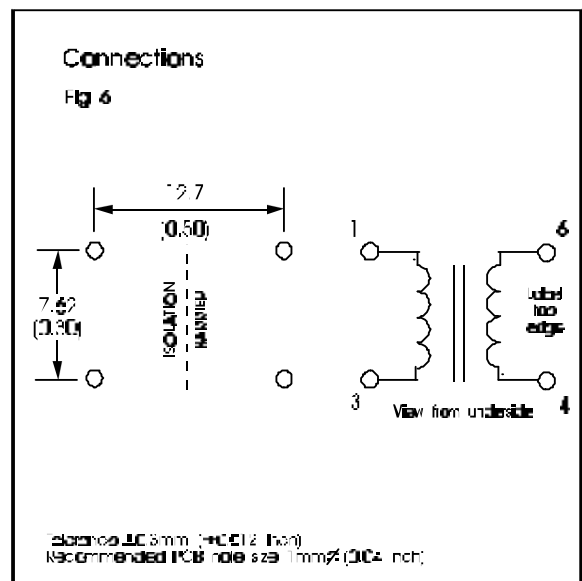
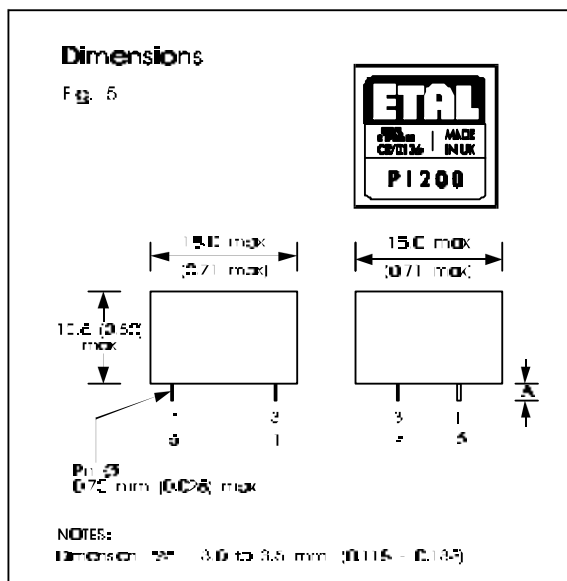


Figure 3 gives flat RX and TX responses against the CTR21 complex reference impedance (typically around  $\pm 0.5\text{dB}$  300Hz - 3.4kHz). Return loss is typically better than 20dB. The circuit values in parentheses give optimum flatness at a small sacrifice in return loss.

For circuits with existing board drillings, figure 4 gives good return loss (>20dB) and RX flatness against the CTR21 complex reference impedance, but TX flatness is degraded by the use of this topology.



## CONSTRUCTION



Dimensions shown are in millimetres (inches).

Geometric centres of outline and pin grid coincide within a tolerance circle of 0.6mm

Windings may be used interchangeably as primary or secondary.

**SAFETY**

Constructed in accordance with IEC 950:1991, EN60950:1992 (BS7002:1992) to amendment 5, supplementary insulation, and UL 1950 3rd Edition, reinforced insulation, 250Vrms maximum working voltage, flammability class V-0.  
Distances through solid insulation 0.4mm minimum.

**CERTIFICATION**

Certified under the IEC CB scheme (Certificate GB445W) to IEC 950:1991, up to amendment 4, sub-clauses 1.5, 1.5.1, 1.5.3, 2.2, 2.2.2, 2.2.3, 2.2.4, 2.9.2, 2.9.3, 2.9.4, 2.9.6, 2.9.7, 4.4, 4.4.3.2 (class V-0) and 5.3 for a maximum working voltage of 250Vrms, nominal mains supply voltage not exceeding 300Vrms and a maximum operating temperature of 70°C in Pollution Degree 2 environments, supplementary insulation.  
Recognized under the Component Recognition Program of Underwriters Laboratories Inc. to US and Canadian requirements CAN/CSA C22.2 No. 950-95/UL1950, Third Edition, including revisions through to revision date March 1, 1998, based on Fourth Amendment of IEC 950, Second Edition, maximum working voltage 250Vrms, Pollution Degree 2, reinforced insulation.

UL File number E203175.  
Approved and certified by BABT to EN 60950 and EN 41003.  
BABT Certificate of Recognition CR/0136.

Additionally, Profec Technologies certifies all transformers as providing voltage isolation of 3.88kVrms, 5.5kV DC minimum. All shipments are supported by a certificate of conformity to current applicable safety standards.

**ABSOLUTE MAXIMUM RATINGS**

(Ratings of components independent of circuit).

Short term isolation voltage (1s)	4.6kVrms, 6.5kV DC
DC current	100µA
Storage temperature	-40°C to +125°C
Lead temperature, 10s	260°C

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