

LOW COST, LOW DISTORTION LINE MATCHING TRANSFORMER

P3801

Features

- * Low Cost
- * Low distortion
- * 12.6mm (0.5") seated height
- * Industry Standard Pinout
- * Extended Frequency Response
- * IEC 950, UL 1950 and EN 60950 Certified
- * UL Recognized Component
- * BAPT Certificate of Recognition
- * High thermal stability
- * Directly replaces 9002VF, 671-8236M, MTLM 2001, EMIT-2001 and ATS-091/B

Applications

- * V.90 and V.92 modems
- * V.34 modems

DESCRIPTION

P3801 is intended for high-speed applications where low distortion at moderate power levels and very low voiceband frequencies is required at the most competitive price. At moderate power levels (e.g. -10dBm) performance to V.90/V.92 may be achieved.

P3801 has extended flat frequency response from 30Hz to 4kHz with very low levels of signal distortion at signal frequencies as low as 150Hz.

P3801 is electrically and mechanically compatible with P3034 and P2001 for supplementary insulation 250V working applications, and directly replaces 9002VF, 671-8236M, MTLM 2001, EMIT-2001, and ATS-091/B without changes to matching components, but with the added benefit of considerably improved thermal stability. P3801 also offers a drop-in performance upgrade path for P3800 and P1200.

P3801 uses patented design and construction methods to achieve excellent signal performance and safety isolation to international standards at truly low cost. P3801 is certified to EN 60950, IEC 950, UL1950 and EN 41003. P3801 is a UL Recognized Component and is supported by a BAPT Certificate of Recognition and an IEC CB Test Certificate.

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to Electronic Techniques
(Anglia) Limited

SPECIFICATIONS

Electrical

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

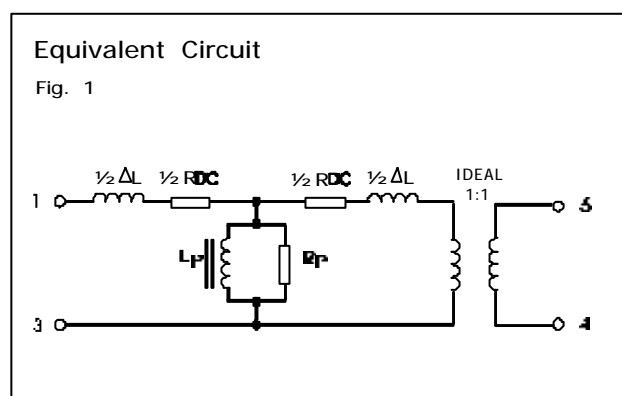
Parameter	Conditions	Min	Typ	Max	Units
Insertion Loss	f = 2kHz, R _L = 560Ω	-	-	1.5	dB
Frequency response	200Hz - 4kHz	-	-	±0.2	dB
Return Loss	200Hz - 4kHz	18	-	-	dB
Third Harmonic Distortion ⁽¹⁾	150Hz - 10dBm	-	-90	-	dBm
	600Hz - 10dBm	-	-100	-	dBm
Voltage isolation ⁽²⁾	50Hz	2.12	-	-	kVrms
	DC	3.0	-	-	kV
Operating range: Functional Storage	Ambient temperature	0	-	+70	°C
		-40	-	+85	°C

Lumped equivalent circuit parameters as Fig. 1

DC resistance, R _{DC} ⁽³⁾	Sum of windings	120	-	148	Ω
Leakage inductance ΔL		16	-	19.5	mH
Shunt inductance L _p ⁽⁴⁾	-43dBm 200Hz	6	-	-	H
Shunt loss R _p ⁽⁴⁾	-43dBm 200Hz	12	-	-	kΩ

Notes

1. Third harmonic typically exceeds other harmonics by 20dB.
2. Components are 100% tested at 3.25kV 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_p will increase and R_p will decrease slightly but the effect is usually favourable to the return loss characteristic.



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MATCHING RECOMMENDATIONS

600Ω MATCH

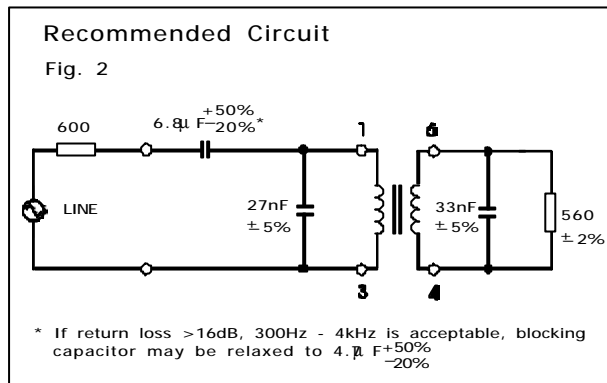
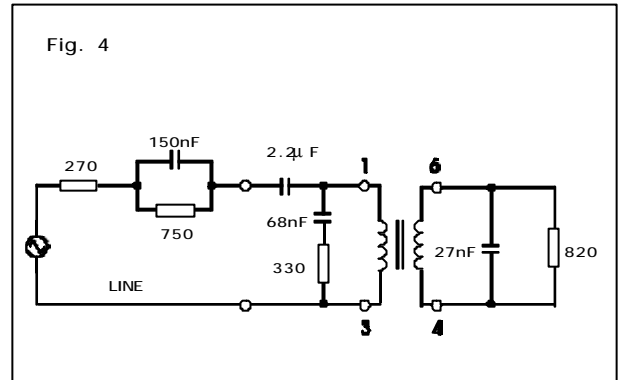
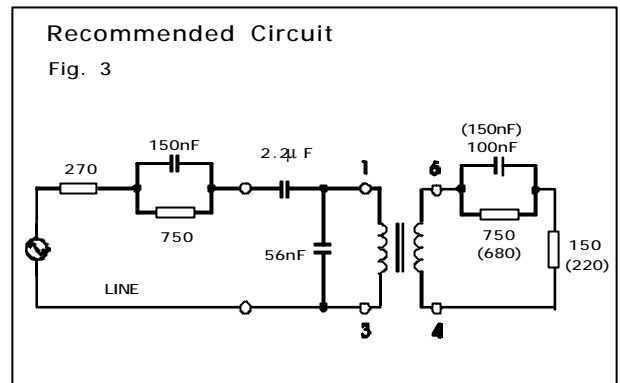


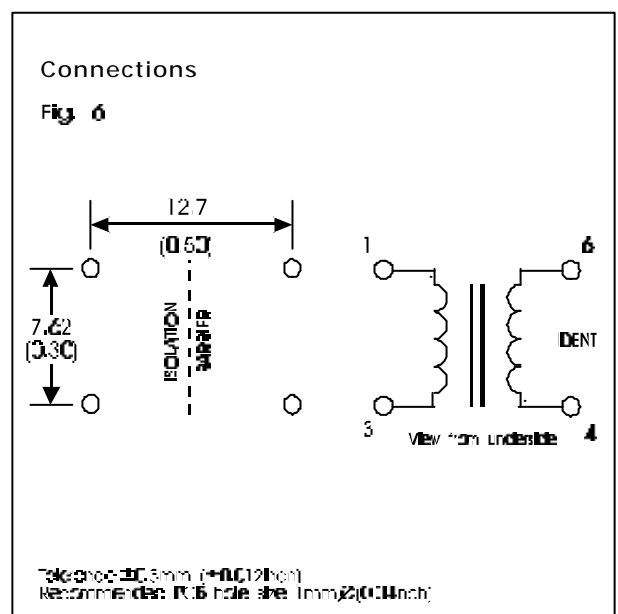
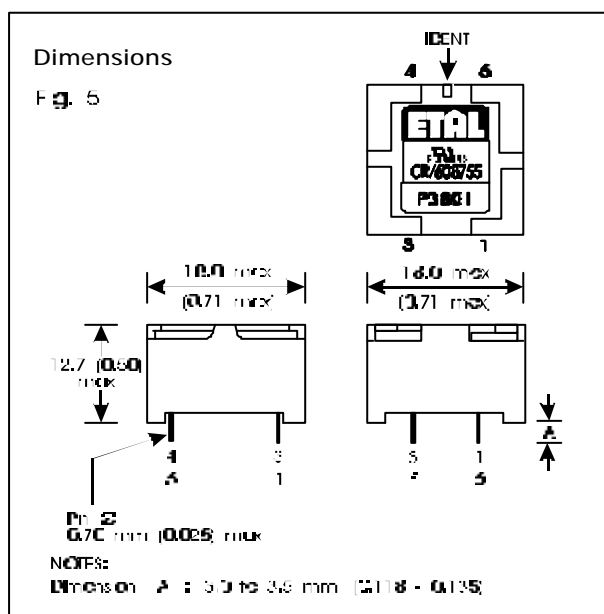
Figure 3 gives flat RX and TX responses against the CTR21 complex reference impedance (typically around $\pm 0.5\text{dB}$ 300Hz - 3.4kHz). Return loss is typically better than 20dB. The circuit values in parentheses give optimum flatness at a small sacrifice in return loss.

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.

EUROPEAN CTR21 COMPLEX MATCH



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), supplementary insulation, 250Vrms maximum working voltage, flammability class V-0.

There are no special installation requirements (beyond attending to usual PCB track separations) since the integral cover provides supplementary insulation from its external faces to internal core and windings.

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, 2.2.3, 2.2.4, 2.9.2, 2.9.3, 2.9.4, 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.

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, supplementary insulation.

UL File number E203175.
Approved and certified by BABT to EN 60950 and EN 41003.
BABT Certificate of Recognition 608755

Additionally, Profec Technologies certifies all transformers as providing voltage isolation of 2.12kVrms, 3kV 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)	2.12kVrms 3.0kVDC
DC current	100µA
Storage temperature	-40°C to +85°C
Lead temperature, 10s	260°C

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P3801 design and construction are protected by patents and registered design.
British Patent No. 2340667.
UK Registered Design No. 2077360.
French Registered Design No. 991512.
Germany Registered Design 49902311.0.
United States Registered Design 426, 815.
Other patents and registered designs pending.

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ISO 9001
FM 25326

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