

LOW COST, LOW INSERTION LOSS LINE MATCHING TRANSFORMER

P3303

Features

- * Low Cost
- * Low Insertion Loss, <1dB
- * 12.6mm (0.5") Seated Height
- * Industry Standard Pinout
- * IEC 950, UL 1950 and EN 60950 Certified
- * UL Recognized Component
- * BAPT Certificate of Recognition
- * Extended Frequency Response
- * Flat TX and RX Responses
- * Simple Matching
- * High Thermal Stability

Applications

- * Voice
- * V.22bis Modems
- * SLIC Interfaces
- * PABX
- * Instrumentation

DESCRIPTION

P3303 is intended for voice and low speed data applications where good distortion at moderate power levels is required with low insertion loss.

P3303 uses patented design and construction methods to achieve excellent signal performance and safety isolation to international standards at truly low cost, making it the component of choice for low loss voice and data applications throughout the world. P3303 is certified to EN 60950, IEC 950, UL1950 and EN 41003. P3303 is a UL Recognized Component, and is supported by a BAPT Certificate of Recognition and an IEC CB Test Certificate.

P3303 has exceptionally flat frequency response from 100Hz to 10kHz, a 3dB bandwidth of typically 90kHz and requires only the very simplest of matching to achieve good return loss and transhybrid loss across the voiceband, with low levels of signal distortion at signal frequencies as low as 200Hz.

P3303 exhibits stable electrical characteristics over its full operating temperature range.

P3303 has very low leakage inductance and winding resistances and is designed for use with AMD QSLAC devices.

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to Electronic Techniques
(Anglia) Limited

SPECIFICATIONS

Electrical

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

Parameter	Conditions	Min	Typ	Max	Units
Insertion Loss	f = 2kHz	-	0.9	-	dB
Frequency Response	LF -3dB cutoff	-	30	-	Hz
	HF -3dB cutoff	-	90	-	kHz
	200Hz – 4kHz	-	-	±0.1	dB
Return Loss	200Hz – 4kHz	-	20	-	dB
Transhybrid Loss	200Hz – 4kHz	-	30	-	dB
Third Harmonic Distortion ^{(1) (3)}	300Hz 0dBm in line	-	-70	-	dBm
	600Hz -10dBm in line	-	-95	-	dBm
Signal Handling ⁽³⁾	300Hz	-	3.5	-	Vrms
	200Hz	-	2.5	-	Vrms
Voltage Isolation ⁽²⁾	50Hz	2.12	-	-	kVrms
	DC	3.0	-	-	kV
Operating Range:	Functional	0	-	+70	°C
	Storage	-40	-	+85	°C

Lumped equivalent circuit parameters as Fig. 1

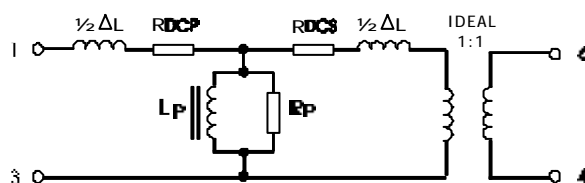
DC resistance ⁽³⁾	Primary resistance R_{DCP}	34	-	42	Ω
	Secondary resistance R_{DCS}	48	-	58	Ω
Leakage inductance, ΔL		1.7	-	2.8	mH
Shunt inductance, L_p ⁽⁴⁾	-43dBm 200Hz	4	6	-	H
Shunt loss, R_p ⁽⁴⁾	-43dBm 200Hz	8	10	-	k Ω

Notes:

1. Third harmonic typically exceeds other harmonics by 10dB.
2. Components are 100% tested at 3.25kVDC.
3. Caution: do not pass DC through windings. Telephone line current must be diverted using semiconductor line hold circuit or choke.
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.

Equivalent Circuit

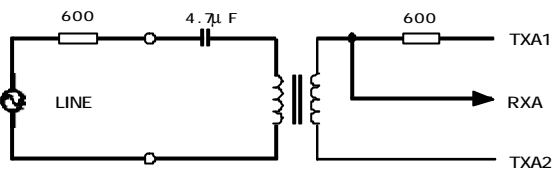
Fig. 1



MATCHING RECOMMENDATIONS

600Ω Test Circuit

Fig. 2

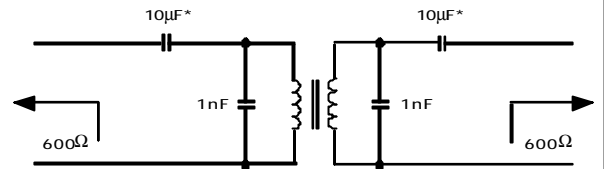


TXA1/TXA2 represent low impedance transmit outputs. RXA represents a high impedance receive input.

Transhybrid loss in specification table assumes TXA1 and TXA2 are balanced outputs. Other hybrid arrangements are possible.

600Ω Wideband Instrumentation

Fig. 3



* If no DC block required, one of these capacitors can be removed and the other set to 4.7μF, or, if preferred, both capacitors can be eliminated.

Insertion Loss: 1dB @ 2kHz

Frequency Response : ±0.2dB 100Hz – 20kHz

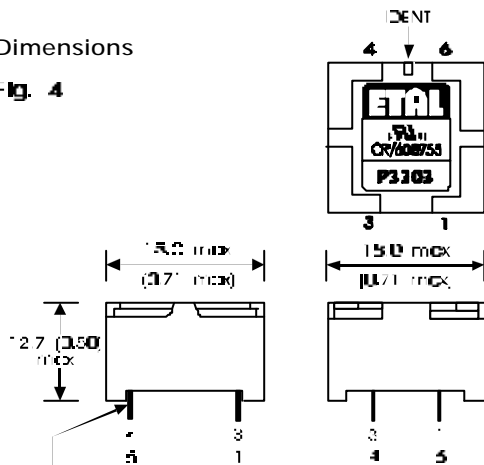
3dB Bandwidth >100kHz

Return Loss: 16dB 100Hz – 20kHz

CONSTRUCTION

Dimensions

Fig. 4



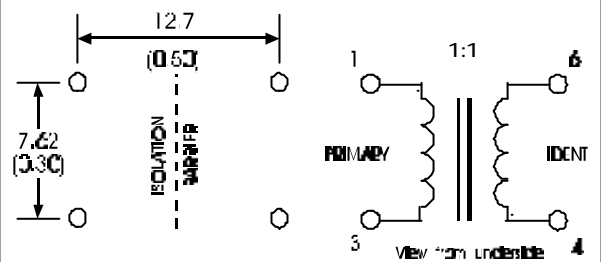
Pin 5
0.70 mm (0.028 inch)

NOTES:

Dimension 2: 0.0 to 0.0 mm (0.115 - 0.135)

Connections

Fig. 5



Telegraph: 0.3mm (0.012 inch)
Recommended: 0.6 hole size (0.024 inch)

Dimensions shown are in millimetres (inches).

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

Windings may be used interchangeably as primary or secondary.

Total weight typically 7g.

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SAFETY

Constructed in accordance with IEC 950:1991, EN 60950:1992 (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 180Vrms (creepage), 420V peak (clearance), 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, 3.0 kVDC
DC current	100µA
Storage temperature	-40°C to +85°C
Lead temperature, 10s	260°C

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P3303 design and construction are protected by patents and registered design.

British Patent No. 2333646.

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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