

ULTRA LOW DISTORTION MICROPROFILE SMD LINE MATCHING TRANSFORMER

P3181

Features

- * Surface Mount
- * Ultra low distortion
- * 7mm seated height
- * Vacuum encapsulated
- * IEC 950, UL 1950 and EN 60950 certified
- * UL Recognized Component
- * BABT Certificate of Recognition
- * CSA NRTL/C Certificate of Compliance

Applications

- * V.90 and V.92 (56kbps) modems
- * Portable computers
- * Fax/Modems

DESCRIPTION

P3181 is an ultra-low distortion microprofile transformer for applications where high performance and safety isolation to international standards are required in an extremely small case size.

Designed specifically as a surface mount device, the P3181 features a 7mm seated height and is offered in the same package as the now familiar P2781 and P3081.

Despite the subminiature size, the performance is superior to that of much larger components. The P3181 offers reinforced insulation, is ideal for data communications at very high data rates whilst capable of being matched to both 600Ω and complex impedance telephone lines.

P3181 incorporates innovative features (patents applied for) which enable data rates of 56kbps to be achieved.

P3181 is certified to IEC 950, EN 60950, EN 41003, and UL1950. P3181 is a UL Recognized Component, and is supported by a BABT Certificate of Recognition, a CSA Certificate of Compliance and an IEC CB Test Certificate.

Patents Pending



to Electronic Techniques
(Anglia) Limited

SPECIFICATIONS**Electrical**

At T = 25°C and as circuit Fig. 1 unless otherwise stated.

Parameter	Conditions	Min	Typ	Max	Units
Frequency response	30Hz - 4kHz	-	-	±0.2	dB
Return Loss	200Hz - 4kHz	16	-	-	dB
Third Harmonic Distortion ^{(1) (3)}	150Hz -10dBm in line	-	-90	-	dBm
Balance	DC - 5kHz Method TG25	80	-	-	dB
Voltage Isolation ⁽²⁾	50Hz DC	3.88 5.5	-	-	kVrms kV
Operating range: Functional Storage ⁽⁴⁾	Ambient temperature	-10 -40	- -	+85 +125	°C °C

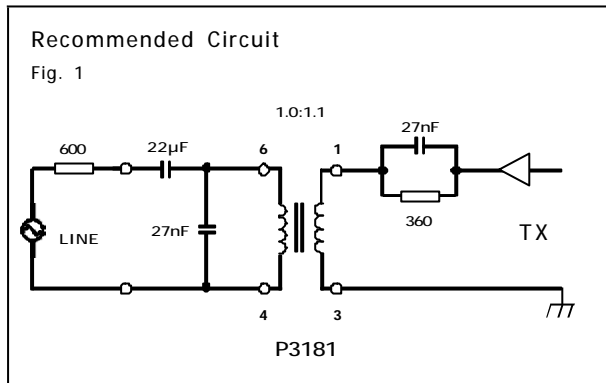
Notes

1. Third harmonic typically exceeds other harmonics by 10dB.
2. Components 100% tested at 6.5 kVDC.
3. **Caution:** Passing DC through windings will permanently increase distortion.
Telephone line current, etc. must be diverted using semiconductor line hold circuit.
4. Excludes shipping materials. Components are dry packed and sealed as shipped. Refer to Profec Technologies for appropriate storage conditions for sealed consignments.

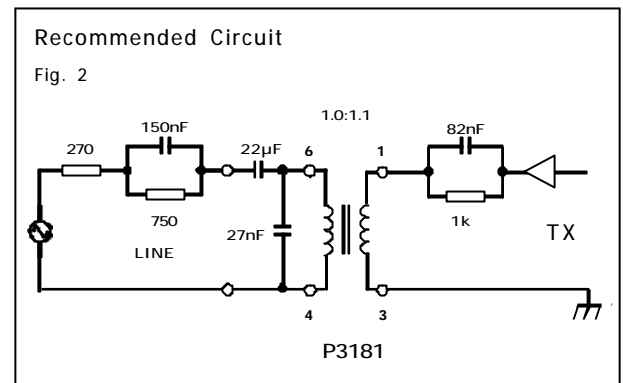
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MATCHING RECOMMENDATIONS

600Ω MATCH AND DISTORTION TEST CIRCUIT



EUROPEAN CTR21 COMPLEX MATCH



Note - Fig. 1:

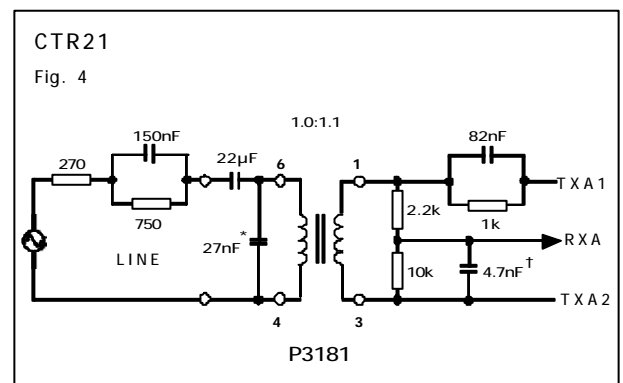
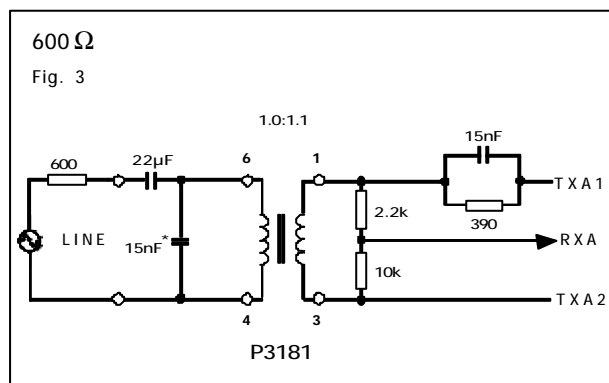
Typical distortion: excite from line at 150Hz to yield -10dBm @ 150Hz at line terminals.
Typical THD at line terminals will then be -90dBm (i.e. -80dBc).

For signals received from the line, the signal level present between terminals 1 and 3 of the transformer will be approximately 6dB below the signal sustained at the line terminals.

Note - Figs. 1 and 2:

As line side components (22μF, 27nF) are common to both 600Ω and complex matches, switching between matches can be performed solely on equipment side.

When driven from a balanced (differential) TX drive with unbalanced (single-ended) high impedance receiver, the following modifications can assist in giving good transhybrid loss (typically better than 18 dB across voiceband):



* If components on line side to be unchanged for 600Ω/CTR21, compromise on 22nF.

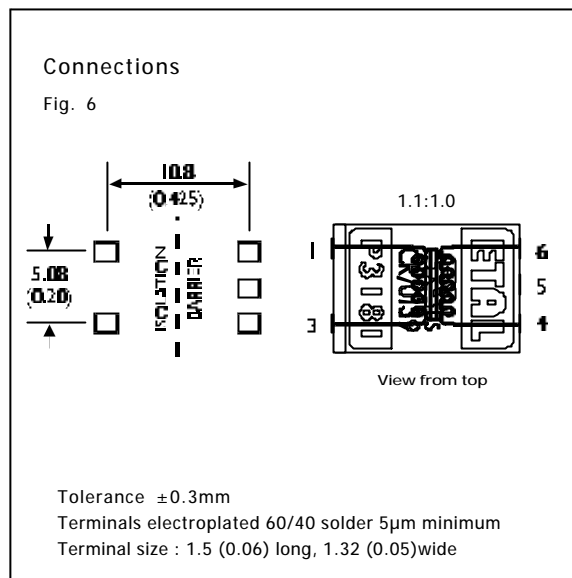
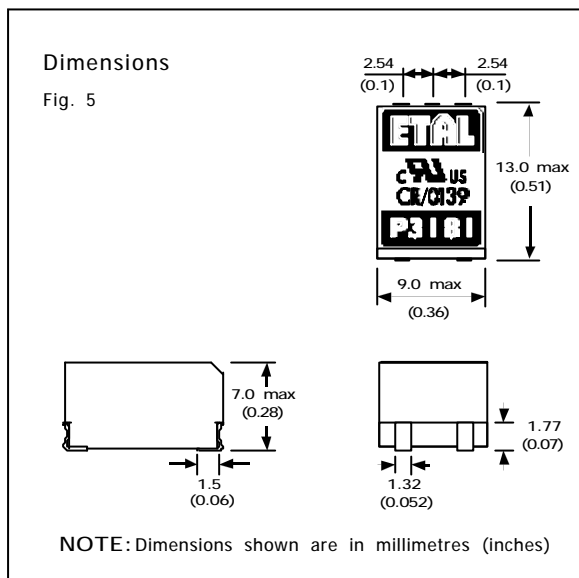
† 4.7nF can also be fitted on 600Ω circuit with only minor degradation.

Note - Figs. 1, 2, 3 and 4:

As P3181 transformer has a non-unity turns ratio, orientation in circuit should be observed

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CONSTRUCTION



Dimensions shown are in millimetres (inches).

Geometric centres of outline and pad grid coincide within a tolerance circle of $0.3\text{mm}\varnothing$.

Observe correct orientation in circuit.

SAFETY

Manufactured from materials conforming to flammability requirements of UL94V-0 and EN 60950:1992 (BS 7002:1992) sub-clause 1.2.13.2 (V-0).

Distance through reinforced insulation 0.4mm minimum.

Creepage and clearances in circuit are 7mm minimum where PCB pads do not exceed $3\text{mm}\varnothing$.

Constructed and fully encapsulated in accordance with EN 60950:1992 (BS 7002:1992) IEC950:1991 and BS EN 41003:1997 (reinforced), 250Vrms maximum working voltage.

CERTIFICATION

Certified by BSI to IEC 950:1991/A4:1996 (IEC CB Test Certificate No. GB441W) 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 250Vrms and a maximum operating temperature of $+85^\circ\text{C}$ in Pollution Degree 2 environment, reinforced insulation.

CAN/CSA C22.2 No. 950-95/UL1950, certified by CSA, 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.

CSA Certificate of Compliance 1107696 (Master Contract 1188107).

Certified by BABT to EN 60950.

BABT Certificate CR/0139.

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.

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ABSOLUTE MAXIMUM RATINGS

(Ratings of components independent of circuit).

Short term isolation voltage (2s)	4.6 kVrms, 6.5kVDC
DC current	100µA
Storage temperature	-40°C to +125°C
Soldering temperature	
Profile peak - either	260°C 10s
or	250°C 30s
or	240°C 60s

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P3181 and its associated circuit embodiment are the subjects of patent applications.

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