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**PRODUCT DATA SHEET****ULTRA LOW DISTORTION MICROPROFILE
SMD LINE MATCHING TRANSFORMER****P3181****Features**

- * Surface Mount
- * Ultra low distortion
- * 7mm seated height
- * Reinforced Insulation
- * Vacuum encapsulated
- * EN 41003 and EN 60950 certified
- * CSA NRTL/C certified
- * BABT Certificate of Recognition

Applications

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

DESCRIPTION

P3181 is an ultra-low distortion microprofile transformer for applications where high performance and safety isolation to the most exacting 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 fully 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 EN 60950, EN 41003, and CSA C22.2 no. 950-95/UL1950 and is supported by a BABT Certificate of Recognition.

Equipment incorporating P3181 is capable of approval worldwide.

Patents Pending





P3181

SPECIFICATIONS

Electrical

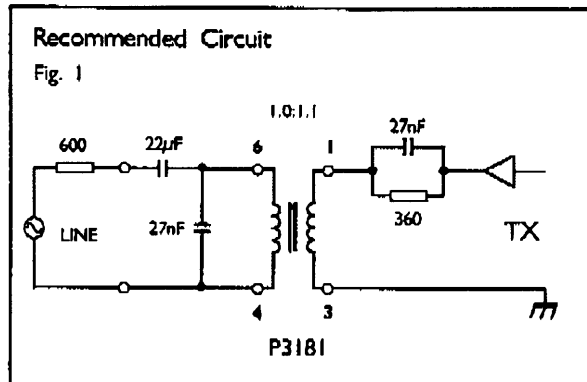
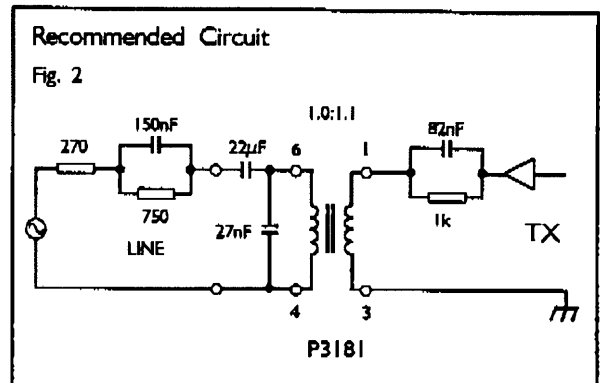
At T = 25°C and as circuit Fig. 1 unless otherwise stated.

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	- -	+70 +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 ETAL for appropriate storage conditions for sealed consignments.

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ETAL**P3181****MATCHING RECOMMENDATIONS****600Ω MATCH AND DISTORTION TEST CIRCUIT****EUROPEAN CTR21 COMPLEX MATCH****Note - Fig. 1:**

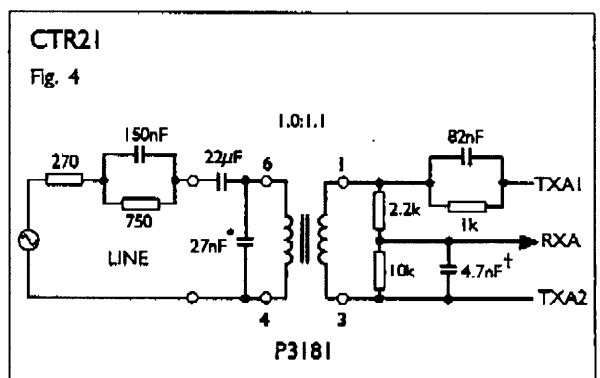
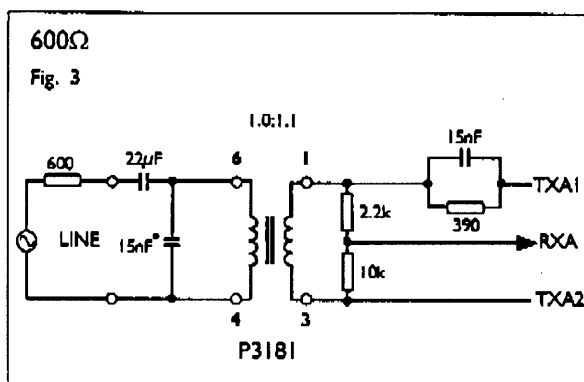
Typical distortion: excite from line at 150Hz to yield -10dBm @ 150Hz at line terminals.
Typical THD at line terminals will then be -90dBm (i.e. -80dBc).

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):



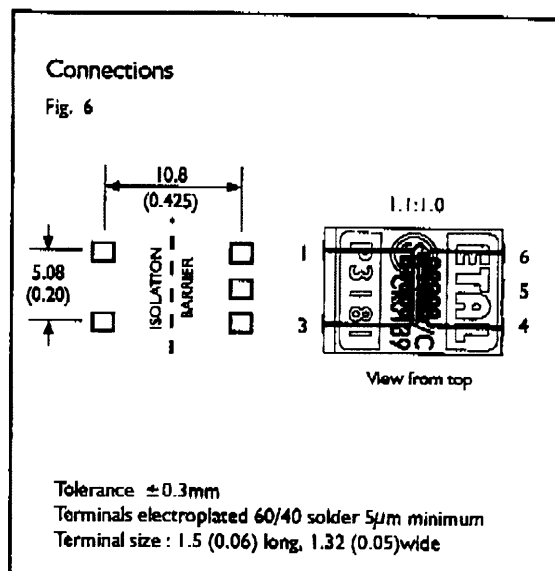
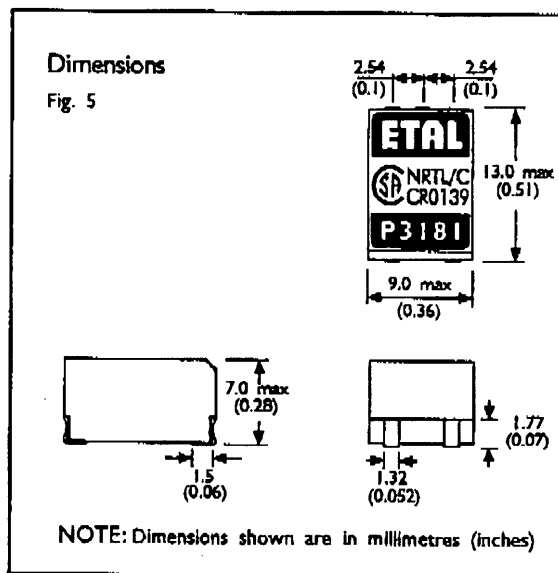
* If components on line side to be unchanged for 600Ω/CTR21, compromise on 22nF.

† 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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ETAL**P3181****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 (certificate 7536) to BS EN 41003:1997 sub-clauses 4.2.4 and 4.5.3; EN 60590:1992 (BS 7002:1992) and IEC950:1991 sub-clauses 2.2.2, 2.9.1, 2.9.7, 4.4.3 (Class V-0) and 5.3 for a maximum working voltage of 250V and a nominal mains supply voltage of 250V.

Approved and certified by BABT.

BABT Certificate of Recognition CR/0139.

CAN/CSA C22.2 no. 950-95/UL1950 certified by CSA. CSA Certificate of Compliance Certification Number LR110998.

Additionally, ETAL 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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ETAL**P3181****ABSOLUTE MAXIMUM RATINGS**

(Ratings of components independent of circuit).

Short term isolation voltage (2s)	4.6 kVrms, 6.5kVDC
DC current	100 μ A
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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Patents Pending**ETAL**

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