PRODUCT DATA SHEET

LOW COST MICROPROFILE SMD LINE MATCHING TRANSFORMER

P3191

Features

* Low Cost
* Surface Mount
* 7mm seated height
* Vacuum encapsulated
* IEC 60950, UL 1950 and EN 60950 certified
* UL Recognized Component
* BABT Certificate of Recognition
* CSA NRTL/C Certificate of Conformity
* Simple 600Ω match

Applications

* Telecommunications
* V.34 modems
* Portable computers
* Fax/Modems

DESCRIPTION

P3191 is a 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 P3191 features a 7mm seated height and is offered in the same package as the now familiar P2781.

Despite the subminiature size, the performance is superior to that of much larger components. The P3191 offers reinforced insulation, is ideal for data communications at high data rates whilst capable of being matched to both 600Ω and complex impedance telephone lines.

When used with 600Ω lines no external compensation components are required.

At moderate transmit power levels (e.g. -10dBm) performance to 33,600 bits/second may be achieved.

P3191 is certified to IEC 60950, EN 60950, EN 41003 and UL1950. P3191 is a UL Recognized Component, and is supported by a BABT Certificate of Recognition, a CSA Certificate of Conformity and an IEC CB Test Certificate.

E203175

1998
to Electronic Techniques (Anglia) Limited

SPECIFICATIONS

Electrical

At T = 25ºC and as circuit Fig. 2 unless otherwise stated.

Parameter	Conditions	Min	Typ	Max	Units
Insertion Loss	f = 2kHz	-	-	4.5	dB
Frequency response	-3dB LF cutoff	-	50	-	Hz
	-3dB HF cutoff	-	35	-	kHz
	200Hz - 4kHz	-	-	±0.2	dB
Return Loss	200Hz - 4kHz	16	-	-	dB
Third Harmonic Distortion (1)	600Hz -10dBm in line	-	-93	-	dBm
Balance	DC - 5kHz Method TG25	80	-	-	dB
Saturation	Excitation 50Hz 250Vrms.				
	Output voltage	-	-	10	Vrms
	across line	-	-	65	Vpeak
Voltage isolation(2)	50Hz	3.88	-	-	kVrms
	DC	5.5	-	-	kV
Operating range:	Ambient temperature				
Functional		-25	-	+85	ºC
Storage(5)		–40	-	+125	ºC
Humidity		-	-	95	%R.H.

Lumped equivalent circuit parameters as Fig. 1

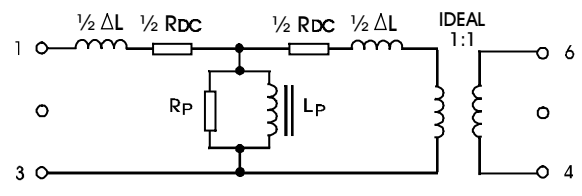
DC resistance, R_{DC}(3)	Sum of windings	270	-	340	Ω
Leakage inductance ΔL		-	5.6	-	mH
Shunt inductance Lp(4)	10mv 200Hz	2.4	-	-	H
Shunt loss Rp(4)	10mV 200Hz	7	-	-	kΩ

Notes

1. Third harmonic typically exceeds other harmonics by 20dB.
2. Components are 100% tested at 6.5 kVDC.
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 100mV, Lp will increase and Rp will decrease slightly but the effect is usually favourable to the return loss characteristic.
5. Excludes shipping materials. Components are dry-packed and sealed as shipped. Refer to Profec Technologies for appropriate storage conditions for sealed consignments.

Equivalent Circuit

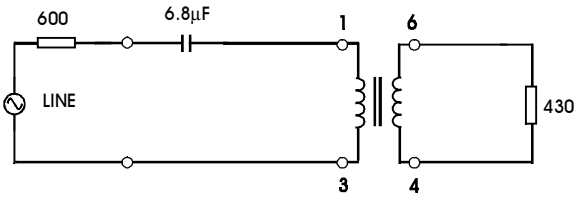
Fig. 1



MATCHING RECOMMENDATIONS

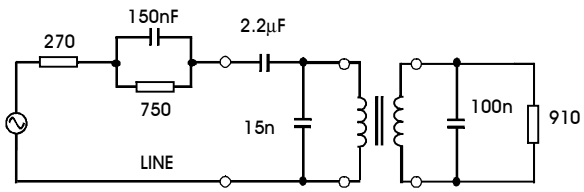
600Ω MATCH

Recommended Circuit
Fig 2



EUROPEAN CTR21 COMPLEX MATCH

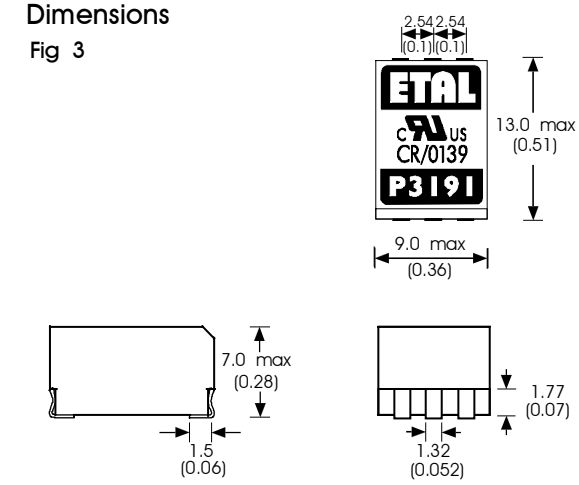
Recommended Circuit
Fig 3



In practice, the 910Ω load resistor will connect to a low output impedance TX driver. The 100nF capacitor should appear in parallel with the 910Ω load resistor (rather than in parallel with transformer winding) to obtain optimum TX flatness to line.

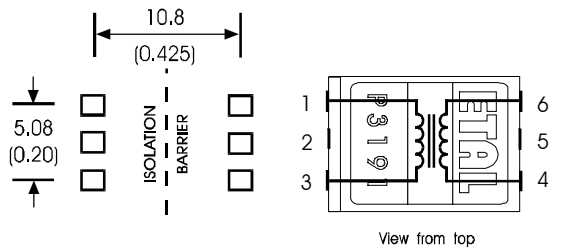
CONSTRUCTION

Dimensions
Fig 3



NOTE: Dimensions shown are in millimetres (inches)

Connections
Fig 4



Tolerance ±0.3mm
Terminals electroplated 60/40 solder 5µm minimum
Terminal size : 1.5 (0.06) long, 1.32 (0.05) wide

Dimensions shown are in millimetres (inches).
Geometric centres of outline and pad grid coincide within a tolerance circle of 0.3mm∅.
Windings may be used interchangeably as primary or secondary.

SAFETY

Manufactured from materials conforming to flammability requirements of UL94V-0.
Distance through reinforced insulation 0.4mm minimum.
Creepage and clearances in circuit are 7mm minimum where PCB pads do not exceed 3mmØ.
Construction complies with IEC 60950-1, EN 60950-1 and UL 1950, reinforced insulation, 250Vrms maximum working voltage.

CERTIFICATION

Certified by BSI to IEC 60950 Third Edition (1999) (IEC CB Test Certificate No. GB592W) sub-clauses 1.5, 1.5.1, 1.5.2, 2.9, 2.9.1, 2.9.2, 2.9.3, 2.9.4, 2.9.5, 2.10, 2.10.1, 2.10.2, 2.10.3, 2.10.3.1, 2.10.3.2, 2.10.4, 2.10.5, 2.10.5.1, 2.10.7, 2.10.8, 4.7, 4.7.3, 4.7.3.1, 4.7.3.4, (Flammability Class V-0) ,5.2, 5.2.1, and 5.2.2 for a maximum working voltage of 250Vrms, nominal mains supply voltage not exceeding 250Vrms and a maximum operating temperature of +85ºC 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.standards.

ABSOLUTE MAXIMUM RATINGS

(Ratings of components independent of circuit).

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

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