PRODUCT DATA SHEET

LOW DISTORTION LINE MATCHING TRANSFORMER

P3166

Features

* Low Distortion
* 12.6mm (0.5") seated height
* Extended Frequency Response
* IEC 950, UL 1950 and EN 60950 certified
* UL Recognized Component
* BABT Certificate of Recognition
* CSA NRTL/C Certificate of Compliance
* Flat TX and RX Responses
* High Thermal Stability

Applications

* V.90 and V.92 modems

DESCRIPTION

P3166 is intended for V.90 and V.92 (56kbps) modems and other high-speed applications where low distortion at high power levels and very low voiceband frequencies is required at a competitive price.

P3166 is mechanically and electrically compatible with industry standard P2001, and offers a drop-in upgrade path for circuits to operate at highest speeds, e.g. V.90 and V.92.

P3166 has extended flat frequency response from 30Hz to 4kHz with very low levels of signal distortion at signal frequencies as low as 150Hz.

P3166 also exhibits stable characteristics over its operating temperature range to maximize data throughput under varying environmental conditions without the need for modem retraining.

P3166 is certified to IEC 950, EN 60950, UL1950 and EN 41003. P3166 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.

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, R_L = 560Ω	-	1.0	-	dB
Frequency response	LF -3dB cutoff	-	10	-	Hz
	HF -3dB cutoff	10	-	-	kHz
	100Hz - 4kHz	-	-	±0.1	dB
Return Loss	200Hz - 4kHz	17	-	-	dB
Third Harmonic Distortion (1)	450Hz 0dBm in line	-	-85	-83	dBm
	150Hz –3dBm	-	-80	-	dBm
Saturation	Excitation 50Hz 250Vrms.	-	-	10	Vrms
	Output voltage across line	-	-	65	Vpeak
Voltage isolation(2)	50Hz	3.88	-	-	kVrms
	DC	5.5	-	-	kV
Operating range:	Ambient temperature				
Functional		-10	-	+70	ºC
Storage		-40	-	+125	ºC
Humidity		-	-	95	%R.H.

Lumped equivalent circuit parameters as Fig. 1

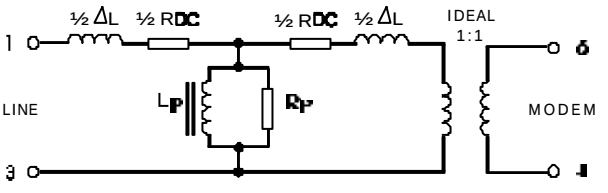
DC resistance R_{DC}(3)	Sum of windings	125	-	155	Ω
Leakage inductance ΔL		16	-	20	mH
Shunt inductance Lp(4)	200Hz 10mV	6	-	15	H
Shunt loss Rp(4)	200Hz 10mV	16	-	30	kΩ

Notes

1. Third harmonic typically exceeds other harmonics by 20dB.
2. Components are 100% tested at 6.5kV DC.
3. Caution: do not pass DC through windings. Telephone line current, etc. must be diverted using semiconductor line hold circuit.
4. At signal levels greater than -20dBm, Lp will increase and Rp will decrease slightly but the effect is usually favourable to the return loss characteristic.

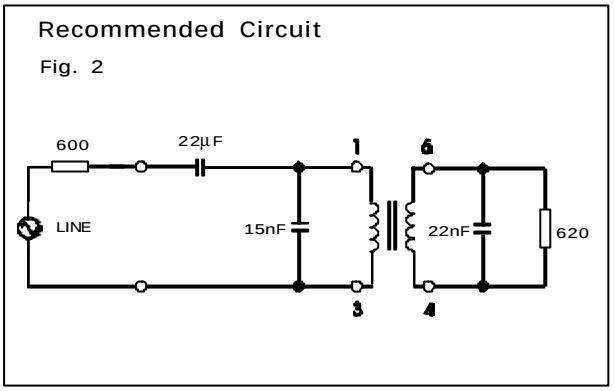
Equivalent Circuit

Fig. 1



MATCHING RECOMMENDATIONS

600Ω MATCH



EUROPEAN CTR21 COMPLEX MATCH

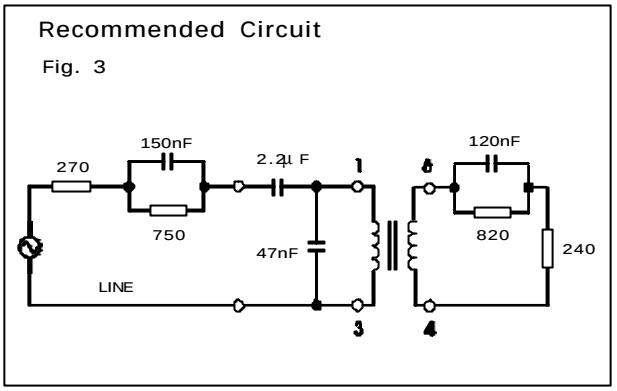
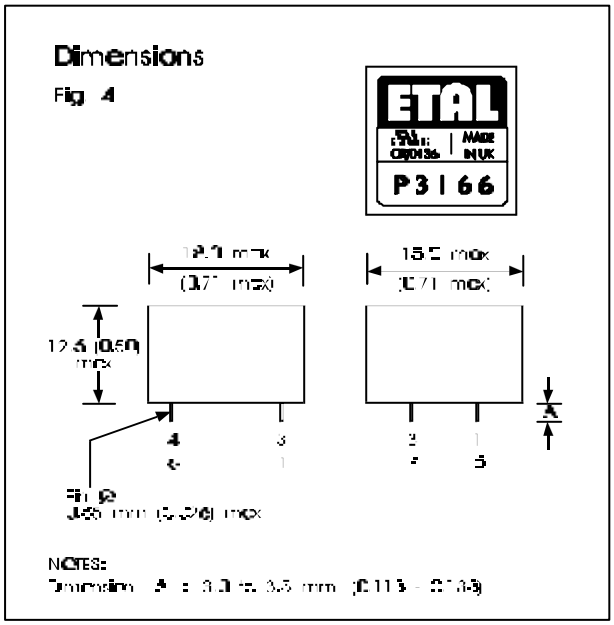
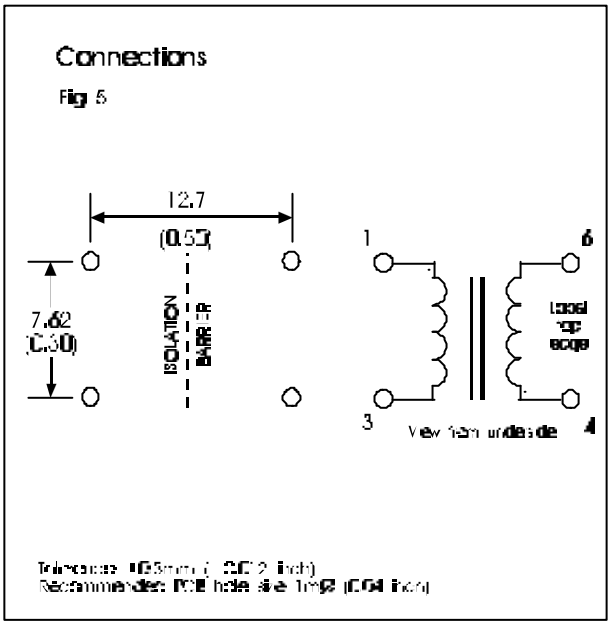


Figure 3 gives flat RX and TX responses against the reference impedance (typically around ±0.4dB 30Hz - 4kHz). Return loss is typically better than 17dB.

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) to amendment 5, supplementary insulation, and UL 1950 3rd Edition, reinforced insulation, 250Vrms maximum working voltage, flammability class V-0.
Distances through solid insulation 0.4mm minimum.

CERTIFICATION

Certified under the IEC CB scheme (Certificate GB442W) to IEC 950:1991, up to amendment 4, 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 300Vrms and a maximum operating temperature of 70ºC in Pollution Degree 2 environments, supplementary insulation.
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, reinforced insulation.

UL File number E203175.
CSA Certificate of Compliance 1107696 (Master Contract 188107).
Approved and certified by BABT to EN 60950 and EN 41003.
BABT Certificate of Recognition CR/0136.

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.

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
Lead temperature, 10s	260ºC

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ISO 9001
FM 25326

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