MICROPROFILE SMD LINE MATCHING TRANSFORMER

P3188

Features

* Surface Mount
* Lead-free (Pb-free)
* RoHS compliant
* 7mm seated height
* Vacuum encapsulated
* IEC 60950 and UL 60950 certified
* UL Recognized Component
* Matches directly to 600Ω lines

Applications

* Telecommunications
* V.22bis modems
* Voice
* Instrumentation

DESCRIPTION

P3188 is a microprofile transformer for applications where high performance and safety isolation to international standards are required in an extremely small case size.

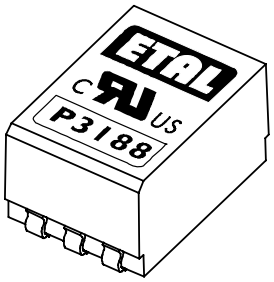
Designed specifically as a surface mount device, the P3188 features a 7mm seated height and is vacuum encapsulated and tested to 6500VDC. The part is compliant with RoHS Directive 2002/95/EC, and suitable for lead-free and conventional placement and reflow.

P3188 offers fully reinforced insulation, is ideal for voice telecommunications and low speed data communications, and can be matched to both 600Ω and complex impedance telephone lines.

600Ω telephone lines are matched directly by P3188 without external compensation components.

In instrumentation applications, the P3188 can provide wideband frequency response from 50Hz to 50kHz.

P3188 is certified to IEC 60950 and UL 60950. P3188 is a UL Recognized Component, and is supported by an IEC CB Test Certificate.



Pb
RoHS
COMPLIANT

SPECIFICATIONS

Electrical

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

Parameter	Conditions	Min	Typ	Max	Units
Insertion Loss	f = 2kHz	-	-	3.5	dB
Frequency response	200Hz - 4kHz	-	-	±0.2	dB
Return Loss	200Hz - 4kHz	18	-	-	dB
Distortion (1)	f = 450Hz 0dBm in line, 3rd Harmonic	-	-	-50	dBm
Balance	DC - 5kHz Method TG25	80	-	-	dB
Saturation	Excitation 50Hz 250Vrms. Output voltage across line	- -	- -	10 65	Vrms Vpeak
Voltage isolation(2)	50Hz DC	3.88 5.5	- -	- -	kVrms kV
Operating range: Functional Storage(5) Humidity	Ambient temperature	 -25 -40 -	 - - -	 +85 +125 95	 °C °C %R.H.

Lumped equivalent circuit parameters as Fig. 1

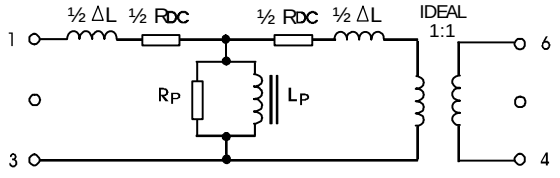
DC resistance, R_{DC}(3)	Sum of windings	168	-	206	Ω
Leakage inductance ΔL		2.9	-	3.5	mH
Shunt inductance Lp(4)	10mv 200Hz	1.1	-	3.2	H
Shunt loss Rp(4)	10mV 200Hz	3.5	-	10	kΩ

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. Handle in accordance with IPC/JEDEC J-STD-033 procedure for components classified as IPC/JEDEC J-STD-020 Moisture Sensitivity Level 5a.

Equivalent Circuit

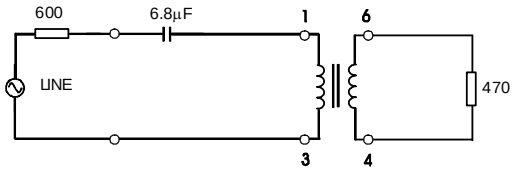
Fig. 1



MATCHING RECOMMENDATIONS

600Ω MATCH

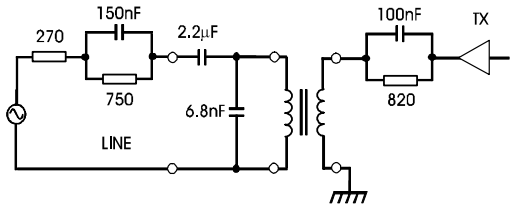
Recommended Circuit
Fig 2



To extend matching and frequency response beyond 30kHz add 4.7nF between pins 1 and 3, and 4.7nF between pins 4 and 6.

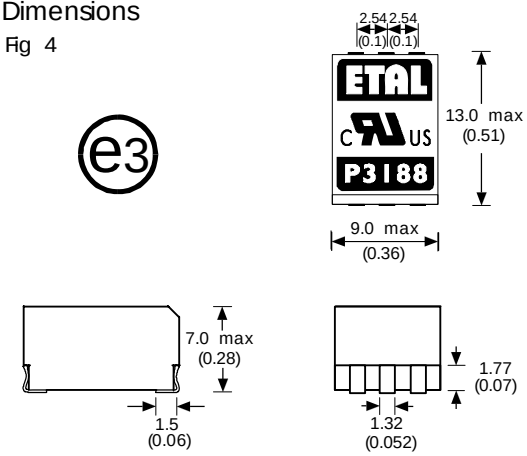
EUROPEAN CTR21 COMPLEX MATCH

Recommended Circuit
Fig 3



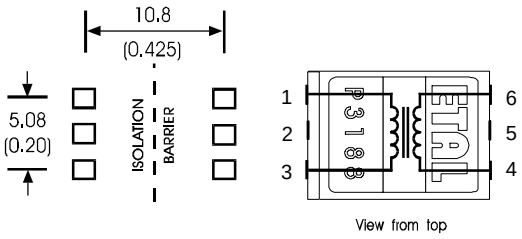
CONSTRUCTION

Dimensions
Fig 4



NOTE: Dimensions shown are in millimetres (inches)

Connections
Fig 5



Tolerance ± 0.3mm
Terminals electroplated pure tin (Sn) 5µm minimum.
JESD97 category = e3.
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 0.3mmØ.
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 60950-1, reinforced insulation, 250Vrms maximum working voltage.

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	260°C 10s

Recommended peak body temperature 245°C in accordance with IPC/JEDEC J-STD-033.

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 +85°C in Pollution Degree 2 environment, reinforced insulation.

Recognized under the Component Recognition Program of Underwriters Laboratories Inc. to US and Canadian requirements CAN/CSA C22.2 No. 60950-1-03/UL60950-1, First Edition, based on IEC 60950-1, First Edition, maximum working voltage 250Vrms, Pollution Degree 2, reinforced insulation.

UL File number E203175.

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.

ORDERING CODE

P3188□□

TR = Tape and Reel
(Blank) = Bulk in tubes.

Carrier tape width 24mm,
500 parts per 13” reel.

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British Patent No. 2283195
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European Patent No. 0725719

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E203175

ISO 9001
FM 25326

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