

**PRODUCT DATA SHEET**

**LOW DISTORTION  
LINE MATCHING TRANSFORMER**

**9035**

**Features**

- \* Low Distortion
- \* Lead-free (Pb-free)
- \* RoHS compliant
- \* 12.6mm (0.5") Seated Height
- \* Industry Standard Pinout
- \* IEC 60950 and UL 60950 Certified
- \* UL Recognized Component
- \* Extended Frequency Response
- \* Flat TX and RX Responses
- \* Simple Matching
- \* Low Insertion Loss
- \* Vacuum encapsulated

**Applications**

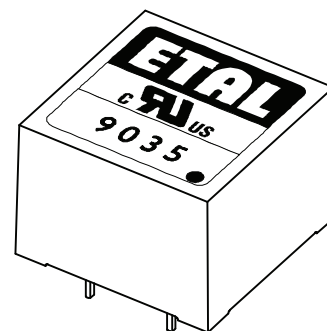
- \* V.90 and V.92 Modems
- \* V.34 Modems
- \* Fax Machines
- \* Instrumentation

**DESCRIPTION**

9035 is intended for V.90 and V.92 (56kbps) modems and other high-speed applications where ultra-low distortion at moderate power levels and very low voiceband frequencies is required at a competitive price.

9035 is completely lead-free, compliant with RoHS Directive 2002/95/EC, and suitable for lead-free and conventional processing.

9035 uses patented design and construction methods to achieve excellent signal performance and safety isolation to international standards. 9035 is certified to IEC 60950 and UL 60950. 9035 is a UL Recognized Component and is supported by an IEC CB Test Certificate.



**RoHS**  
COMPLIANT



## SPECIFICATIONS

### Electrical

At T = 25 °C and with 600Ω source and load unless otherwise stated.

Parameter	Conditions	Min	Typ	Max	Units
Insertion Loss	f = 2kHz	-	-	1.4	dB
Frequency Response	100Hz – 4kHz	-	-	±0.04	dB
Return Loss	300Hz – 4kHz, circuit figure 2.	25	-	-	dB
Third Harmonic Distortion <sup>(1)</sup>	200Hz -10dBm in line	-	-89	-75	dBm
Voltage Isolation <sup>(2)</sup>	50Hz	2.12	-	-	kVrms
	DC	3.0	-	-	kV
Operating Range:	Functional	0	-	+70	°C
	Storage	-40	-	+85	°C

Lumped equivalent circuit parameters as Fig. 1

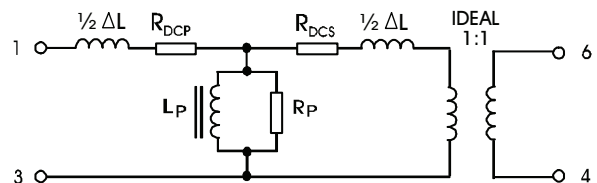
DC resistance <sup>(3)</sup>	Primary resistance R <sub>DCP</sub>	74	-	89	Ω
	Secondary resistance R <sub>DCS</sub>	104	-	125	Ω
Leakage inductance, ΔL		2.1	2.9	3.6	mH
Shunt inductance, L <sub>p</sub>	200Hz 250mV	7	9	-	H
Shunt loss, R <sub>p</sub>	200Hz 250mV	20	15	-	kΩ

#### Notes:

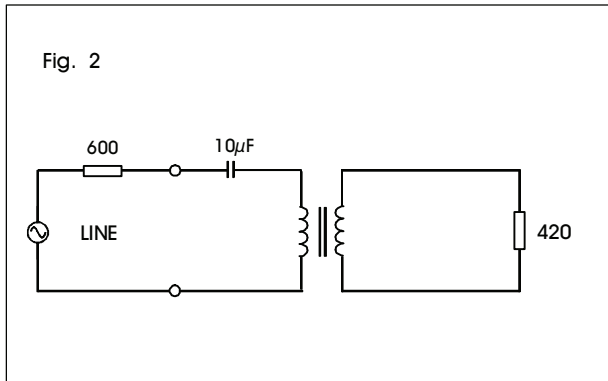
1. Third harmonic typically exceeds other harmonics by 10dB.
2. Components are 100% tested at 6.5kVDC.
3. Caution: do not pass DC through windings. Telephone line current must be diverted using semiconductor line hold circuit or choke.

#### Equivalent Circuit

Fig. 1



**REFERENCE CIRCUIT**



**CERTIFICATION**

Certified under the IEC CB Scheme (Certificate DK-15467) to IEC 60950-1:2005 sub-clauses 1.5, 1.7, 2.9, 2.10, 4.7 and 5.2 (Denmark, Finland, Germany, Norway, Ireland, Korea, Spain, Sweden, Switzerland, USA, Canada and UK national deviations) for a maximum working voltage of 250Vrms, nominal mains supply voltage not exceeding 250Vrms and a maximum operating temperature of 70°C in Pollution Degree 2 environments.

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

UL File number E203175.

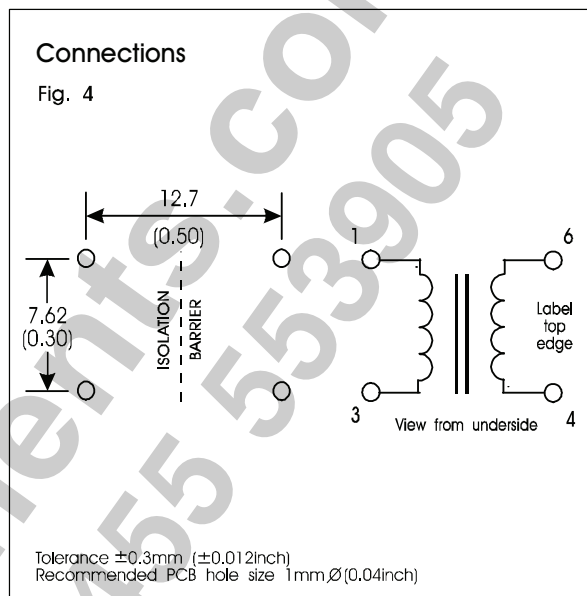
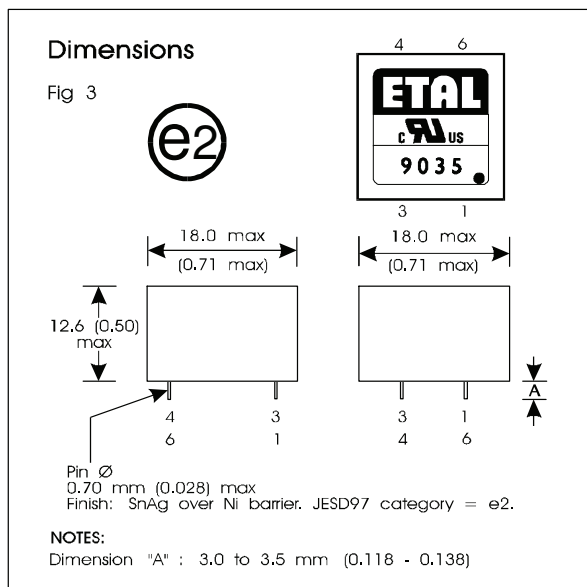
Additionally, ETAL certifies all transformers as providing voltage isolation of 3.88kVrms, 5kV DC minimum. All shipments are supported by a certificate of conformity to current applicable safety standards.

**SAFETY**

Constructed in accordance with IEC 60950-1, Second Edition, reinforced insulation, 250Vrms maximum working voltage, flammability class V-0.

Patented

**CONSTRUCTION**



Dimensions shown are in millimetres (inches).  
Geometric centres of outline and pin grid coincide within a tolerance circle of 0.6mm $\varnothing$ .  
Windings may be used interchangeably as primary or secondary.

**ABSOLUTE MAXIMUM RATINGS**

(Ratings of components independent of circuit).

Short term isolation voltage (1s)	4.6kVrms, 6.5kVDC
DC current	100 $\mu$ A
Storage temperature	-40 $^{\circ}$ C to +85 $^{\circ}$ C
Lead temperature, 10s	260 $^{\circ}$ C

**INTELLECTUAL PROPERTY RIGHTS**

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9035 design and construction are protected by patents.  
USA Patent No. 6, 344, 787

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