



PRODUCT SPECIFICATION · TRANSFORMER

TR-ATQ1914-40W

40 W Flyback Transformer — ATQ19/10 Core, PC95 Ferrite Material

This document is provided as buyer evidence of transformer design specification, winding structure, and material selection. Project-specific performance values must be confirmed via approved sample record and project drawing.

1. Document Information

Manufacturer P/N	TR-ATQ1914-40W
Product Type	40 W Flyback Transformer
Core	ATQ19/10 (planar-type EQ core)
Core Material	TDK PC95 high-frequency ferrite
Manufacturer	Shenzhen PROMAGTECH Co., Ltd. www.promagtech.com
Contact	zyong@promagtech.cn +86 135 3765 8938
Address	No. 22 Dongda Road, Dongkeng, Fenghuang St., Guangming District, Shenzhen, China
RoHS Compliance	Yes — all materials comply with RoHS and applicable environmental requirements

Evidence Note: This transformer design specification is published as buyer review evidence. It demonstrates design structure, winding configuration, and material specification for this transformer family. Turns ratio, DCR, leakage inductance, voltage isolation, and temperature rise values for any specific project must be confirmed against the approved sample record and project-specific drawing.

2. Core and Magnetic Circuit

Parameter	Specification	Notes
Core type	ATQ19/10 (EQ-style planar core)	Low-profile planar geometry; suited to flat wire winding
Core material	TDK PC95 MnZn ferrite	High-frequency, low-loss grade; optimised 100 kHz – 500 kHz
Effective AL value	Per PC95 / ATQ19 datasheet	Used to calculate turns for target magnetising inductance
Saturation flux (Bsat)	~510 mT @ 25°C; ~390 mT @ 100°C	PC95 grade; verify at operating temperature
Core loss Pcv	< 300 kW/m³ @ 100 kHz, 200 mT, 100°C	PC95 grade low-loss advantage at elevated temperature

Parameter	Specification	Notes
Gap	Per design specification	Adjusts magnetising inductance; contact engineering for details

3. Winding Structure Overview

The TR-ATQ1914-40W uses a planar / flat-wire winding structure to achieve low leakage inductance, high coupling coefficient, and low-profile physical dimensions. The winding arrangement is configured for flyback topology with primary and secondary isolation meeting the hi-pot requirement.

Winding	Function	Wire Type	Insulation	Notes
Primary (NP)	Flyback energy storage; gate drive reference	Flat copper wire, enamelled AIW class	PI film inter-layer	Turn count per design spec; contact engineering
Secondary (NS1)	Main output rectifier supply	Flat copper wire or foil	Inter-winding barrier	Turns set by required turns ratio NP:NS1
Secondary (NS2)	Auxiliary / bias output (if present)	Per project spec	Per project spec	Optional winding; present only if design requires
Shield (if used)	Reduce primary-secondary capacitance	Copper foil, one turn	PI tape	Connected to appropriate reference per design

Note on Winding Details: Specific turns count, wire gauge, and layer order for each project are defined in the project-specific approved drawing and sample record. Contact PROMAGTECH engineering with your input/output voltage, power, switching frequency, and isolation requirement to initiate a design review.

4. Electrical Specification References

The following parameters are design targets for the TR-ATQ1914-40W product family. Actual production values are measured on approved samples and confirmed in the project-specific sample acceptance record.

Parameter	Design Target / Reference	Test Condition	Notes
Rated power	40 W continuous	Per converter design	Single-stage flyback
Input voltage range	Per project specification	—	Consult engineering for wide-range vs. fixed input
Switching frequency	65 kHz – 200 kHz (design dependent)	—	PC95 core optimised for this range
Magnetising inductance (Lm)	Per design spec (µH)	100 kHz / 1.0 V, open secondary	Confirmed on approved samples
Leakage inductance (Lk)	< 2% of Lm (target)	100 kHz, short secondary	Critical for snubber and clamp circuit design
Primary DCR	Per project spec (mΩ)	25°C ambient	Lower with flat wire vs. round wire
Secondary DCR	Per project spec (mΩ)	25°C ambient	Per secondary winding
Turns ratio (NP:NS)	Per project spec	—	Set by input/output voltage ratio and duty cycle

Parameter	Design Target / Reference	Test Condition	Notes
Inter-winding hi-pot	AC 1500 V / 1 min (standard)	Primary to secondary	800V systems: AC 3000 V minimum
Insulation resistance	≥ 100 MΩ @ DC 500 V	Primary to secondary	—
Inter-turn test	AC 1000 V / 5 pulses, no anomaly	Per winding	—
Temperature rise (ΔT)	≤ 50°C above ambient (design target)	At rated load; natural convection	Confirm in thermal test on approved samples

5. Insulation System

Insulation Element	Material	Rating	Purpose
Primary layer insulation	Polyimide (PI) film	Class H / 180°C	Layer-to-layer within primary winding
Primary-to-secondary barrier	Triple-layer PI tape or equivalent	Reinforced insulation	Provides creepage and clearance for safety isolation
Secondary layer insulation	PI film or PET (per project)	Class F or H	Layer-to-layer within secondary winding
Core-to-winding clearance	Bobbin base / tape	Per hi-pot requirement	Maintains winding-to-core voltage margin
Encapsulation (if specified)	Epoxy potting (optional)	130°C min	For sealed/outdoor installation variants

For applications requiring 800V input or output isolation (e.g., EV OBC, high-voltage industrial), the inter-winding insulation must be reviewed against the working voltage and hi-pot test level. PROMAGTECH engineering will specify the correct barrier tape type, number of layers, and creepage distance for the project voltage class.

6. Material List

Item	Material / Grade	Specification	Temp. Class	RoHS
Core	TDK PC95 MnZn ferrite	ATQ19/10 geometry	N/A (ceramic)	Yes
Primary winding	Enamelled flat Cu wire (AIW class)	Per project spec	220°C	Yes
Secondary winding	Enamelled flat Cu or foil	Per project spec	220°C	Yes
Layer insulation	Polyimide (PI) film	Per project spec	220°C	Yes
Inter-winding barrier	Triple-layer PI tape	Per project spec	220°C	Yes
Bobbin / base	PPS or LCP resin	Per project spec	130°C+	Yes
Adhesive	Epoxy compound	3300 or equivalent	130°C	Yes

7. Applicable Standards

IEC 1007	Transformers and inductors for electronic/telecom equipment — measuring methods and test procedures
GB/T 15290-94	General specifications for power transformers and filter chokes for electronic equipment
GB 2423	Basic environmental testing procedures for electronic products
UL 1446	Standard for insulation systems certification
IPC 9592	Performance parameters for power conversion devices
IEC 62368-1	Audio/video, IT and communication technology equipment — safety requirements (reference for isolation class)
RoHS / REACH	Compliant — all materials meet applicable environmental regulations

8. Contact and Engineering Review

To initiate an engineering review for a custom flyback transformer based on this design, provide: converter topology, input voltage range, output voltage(s) and power, switching frequency, target magnetising inductance, leakage inductance limit, isolation voltage (working + hi-pot), temperature rise limit, cooling method, and package envelope.

Email	zyong@promagtech.cn
WhatsApp	+86 135 3765 8938
Website	www.promagtech.com/contact.html

Response Commitment: Preliminary design assessment within 24 hours of complete specification. Formal quotation within 3 business days. Sample delivery: 5–7 business days for standard custom designs.