



Mn-Zn

Large Size Ferrite Cores for High Power

PQ series

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**REMINDERS FOR USING THESE PRODUCTS**

Please be sure to read this manual thoroughly before using the products.

The products listed on this catalog are intended for use in general electronic equipment (AV equipment, telecommunications equipment, home appliances, amusement equipment, computer equipment, personal equipment, office equipment, measurement equipment, industrial robots) under a normal operation and use condition.

The products are not designed or warranted to meet the requirements of the applications listed below, whose performance and/or quality require a more stringent level of safety or reliability, or whose failure, malfunction or trouble could cause serious damage to society, person or property.

When using the products for specific purposes, please first make confirmations in areas such as safety, reliability, and quality.

Please understand that we are not in a position to be held responsible for any damage or the like caused by any use exceeding the range or conditions of this specification sheet or by any use in the specific applications.

- |   |  |
|---|--|
| (1) Aerospace/Aviation equipment                            | (8) Public information-processing equipment                                  |
| (2) Transportation equipment (electric trains, ships, etc.) | (9) Military equipment   |
| (3) Medical equipment                                       | (10) Electric heating apparatus, burning equipment                           |
| (4) Power-generation control equipment                      | (11) Disaster prevention/crime prevention equipment                          |
| (5) Atomic energy-related equipment                         | (12) Safety equipment  |
| (6) Seabed equipment  | (13) Other applications that are not considered general-purpose applications |
| (7) Transportation control equipment                        |  |

When using this product in general-purpose standard applications, you are kindly requested to take into consideration securing protection circuit/equipment or providing backup circuits, etc to ensure higher safety.

# Large Size Ferrite Cores for High Power

Product compatible with RoHS directive  
Halogen-free

## Overview of the PQ Series

### FEATURES

- Large size cores for transformers with large power outputs.
- Can also be used in reactors.

### APPLICATION

- Large size industrial equipment, transformers for consumer equipment
- Reactors


### PART NUMBER CONSTRUCTION

PE22	PQ	78	×	39	×	42
<b>Material</b>	<b>Core shape</b>	<b>Width</b>		<b>Height when assembled</b>		<b>Thickness</b>
PE22	PQ	78		39		42
PC40		107		87		70

### RANGE OF USE AND STORAGE TEMPERATURE

Temperature range	
Operating temperature (°C)	Storage temperature (°C)
-30 to +105	-30 to +85

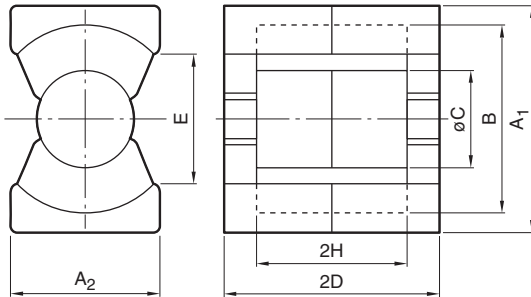
- RoHS Directive Compliant Product: See the following for more details.<https://product.tdk.com/info/en/environment/rohs/index.html>
- Halogen-free: Indicates that Cl content is less than 900ppm, Br content is less than 900ppm, and that the total Cl and Br content is less than 1500ppm.

 Please be sure to request delivery specifications that provide further details on the features and specifications of the products for proper and safe use.  
Please note that the contents may change without any prior notice due to reasons such as upgrading.

## Mn-Zn PQ Cores



## SHAPES AND DIMENSIONS



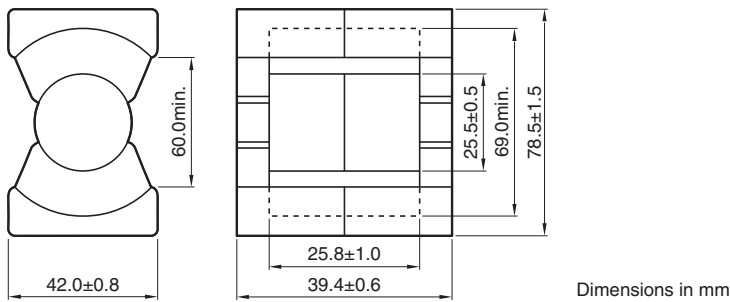
PE22	PQ	78	×	39	×	42
Material	Core shape	Width		Height when assembled		Thickness

Part No.	Dimensions (mm)							
	A <sub>1</sub>	A <sub>2</sub>	B	øC	2D	E	2H	
PE22 PQ78×39×42 PC40 PQ78×39×42	78.5±1.5	42.0±0.8	69.0min.	25.5±0.5	39.4±0.6	60.0min.	25.8±1.0	
PE22 PQ107×87×70 PC40 PQ107×87×70	107.0±2.0	70.0±1.5	93.7min.	41.0±1.0	87.0±1.5	72.5min.	56.0±1.5	

Part No.	Effective parameter						Electrical characteristics A <sub>L</sub> -value (nH/N <sup>2</sup> ) 1kHz 0.4A/m 23°C
	Core factor		Effective cross-sectional area A <sub>e</sub> (mm <sup>2</sup> )	Effective magnetic path length ℓ <sub>e</sub> (mm)	Effective core volume V <sub>e</sub> (mm <sup>3</sup> )	Weigh (approx.) (g)	
	C <sub>1</sub> (mm <sup>-1</sup> )	C <sub>2</sub> ×10 <sup>-2</sup> (mm <sup>-3</sup> )					
PE22 PQ78×39×42 PC40 PQ78×39×42	0.24730	0.051530	480	119	56900	304 304	7940±25% 9790±25%
PE22 PQ107×87×70 PC40 PQ107×87×70	0.14260	0.009989	1428	204	290600	1560 1560	14570±25% 18210±25%

Mn-Zn PQ series **Part No.: PE22 PQ78X39X42**

## ■ SHAPES AND DIMENSIONS



Effective parameter									Electrical characteristics
Core factor		Effective magnetic path length	Effective cross-sectional area	Effective core volume	Cross-sectional center pole area	Minimum cross-sectional area	Winding cross-sectional area	Weight (approx.)	AL-value
C <sub>1</sub> (mm <sup>-1</sup> )	C <sub>2</sub> ×10 <sup>-2</sup> (mm <sup>-3</sup> )	ℓ <sub>e</sub> (mm)	A <sub>e</sub> (mm <sup>2</sup> )	V <sub>e</sub> (mm <sup>3</sup> )	A <sub>c</sub> (mm <sup>2</sup> )	A min.* (mm <sup>2</sup> )	A <sub>cw</sub> (mm <sup>2</sup> )	(g)	(nH/N <sup>2</sup> ) 1kHz 0.4A/m 23°C
0.2473	0.05153	119	480	56900	510	510C*	570	304	7940±25%

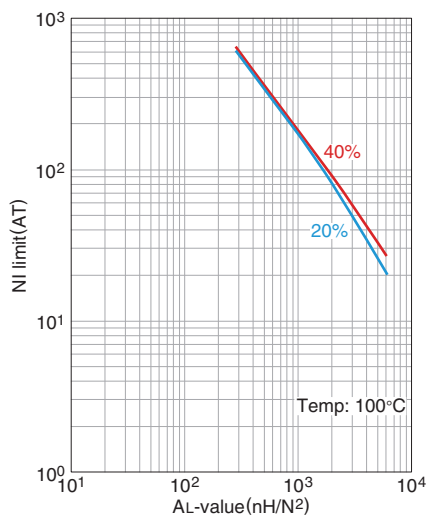
\* The symbol followed A min. value shows minimum cross-sectional area part.

C is center pole part, L: is outer pole part, B is the back part.

• Available customize core like this. Please specify when ordering.

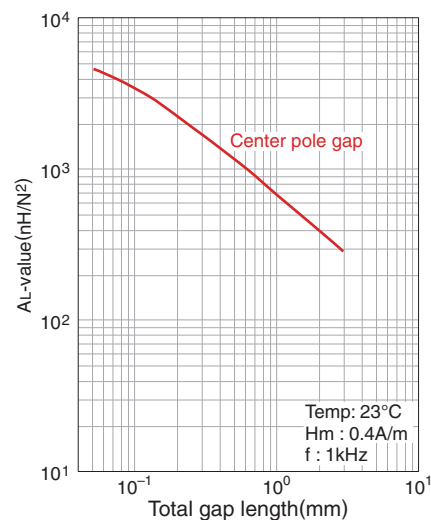
○ Calculated output power (forward converter mode): 1.6kW (100kHz)

## NI limit vs. AL-value



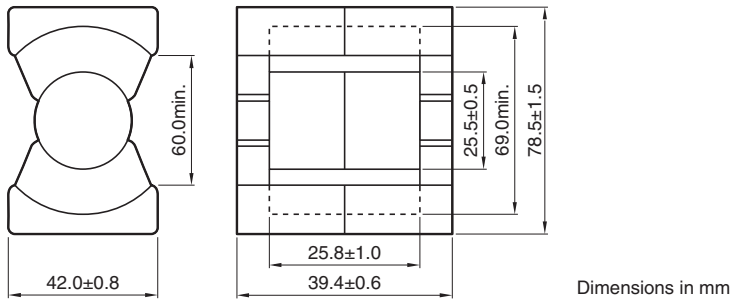
The 20% and 40% graph shows when a 20% and 40% drop from the initial AL-value has been made due to the DC superimposition.

## AL-value vs. Air gap length



Mn-Zn PQ series **Part No.: PC40 PQ78X39X42**

## ■ SHAPES AND DIMENSIONS



Effective parameter									Electrical characteristics
Core factor		Effective magnetic path length	Effective cross-sectional area	Effective core volume	Cross-sectional center pole area	Minimum cross-sectional area	Winding cross-sectional area	Weigh (approx.)	AL-value
C <sub>1</sub> (mm <sup>-1</sup> )	C <sub>2</sub> ×10 <sup>-2</sup> (mm <sup>-3</sup> )	ℓ <sub>e</sub> (mm)	A <sub>e</sub> (mm <sup>2</sup> )	V <sub>e</sub> (mm <sup>3</sup> )	A <sub>c</sub> (mm <sup>2</sup> )	A min.* (mm <sup>2</sup> )	A <sub>cw</sub> (mm <sup>2</sup> )	(g)	(nH/N <sup>2</sup> ) 1kHz 0.4A/m 23°C
0.2473	0.05153	119	480	56900	510	510C*	570	304	9790±25%

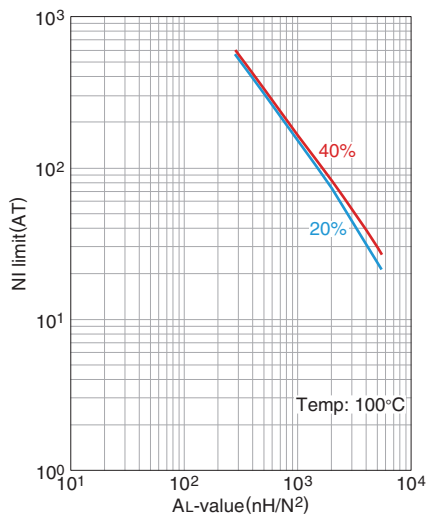
\* The symbol followed A min. value shows minimum cross-sectional area part.

C is center pole part, L: is outer pole part, B is the back part.

• Available customize core like this. Please specify when ordering.

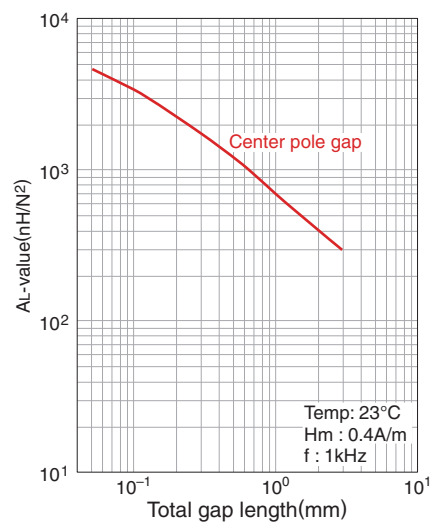
○ Calculated output power (forward converter mode): 1.7kW (100kHz)

## NI limit vs. AL-value



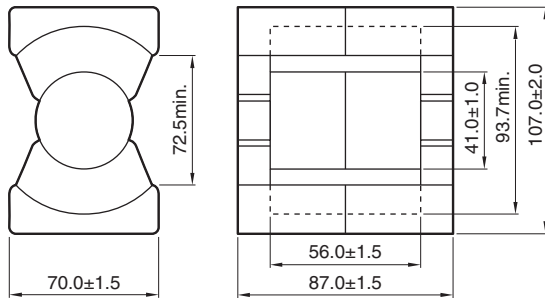
The 20% and 40% graph shows when a 20% and 40% drop from the initial AL-value has been made due to the DC superimposition.

## AL-value vs. Air gap length



Mn-Zn PQ series **Part No.: PE22 PQ107X87X70**

## ■ SHAPES AND DIMENSIONS



Dimensions in mm

Effective parameter									Electrical characteristics
Core factor		Effective magnetic path length	Effective cross-sectional area	Effective core volume	Cross-sectional center pole area	Minimum cross-sectional area	Winding cross-sectional area	Weight (approx.)	AL-value
$C_1$ (mm <sup>-1</sup> )	$C_2 \times 10^{-2}$ (mm <sup>-3</sup> )	$\ell_e$ (mm)	$A_e$ (mm <sup>2</sup> )	$V_e$ (mm <sup>3</sup> )	$A_c$ (mm <sup>2</sup> )	A min.* (mm <sup>2</sup> )	$A_{cw}$ (mm <sup>2</sup> )	(g)	(nH/N <sup>2</sup> ) 1kHz 0.4A/m 23°C
0.1426	0.009989	204	1428	290600	1320	1320C*	1540	1560	14570±25%

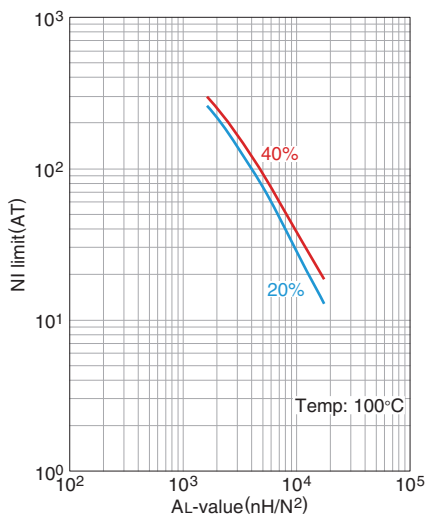
\* The symbol followed A min. value shows minimum cross-sectional area part.

C is center pole part, L: is outer pole part, B is the back part.

• Available customize core like this. Please specify when ordering.

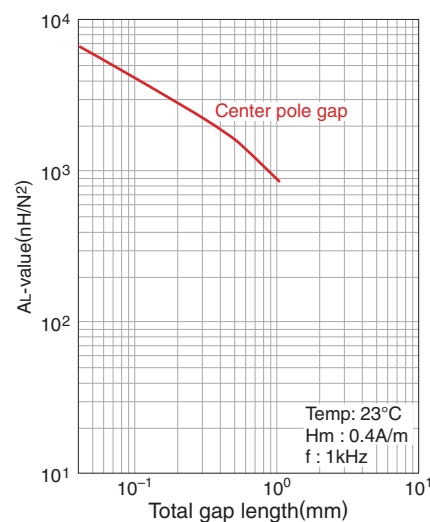
○ Calculated output power (forward converter mode): 8.3kW (100kHz)

## NI limit vs. AL-value



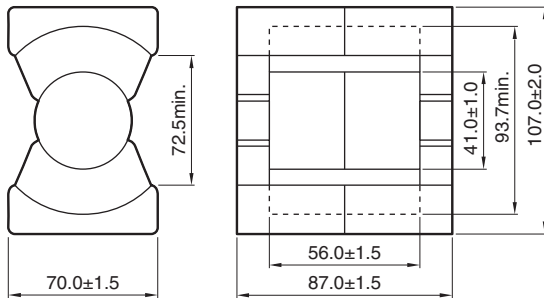
The 20% and 40% graph shows when a 20% and 40% drop from the initial AL-value has been made due to the DC superimposition.

## AL-value vs. Air gap length



Mn-Zn PQ series **Part No.: PC40 PQ107X87X70**

## ■ SHAPES AND DIMENSIONS



Dimensions in mm

Effective parameter									Electrical characteristics
Core factor		Effective magnetic path length	Effective cross-sectional area	Effective core volume	Cross-sectional center pole area	Minimum cross-sectional area	Winding cross-sectional area	Weight (approx.)	AL-value
$C_1$ (mm <sup>-1</sup> )	$C_2 \times 10^{-2}$ (mm <sup>-3</sup> )	$\ell_e$ (mm)	$A_e$ (mm <sup>2</sup> )	$V_e$ (mm <sup>3</sup> )	$A_c$ (mm <sup>2</sup> )	A min.* (mm <sup>2</sup> )	$A_{cw}$ (mm <sup>2</sup> )	(g)	(nH/N <sup>2</sup> ) 1kHz 0.4A/m 23°C
0.1426	0.009989	204	1428	290600	1320	1320C*	1540	1560	18210±25%

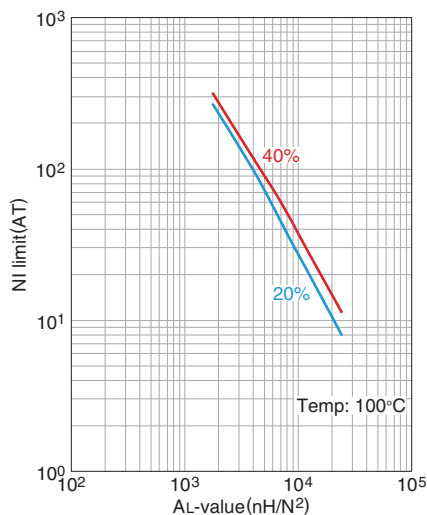
\* The symbol followed A min. value shows minimum cross-sectional area part.

C is center pole part, L: is outer pole part, B is the back part.

• Available customize core like this. Please specify when ordering.

○ Calculated output power (forward converter mode): 9.0kW (100kHz)

## NI limit vs. AL-value



The 20% and 40% graph shows when a 20% and 40% drop from the initial AL-value has been made due to the DC superimposition.

## AL-value vs. Air gap length

