

# Ferrite for Telecommunication

Pot cores

P series

Issue date: April 2011

- All specifications are subject to change without notice.
  - Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.
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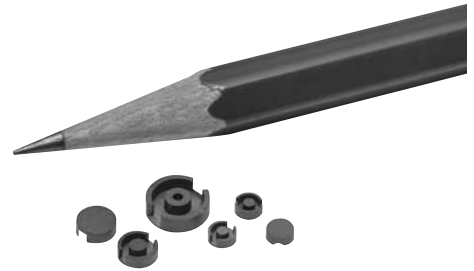
# Ferrite for Telecommunication

## Pot Cores P Series

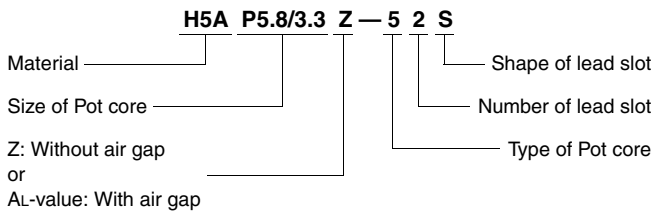
TDK produces a pot core series. These tiny pot cores are used in a variety of applications, including inductors for wristwatches, special choke coils, and pulse transformers. Some have even been used in miniature power supplies.

Bobbins are available for P5.8/3.3 and P7/4 cores.

Adhesives are usually employed to joint the two halves of the pot core.

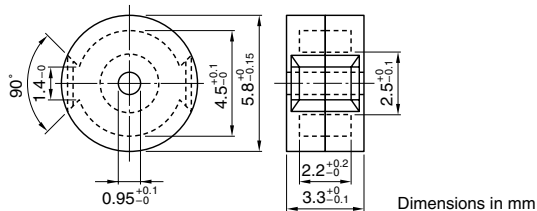


### ORDERING CODE SYSTEMS



### P5.8/3.3 POT CORES

Based on IEC Publication 62317-2.



### TYPICAL CHARACTERISTICS

Part No.	AL-value (nH/N <sup>2</sup> )	Effective permeability ( $\mu_e$ )
<b>Without air gap</b>		
<b>H5AP5.8/3.3Z-52S</b>	870 $\pm$ 25%	1163
<b>H5C2P5.8/3.3Z-52S</b>	2660 min.	3556

Measuring conditions:

Coil  $\phi$ 0.08mm, 2UEW, 70Ts (for material H5C2), 100Ts(for others)

Frequency 1kHz

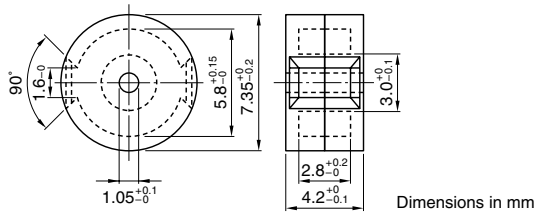
Current level 0.5mA

### PARAMETER

Parameter	Symbol	Unit	Value
Core factor	C <sub>1</sub>	mm <sup>-1</sup>	1.68
Effective magnetic path length	$\ell_e$	mm	7.9
Effective cross-sectional area	A <sub>e</sub>	mm <sup>2</sup>	4.7
Effective core volume	V <sub>e</sub>	mm <sup>3</sup>	37
Cross-sectional center pole area	A <sub>cp</sub>	mm <sup>2</sup>	4.08
Minimum cross-sectional area	A <sub>cp min.</sub>	mm <sup>2</sup>	3.66
Cross-sectional winding area of core	A <sub>cw</sub>	mm <sup>2</sup>	2.42
Weight (approx.)	g		0.2

## P7/4 POT CORES

Based on IEC Publication 62317-2.



### TYPICAL CHARACTERISTICS

Part No.	AL-value (nH/N <sup>2</sup> )	Effective permeability ( $\mu$ e)
<b>Without air gap</b>		
<b>H5AP7/4Z-52S</b>	1200 $\pm$ 25%	1366
<b>H5C2P7/4Z-52S</b>	4970 $\pm$ 30%	5656

Measuring conditions:

Coil  $\phi$ 0.1mm, 2UEW, 70Ts (for material H5C2), 100Ts(for others)

Frequency 1kHz

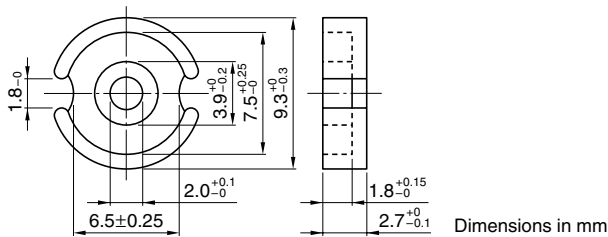
Current level 0.5mA

### PARAMETER

Parameter	Symbol	Unit	Value
Core factor	$C_1$	mm <sup>-1</sup>	1.43
Effective magnetic path length	$\ell_e$	mm	10
Effective cross-sectional area	$A_e$	mm <sup>2</sup>	7.0
Effective core volume	$V_e$	mm <sup>3</sup>	70
Cross-sectional center pole area	$A_{cp}$	mm <sup>2</sup>	6.05
Minimum cross-sectional area	$A_{cp \text{ min.}}$	mm <sup>2</sup>	5.57
Cross-sectional winding area of core	$A_{cw}$	mm <sup>2</sup>	4.31
Weight (approx.)	$g$		0.5

## P9/5 POT CORES

Based on IEC Publication 62317-2 and JIS C 2516.



### TYPICAL CHARACTERISTICS

Part No.	AL-value (nH/N <sup>2</sup> )	Effective permeability ( $\mu$ e)
<b>Without air gap</b>		
<b>H5AP9/5Z-52H</b>	1570 $\pm$ 25%	1562
<b>H5C2P9/5Z-52H</b>	6030 $\pm$ 30%	5998

Measuring conditions:

Coil  $\phi$ 0.1mm, 2UEW, 70Ts (for material H5C2), 100Ts(for others)

Frequency 1kHz

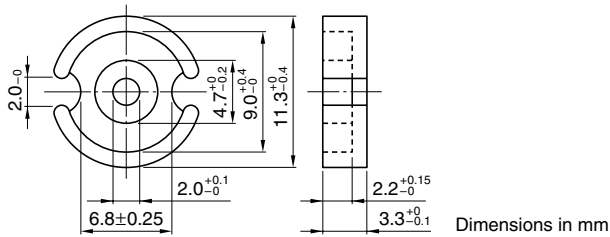
Current level 0.5mA

### PARAMETER

Parameter	Symbol	Unit	Value
Core factor	$C_1$	mm <sup>-1</sup>	1.24
Effective magnetic path length	$\ell_e$	mm	12.4
Effective cross-sectional area	$A_e$	mm <sup>2</sup>	10.0
Effective core volume	$V_e$	mm <sup>3</sup>	124
Cross-sectional center pole area	$A_{cp}$	mm <sup>2</sup>	8.04
Minimum cross-sectional area	$A_{cp \text{ min.}}$	mm <sup>2</sup>	7.29
Cross-sectional winding area of core	$A_{cw}$	mm <sup>2</sup>	7.17
Weight (approx.)	$g$		0.8

## P11/7 POT CORES

Based on IEC Publication 62317-2 and JIS C 2516.



### TYPICAL CHARACTERISTICS

Part No.	AL-value (nH/N <sup>2</sup> )	Effective permeability ( $\mu$ e)
<b>Without air gap</b>		
<b>H5AP11/7Z-52H</b>	2320±25%	1765
<b>H5C2P11/7Z-52H</b>	8220±30%	6253

Measuring conditions:

Coil  $\phi$ 0.18mm, 2UEW, 70Ts (for material H5C2), 100Ts (for others)

Frequency 1kHz

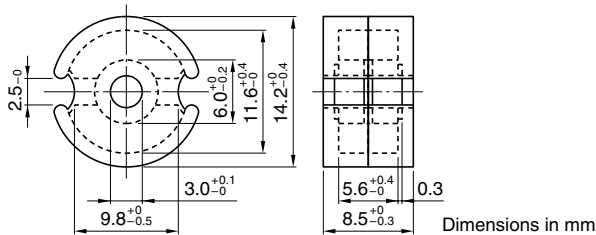
Current level 0.5mA

### PARAMETER

Parameter	Symbol	Unit	Value
Core factor	$C_1$	mm <sup>-1</sup>	0.969
Effective magnetic path length	$\ell_e$	mm	15.5
Effective cross-sectional area	$A_e$	mm <sup>2</sup>	16.0
Effective core volume	$V_e$	mm <sup>3</sup>	248
Cross-sectional center pole area	$A_{cp}$	mm <sup>2</sup>	13.3
Minimum cross-sectional area	$A_{cp \text{ min.}}$	mm <sup>2</sup>	12.4
Cross-sectional winding area of core	$A_{cw}$	mm <sup>2</sup>	10.5
Weight (approx.)	$g$		1.8

## P14/8 POT CORES

Based on IEC Publication 62317-2 and JIS C 2516.



### TYPICAL CHARACTERISTICS

Part No.	AL-value (nH/N <sup>2</sup> )	Effective permeability ( $\mu$ e)
<b>Without air gap</b>		
<b>H5AP14/8Z-52B</b>	3000±25%	1884
<b>H5C2P14/8Z-52B</b>	11500±30%	7221

Measuring conditions:

Coil  $\phi$ 0.18mm, 2UEW, 100Ts

Frequency 1kHz

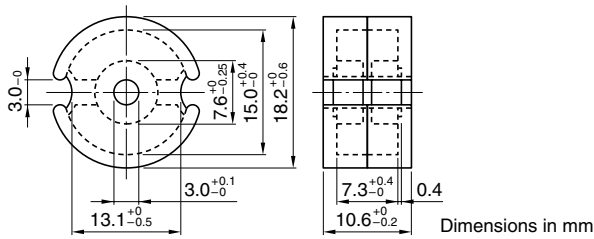
Current level 0.5mA

### PARAMETER

Parameter	Symbol	Unit	Value
Core factor	$C_1$	mm <sup>-1</sup>	0.789
Effective magnetic path length	$\ell_e$	mm	19.8
Effective cross-sectional area	$A_e$	mm <sup>2</sup>	25.1
Effective core volume	$V_e$	mm <sup>3</sup>	497
Cross-sectional center pole area	$A_{cp}$	mm <sup>2</sup>	19.8
Minimum cross-sectional area	$A_{cp \text{ min.}}$	mm <sup>2</sup>	18.4
Cross-sectional winding area of core	$A_{cw}$	mm <sup>2</sup>	17.1
Weight (approx.)	$g$		3.2

## P18/11 POT CORES

Based on IEC Publication 62317-2 and JIS C 2516.



### TYPICAL CHARACTERISTICS

Part No.	AL-value (nH/N <sup>2</sup> )	Effective permeability ( $\mu e$ )
<b>Without air gap</b>		
<b>H5AP18/11Z-52B</b>	4500±25%	2138
<b>H5C2P18/11Z-52B</b>	16000±30%	7601

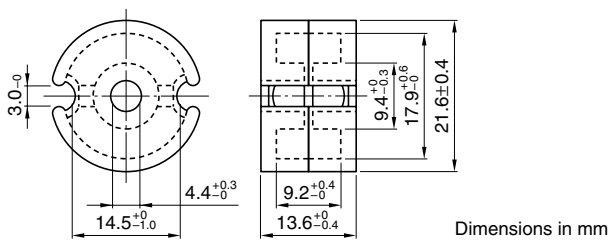
Measuring conditions:  
Coil  $\phi$ 0.30mm, 2UEW, 100Ts  
Frequency 1kHz  
Current level 0.5mA

### PARAMETER

Parameter	Symbol	Unit	Value
Core factor	$C_1$	mm <sup>-1</sup>	0.596
Effective magnetic path length	$\ell_e$	mm	25.8
Effective cross-sectional area	$A_e$	mm <sup>2</sup>	43.3
Effective core volume	$V_e$	mm <sup>3</sup>	1117
Cross-sectional center pole area	$A_{cp}$	mm <sup>2</sup>	36.3
Minimum cross-sectional area	$A_{cp \text{ min.}}$	mm <sup>2</sup>	34.4
Cross-sectional winding area of core	$A_{cw}$	mm <sup>2</sup>	29.0
Weight (approx.)	$g$		6.7

## P22/13 POT CORES

Based on IEC Publication 62317-2 and JIS C 2516.



### TYPICAL CHARACTERISTICS

Part No.	AL-value (nH/N <sup>2</sup> )	Effective permeability ( $\mu e$ )
<b>Without air gap</b>		
<b>H5AP22/13Z-52H</b>	5900±25%	2333
<b>H5C2P22/13Z-52H</b>	19500±30%	7700[at 21.7mT]
	16000+40/-30%	6318*[at 0.5mT]

\* Reference specification when 0.5mT is applied to cores.

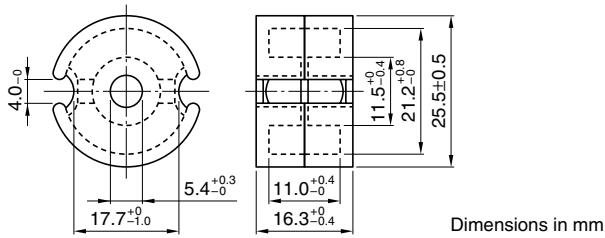
Measuring conditions:  
Coil  $\phi$ 0.35mm, 2UEW, 100Ts  
Frequency 1kHz  
Current level 0.5mA

### PARAMETER

Parameter	Symbol	Unit	Value
Core factor	$C_1$	mm <sup>-1</sup>	0.497
Effective magnetic path length	$\ell_e$	mm	31.5
Effective cross-sectional area	$A_e$	mm <sup>2</sup>	63.4
Effective core volume	$V_e$	mm <sup>3</sup>	1997
Cross-sectional center pole area	$A_{cp}$	mm <sup>2</sup>	51.6
Minimum cross-sectional area	$A_{cp \text{ min.}}$	mm <sup>2</sup>	47.7
Cross-sectional winding area of core	$A_{cw}$	mm <sup>2</sup>	42.1
Weight (approx.)	$g$		12.7

## P26/16 POT CORES

Based on IEC Publication 62317-2 and JIS C 2516.



### TYPICAL CHARACTERISTICS

Part No.	AL-value (nH/N <sup>2</sup> )	Effective permeability ( $\mu e$ )
<b>Without air gap</b>		
<b>H5AP26/16Z-52H</b>	7800±25%	2483
	24500±30%	7800[at 18.4mT]
<b>H5C2P26/16Z-52H</b>	20000+40/-30%	6367*[at 0.5mT]

\* Reference specification when 0.5mT is applied to cores.

Measuring conditions:

Coil  $\phi$ 0.40mm, 2UEW, 100Ts

Frequency 1kHz

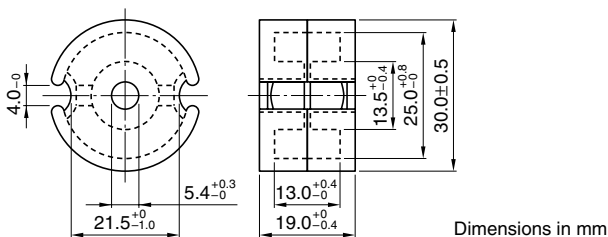
Current level 0.5mA

### PARAMETER

Parameter	Symbol	Unit	Value
Core factor	$C_1$	mm <sup>-1</sup>	0.40
Effective magnetic path length	$\ell_e$	mm	37.6
Effective cross-sectional area	$A_e$	mm <sup>2</sup>	94
Effective core volume	$V_e$	mm <sup>3</sup>	3534
Cross-sectional center pole area	$A_{cp}$	mm <sup>2</sup>	76.1
Minimum cross-sectional area	$A_{cp \text{ min.}}$	mm <sup>2</sup>	71.3
Cross-sectional winding area of core	$A_{cw}$	mm <sup>2</sup>	57.7
Weight (approx.)	$g$		21.1

## P30/19 POT CORES

Based on IEC Publication 62317-2 and JIS C 2516.



### TYPICAL CHARACTERISTICS

Part No.	AL-value (nH/N <sup>2</sup> )	Effective permeability ( $\mu e$ )
<b>Without air gap</b>		
<b>H5AP30/19Z-52H</b>	9800±25%	2573
	32000±30%	8400[at 16.5mT]
<b>H5C2P30/19Z-52H</b>	25000+40/-30%	6563*[at 0.5mT]

\* Reference specification when 0.5mT is applied to cores.

Measuring conditions:

Coil  $\phi$ 0.40mm, 2UEW, 100Ts

Frequency 1kHz

Current level 0.5mA

### PARAMETER

Parameter	Symbol	Unit	Value
Core factor	$C_1$	mm <sup>-1</sup>	0.33
Effective magnetic path length	$\ell_e$	mm	45.2
Effective cross-sectional area	$A_e$	mm <sup>2</sup>	137
Effective core volume	$V_e$	mm <sup>3</sup>	6192
Cross-sectional center pole area	$A_{cp}$	mm <sup>2</sup>	115
Minimum cross-sectional area	$A_{cp \text{ min.}}$	mm <sup>2</sup>	109
Cross-sectional winding area of core	$A_{cw}$	mm <sup>2</sup>	79.9
Weight (approx.)	$g$		35.3