According to the market demand of severe competition, we put the state of are technology for the developing “Cost Effective” and “Attractive Performance” at the same time. Power supply can be slim and smart with help of APT series it also enables cost effective. Toroid core properties of APT series are ready to serve our customers.

Innovative Benefit

• Remarkable Size Reduction
• Higher Efficient Solution
• More Cost Effective with Same Performance

Application

• PFC Chokes for PC Power Supplies
• PFC Chokes for Server/Workstation power Supplies
• PFC Chokes for Industrial PC
• PFC Chokes for LCD/PDP TV Power Supplies
• PFC Output Choke for General Industrial Power Supplies

Comparison with HF, MPP and Sendust Material on DCB

Core Loss Density of APT

Typical Core Loss Density Comparison with High Flux
AMORPHOUS POWDER CORE SERIES PRODUCTS

PROPERTIES OF APT

Core Loss Density Curves, 26 μ

![Graph showing core loss density curves for 26 μ cores.](image1)

Core Loss Density Curves, 60~90 μ

![Graph showing core loss density curves for 60~90 μ cores.](image2)
PROPERTIES OF APT AMORPHOUS POWDER CORE SERIES PRODUCTS

Core Loss Density Curves, 26 μ

Core Loss Density Curves, 60~90 μ
**AMORPHOUS POWDER CORE SERIES PRODUCTS**

**PROPERTIES OF APT**

**Permeability versus DC Bias Curve Fit Formula**

**Effective Permeability** ($\mu_{\text{eff}}$)

For a magnetic circuit constructed with an air gap, or gaps, the permeability of a hypothetical homogeneous material that would provide the same reluctance, or net permeability.

$$\mu_{\text{eff}} = \frac{\mu_i^2 + a \mu_i^3 H + b \mu_i^4 H^2}{1 + c \mu_i H + d \mu_i^2 H^2}$$

<table>
<thead>
<tr>
<th>Value</th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>26</td>
<td>$-7.24 \times 10^{-8}$</td>
<td>$-2.31 \times 10^{-9}$</td>
<td>$-5.21 \times 10^{-6}$</td>
<td>$-1.50 \times 10^{-9}$</td>
</tr>
<tr>
<td>60</td>
<td>$-3.30 \times 10^{-8}$</td>
<td>$-2.22 \times 10^{-9}$</td>
<td>$-1.20 \times 10^{-6}$</td>
<td>$-1.22 \times 10^{-9}$</td>
</tr>
<tr>
<td>75</td>
<td>$-3.46 \times 10^{-8}$</td>
<td>$-4.28 \times 10^{-10}$</td>
<td>$-1.70 \times 10^{-6}$</td>
<td>$-2.40 \times 10^{-9}$</td>
</tr>
<tr>
<td>90</td>
<td>$-3.18 \times 10^{-8}$</td>
<td>$-7.58 \times 10^{-11}$</td>
<td>$-1.35 \times 10^{-6}$</td>
<td>$-1.50 \times 10^{-9}$</td>
</tr>
</tbody>
</table>

**Replacement Concept**

High Flux 60 ↔ APTxxP60

MPP 60 ↔ APTxxP60

**Note:**
1. Number of winding is same.
2. Size of core is same for HF and MPP replacement.
3. Temperature rise of APC is smaller than High Flux, MPP.
According to the market demand of severe competition, we put the state of art technology for the developing “Cost Effective” and “Attractive Performance” at the same time.

Power supply can be slim and smart with help of APT series it also enables cost effective.

Toroid core properties of APT series are ready to serve our customers.

**Innovative Benefit**

- Remarkable Size Reduction
- Higher Efficient Solution
- More Cost Effective with Same Performance

**Application**

- PFC Chokes for PC Power Supplies
- PFC Chokes for Server/Workstation power Supplies
- PFC Chokes for Industrial PC
- PFC Chokes for LCD/PDP TV Power Supplies
- PFC Output Choke for General Industrial Power Supplies
AMORPHOUS POWDER CORE SERIES PRODUCTS

PROPERTIES OF APT

Core Loss Density Curves, 26 μ

[Graph showing core loss density curves for flux densities of different frequencies]

Core Loss Density Curves, 60~90 μ

[Graph showing core loss density curves for flux densities of different frequencies]
AMORPHOUS POWDER CORE SERIES PRODUCTS

PROPERTIES OF APT

Core Loss Density Curves, 26 μ

Core Loss Density Curves, 60~90 μ
AMORPHOUS POWDER CORE SERIES PRODUCTS

PROPERTIES OF APT

**Permeability versus DC Bias Curve Fit Formula**

**Effective Permeability** \( \mu_{\text{eff}} \)

For a magnetic circuit constructed with an air gap, or gaps, the permeability of a hypothetical homogeneous material that would provide the same reluctance, or net permeability.

\[
\mu_{\text{eff}} = \sqrt{\frac{\mu_i^2 + a\mu_i^3H + b\mu_i^4H^2}{1 + c\mu_i + d\mu_i^2H^2}}
\]

<table>
<thead>
<tr>
<th>Value</th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>26</td>
<td>(-7.24 \times 10^{-8})</td>
<td>(-2.31 \times 10^{-8})</td>
<td>(-5.21 \times 10^{-8})</td>
<td>(-1.50 \times 10^{-8})</td>
</tr>
<tr>
<td>60</td>
<td>(-3.30 \times 10^{-8})</td>
<td>(-2.22 \times 10^{-10})</td>
<td>(-1.20 \times 10^{-8})</td>
<td>(-1.22 \times 10^{-8})</td>
</tr>
<tr>
<td>75</td>
<td>(-3.46 \times 10^{-8})</td>
<td>(-4.28 \times 10^{-11})</td>
<td>(-1.70 \times 10^{-8})</td>
<td>(-2.40 \times 10^{-8})</td>
</tr>
<tr>
<td>90</td>
<td>(-3.18 \times 10^{-8})</td>
<td>(-7.58 \times 10^{-11})</td>
<td>(-1.35 \times 10^{-8})</td>
<td>(-1.50 \times 10^{-8})</td>
</tr>
</tbody>
</table>

**Replacement Concept**

- High Flux 60 ↔ APTxxP60
- MPP 60 ↔ APTxxP60

**Note:**
1. Number of winding is same.
2. Size of core is same for HF and MPP replacement.
3. Temperature rise of APC is smaller than High Flux, MPP.
According to the market demand of severe competition, we put the state of are technology for the developing “Cost Effective” and “Attractive Performance” at the same time.

Power supply can be slim and smart with help of APT series it also enables cost effective.

Toroid core properties of APT series are ready to serve our customers.

Innovative Benefit

- Remarkable Size Reduction
- Higher Efficient Solution
- More Cost Effective with Same Performance

Application

- PFC Chokes for PC Power Supplies
- PFC Chokes for Server/Workstation power Supplies
- PFC Chokes for Industrial PC
- PFC Chokes for LCD/PDP TV Power Supplies
- PFC Output Choke for General Industrial Power Supplies
AMORPHOUS POWDER CORE SERIES PRODUCTS

PROPERTIES OF APT

Core Loss Density Curves, 26 μ

\[ P = 4.33B^{1.25}f^{0.5} \quad (B:0.1\text{Tesla}, f:kHz) \]

Core Loss Density Curves, 60~90 μ

\[ P = 3.89B^{2.5}f^{0.5} \quad (B:0.1\text{Tesla}, f:kHz) \]
AMORPHOUS POWDER CORE SERIES PRODUCTS

PROPERTIES OF APT

Core Loss Density Curves, 26 μ

Core Loss Density Curves, 60~90 μ
AMORPHOUS POWDER CORE SERIES PRODUCTS

PROPERTIES OF APT

Permeability versus DC Bias Curve Fit Formula

**Effective Permeability** ($\mu_{\text{eff}}$)

For a magnetic circuit constructed with an air gap, or gaps, the permeability of a hypothetical homogeneous material that would provide the same reluctance, or net permeability.

$$
\mu_{\text{eff}} = \sqrt{\frac{\mu_i^2 + a\mu_i^3H + b\mu_i^4H^2}{1 + c\mu_iH + d\mu_i^2H^2}}
$$

<table>
<thead>
<tr>
<th>Value</th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>26</td>
<td>$-7.24 \times 10^{-8}$</td>
<td>$-2.31 \times 10^{-9}$</td>
<td>$-5.21 \times 10^{-6}$</td>
<td>$-1.50 \times 10^{-9}$</td>
</tr>
<tr>
<td>60</td>
<td>$-3.30 \times 10^{-8}$</td>
<td>$-2.22 \times 10^{-10}$</td>
<td>$-1.20 \times 10^{-8}$</td>
<td>$-1.22 \times 10^{-9}$</td>
</tr>
<tr>
<td>75</td>
<td>$-3.46 \times 10^{-8}$</td>
<td>$-4.28 \times 10^{-11}$</td>
<td>$-1.70 \times 10^{-8}$</td>
<td>$-2.40 \times 10^{-9}$</td>
</tr>
<tr>
<td>90</td>
<td>$-3.18 \times 10^{-8}$</td>
<td>$-7.58 \times 10^{-11}$</td>
<td>$-1.35 \times 10^{-8}$</td>
<td>$-1.50 \times 10^{-9}$</td>
</tr>
</tbody>
</table>

Replacement Concept

| High Flux 60 | APTxxP60 |
| MPP 60       | APTxxP60 |

Note:
1. Number of winding is same.
2. Size of core is same for HF and MPP replacement.
3. Temperature rise of APC is smaller than High Flux, MPP.
According to the market demand of severe competition, we put the state of the art technology for the developing “Cost Effective” and “Attractive Performance” at the same time.

Power supply can be slim and smart with help of APT series it also enables cost effective.

Toroid core properties of APT series are ready to serve our customers.

**Innovative Benefit**

- Remarkable Size Reduction
- Higher Efficient Solution
- More Cost Effective with Same Performance

**Application**

- PFC Chokes for PC Power Supplies
- PFC Chokes for Server/Workstation power Supplies
- PFC Chokes for Industrial PC
- PFC Chokes for LCD/PDP TV Power Supplies
- PFC Output Choke for General Industrial Power Supplies
AMORPHOUS POWDER CORE SERIES PRODUCTS

PROPERTIES OF APT

Core Loss Density Curves, 26 μ

Core Loss Density Curves, 60~90 μ
AMORPHOUS POWDER CORE SERIES PRODUCTS

PROPERTIES OF APT

Core Loss Density Curves, 26 μ

Core Loss Density Curves, 60~90 μ
AMORPHOUS POWDER CORE SERIES PRODUCTS

PROPERTIES OF APT

Permeability versus DC Bias Curve Fit Formula

Effective Permeability ($\mu_{\text{eff}}$)

For a magnetic circuit constructed with an air gap, or gaps, the permeability of a hypothetical homogeneous material that would provide the same reluctance, or net permeability.

$$\mu_{\text{eff}} = \sqrt{\frac{\mu_i^2 + a\mu_i^3H + b\mu_i^4H^2}{1 + c\mu_iH + d\mu_i^2H^2}}$$

<table>
<thead>
<tr>
<th>Value</th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>26</td>
<td>$-7.24 \times 10^{-6}$</td>
<td>$-2.31 \times 10^{-4}$</td>
<td>$-5.21 \times 10^{-6}$</td>
<td>$-1.50 \times 10^{-8}$</td>
</tr>
<tr>
<td>60</td>
<td>$-3.30 \times 10^{-6}$</td>
<td>$-2.22 \times 10^{-4}$</td>
<td>$-1.20 \times 10^{-6}$</td>
<td>$-1.22 \times 10^{-8}$</td>
</tr>
<tr>
<td>75</td>
<td>$-3.46 \times 10^{-6}$</td>
<td>$-4.28 \times 10^{-4}$</td>
<td>$-1.70 \times 10^{-6}$</td>
<td>$-2.40 \times 10^{-8}$</td>
</tr>
<tr>
<td>90</td>
<td>$-3.18 \times 10^{-6}$</td>
<td>$-7.58 \times 10^{-4}$</td>
<td>$-1.35 \times 10^{-6}$</td>
<td>$-1.50 \times 10^{-8}$</td>
</tr>
</tbody>
</table>

Replacement Concept

- High Flux 60 ↔ APTxxP60
- MPP 60 ↔ APTxxP60

Note:
1. Number of winding is same.
2. Size of core is same for HF and MPP replacement.
3. Temperature rise of APC is smaller than High Flux, MPP.