

# Ferrite for Telecommunication

## Low THD Materials for xDSL Modem Transformers DN40 and DN70

The use of xDSL technique becomes wide spread as a high broad-band access to the internet. In order to utilize such network access as sufficient as possible, low THD (Total Harmonic Distortion) of transformer for xDSL modem is quite important to transfer the significant signals.

Materials DN40 and DN70, TDK achieved such requirements recently, are developed to meet low THD over a wide temperature range(0 to 85°C) and wide frequency range( $\geq 5$ kHz).

Therefore, They are suitable for the high performance transformer design for xDSL modem applications.

Standardization of AL-value will help you to select the optimum core at the transformer design.

### FEATURES

- Meet low THD over a wide temperature range(0 to 85°C) and wide frequency range ( $\geq 5$ kHz).

### APPLICATIONS

- Transformer for xDSL modem

### APPLIED CORE TYPE AND AL-value

Core	Type	AL-value
EP	EP7	40, 63, 100, 160, 250
	EP10	40, 63, 100, 160, 250
	EP13	63, 100, 160, 250, 400, 500

### MATERIAL CHARACTERISTICS

Material			DN70	DN40
Initial permeability	$\mu_i$	25°C	7500 $\pm$ 25%	4000 $\pm$ 25%
Relative loss factor [10kHz]	$\tan\delta/\mu_i$	$\times 10^{-6}$ 25°C	<2.0	<2.5
Temperature factor of initial permeability	$\alpha_{\mu i r}$	-30 to +20°C 20 to 70°C	-0.5 to +1.5 -0.5 to +1.5	-0.5 to 2.0 -0.5 to 2.0
Saturation magnetic flux density [1000A/m]	Bs	mT 25°C	390	405
Hysteresis material constant [25°C, 1.5 to 3.0mT, 10kHz]	$\mu\Phi$	$\frac{10^{-6}}{\text{mT}}$	<0.2	<0.8
Curie temperature	Tc	°C min.	105	130
Density	db	kg/m <sup>3</sup>	5.0 $\times 10^3$	4.8 $\times 10^3$
Electrical resistivity	$\rho_v$	$\Omega \cdot \text{m}$	0.3	1.0

• Unless otherwise specify the tolerance, the values are shown as a typical.

### THD TEMPERATURE DEPENDENCE CHARACTERISTICS (Typical) $\mu_i$ vs. TEMPERATURE CHARACTERISTICS (Typical)

