

# Ferrite for Telecommunication

## For 100Base-T Pulse Transformers

### DC Superposed, High Inductance Materials DN45

Pulse transformers for high-speed LANs must provide low insertion loss at a wide range of frequencies, high inductance at low frequency ranges, and the suppression of coil resistance and leakage inductance at high frequency ranges. In particular, 100 Base-T pulse transformers must be able to maintain an inductance of 350 $\mu$ H minimum at DC bias 8mA and a temperature range from 0 to 70°C. This product meets these requirements and realizes a 30% improvement in DC superposition over our previous material HP5, and is therefore the optimum solution for 100 Base-T pulse transformer cores.

#### FEATURES

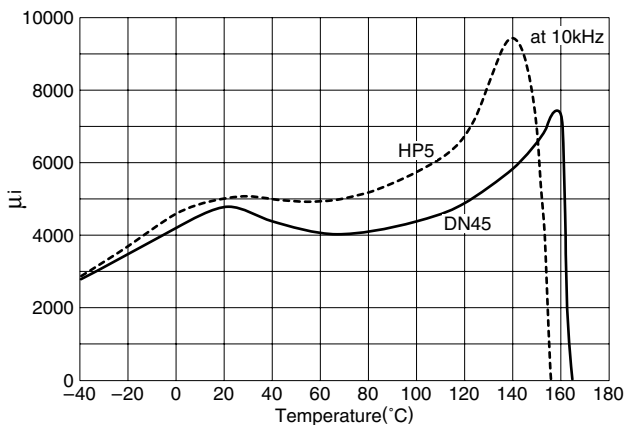
- Provides high inductance and excellent DC superposition over a wide temperature range (0 to 70°C).
- Provides 30% improvement in DC superposition over our previous material HP5.
- Coil windings can be reduced by 20% compared to material HP5.

#### MATERIAL CHARACTERISTICS COMPARISON TO PREVIOUS MATERIAL (HP5)

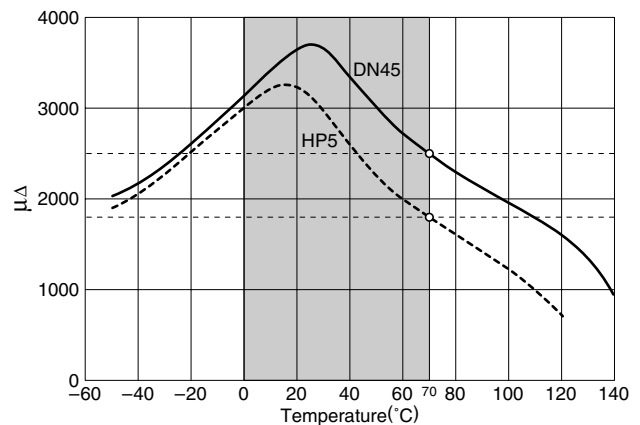
Material				DN45(NEW)	HP5
Initial permeability	$\mu_i$		25°C	4500 $\pm$ 25%	5000 $\pm$ 25%
Relative loss factor [10kHz]	$\tan\delta/\mu_i$	$\times 10^{-6}$	25°C	<3.5	<3.5
Saturation magnetic flux density [1000A/m]	Bs	mT	25°C	460	400
Curie temperature	Tc	°C	min.	150	140
Density	db	kg/m <sup>3</sup>		4.85 $\times 10^3$	4.8 $\times 10^3$
Electrical resistivity	$\rho_v$	$\Omega \cdot m$		0.3	0.15

- Various toroidal cores of small sizes are available. Please contact us for details.

#### $\mu_i$ vs. TEMPERATURE CHARACTERISTICS



#### $\mu\Delta$ vs. TEMPERATURE CHARACTERISTICS



Toroidal core(OD3.05 $\times$ ID2.54 $\times$ T1.27mm)  
DC bias current=8mA( $H_{DC}$ =32.1A/m), 100kHz, 100mV, N=24Ts