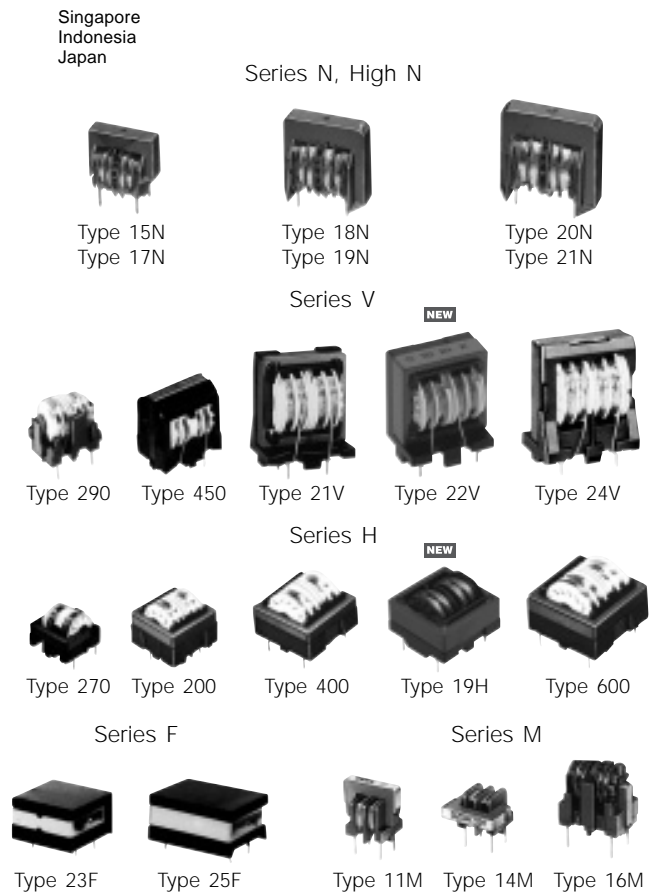


### Line Filters

- Series: **N** (Type 15N, 18N, 20N)  
 Series: **High N** (Type 17N, 19N, 21N)  
 Series: **V** (Type 290, 450, 21V, 22V, 24V)  
 Series: **H** (Type 200, 270, 400, 19H, 600)  
 Series: **F** (Type 23F, 25F)  
 Series: **M** (Type 11M, 14M, 16M)

Line filters suppress power supply conductive noise (ranging from low to high frequencies).



### ■ Features

Series	Types	Features	
N	15N, 18N, 20N	Vertical Structure	● Suitable for high-density automatic insertion
High N	17N, 19N, 21N	Vertical Structure	● High inductance (same size with series N)
V	290, 450, 21V *, 22V *, 24V *	Vertical Structure	● 30% smaller size than existing type (22 V, 19 H type) ● Excellent high frequency attenuation
H	200, 270, 400, 19H, 600	Horizontal Structure	● Greatly reduced leakage flux
F	23F, 25F	Thin Structure	● 15 mm height max.
M	11M, 14M, 16M	Small Structure	● Small size and lightweight

\* Type 21V is developed product of Type 650. Type 24V is Type 850  
 ELF 21V/24V have the same specifications as ELF#650/#850 types.  
 The new ELF19H/22V has the same specifications as ELF#600/#24V but is smaller and with a lower profile.

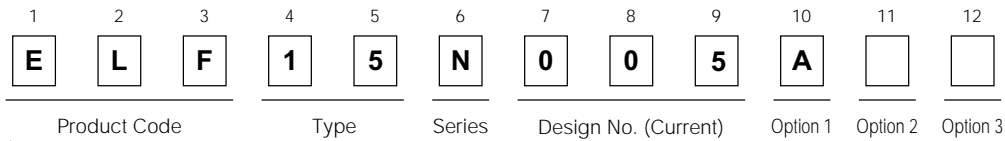
### ■ Recommended Applications

- Audio/Visual, Communications, Household and Lighting equipment and Power supplies

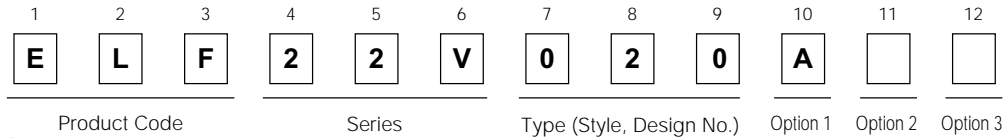
Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use.  
 Should a safety concern arise regarding this product, please be sure to contact us immediately.

### Explanation of Part Numbers

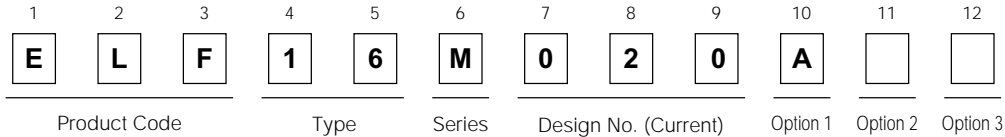
#### ● N, High N Series



#### ● V, H Series



#### ● F, M Series



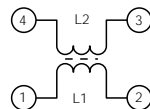
### Performance Characteristics

Item	Series	V Serie	H Serie	F Series	M Series	N Serie	High N Series	Notes	
	Type	290 450 21V/22V 24V	270 200 400 19H 600	23F 25F	11M/14M 16M	15N 18N 20N	17N 19N 21N		
Operating Temperature		-20 °C to 105 °C (Partially 115 °C *)				-20 °C to 115 °C *			
Voltage		AC 250 Vrms max.							
Current		Refer to "Examples"							
Inductance		Refer to "Examples"							
Dielectric Withstanding Voltage		AC 2 kV 1 min.							
Temperature Rise		45 K max. (Non object of 21V, 19H, 22V type)							Resistance method
Applicable Safety Standards		** Denki Yohin, UL, CSA, IEC							

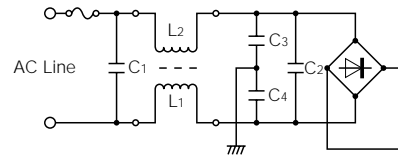
\* UL, CSA : -20 °C to 100 °C

\*\* Line filter is not certified, but meets the established safety standards for these entities.

### Connection Schematics

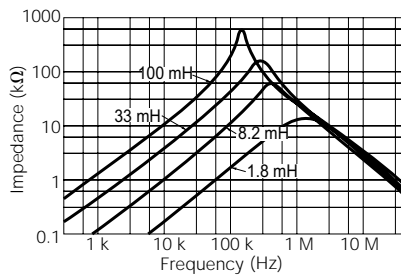


### Circuit Example

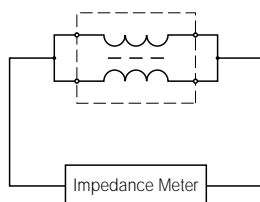


### Impedance and Attenuation Characteristics (Typical)

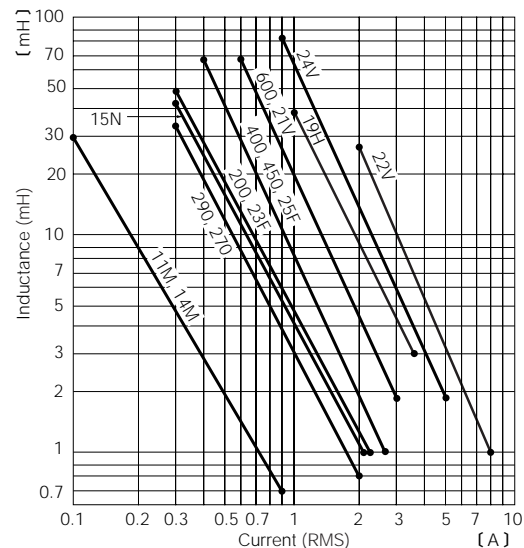
#### ● Impedance Characteristics



#### ● Test Circuit Diagram



### Current-Inductance (min.) Characteristics (Reference only)



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