Professional - Flexible - Reliable

Three-Phase Common Mode Power Line Choke

Product Overview

The HIPOWER TP3P series three-phase common mode chokes are designed as the cornerstone component in three-phase EMI/EMC line filters. These chokes effectively suppress common-mode (CM) noise currents flowing on all three phases by providing high common-mode impedance while maintaining negligible differential-mode impedance for the power current. In a typical CLC filter topology, the main inductance (LCM) of the common mode choke, together with Y capacitors, forms an LC-CM filter achieving 40 dB per decade insertion loss above the filter cutoff frequency. Simultaneously, the leakage inductance (Lleak) of the choke, in combination with X capacitors, forms a CLC-DM filter delivering 60 dB per decade attenuation for differential-mode noise.

Available in both manganese-zinc (MnZn) ferrite and nanocrystalline (NC) core materials, the TP3P series covers an inductance range of 0.5–50.0 mH with rated currents from 4 A to 60 A (RMS). The MnZn cores exhibit a linear impedance characteristic up to the first resonance frequency, making them ideal for broadband filtering applications. Nanocrystalline cores offer higher permeability and inductance density, with characteristic impedance curves that provide strong low-frequency attenuation.

The TP3PFCM series is designed for THT (through-hole) mounting, ensuring robust mechanical stability in industrial environments. With voltage ratings of 500 VAC (operating) and 2500 VAC (test), these chokes meet the requirements of 400 VAC three-phase mains systems and comply with CISPR 16/EN 55011 conducted emissions standards for the frequency range 150 kHz to 30 MHz.

1.0 – 40 mH	10 – 60 A	Drop-In	THT Mount
INDUCTANCE RANGE	CURRENT RANGE (I rms)	WE-TPB COMPATIBLE	MECHANICAL STABILITY

Typical Applications

- Power electronics
- Power line input filter
- Radio interference suppression in motors
- Suppression for common mode noise
- Frequency converter
- Power supplies
- Charging stations

Electrical Characteristics Matrix

The TP3P series is engineered to provide high common-mode impedance across the critical EMC frequency range from 150 kHz to 30 MHz, as required by CISPR 16/EN 55011 for conducted emissions. The main inductance (LCM) of the common mode choke, measured at 10 kHz / 0.25 V, determines the CM filter cutoff frequency and should be selected with a recommended 30% margin above the calculated value to compensate for core material tolerances and temperature dependence. The leakage inductance (Lleak), typically in the range of tens of microhenries, serves as the inductive element in the differential-mode CLC-π filter and can be verified using impedance analysis tools such as REDEXPERT by positioning the cursor in the linearly rising (inductive) region of the impedance curve.

TrafoPSU Model	L(mH) ±20%	Irms(A)	DCR(mΩ)	Vr(V-AC)	Vt(V-AC)	Material	Dimensions (OD x H)
TP3PFCM-3R7M	3.68	14	30.0	500	2500	MnZn	45 x 38
TP3PFCM-6R0M	6.00	12	30.0	500	2500	MnZn	60 x 25
TP3PFCM-1R0M	1.20	20	20.0	2000	4000	MnZn	62 x 32
TP3PFCM-3R8M	3.80	20	18.0	500	2500	MnZn	60 x 40
TP3PFCM-2R9M	2.90	16	18.0	500	2500	MnZn	52 x 37
TP3PFCM-1R8M	1.78	30	8.0	500	2500	MnZn	69 x 45
TP3PNCM-1R0M	1.00	25	4.0	760	3000	Nano	41 x 24
TP3PNCM-2R0M	2.00	10.	10.5	760	3000	Nano	41 x 24
TP3PNCM-2R2M	2.20	20	1.5	760	3000	Nano	55 x 27
TP3PNCM-2R4M	2.40	60	1.5	760	3000	Nano	88 x 50
TP3PNCM-4R0M	4.00	30	3.0	760	3000	Nano	49 x 34
TP3PNCM-4R2M	4.20	25	3.0	760	3000	Nano	88 x 50
TP3PNCM-10R0M-15	10.00	15	7.5	760	3000	Nano	41 x 24
TP3PNCM-10R0M-20	10.00	20	4.0	760	3000	Nano	49 x 34
TP3PNCM-10R5M	10.50	40	3.2	760	3000	Nano	68 x 39
TP3PNCM-40R0M	40.00	10	21.5	760	3000	Nano	49 x 34

- Inductance is tested at 10KHz/0.25V
- Operating Temperature: -20 ℃ up to +125℃
- Custom inductance and current ratings available

Our Commitment to Your Power Performance

Professional · Flexible · Reliable

At HIPOWER, we believe that the stability of your power system relies on the absolute precision of every single winding. By combining 100% rigorous optical and electrical inspections with highly flexible custom engineering, we deliver magnetic components that consistently exceed catalog standards. We are not just a component vendor; we are your engineering partner dedicated to resolving your custom design constraints and securing your global supply chain.