TCB60405-252H vs VAC T60405-S6123-X140

40A 3-Phase Nanocrystalline Common Mode Choke — Technical Comparison

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VAC Common Mode Choke Supply Chain Reality

Three Pain Points for Customers

1. OEM lead time 16–24 weeks, production schedule at risk
2. Distributor spot price 3–8x premium, BOM cost out of control
3. 40A 3-phase SKUs extremely thin stock, volume orders not guaranteed

Why Sourcing Alternatives Now

- Europe/NA energy storage, inverter and VFD demand squeezes VAC capacity
- Designers need pin-to-pin alternatives to shorten lead time and lock cost
- Yetcoil TCB60405-252H is engineered for this exact purpose
- Same footprint, matched impedance, 4–6 week lead time

Source: Mouser / DigiKey distributor data, Q4 2026 · Yetcoil field survey

Product Positioning Comparison

Yetcoil TCB60405-252H

- Manufacturer: Yetcoil / Yu Yang Magnetic
- Material: Fe-based nanocrystalline
- Rated Current: 40 A (3-phase)
- L @10kHz: 2.50 mH
- |Z| @100kHz: 600 Ω
- Operating Temp: –40 to +130 °C
- Flame Rating: UL94V-0
- Lead Time: 4–6 weeks

VS

VAC T60405-S6123-X140

- Manufacturer: Vacuumschmelze, Germany
- Material: VITROPERM 500F
- Rated Current: 40 A (3-phase)
- L @10kHz: 2.48 mH
- |Z| @100kHz: 600 Ω
- Operating Temp: –40 to +130 °C
- Insulation System: UL1446 E209169
- Lead Time: 16–24 weeks

Source: Yetcoil TCB60405-252H datasheet · VAC T60405-S6123-X140 datasheet (10.05.2010)

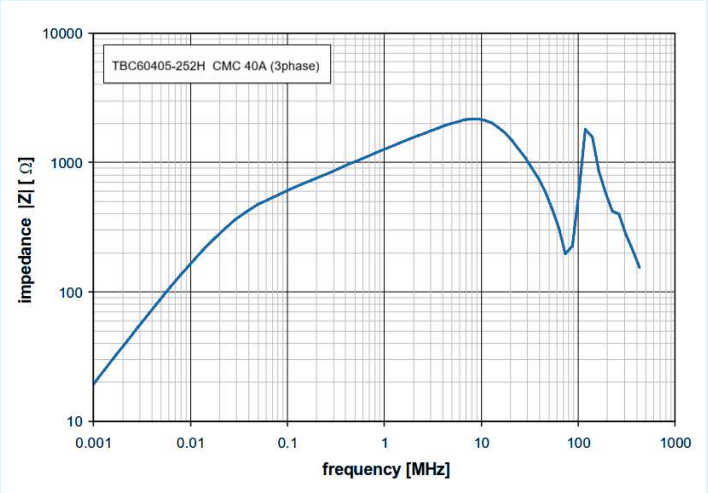
Key Electrical Parameters

Parameter	Yetcoil TCB60405-252H	VAC T60405-S6123-X140
Rated Current	40 A (3-phase)	40 A (3-phase)
Inductance L @10kHz	2.50 mH	2.48 mH
CM Impedance |Z| @100kHz	600 Ω	600 Ω
Unbalanced Current Iunbal	220 mA	220 mA
Operating Temperature	–40 to +130 °C	–40 to +130 °C
Max Outer Diameter	Ø52.0 mm max	Ø51 mm
Flame / Insulation	UL94V-0	UL1446 E209169

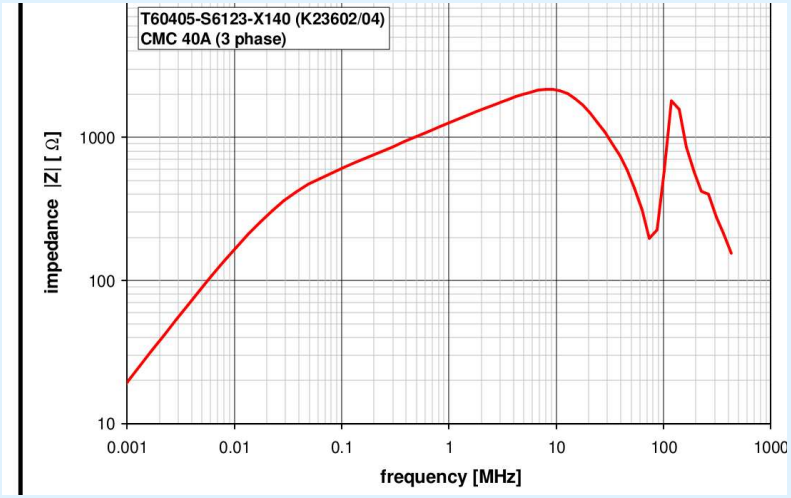
Source: Yetcoil TCB60405-252H datasheet · VAC T60405-S6123-X140 datasheet · Electrically equivalent, pin-to-pin drop-in

Impedance & Insertion Loss Comparison

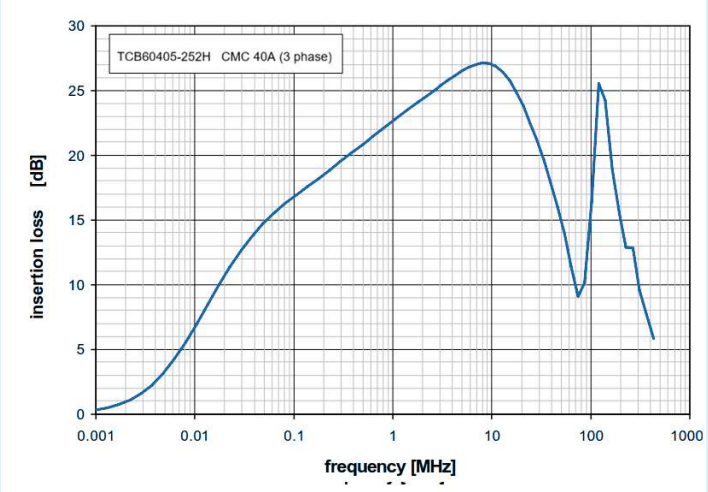
Yetcoil TCB60405-252H — Impedance |Z|



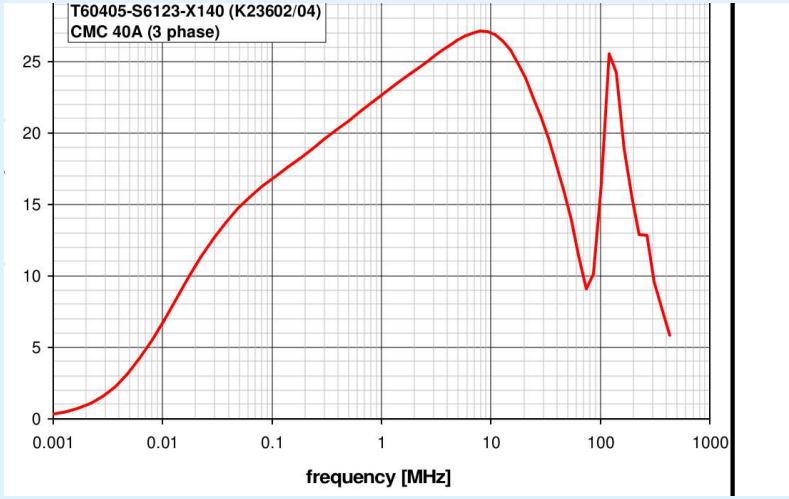
VAC T60405-S6123-X140 — Impedance |Z|



Yetcoil TCB60405-252H — Insertion Loss



VAC T60405-S6123-X140 — Insertion Loss



Source: Yetcoil test data · VAC T60405-S6123-X140 datasheet (10.05.2010) · Curve shape and frequency response closely aligned

Core Material Comparison

VAC VITROPERM 500F

- Material: Fe-based nanocrystalline alloy
- Initial permeability μ ≈ 20,000
- Saturation flux density Bs ≈ 1.24 T
- Ribbon thickness down to 18 μm
- Manufactured in Germany; cores not sold externally
- Flat temperature characteristics, wideband attenuation

Yetcoil Equivalent 1K107B

- Material: Fe-based nanocrystalline (GB/T 1K107B)
- Permeability and Bs equivalent to 500F
- Suppliers: Antainano / Qingdao Yunlu / CRIM
- Cores freely purchasable, cost controllable
- Custom annealing and winding for target impedance
- Verified: 10kHz / 100kHz impedance matched

Source: VAC VITROPERM datasheet · CRIM 1K107B spec · Antainano product data

Commercial & Service Comparison

Dimension	Yetcoil TCB60405-252H	VAC T60405-S6123-X140
Lead Time	**4–6 weeks**	16–24 weeks
Price (volume)	**30–50% lower**	Baseline (3–8x distributor premium)
MOQ	**100 pcs**	Typically 500–1000+
Sample Support	**3–5 days**	Through official channels
Technical Support	**24h response / custom winding**	Standard catalog only

Source: Yetcoil 2026 quotation · Mouser / DigiKey distributor pricing Q4 2026 · VAC official lead time notice

Typical Applications

Industrial / Energy / Power Electronics

- 3-Phase PV Inverter
- Energy Storage PCS
- VFD / Frequency Converter
- Three-Phase Online UPS
- Industrial Power Supply / Rectifier

Why This Choke

- 40A 3-phase high-current, strict EMC requirements
- Nanocrystalline wideband attenuation, single-stage filtering
- Inverter high-frequency switching noise suppression
- VAC OEM lead time too long; backup solution needed
- TCB60405-252H pin-to-pin direct replacement

Source: Yetcoil TCB60405-252P application guide · VAC VITROPERM CMC application notes

Conclusion

TCB60405-252H and VAC T60405-S6123-X140 are closely aligned in electrical parameters, impedance curves and dimensions — a direct pin-to-pin replacement.

Yetcoil offers clear advantages in lead time (4–6 weeks vs 16–24 weeks), price (30–50% lower), MOQ and sample turnaround.

For European and North American inverter, energy storage and VFD customers, this is a low-risk, high-value alternative.

Next Steps

1. Request the full TCB60405-252H datasheet and impedance curves
2. Order 3–5 samples for EMC validation
3. Contact the Yetcoil sales team for volume pricing