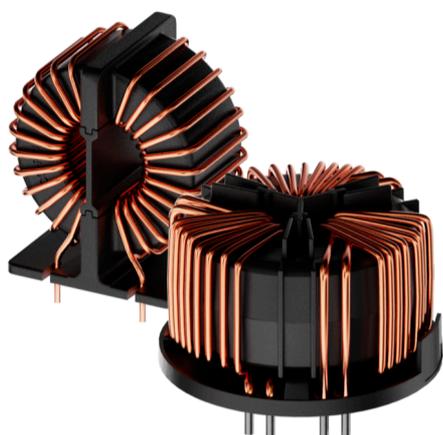


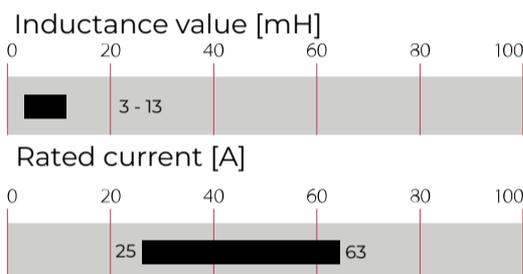
Current-Compensated Chokes - Nanocrystalline Core



- Rated currents from 25 to 63 A
- Up to 600 VAC and VDC
- 2- and 3-wire configurations
- Horizontal and vertical PCB mounting types
- Ruggedized saturation and thermal behavior
- Open construction for forced and convection cooling
- Straightforward pin-out for easy PCB design
- Nanocrystalline core for high performance at 10 kHz



Performance indicators



Approvals & Compliances



RT common-mode chokes are mainly used to filter EMI noise on AC power lines up to 600 VAC. EMI noise of electronic equipment can go to the power lines and disturb the proper function of other devices like communication devices or control logic of robotics. Thus noise generated by the equipment from switched power electronics or by high slew rates of controllers needs to be filtered. RT common-mode chokes are used to suppress EMI noise in PCB integrated filter designs with line bypass capacitors or in combination with single phase filters for extra low leakage filter designs.

Features and Benefits

- Cost-effective PCB designs for up to 100 A with forced cooling
- EIS (electrical insulation system E332676) acc. to UL 1446
- Compact size and light weight
- Low magnetic leakage flux
- Excellent winding insulation
- Standardized foot print
- Broad range of inductance ratings
- Custom-specific versions on request

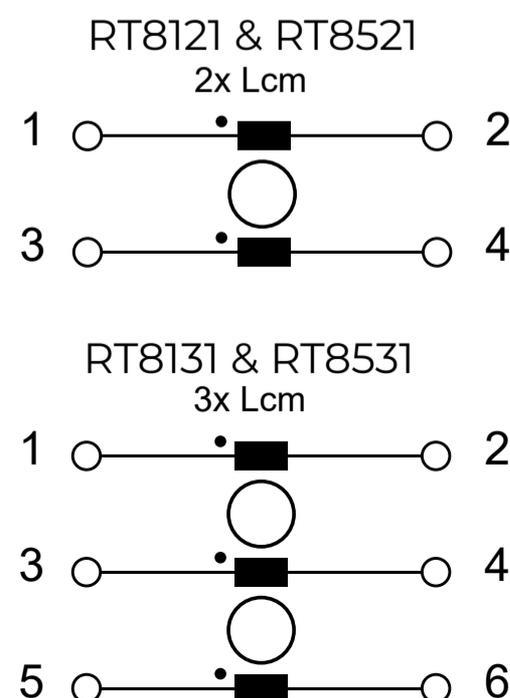
Technical Specifications

| | |
|--|--|
| Rated currents | 25 to 63 A @ 60°C |
| Operating frequency | DC to 400 Hz |
| Creepage and clearance distances | Creepage & Clearance (2-line): ≥ 3.5 mm (Coil - Coil) / ≥ 3.0 mm (Coil-Core) Creepage & Clearance (3-line): ≥ 6.3 mm (Coil - Coil) / ≥ 5.5 mm (Coil-Core) |
| High potential test voltage | 3 kV AC 3s (coil to coil) Repetition with max. 80% of the HV test voltage |
| Rated inductance | 3 to 13 mH |
| Operating voltage | 300 VAC / 450 VDC (2-line) 600 VAC (3-line) |
| Overvoltage category | III (acc. IEC 60664-1) |
| Pollution degree | PD2 (acc. IEC60664-1) |
| Stray inductance | Max. 0.1% of rated inductance (@ 10 kHz 1 V, 0 A) |
| Temperature range (operation and storage) | -40°C to +125°C |
| Climatic category | 40/125/56 (acc. IEC 60068-1) |
| Altitude | 2'000 m, current and voltage derating above |
| Flammability corresponding to | UL 94 V0 |
| Vibration and shock | Vibration: 10 Hz to 55 Hz (24 cycles, according IEC 60938-1) Shock: 30 g / 18 ms (3 cycles, according IEC 60938-1) 3M4 (according IEC 60721-3-3) |
| Design corresponding to | UL/IEC 60938-1/-2 UL1446 |
| MTBF (Mil-HB-217F) | >2,000,000 h @ 60°C/300 V |

Typical Applications

- AC and DC filtering for midsize power range drives, photovoltaic inverters, fast chargers, EV charging stations, UPS and switch mode power supplies
- Filter with low leakage current noise or improved immunity against grid disturbances
- Electronic devices, automation and (industrial) LED lighting
- Communication devices
- Medical and laboratory equipment
- Converters

Typical electrical schematic



RT Series - Nanocrystalline Core

| | Cooling nominal Current @ 60°C [A] | *3 m/s nominal Current @ 60°C [A] | **Ln @ 25°C 10kHz [mH/path] | Ln @ 25°C 100kHz [mH/path] | R @ 25°C [mΩ/path] | Size [size] | ***Ø Pin ±0.1 ØP [mm] | Weight [g] |
|--------------------------|--|---|-----------------------------------|----------------------------------|-----------------------|----------------|-----------------------------|---------------|
| Horizontal 2-line | | | | | | | | |
| RT8121-32-12M8 | 32 | 51 | 12.8 | 2.9 | 3.4 | 13 | 2.4 | 220 |
| RT8121-40-10M1 | 40 | 64 | 10.1 | 2.3 | 2.2 | 13 | 2.8 | 230 |
| RT8121-50-8M6 | 50 | 80 | 8.6 | 1.9 | 1.7 | 14 | 2x 2.2 | 280 |
| RT8121-63-4M4 | 63 | 100 | 4.4 | 1 | 1.1 | 14 | 2x 2.2 | 270 |
| Vertical 2-line | | | | | | | | |
| RT8521-32-12M8 | 32 | 51 | 12.8 | 2.9 | 3.5 | 15 | 2.4 | 230 |
| RT8521-40-10M1 | 40 | 64 | 10.1 | 2.3 | 2.3 | 15 | 2.8 | 240 |
| RT8521-50-8M6 | 50 | 80 | 8.6 | 1.9 | 1.7 | 16 | 2x 2.2 | 300 |
| RT8521-63-4M4 | 63 | 100 | 4.4 | 1 | 1 | 16 | 2x 2.2 | 290 |
| Horizontal 3-line | | | | | | | | |
| RT8131-25-12M8 | 25 | 25 | 12.8 | 2.9 | 3.5 | 17 | 2.4 | 260 |
| RT8131-32-10M1 | 32 | 51 | 10.1 | 2.3 | 2.5 | 17 | 2.4 | 260 |
| RT8131-40-6M3 | 40 | 64 | 6.3 | 1.4 | 1.9 | 18 | 2x 1.9 | 290 |
| RT8131-50-4M4 | 50 | 80 | 4.4 | 1 | 1.2 | 18 | 2x 2.2 | 300 |
| RT8131-63-2M8 | 63 | 100 | 2.8 | 0.6 | 0.7 | 18 | 2x 2.6 | 320 |
| Vertical 3-line | | | | | | | | |
| RT8531-25-12M8 | 25 | 25 | 12.8 | 2.9 | 3.5 | 19 | 2.4 | 260 |
| RT8531-32-10M1 | 32 | 51 | 10.1 | 2.3 | 2.5 | 19 | 2.4 | 260 |
| RT8531-40-6M3 | 40 | 64 | 6.3 | 1.4 | 1.9 | 20 | 2x 1.9 | 290 |
| RT8531-50-4M4 | 50 | 80 | 4.4 | 1 | 1.2 | 20 | 2x 2.2 | 300 |
| RT8531-63-2M8 | 63 | 100 | 2.8 | 0.6 | 0.8 | 20 | 2x 2.6 | 320 |

Test conditions: Inductance tolerance: +50%, -30%; Resistance tolerance: +15% @ 25°C; Electrical characteristics @ 25°C: ±2°C

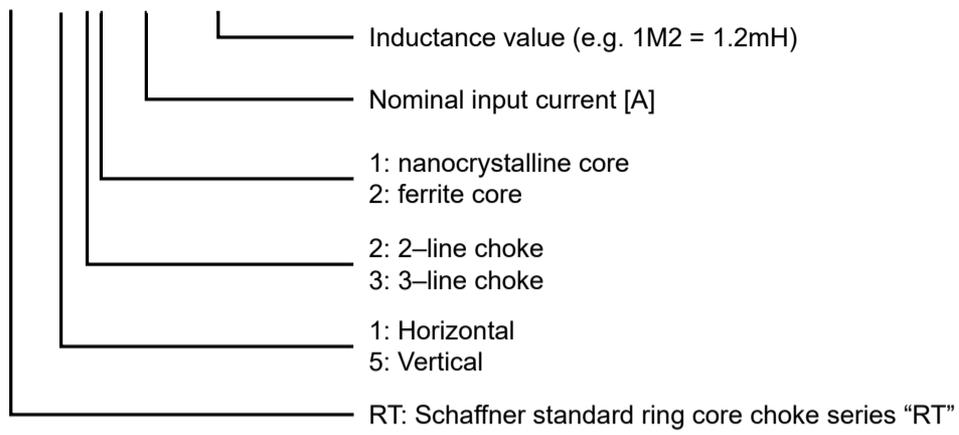
* Typical current for forced cooling with 3 m/s. Due to the possible turbulences and degradation of the air stream within an equipment please consider thermal validation.

** Typical stray inductance, max is 0.1% of Ln.

*** Length of pin (dimension P) is always 5.5 mm ± 1 mm.

Product selector

RT8xxx-xx-xMx



Examples:

RT8121-32-12M8: Horizontal 2-line choke for 32 A, with 12.8 mH

RT8531-50-4M4: Vertical 3-line choke for 50 A, with 4.4 mH

Distribution Inventory

Up-to-date inventory levels for global distributors is available at

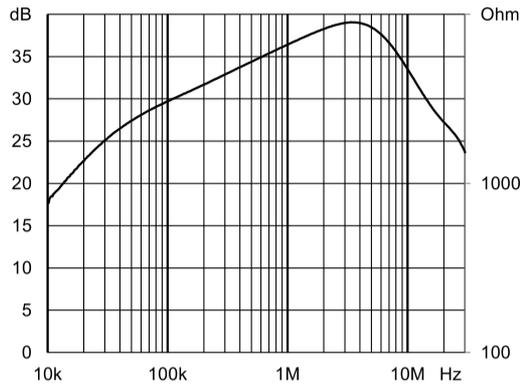
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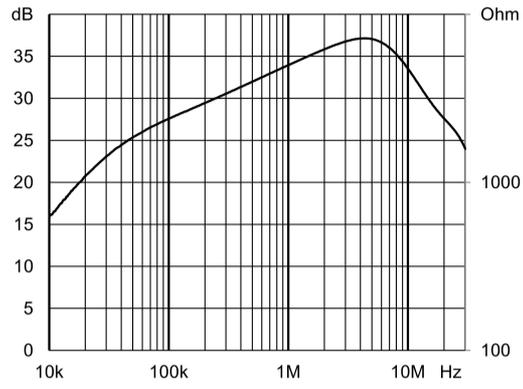
Typical Choke Attenuation And Impedance - 2-Line Versions

Per CISPR 17; 50 Ω/50 Ω asym

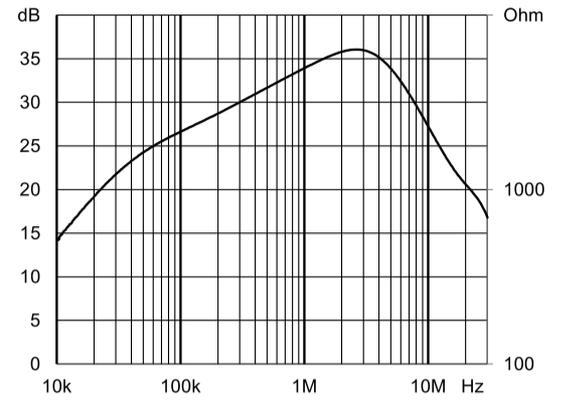
RT8x21-32-12M8



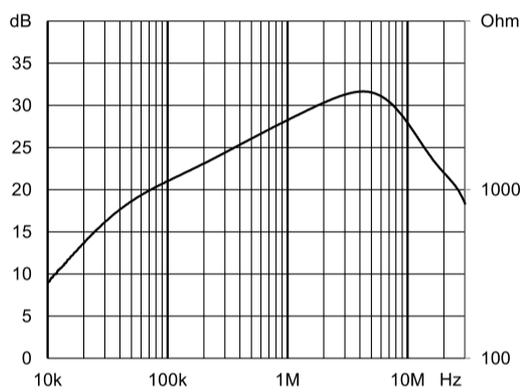
RT8x21-40-10M1



RT8x21-50-8M6



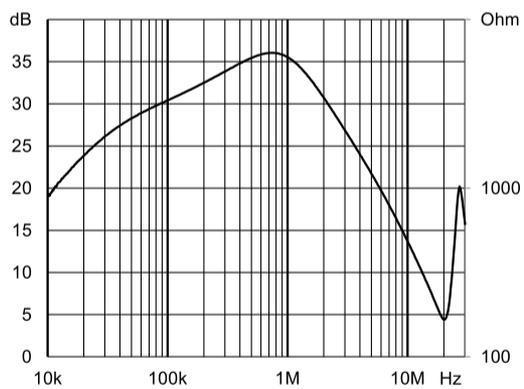
RT8x21-63-4M4



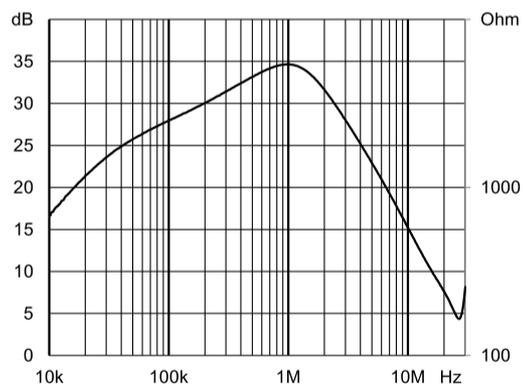
Typical Choke Attenuation And Impedance - 3-Line Versions

Per CISPR 17; 50 Ω/50 Ω asym

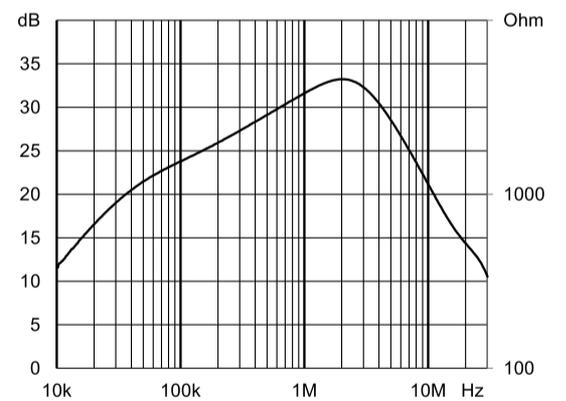
RT8x31-25-12M8



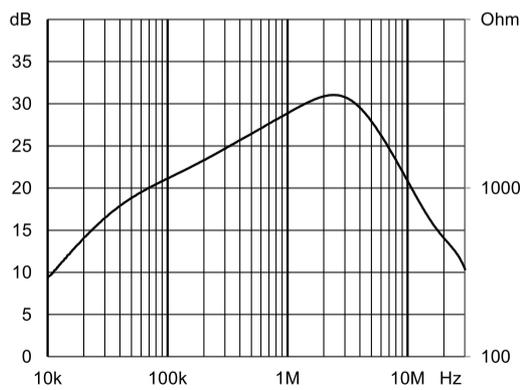
RT8x31-32-10M1



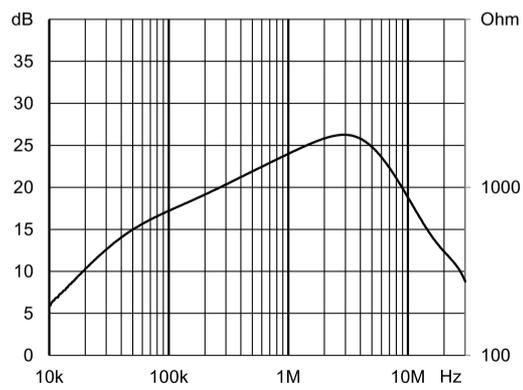
RT8x31-40-6M3



RT8x31-50-4M4



RT8x31-63-2M8

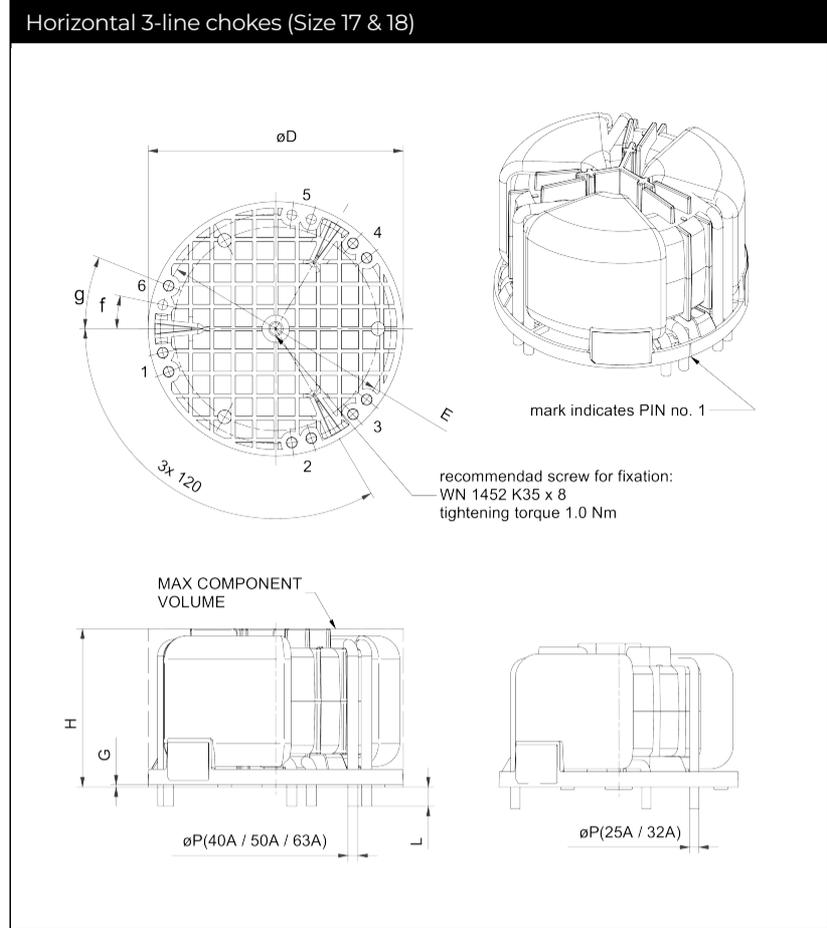
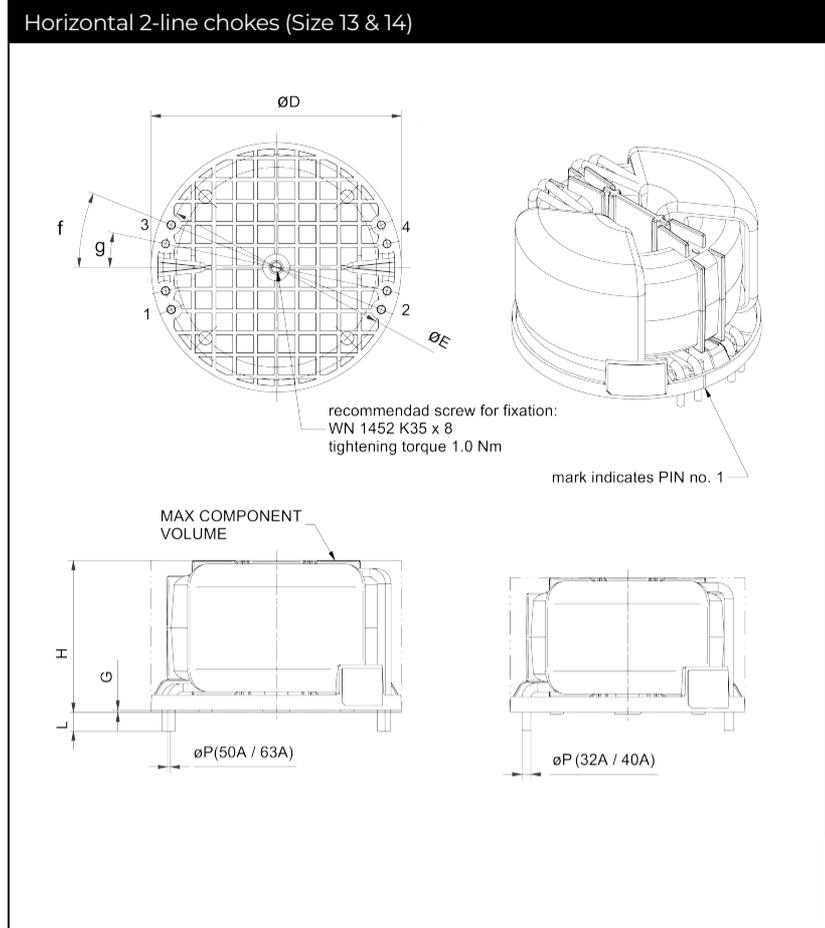


RT 8132

Mechanical Data: Horizontal Chokes

All dimensions in mm; 1 inch = 25.4 mm

Tolerances according: ISO 2768-m/EN 22768-m



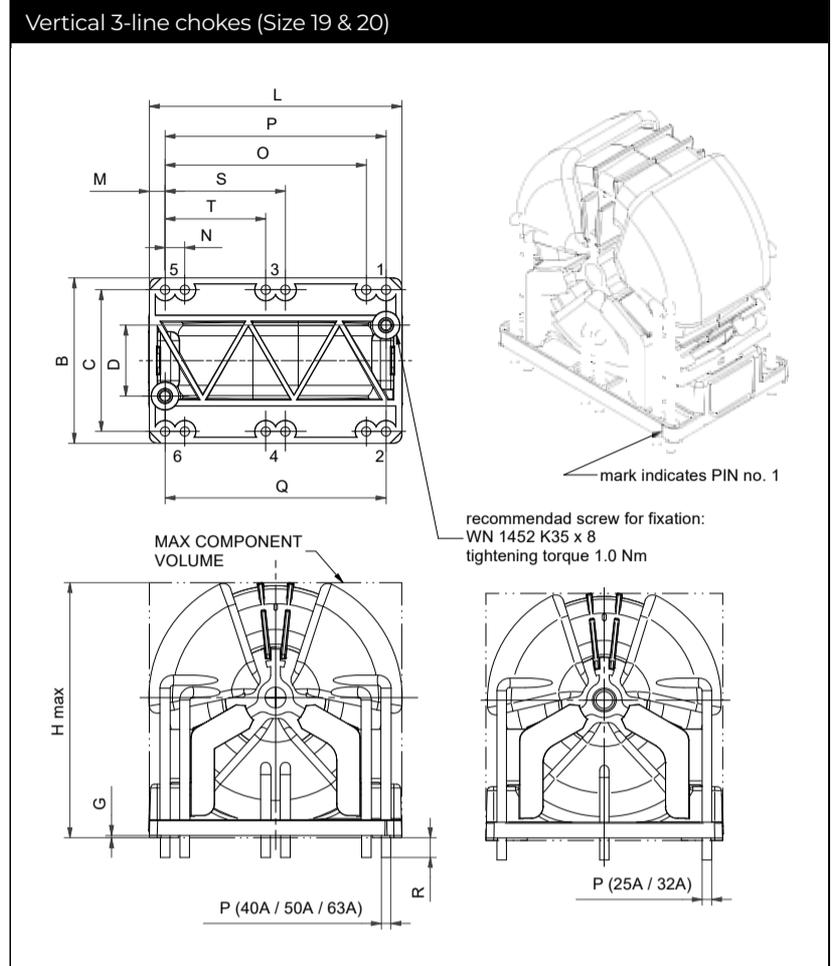
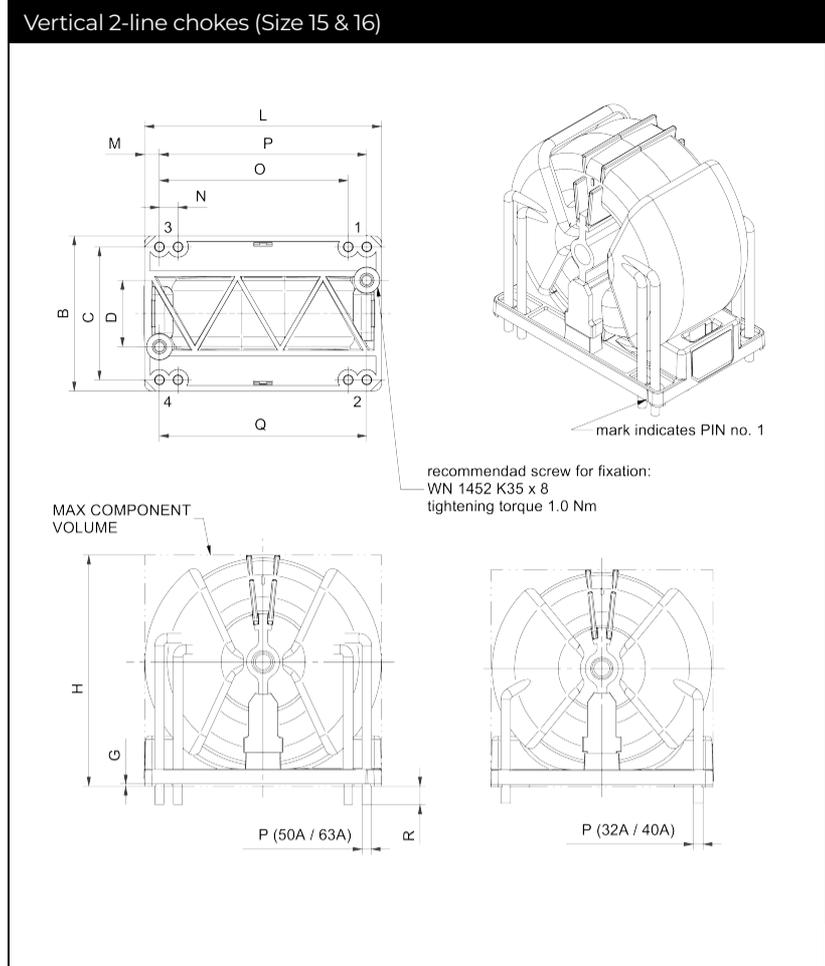
Dimensions

| | $\varnothing D$ | H | G | $\varnothing E$ | f | g | L | $\varnothing P$ |
|--|-----------------|-------|-----------|-----------------|----------------|----------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | | | | | | | | (25A) | (32A) | (40A) | (50A) | (63A) |
| | ± 0.2 | (max) | ± 0.1 | ± 0.2 | $\pm 10^\circ$ | $\pm 10^\circ$ | ± 0.5 | ± 0.1 |
| Size 13 (RT8121-32-12M8, RT8121-40-10M1) | 62 | 37 | 0.6 | 55.4 | 150° | | 5 | | 2.4 | 2.8 | | |
| Size 14 (RT8121-50-8M6, RT8121-63-4M4) | 66 | 41 | 0.6 | 59.8 | 120° | 220° | 5 | | | | 2x 2.2 | 2x 2.2 |
| Size 17 (RT8131-25-12M8, RT8131-32-10M1) | 62 | 38 | 0.6 | 55.4 | 150° | | 5 | 2.4 | 2.4 | | | |
| Size 18 (RT8131-40-6M3, RT8131-50-4M4, RT8131-63-2M8) | 66 | 42 | 0.6 | 59.8 | 120° | 220° | 5 | | | 2x 1.9 | 2x 2.2 | 2x 2.6 |

Mechanical Data: Vertical Chokes

All dimensions in mm; 1 inch = 25.4 mm

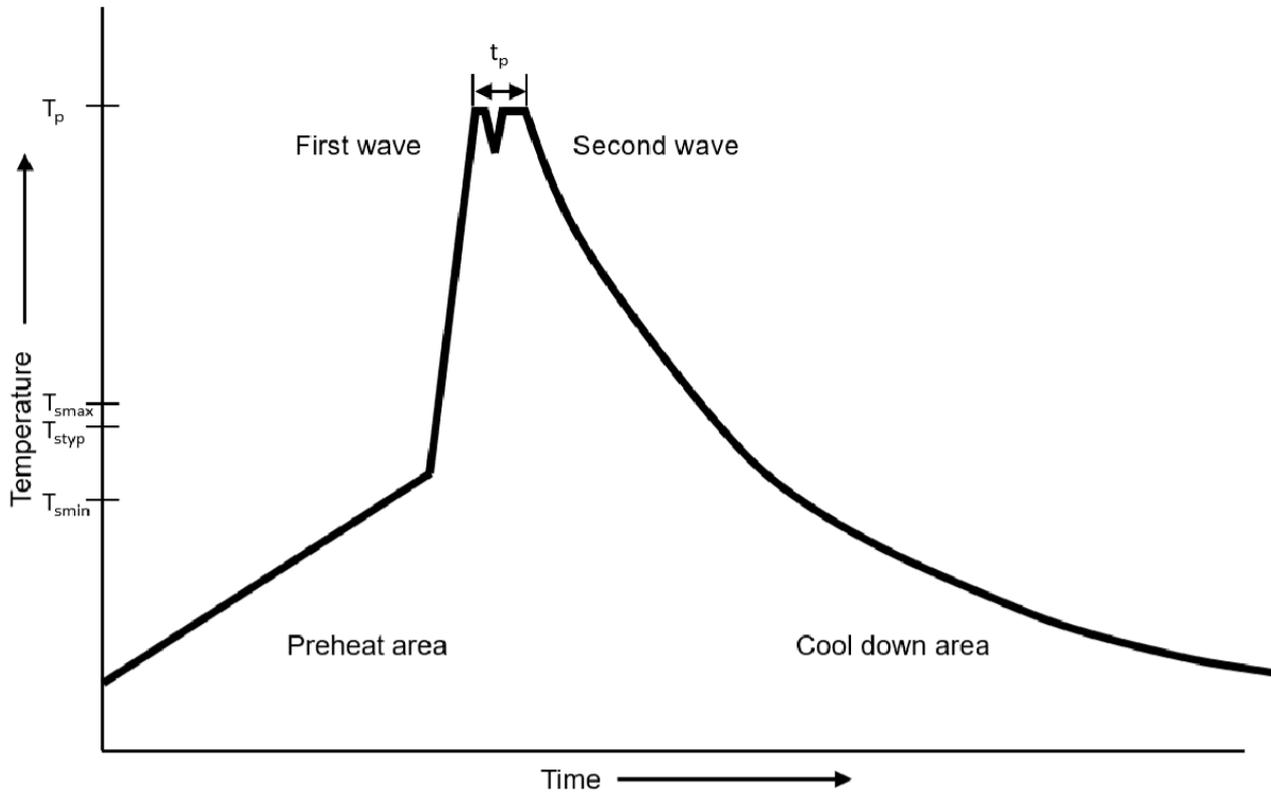
Tolerances according: ISO 2768-m/EN 22768-m



Dimensions

| | L | B | H | G | C | D | M | N | O | P | Q | S | T | R | øP | øP | øP | øP | øP |
|--|------|------|-------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| | ±0.2 | ±0.2 | (max) | ±0.1 | ±0.4 | ±0.2 | ±0.1 | ±0.4 | ±0.4 | ±0.4 | ±0.4 | ±0.4 | ±0.2 | ±0.5 | (25A) | (32A) | (40A) | (50A) | (63A) |
| Size 15 (RT8521-32-12M8, RT8521-40-10M1) | 60 | 38 | 60 | 0.6 | 32 | 12 | 4 | | | 52 | 46 | | | 5 | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1 |
| Size 16 (RT8521-50-8M6, RT8521-63-4M4) | 64 | 42 | 64 | 0.6 | 36 | 18 | 4 | 5 | 51 | 56 | 56 | | | 5 | | | | 2x | 2x |
| | | | | | | | | | | | | | | | | | | 2.2 | 2.2 |
| Size 19 (RT8531-25-12M8, RT8531-32-10M1) | 60 | 38 | 63 | 0.6 | 32 | 12 | 4 | | | 52 | 46 | | 26 | 5 | 2.4 | 2.4 | | | |
| Size 20 (RT8531-40-6M3, RT8531-50-4M4, RT8531-63-2M8) | 64 | 42 | 67 | 0.6 | 36 | 18 | 4 | 5 | 51 | 56 | 56 | 30.5 | 25.5 | 5 | | | 2x | 2x | 2x |
| | | | | | | | | | | | | | | | | | 1.9 | 2.2 | 2.6 |

Soldering Profile



Reference IEC61760-1:2020

| Profile Feature | Lead (Pb) Free Solder |
|-------------------------------------|---|
| Preheat | Temperature min. (T_{smin}) 100 °C |
| | Temperature typ. (T_{styp}) 120 °C |
| | Temperature max. (T_{smax}) 130 °C |
| | Time (T_{smin} to T_{smax})(t_s) 70 seconds |
| Δ Preheat to max Temperature | 150 °C max. |
| Peak temperature (T_p) | 250 °C – 260 °C |
| Time at peak temperature (t_p) | 6 seconds max. 2 seconds each wave |
| Ramp-down rate | ~ 2 K/s min. ~ 3.5 K/s typ. ~ 5 K/s max. |
| Time 25 °C to 25 °C | 4 minutes |

Manual solder

350 °C \pm 10 °C, 10 seconds \pm 1s (by soldering iron).

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