

Differential-mode chokes



- | Rated currents from 0.5 to 4 A

- | DC to 400 Hz frequency

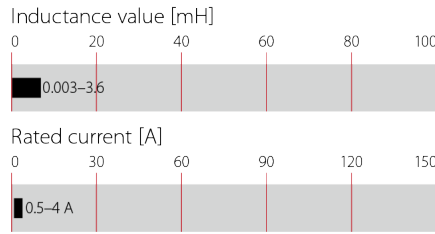
- | 500 kHz to 60 MHz differential-mode resonance frequency

- | 40 to 450 microjoules storage

- | Multiple PCB-mounting options



Performance indicators



Approvals



RS chokes are state of the art differential-mode or symmetric chokes, which can be used in various kinds of applications. The datasheet gives an overview of three different kinds of applications with the related electrical specifications.

Features and benefits

- | 3 different applications specified

- | usable for basic and reinforced equipment

- | Quasi linear saturation for storage mode

- | 40 to 450 microjoules storage

- | Resonance Frequency from 500kHz to 60MHz in symmetrical mode

- | Custom-specific versions are available on request

- | Multiple housing options

Technical specifications

| | |
|--|--|
| Operating voltage | 250 VAC |
| Operating frequency | DC to 400 Hz |
| Rated currents | 0.5 to 4 A @ rated ambient temperature |
| Rated inductance | 0.003 to 3.6 mH |
| High potential test voltage winding-to-winding @ 25°C | 1500 VAC, 60 sec, guaranteed 1500 VAC, 2 sec, factory test |
| winding-to-housing @ 25°C | 4000 VAC, 60 sec, guaranteed |
| Surge current @ 10 msec | 20 x I _N @ 25°C |
| Temperature range (operation and storage) | -40°C to 125°C (40/125/56) acc. IEC 60068-1 |
| Flammability corresponding to | Potting compound UL 94V-0 Housing UL 94V-0 Ringcore coating UL 94V-0 |
| Design corresponding to | UL 1283, IEC/EN 60938-1 |

Typical applications

- | Energy filtering

- | Multistage discrete filtering

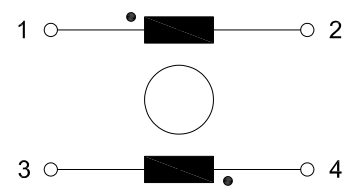
- | General purpose differential/symmetrical mode filtering

- | SMPS and UPS

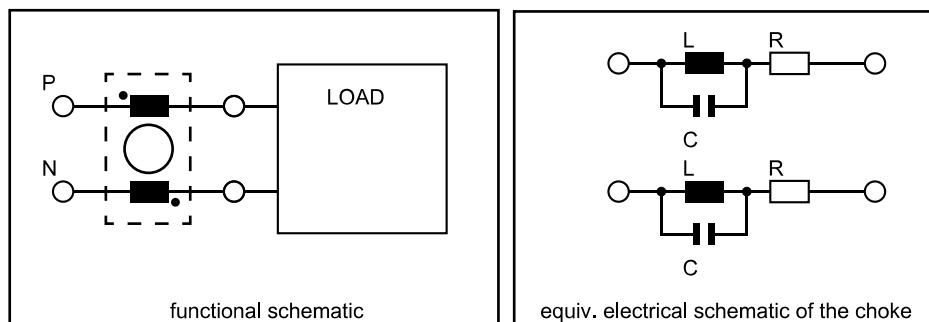
- | DC/DC converters

- | Frequency converters

Typical electrical schematic



Application type #1: Symmetrical/differential mode

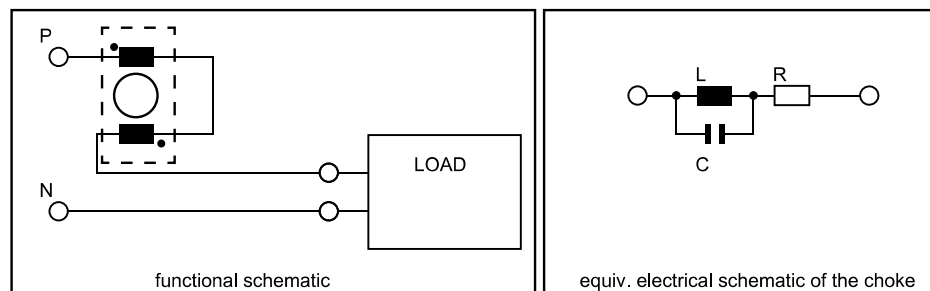


Choke selection table

| Filter | Current (I _N) | Inductance (L) | Resistance (R) | typ. Resonance Frequency f ₀ | typ. Attenuation @ f ₀ | typ. parasitic Capacitance C _p |
|--------------------------------------|---------------------------|-------------------|-------------------|---|--------------------------------------|---|
| | @ 40°C ambient [A] | | | | | |
| RS 512-0.5-02 / RS 612-0.5-02 | 0.5 | 200 | 650 | 8 | 44.9 | 1.98 |
| RS 512-1-02 / RS 612-1-02 | 1 | 55 | 130 | 20 | 37.3 | 3.83 |
| RS 512-2-02 / RS 612-2-02 | 2 | 13 | 30 | 25 | 25.3 | 3.31 |
| RS 512-4-02 / RS 612-4-02 | 4 | 3 | 10 | 33 | 10.7 | 7.75 |
| RS 514-0.5-02 / RS 614-0.5-02 | 0.5 | 480 | 800 | 7 | 50.6 | 8.87 |
| RS 514-1-02 / RS 614-1-02 | 1 | 120 | 200 | 11 | 42.7 | 7.39 |
| RS 514-2-02 / RS 614-2-02 | 2 | 30 | 50 | 16 | 32.5 | 3.66 |
| RS 514-4-02 / RS 614-4-02 | 4 | 8 | 20 | 22 | 25.6 | 3.43 |
| RS 622-0.5-02 | 0.5 | 900 | 1250 | 2 | 54.9 | 12.64 |
| RS 622-1-02 | 1 | 225 | 300 | 4 | 46 | 6.33 |
| RS 622-2-02 | 2 | 55 | 70 | 7 | 33.2 | 9.40 |
| RS 622-4-02 | 4 | 15 | 30 | 13 | 28.7 | 4.86 |

Test conditions: Measuring frequency: 10 kHz; 50 mV; Inductance tolerance: +50%, -30%; Resistance tolerance: ±15% @ 25°C; Electrical characteristics @ 25°C: ±2°C
For mechanical tolerances refer to mechanical data section.

Application type #2: Symmetrical/differential mode

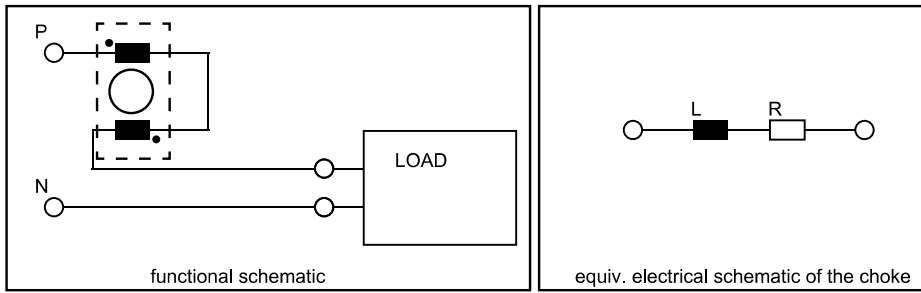


Choke selection table

| Filter | Current (I _N) @ 40°C ambient [A] | Inductance (L) [μH] | Resistance (R) [mOhm] | calc. Resonance Frequency | typ. Attenuation | typ. parasitic Capacitance |
|-------------------------------|--|---------------------------|-----------------------------|------------------------------|--------------------------|-------------------------------|
| | | | | F ₀ [MHz] | @ F ₀ [dB] | C _p [pF] |
| RS 512-0.5-02 / RS 612-0.5-02 | 0.5 | 800 | 1300 | 2 | 50 | 7.9 |
| RS 512-1-02 / RS 612-1-02 | 1 | 220 | 260 | 8 | 47 | 4.8 |
| RS 512-2-02 / RS 612-2-02 | 2 | 52 | 60 | 17 | 36 | 3.0 |
| RS 512-4-02 / RS 612-4-02 | 4 | 12 | 20 | 27 | 22 | 2.9 |
| RS 514-0.5-02 / RS 614-0.5-02 | 0.5 | 1920 | 1600 | 2.5 | 60 | 7.0 |
| RS 514-1-02 / RS 614-1-02 | 1 | 480 | 400 | 5.5 | 53 | 6.6 |
| RS 514-2-02 / RS 614-2-02 | 2 | 120 | 100 | 10 | 42 | 4.4 |
| RS 514-4-02 / RS 614-4-02 | 4 | 32 | 40 | 18 | 34 | 5.8 |
| RS 622-0.5-02 | 0.5 | 3600 | 2500 | 0.6 | 63 | 11.7 |
| RS 622-1-02 | 1 | 900 | 600 | 1.5 | 55 | 9.3 |
| RS 622-2-02 | 2 | 220 | 140 | 3 | 33 | 12.8 |
| RS 622-4-02 | 4 | 60 | 60 | 5 | 38 | 5.2 |

Test conditions: Measuring frequency: 10 kHz; 50 mV; Inductance tolerance: +50%, -30%; Resistance tolerance: ±15% @ 25°C; Electrical characteristics @ 25°C: ±2°C
For mechanical tolerances refer to mechanical data section.

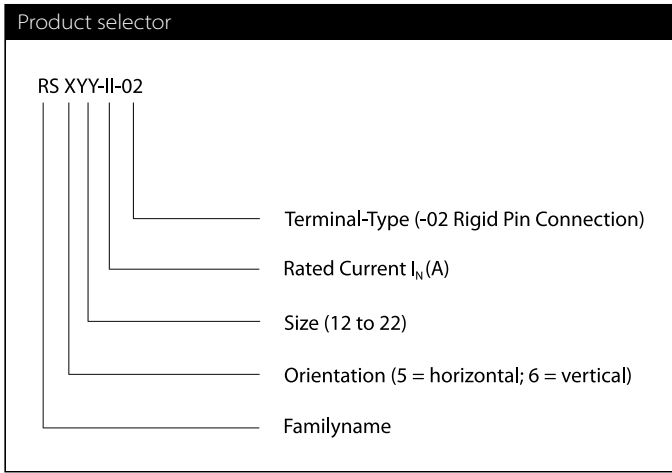
Application type #3: Energy storage



Choke selection table

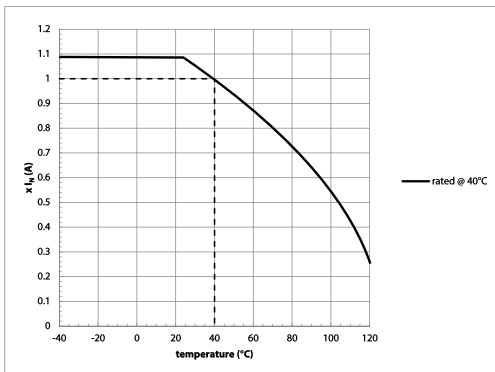
| Filter | Current (I_N) @ 40°C ambient [A] | Inductance (L) [μH] | Resistance (R) [mOhm] | Energy E [μJ] |
|-------------------------------|--|---------------------------|-----------------------------|---------------------|
| RS 512-0.5-02 / RS 612-0.5-02 | 0.5 | 800 | 1300 | 100 |
| RS 512-1-02 / RS 612-1-02 | 1 | 220 | 260 | 100 |
| RS 512-2-02 / RS 612-2-02 | 2 | 52 | 60 | 100 |
| RS 512-4-02 / RS 612-4-02 | 4 | 12 | 20 | 100 |
| RS 514-0.5-02 / RS 614-0.5-02 | 0.5 | 1960 | 1600 | 240 |
| RS 514-1-02 / RS 614-1-02 | 1 | 480 | 400 | 240 |
| RS 514-2-02 / RS 614-2-02 | 2 | 120 | 100 | 240 |
| RS 514-4-02 / RS 614-4-02 | 4 | 32 | 40 | 240 |
| RS 622-0.5-02 | 0.5 | 3600 | 2500 | 450 |
| RS 622-1-02 | 1 | 900 | 600 | 450 |
| RS 622-2-02 | 2 | 220 | 140 | 450 |
| RS 622-4-02 | 4 | 60 | 60 | 450 |

Test conditions: Measuring frequency: 10 kHz; 50 mV; Inductance tolerance: +50%, -30%; Resistance tolerance: ±15% @ 25°C; Electrical characteristics @ 25°C: ±2°C
For mechanical tolerances refer to mechanical data section.

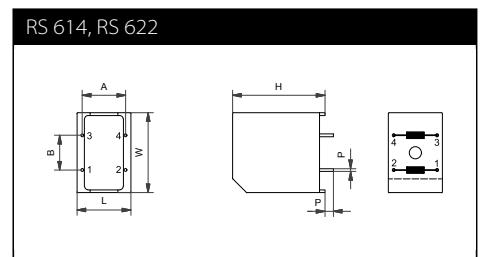
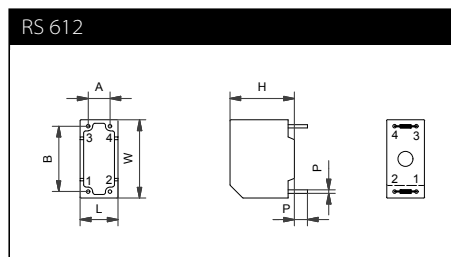
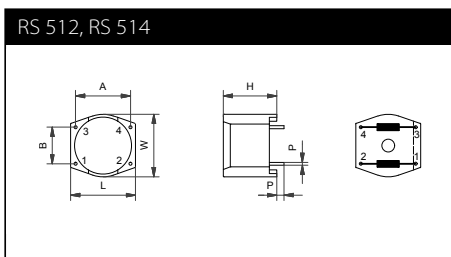


Thermal Derating

If higher ambient temperatures than the specified apply, the nominal current needs to be reduced according to the graph below.



Mechanical data



Pin material: Steel (base), Cu (under plating), Sn (final plating 6µm)

Dimensions

| | A (±0.6 mm) | B (±0.6 mm) | H (±0.3 mm) | L (±0.3 mm) | W (±0.3 mm) | P (±0.5 mm) | ØP (±0.1 mm) | weight [g] |
|---------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------------------|----------------------|
| RS 512 | 15.0 mm | 10.0 mm | 12.6 mm | 17.7 mm | 17.1 mm | 4.0 mm | 0.8 mm | 6 |
| RS 514 | 20.1 mm | 12.5 mm | 13.2 mm | 22.5 mm | 21.5 mm | 4.0 mm | 0.8 mm | 11 |
| RS 612 | 10.0 mm | 15.0 mm | 20.0 mm | 12.5 mm | 18.0 mm | 4.0 mm | 0.8 mm | 9 |
| RS 614 | 12.5 mm | 10.0 mm | 25.0 mm | 15.5 mm | 23.0 mm | 4.0 mm | 0.8 mm | 15 |
| RS 622 | 15.0 mm | 12.5 mm | 29.3 mm | 18.0 mm | 31.0 mm | 4.3 mm | 0.8 mm | 30 |

Please visit www.schaffner.com to find more details on filter connections.



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