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Differential-mode chokes



- | Rated currents from 0.5 to 4 A

- | DC to 400 Hz frequency

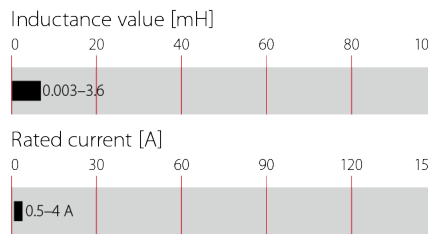
- | 500 kHz to 60 MHz differential-mode resonance frequency

- | 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

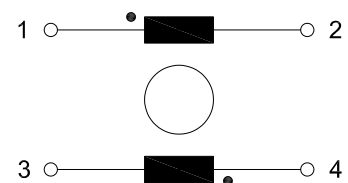
- | General purpose differential/symmetrical mode filtering

- | SMPS and UPS

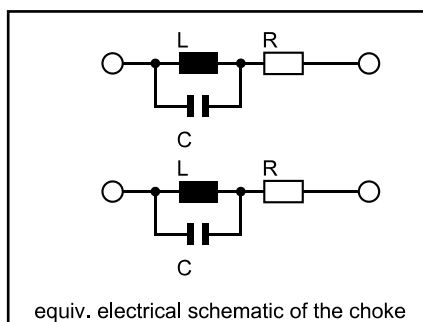
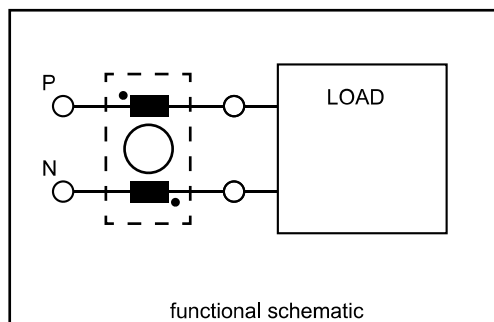
- | DC/DC converters

- | Frequency converters

Typical electrical schematic



Application type #1: Symmetrical/differential mode

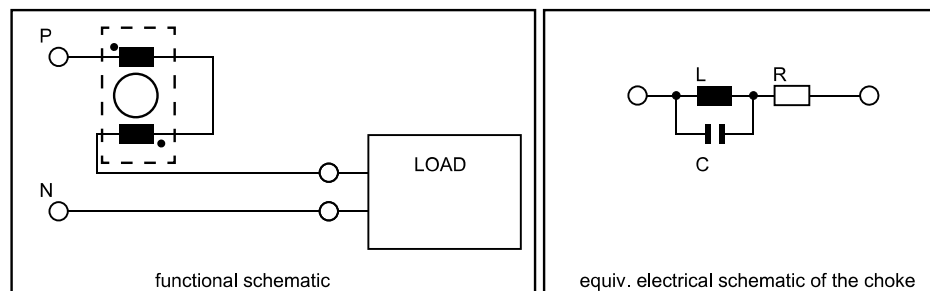


Choke selection table

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

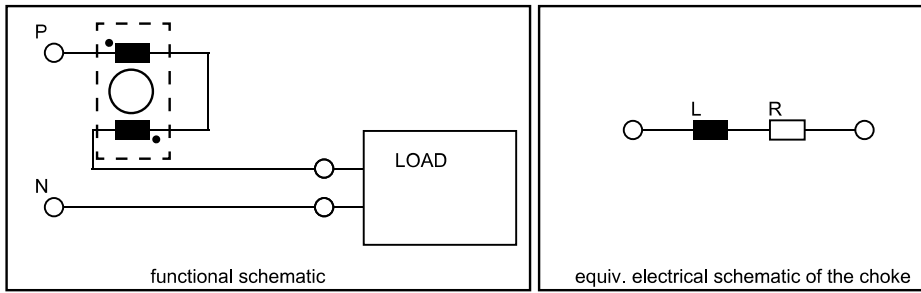


Choke selection table

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.

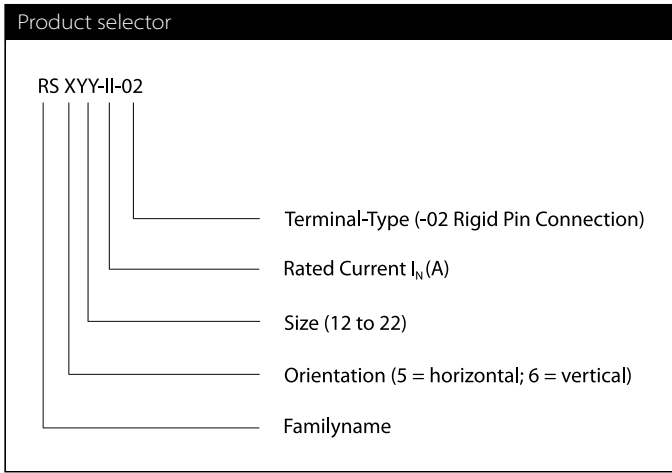
Application type #3: Energy storage



Choke selection table

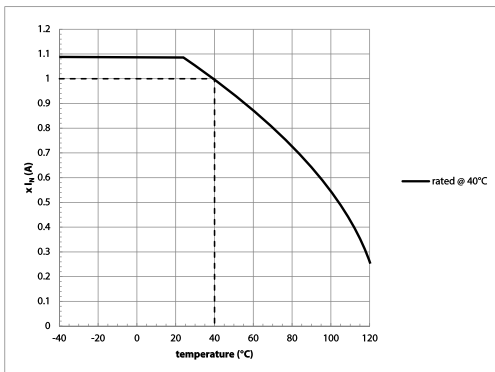
Filter	Current (I_N) @ 40°C ambient [A]	Inductance (L) [μH]	Resistance (R) [mOhm]	Energy E [μJ]
RS 512-0.5-02 / RS 612-0.5-02	0.5	800	1300	100
RS 512-1-02 / RS 612-1-02	1	220	260	100
RS 512-2-02 / RS 612-2-02	2	52	60	100
RS 512-4-02 / RS 612-4-02	4	12	20	100
RS 514-0.5-02 / RS 614-0.5-02	0.5	1960	1600	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.

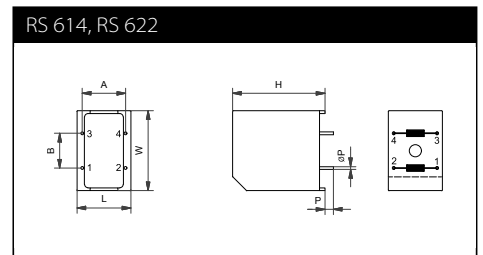
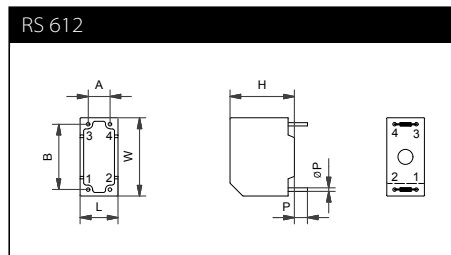
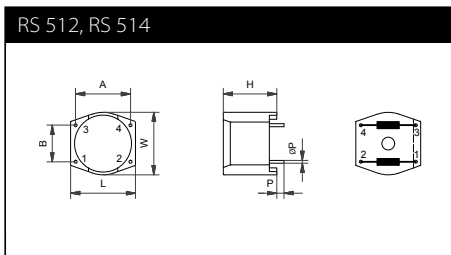


Thermal Derating

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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