

Eaton EXL high performance molded inductors



Next-gen pressed powder high-current inductors for computing, industrial, energy, and medical applications



Eaton's EXL is a family of next-generation pressed powder high-current inductors.

Product description

Eaton's EXL is a family of next-generation pressed powder high-current inductors. They provide a wide range of inductances from 0.15 μH to 10 μH . Eaton's EXL inductors are available in 4 high power density sizes: 4 mm, 5 mm, 6 mm, and 7 mm. Their advanced molded construction is excellent for higher currents requiring low saturation and stability across a wide operating temperature range (-40 °C up to +125 °C). Each product in the EXL line is magnetically shielded for superior EMI immunity.

Features and benefits

- Wide range of inductances suitable for next-gen converter and filtering applications
- Multiple SMT footprints to suit a wide range of applications
- Unique molded construction allowing for higher power density and efficiency
- Shielded construction for EMI immunity in any application
- Smaller SMT footprint for greater board savings
- Wide operating temperature range for a broad range of computing, industrial, energy, and medical applications
- Soft saturation characteristic to withstand high current spikes

Product specifications

Part number ⁵	OCL ¹ (μH) $\pm 20\%$	FLL ² (μH) minimum	I_{rms}^3 (A) typical		I_{sat}^4 (A)	DCR (m Ω) typical @ +25 °C	DCR (m Ω) maximum @ +25 °C	SRF (MHz) typical
			+20 °C rise	+40 °C rise				
EXL1V0402-xxx-R	0.47 - 3.3	0.26 - 1.84	4.4 - 9.8	5.5 - 13.2	4.4 - 12.5	6.0 - 34.2	6.8 - 38.3	26 - 90
EXL1V0503-xxx-R	0.15 - 4.7	0.08 - 2.63	4.3 - 14.3	5.9 - 22.2	7 - 32.5	2.1 - 33	2.31 - 36.3	21 - 140
EXL1V0505-xxx-R	5.6 - 10	3.13 - 5.6	3.8 - 5.3	5 - 7.2	5.4 - 7.2	22 - 39	24.2 - 43	10 - 20
EXL1V0603-xxx-R	0.18 - 4.5	0.1 - 2.52	5 - 24	7 - 32	8 - 36	1.6 - 23	1.75 - 25.3	20 - 143
EXL1V0605-xxx-R	0.82 - 8.2	0.45 - 4.59	4.5 - 16	6.2 - 21	6.8 - 20	3.8 - 28.6	4.18 - 31.5	15 - 52
EXL1V0606-xxx-R	1 - 10	0.56 - 5.6	5 - 15	7 - 19	6.8 - 16	3.9 - 26.6	4.29 - 29.3	12 - 37
EXL1V0703-xxx-R	1 - 8.2	0.56 - 4.59	3 - 16.1	5.9 - 21.8	9 - 28	4.55 - 44.3	5 - 48.7	12 - 35
EXL1V0705-xxx-R	2.2 - 5.6	1.23 - 3.13	7 - 11	10 - 14	11 - 17	5.8 - 15.6	6.4 - 17.2	15 - 27
EXL1V0707-xxx-R	2.2 - 6.8	1.23 - 3.8	7 - 13.2	9.5 - 17.8	11 - 17.6	5.73 - 17.8	6.33 - 19.6	13 - 25

1. Open Circuit Inductance (OCL) Test Parameters: 100 kHz, 0.1 V_{rms} , 0.0 Adc, +25 °C

2. Full Load Inductance (FLL) Test Parameters: 100 kHz, 0.1 V_{rms} , I_{sat} , +25 °C

3. I_{rms} : Heat Rated Current (I_{rms}) will cause the part temperature rise approximately ΔT of 40 °C. Circuit design, component, PCB trace size and thickness, airflow and other cooling provisions all affect the part temperature. Part temperature should be verified in the end application. The part temperature (ambient + temp rise) should not exceed +125 °C under worst case operating conditions.

4. I_{sat} : Peak current for approximately 30% rolloff @ +25 °C

5. Part Number Definition: EXLxxx-xxx-R

EXLxxxxx = Product code and size

xxx= inductance value in μH , R= decimal point,

If no R is present then third digit equals the number of zeros

-R suffix = RoHS compliant

6. Rated operating voltage: 15 V to 40 V typical

Mechanical parameters, schematic, pad layout (mm)

Part number	A	B	C	D	E	F
EXL1V0402-xxx-R	4.4 \pm 0.20	4.4 \pm 0.20	1.9 \pm 0.20	3.4 \pm 0.30	0.88 \pm 0.20	1.6 \pm 0.25
EXL1V0503-xxx-R	6.0 \pm 0.2	5.7 \pm 0.2	2.9 \pm 0.2	4.3 \pm 0.3	1.1 \pm 0.2	2.3 \pm 0.25
EXL1V0505-xxx-R	6.0 \pm 0.2	5.7 \pm 0.2	4.8 \pm 0.2	4.3 \pm 0.3	1.1 \pm 0.2	2.3 \pm 0.25
EXL1V0603-xxx-R	7.2 \pm 0.2	6.9 \pm 0.2	2.8 \pm 0.2 (R18-1R2) (1R5-4R5)	2.9 \pm 0.2 (1R5-4R5) See spec table ± 0.3	1.4 \pm 0.2	2.6 \pm 0.25
EXL1V0605-xxx-R	7.2 \pm 0.2	6.9 \pm 0.2	4.8 \pm 0.2	5.3 \pm 0.3 5.2 \pm 0.3 (R82-1R8) (2R2-8R2)	1.4 \pm 0.2	2.6 \pm 0.25
EXL1V0606-xxx-R	7.2 \pm 0.2	6.9 \pm 0.2	5.8 \pm 0.2	5.3 \pm 0.3	1.4 \pm 0.2	2.6 \pm 0.25
EXL1V0703-xxx-R	8.4 \pm 0.3	8 \pm 0.3	2.9 \pm 0.2	6.6 \pm 0.3 (1R0, 1R5)	1.75 \pm 0.2	3.15 \pm 0.25
EXL1V0705-xxx-R	8.4 \pm 0.3	8 \pm 0.3	4.8 \pm 0.2	6.2 \pm 0.3	1.75 \pm 0.2	3.15 \pm 0.25
EXL1V0707-xxx-R	8.4 \pm 0.3	8 \pm 0.3	6.7 \pm 0.3	6.7 \pm 0.3 6.5 \pm 0.3 (2R2-4R7) (5R6, 6R8)	1.75 \pm 0.2	3.15 \pm 0.25

Part marking:

1st digit = Inductance value per the "Part Marking Designator" letter code in specification table

2nd digit = Revision level

All soldering surfaces to be coplanar within 0.1 millimeters

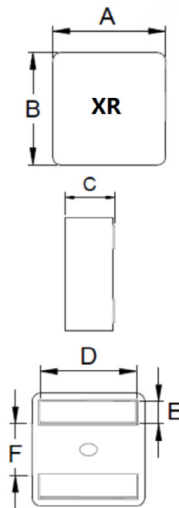
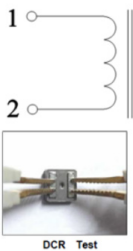
Tolerances are ± 0.3 millimeters unless stated otherwise

Dimensions of recommended PCB layout are reference only.

Pad layout tolerances are ± 0.1 millimeters unless stated otherwise

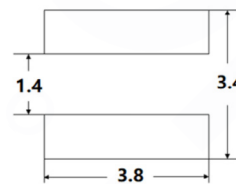
Traces or vias underneath the inductor is not recommended.

Schematic

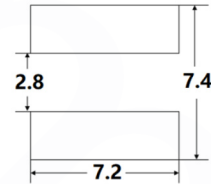


Recommended pad layout

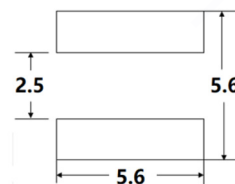
EXL1V0402-xxx-R



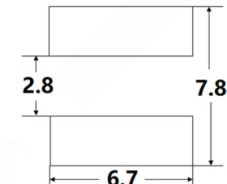
EXL1V0503-xxx-R, EXL1V0505-xxx-R,
EXL1V0703-xxx-R, EXL1V0705-xxx-R



EXL1V0603-xxx-R, EXL1V0605-xxx-R,
EXL1V0606-xxx-R



EXL1V0707-xxx-R



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