

Molded SMD Power Inductors – MWSA Series

Operating Temp. : -40°C~+125°C (Including self-heating)



FEATURES

- Metal material for large current and low loss
- Closed magnetic circuit design reduces leakage flux
- Halogen free, RoHS compliant

APPLICATIONS

- Server, desktop computer, notebook
- Graphics, memory
- Industrial equipment, telecom base station

PRODUCT IDENTIFICATION

MWSA **0603S** = **1R0** **M** **T** □□□

① ② ③ ④ ⑤ ⑥

| | |
|------|---------------------------|
| ① | Type |
| MWSA | Molded SMD Power Inductor |

| | |
|---------|--------------------|
| ③ | Nominal Inductance |
| Example | Nominal Value |
| R82 | 0.82μH |
| 1R0 | 1.0μH |

| | |
|-------|---------------------------------|
| ② | External dimensions(LxWxH) [mm] |
| 0412S | 4.2x4.4x1.2 |
| 0402S | 4.2*4.4*2.0 |
| 0518S | 5.2*5.4*1.8 |
| 0503S | 5.2*5.4*3.0 |
| 0618S | 6.6*7.0*1.8 |
| 0624S | 6.6*7.0*2.4 |
| 0603S | 6.6*7.0*3.0 |
| 0604S | 6.6*7.0*4.0 |
| 0605S | 6.6*7.0*5.0 |
| 1004S | 10.0*11.5*4.0 |
| 1205S | 12.6*13.45*5.0 |

| | |
|---|----------------------|
| ④ | Inductance Tolerance |
| M | ±20% |

| | |
|---|-------------|
| ⑤ | Packing |
| T | Tape & Reel |

| | |
|---------------------------|-------------|
| ⑥ | Design Code |
| □□□ | Design Code |
| Standard Product is Blank | |

SHAPE AND DIMENSIONS



Unit: mm

| Series | A | B | C | D | E | I Typ. | J Typ. | H Typ. |
|-----------|----------|------------|---------|----------|---------|--------|--------|--------|
| MWSA0412S | 4.2±0.25 | 4.4±0.35 | 1.0±0.2 | 0.8±0.3 | 2.0±0.3 | 1.5 | 2.2 | 2.5 |
| MWSA0402S | 4.2±0.25 | 4.4±0.35 | 1.8±0.2 | 0.8±0.3 | 2.0±0.3 | 1.5 | 2.2 | 2.5 |
| MWSA0518S | 5.2±0.2 | 5.4±0.35 | 1.6±0.2 | 1.20±0.2 | 2.2±0.3 | 1.9 | 2.2 | 2.5 |
| MWSA0503S | 5.2±0.2 | 5.4±0.35 | 2.8±0.2 | 1.20±0.2 | 2.2±0.3 | 1.9 | 2.2 | 2.5 |
| MWSA0618S | 6.6±0.2 | 7.0±0.3 | 1.6±0.2 | 1.60±0.3 | 3.0±0.3 | 2.35 | 3.7 | 3.5 |
| MWSA0624S | 6.6±0.2 | 7.0±0.3 | 2.2±0.2 | 1.60±0.3 | 3.0±0.3 | 2.35 | 3.7 | 3.5 |
| MWSA0603S | 6.6±0.2 | 7.0±0.3 | 2.8±0.2 | 1.60±0.3 | 3.0±0.3 | 2.35 | 3.7 | 3.5 |
| MWSA0604S | 6.6±0.2 | 7.0±0.3 | 3.8±0.2 | 1.60±0.3 | 3.0±0.3 | 2.35 | 3.7 | 3.5 |
| MWSA0605S | 6.6±0.2 | 7.0±0.3 | 4.8±0.2 | 1.60±0.3 | 3.0±0.3 | 2.35 | 3.7 | 3.5 |
| MWSA1004S | 10.0±0.3 | 11.5Max | 3.8±0.2 | 2.0±0.5 | 3.0±0.5 | 4.1 | 5.4 | 4.1 |
| MWSA1205S | 12.6±0.3 | 13.45±0.35 | 4.8±0.2 | 2.0±0.5 | 3.5±0.5 | 3.25 | 8.0 | 5.0 |

SPECIFICATIONS

MWSA0412S Series

| Part Number | Inductance | DC Resistance | Saturation Current ^{*3} | Heat Rating Current ^{*4} |
|-----------------|------------|---------------|----------------------------------|-----------------------------------|
| | @100KH,1V | Max. | Typ. | Typ. |
| Units | μH | mΩ | A | A |
| Symbol | L | DCR | Isat | Irms |
| MWSA0412S-R15MT | 0.15±20% | 9 | 15.00 | 7.50 |
| MWSA0412S-R22MT | 0.22±20% | 11 | 11.00 | 7.00 |
| MWSA0412S-R33MT | 0.33±20% | 19 | 8.40 | 6.50 |
| MWSA0412S-R47MT | 0.47±20% | 21 | 6.80 | 6.00 |
| MWSA0412S-R68MT | 0.68±20% | 36 | 6.00 | 4.70 |
| MWSA0412S-1R0MT | 1.0±20% | 47 | 5.50 | 4.50 |
| MWSA0412S-1R5MT | 1.5±20% | 75 | 4.00 | 3.25 |
| MWSA0412S-2R2MT | 2.2±20% | 83.5 | 3.00 | 2.75 |
| MWSA0412S-4R7MT | 4.7±20% | 195 | 2.20 | 1.80 |

SPECIFICATIONS

MWSA0402S Series

| Part Number | Inductance | DC Resistance | Saturation Current ^{*3} | Heat Rating Current ^{*4} |
|-----------------|------------|---------------|----------------------------------|-----------------------------------|
| | @100KH,1V | Max. | Typ. | Typ. |
| Units | μH | mΩ | A | A |
| Symbol | L | DCR | Isat | Irms |
| MWSA0402S-R10MT | 0.10±20% | 4 | 22.00 | 13.00 |
| MWSA0402S-R22MT | 0.22±20% | 6.6 | 12.50 | 9.50 |
| MWSA0402S-R33MT | 0.33±20% | 11 | 12.00 | 10.00 |
| MWSA0402S-R47MT | 0.47±20% | 14 | 9.50 | 7.50 |
| MWSA0402S-R56MT | 0.56±20% | 16 | 9.00 | 7.00 |
| MWSA0402S-R68MT | 0.68±20% | 18 | 8.00 | 7.00 |
| MWSA0402S-1R0MT | 1.0±20% | 27 | 7.00 | 6.00 |
| MWSA0402S-1R2MT | 1.2±20% | 27 | 6.50 | 6.00 |
| MWSA0402S-1R5MT | 1.5±20% | 46 | 5.50 | 5.00 |
| MWSA0402S-2R2MT | 2.2±20% | 58 | 5.00 | 4.50 |
| MWSA0402S-3R3MT | 3.3±20% | 87 | 3.50 | 3.30 |
| MWSA0402S-4R7MT | 4.7±20% | 105 | 3.00 | 2.80 |
| MWSA0402S-6R8MT | 6.8±20% | 175 | 2.50 | 2.40 |
| MWSA0402S-100MT | 10±20% | 282 | 2.00 | 1.60 |

MWSA0518S Series

| Part Number | Inductance | DC Resistance | Saturation Current ^{*3} | Heat Rating Current ^{*4} |
|-----------------|------------|---------------|----------------------------------|-----------------------------------|
| | @100KH,1V | Max. | Typ. | Typ. |
| Units | μH | mΩ | A | A |
| Symbol | L | DCR | Isat | Irms |
| MWSA0518S-R47MT | 0.47±20% | 9 | 12.00 | 10.50 |
| MWSA0518S-R56MT | 0.56±20% | 10 | 11.00 | 9.50 |
| MWSA0518S-1R0MT | 1.0±20% | 17 | 9.00 | 8.00 |
| MWSA0518S-1R5MT | 1.5±20% | 26 | 8.00 | 7.50 |
| MWSA0518S-2R2MT | 2.2±20% | 35 | 6.00 | 5.00 |
| MWSA0518S-3R3MT | 3.3±20% | 58 | 4.80 | 4.50 |
| MWSA0518S-4R7MT | 4.7±20% | 85 | 4.00 | 3.50 |
| MWSA0518S-6R8MT | 6.8±20% | 120 | 3.40 | 2.80 |
| MWSA0518S-100MT | 10±20% | 155 | 2.50 | 2.50 |

SPECIFICATIONS

MWSA0503S Series

| Part Number | Inductance | DC Resistance | Saturation Current ^{*3} | Heat Rating Current ^{*4} |
|-----------------|------------|---------------|----------------------------------|-----------------------------------|
| | @100KH,1V | Max. | Typ. | Typ. |
| Units | μH | mΩ | A | A |
| Symbol | L | DCR | Isat | Irms |
| MWSA0503S-R10MT | 0.10±20% | 3.0 | 30.00 | 25.00 |
| MWSA0503S-R20MT | 0.20±20% | 3.9 | 20.00 | 14.00 |
| MWSA0503S-R33MT | 0.33±20% | 5.5 | 18.00 | 14.00 |
| MWSA0503S-R47MT | 0.47±20% | 8.5 | 15.00 | 11.00 |
| MWSA0503S-R68MT | 0.68±20% | 12 | 11.50 | 9.00 |
| MWSA0503S-1R0MT | 1.0±20% | 14 | 10.00 | 8.50 |
| MWSA0503S-1R2MT | 1.2±20% | 16 | 9.50 | 8.50 |
| MWSA0503S-1R5MT | 1.5±20% | 25 | 9.00 | 8.20 |
| MWSA0503S-2R2MT | 2.2±20% | 29 | 7.00 | 7.00 |
| MWSA0503S-3R3MT | 3.3±20% | 38 | 6.00 | 5.50 |
| MWSA0503S-4R7MT | 4.7±20% | 60 | 4.60 | 4.50 |
| MWSA0503S-6R8MT | 6.8±20% | 90 | 3.60 | 3.50 |
| MWSA0503S-100MT | 10±20% | 125 | 3.50 | 3.20 |

MWSA0618S Series

| Part Number | Inductance | DC Resistance | Saturation Current ^{*3} | Heat Rating Current ^{*4} |
|-----------------|------------|---------------|----------------------------------|-----------------------------------|
| | @100KH,1V | Max. | Typ. | Typ. |
| Units | μH | mΩ | A | A |
| Symbol | L | DCR | Isat | Irms |
| MWSA0618S-R10MT | 0.10±20% | 2.3 | 38.00 | 25.00 |
| MWSA0618S-R22MT | 0.22±20% | 3.5 | 24.00 | 22.00 |
| MWSA0618S-R47MT | 0.47±20% | 8.4 | 18.00 | 11.50 |
| MWSA0618S-R68MT | 0.68±20% | 12 | 16.50 | 9.50 |
| MWSA0618S-1R0MT | 1.0±20% | 16 | 12.00 | 8.50 |
| MWSA0618S-1R5MT | 1.5±20% | 26 | 9.20 | 8.00 |
| MWSA0618S-2R2MT | 2.2±20% | 35 | 8.00 | 7.00 |
| MWSA0618S-3R3MT | 3.3±20% | 50 | 6.00 | 4.50 |
| MWSA0618S-4R7MT | 4.7±20% | 62 | 5.00 | 4.00 |
| MWSA0618S-6R8MT | 6.8±20% | 110 | 4.50 | 3.00 |
| MWSA0618S-100MT | 10±20% | 155 | 4.00 | 2.30 |

SPECIFICATIONS

MWSA0624S Series

| Part Number | Inductance | DC Resistance | Saturation Current ^{*3} | Heat Rating Current ^{*4} |
|-----------------|------------|---------------|----------------------------------|-----------------------------------|
| | @100KH,1V | Max. | Typ. | Typ. |
| Units | μH | mΩ | A | A |
| Symbol | L | DCR | Isat | Irms |
| MWSA0624S-R22MT | 0.22±20% | 3 | 30.00 | 21.00 |
| MWSA0624S-R33MT | 0.33±20% | 4.1 | 24.50 | 18.00 |
| MWSA0624S-R47MT | 0.47±20% | 5.1 | 20.00 | 15.00 |
| MWSA0624S-R56MT | 0.56±20% | 6.5 | 17.00 | 13.00 |
| MWSA0624S-R68MT | 0.68±20% | 7 | 16.00 | 12.00 |
| MWSA0624S-1R0MT | 1.0±20% | 13.5 | 15.00 | 9.00 |
| MWSA0624S-1R5MT | 1.5±20% | 20 | 13.50 | 8.20 |
| MWSA0624S-2R2MT | 2.2±20% | 28 | 10.00 | 7.00 |
| MWSA0624S-3R3MT | 3.3±20% | 39 | 8.00 | 5.50 |
| MWSA0624S-4R7MT | 4.7±20% | 50 | 6.50 | 5.00 |
| MWSA0624S-6R8MT | 6.8±20% | 70 | 6.00 | 4.00 |
| MWSA0624S-100MT | 10±20% | 101 | 4.00 | 3.10 |
| MWSA0624S-150MT | 15±20% | 160 | 3.30 | 2.50 |
| MWSA0624S-220MT | 22±20% | 230 | 2.50 | 2.00 |

MWSA0603S Series

| Part Number | Inductance | DC Resistance | Saturation Current ^{*3} | Heat Rating Current ^{*4} |
|-----------------|------------|---------------|----------------------------------|-----------------------------------|
| | @100KH,1V | Max. | Typ. | Typ. |
| Units | μH | mΩ | A | A |
| Symbol | L | DCR | Isat | Irms |
| MWSA0603S-R22MT | 0.22±20% | 3 | 34.00 | 24.00 |
| MWSA0603S-R33MT | 0.33±20% | 3.5 | 25.00 | 21.00 |
| MWSA0603S-R47MT | 0.47±20% | 4.1 | 20.00 | 18.00 |
| MWSA0603S-R56MT | 0.56±20% | 4.5 | 18.00 | 16.50 |
| MWSA0603S-R68MT | 0.68±20% | 5.3 | 17.00 | 16.00 |
| MWSA0603S-R82MT | 0.82±20% | 6.0 | 16.00 | 14.00 |
| MWSA0603S-1R0MT | 1.0±20% | 7.4 | 15.00 | 12.00 |
| MWSA0603S-1R5MT | 1.5±20% | 12.1 | 12.00 | 12.00 |
| MWSA0603S-2R2MT | 2.2±20% | 15 | 10.00 | 9.50 |
| MWSA0603S-3R3MT | 3.3±20% | 22 | 9.50 | 8.50 |
| MWSA0603S-4R7MT | 4.7±20% | 33 | 9.00 | 6.00 |
| MWSA0603S-5R6MT | 5.6±20% | 42 | 6.50 | 6.00 |
| MWSA0603S-6R8MT | 6.8±20% | 48 | 6.00 | 5.00 |
| MWSA0603S-8R2MT | 8.2±20% | 60 | 5.50 | 5.00 |
| MWSA0603S-100MT | 10±20% | 68 | 5.20 | 4.50 |
| MWSA0603S-150MT | 15±20% | 113 | 4.00 | 3.00 |
| MWSA0603S-220MT | 22±20% | 170 | 3.00 | 2.50 |
| MWSA0603S-330MT | 33±20% | 270 | 2.50 | 2.00 |
| MWSA0603S-470MT | 47±20% | 385 | 2.00 | 1.50 |

SPECIFICATIONS

MWSA0604S Series

| Part Number | Inductance | DC Resistance | Saturation Current ^{*3} | Heat Rating Current ^{*4} |
|-----------------|------------|---------------|----------------------------------|-----------------------------------|
| | @100KH,1V | Max. | Typ. | Typ. |
| Units | μH | mΩ | A | A |
| Symbol | L | DCR | Isat | Irms |
| MWSA0604S-2R2MT | 2.2±20% | 18 | 12.00 | 8.00 |

MWSA0605S Series

| Part Number | Inductance | DC Resistance | Saturation Current ^{*3} | Heat Rating Current ^{*4} |
|-----------------|------------|---------------|----------------------------------|-----------------------------------|
| | @100KH,1V | Max. | Typ. | Typ. |
| Units | μH | mΩ | A | A |
| Symbol | L | DCR | Isat | Irms |
| MWSA0605S-100MT | 10±20% | 60 | 5.30 | 4.50 |
| MWSA0605S-150MT | 15±20% | 90 | 4.00 | 3.10 |
| MWSA0605S-220MT | 22±20% | 140 | 3.50 | 2.60 |
| MWSA0605S-330MT | 33±20% | 190 | 3.00 | 2.30 |

MWSA1004S Series

| Part Number | Inductance | DC Resistance | Saturation Current ^{*3} | Heat Rating Current ^{*4} |
|-----------------|------------|---------------|----------------------------------|-----------------------------------|
| | @100KH,1V | Max. | Typ. | Typ. |
| Units | μH | mΩ | A | A |
| Symbol | L | DCR | Isat | Irms |
| MWSA1004S-R22MT | 0.22±20% | 1 | 60.00 | 35.00 |
| MWSA1004S-R30MT | 0.30±20% | 1.1 | 45.00 | 35.00 |
| MWSA1004S-R36MT | 0.36±20% | 1.2 | 45.00 | 30.00 |
| MWSA1004S-R47MT | 0.47±20% | 1.7 | 40.00 | 30.00 |
| MWSA1004S-R56MT | 0.56±20% | 1.8 | 33.00 | 25.00 |
| MWSA1004S-R68MT | 0.68±20% | 2.4 | 30.00 | 23.00 |
| MWSA1004S-R80MT | 0.80±20% | 2.7 | 29.00 | 23.00 |
| MWSA1004S-1R0MT | 1.0±20% | 3.3 | 28.00 | 19.00 |
| MWSA1004S-1R5MT | 1.5±20% | 4.2 | 24.00 | 16.00 |
| MWSA1004S-2R2MT | 2.2±20% | 7 | 16.50 | 12.00 |
| MWSA1004S-3R3MT | 3.3±20% | 11.8 | 16.00 | 11.00 |
| MWSA1004S-4R7MT | 4.7±20% | 20 | 13.00 | 9.00 |
| MWSA1004S-6R8MT | 6.8±20% | 25 | 12.00 | 8.50 |
| MWSA1004S-8R2MT | 8.2±20% | 27 | 9.00 | 8.00 |
| MWSA1004S-100MT | 10±20% | 30 | 8.50 | 7.80 |
| MWSA1004S-150MT | 15±20% | 45 | 7.00 | 6.50 |
| MWSA1004S-220MT | 22±20% | 66 | 5.50 | 5.00 |
| MWSA1004S-330MT | 33±20% | 92 | 4.80 | 4.40 |
| MWSA1004S-470MT | 47±20% | 145 | 3.50 | 3.30 |
| MWSA1004S-680MT | 68±20% | 195 | 3.00 | 2.50 |

SPECIFICATIONS

MWSA1205S Series

| Part Number | Inductance | DC Resistance | Saturation Current ^{*3} | Heat Rating Current ^{*4} |
|-----------------|------------|---------------|----------------------------------|-----------------------------------|
| | @100KH,1V | Max. | Typ. | Typ. |
| Units | μH | mΩ | A | A |
| Symbol | L | DCR | Isat | Irms |
| MWSA1205S-R36MT | 0.36±20% | 0.85 | 50.00 | 42.00 |
| MWSA1205S-R50MT | 0.50±20% | 1.15 | 48.00 | 38.00 |
| MWSA1205S-R68MT | 0.68±20% | 1.55 | 46.00 | 33.00 |
| MWSA1205S-R82MT | 0.82±20% | 1.67 | 39.00 | 30.00 |
| MWSA1205S-R36MT | 0.36±20% | 0.85 | 50.00 | 42.00 |
| MWSA1205S-R50MT | 0.50±20% | 1.15 | 48.00 | 38.00 |
| MWSA1205S-R68MT | 0.68±20% | 1.55 | 46.00 | 33.00 |
| MWSA1205S-R82MT | 0.82±20% | 1.67 | 39.00 | 30.00 |
| MWSA1205S-1R0MT | 1.0±20% | 2.2 | 35.00 | 26.00 |
| MWSA1205S-1R5MT | 1.5±20% | 3.2 | 33.00 | 23.00 |
| MWSA1205S-2R2MT | 2.2±20% | 5.0 | 24.00 | 15.00 |
| MWSA1205S-3R3MT | 3.3±20% | 7 | 22.00 | 14.00 |
| MWSA1205S-4R7MT | 4.7±20% | 9 | 20.00 | 13.00 |
| MWSA1205S-6R8MT | 6.8±20% | 18 | 16.00 | 12.00 |
| MWSA1205S-100MT | 10±20% | 22 | 12.00 | 9.00 |
| MWSA1205S-150MT | 15±20% | 30 | 10.00 | 8.00 |
| MWSA1205S-220MT | 22±20% | 58 | 6.50 | 4.50 |
| MWSA1205S-330MT | 33±20% | 84 | 6.00 | 3.50 |
| MWSA1205S-470MT | 47±20% | 130 | 5.00 | 3.00 |

※1: All test data is referenced to 25°C ambient;

※2: Rated current: Isat or Irms, whichever is smaller;

※*3: Isat: DC current at which the inductance drops approximate 30% from its value without current;

※*4: Irms: DC current that causes the temperature rise ($\Delta T = 40^{\circ}\text{C}$) from 20°C ambient.

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