

Chip Resistors

How to Order

| WR | 06 | X | 1000 | F | T | L |
|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| Type code R : Discrete 1-10MR | Size code 25 : 2512 (6432) 20 : 2010 (5025) 18 : 1218 (3248) 12 : 1206 (3216) 10 : 1210 (3225) 06 : 0603 (1608) 08 : 0805 (2012) 04 : 0402 (1005) 02 : 0201 (0603) | Functional code X : Normal W : 1% for < 10ohm and >1Mohm | Resistance E24 : 2 significant digits followed by No. of zeros and a blank e.g. : 3ohm=3R0_ 10ohm=100_ 220ohm=221_ 56Kohm=563_ ("_" means blank) E96 : 3 significant digits followed by No. of zeros | Tolerance F : +/- 1% J : +/- 5% P : Jumper | Packaging code T : 7" reel taping Q : 10" reel taping G : 13" reel taping R : 0603 2mm pitch taping B : Bulk K : Bulkcase | Termination code _ = SnPb base ("_" means blank) L = Sn base (Lead free) R = Pb 100 ppm (total) |
| WW | 25 | M | R002 | F | T | L |
| Type code W : < 1ohm | Size code 25 : 2512 (6432) 20 : 2010 (5025) 18 : 1218 (3248) 12 : 1206 (3216) 10 : 1210 (3225) 08 : 0805 (2012) 06 : 0603 (1608) 04 : 0402 (1005) | Functional code X : Normal M : Sensing type L : Sensing type, wide termination W : Thick film low TCR type P : Power (2010 size=0.75 watt, 1206 size 0.5 watt, 0805 size 0.25 watt, 0603 size 0.125 watt) | Resistance "R" followed by 3 significant digits e.g.: 0.1ohm=R100 0.033ohm=R033 0.56ohm=R560 | Tolerance F : +/- 1% G : +/- 2% J : +/- 5% | Packaging code T : 7" reel taping Q : 10" reel taping G : 13" reel taping B : Bulk K : BulkcaseK = Ni base | Termination code _ = SnPb base ("_" means blank) L = Sn base (Lead free) G = Au base S = Ag base |
| WF | 04 | H | 1001 | B | T | L |
| Type code F : Special function | Size code 25 : 2512 (6432) 20 : 2010 (5025) 18 : 1218 (3248) 12 : 1206 (3216) 10 : 1210 (3225) 08 : 0805 (2012) 06 : 0603 (1608) 04 : 0402 (1005) | Functional code G : High ohmic (>10Mohm) H : Thick film, Precision tolerance <1% K : Thick film, TCR50ppm M : Trimmable P : Power (> WR and WW series) S : Surge T : Thin film, TCR50ppm U : Thin film, TCR25ppm V : High voltage W : Filet less X : Special resistance Y : E24/E96 resistance with special termination (non SnPb or Sn base), 1% | Resistance E24 : 2 significant digits followed by No. of zeros and a blank e.g.: 3ohm=3R0_ 10ohm=100_ 220ohm=221_ 56Kohm=563_ ("_" means blank) E96 : 3 significant digits followed by No. of zeros | Tolerance B : +/- 0.1% C : +/- 0.25% D : +/- 0.5% F : +/- 1% G : +/- 2% J : +/- 5% M : 0/- 20% K : 0/-30% P : Jumper | Packaging code T : 7" reel taping Q : 10" reel taping G : 13" reel taping B : Bulk K : BulkcaseK = Ni base | Termination code _ = SnPb base ("_" means blank) L = Sn base (Lead free) G = Au base S = Ag base |
| WA | 04 | Y | 103_ | J | T | L |
| Type code A : Isolated Resistor Array | Size code 06 : 0603 (1608) 04 : 0402 (1005) | No. of element, term, style X : *4, convex Y : *2, convex W : *8, convex T : *4, concave U : *2, concave P : *3, convex (Attenuator) | Resistance E24 : 2 significant digits followed by No. of zeros and a blank e.g.: 3ohm=3R0_ 10ohm=100_ 220ohm=221_ 56Kohm=563_ ("_" means blank) E96 : 3 significant digits followed by No. of zeros | Tolerance F : +/- 1% J : +/- 5% P : Jumper | Packaging code T : 7" reel taping B : Bulk | Termination code _ = SnPb base ("_" means blank) L = Sn base (Lead free) |
| WT | 04 | X | 103_ | J | T | L |
| Type code T : Bussed/Network Resistors | Size per elements 04: total package size 1206 (3216) | No. of element, term, style X : *8, convex | Resistance E24 : 2 significant digits followed by No. of zeros e.g.: 3ohm=3R0_ 10ohm=100_ 220ohm=221_ 56Kohm=563_ ("_" means blank) | Tolerance J : +/- 5% | Packaging code T : 7" reel taping B : Bulk | Termination code _ = SnPb base ("_" means blank) L = Sn base (Lead free) |

Remark: 1. Detail product part number, functional code, tolerance combination,...please refer to specific data sheet.

2. Example: ("_" means blank)

Chip-R 0805 size, 4.3ohm, 5% Normal type, SnPb termination, 5000pcs taped in reel: WR08X4R3_JT_

Chip-R 0805 size, 4.3ohm, 5% Normal type, Sn Lead free termination, 5000pcs taped in reel: WR08X4R3_JTL

Chip-R 0603 size, 100ohm, 5% Normal type, SnPb termination, 5000pcs taped in reel: WR06X101_JT_

Chip-R 0603 size, 100ohm, 1% Normal type, Sn termination, 5000pcs taped in reel: WR06X1000FTL

Low ohmic Chip-R 2512 size, 0.1ohm, 1% Normal type, SnPb termination, 4000pcs taped in reel: WW25XR100FT_

Low ohmic Chip-R 2512 size, 0.1ohm, 1% Normal type, Sn Lead free termination, 4000pcs taped in reel: WW25XR100FTL

Chip-R array 0603x4, 10Kohm, 5% convex with SnPb termination, 5000pcs taped in reel: WA06X103_JT_

Chip-R 0402 size, 220ohm, Normal type, Gold termination, 5% 10,000pcs taped in reel: WF04Y221_JTG

Chip-R 0603 size, 0ohm, Normal type, SnPb termination, 5000pcs taped in reel: WR06X000_PT_

Chip Resistors

Chip Resistors Array : Convex Termination

Feature

1. High reliability and stability
2. Reduced size of final equipment
3. Lower assembly cost and higher surface mounted efficiency
4. Higher component and equipment reliability

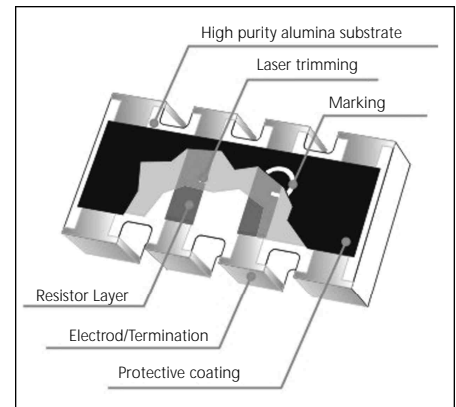
Application

1. Consumer electrical equipment, PDA, Digital Camcorder, ...
2. EDP, Computer application
3. Mobile phone, Telecom
4. DIMM

Description and Physical Dimensions

The resistors array is constructed in a high grade ceramic body (aluminum oxide). Internal metal electrodes are added at each end and connected by a resistive paste that is applied to the top surface of the substrate. The composition of the paste is adjusted to give the approximate resistance required and the value is trimmed to within tolerance by laser cutting of this resistive layer.

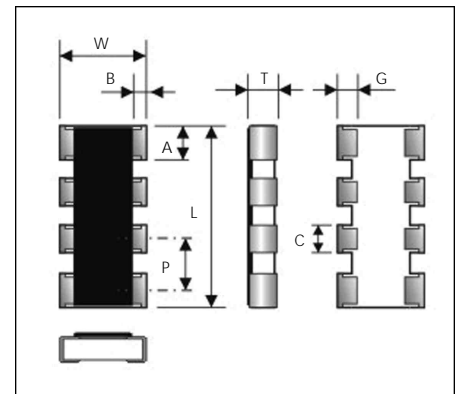
The resistive layer is covered with a protective coat. Finally, the two external end terminations are added. For ease of soldering the outer layer of these end terminations is a Lead-tin or Tin solder alloy. Marking code description is depended on component size and tolerance. Following figure shown the construction of a Chip-R array.



Physical Dimensions

Unit: mm

| Type | WA06X | WA04X | WA04Y |
|------|-------------|-------------|-------------|
| L | 3.20 ± 0.10 | 2.00 ± 0.10 | 1.00 ± 0.10 |
| W | 1.60 ± 0.10 | 1.00 ± 0.10 | 1.00 ± 0.10 |
| T | 0.50 ± 0.10 | 0.45 ± 0.10 | 0.35 ± 0.10 |
| P | 0.80 ± 0.10 | 0.50 ± 0.05 | 0.65 ± 0.10 |
| A | 0.60 ± 0.10 | 0.4 ± 0.10 | 0.34 ± 0.10 |
| B | 0.30 ± 0.10 | 0.20 ± 0.10 | 0.20 ± 0.15 |
| C | 0.40 ± 0.10 | 0.30 ± 0.05 | - |
| G | 0.30 ± 0.20 | 0.25 ± 0.10 | 0.25 ± 0.17 |



Quick Reference Data

| Series No. | WA06X | WA04X | WA04Y |
|--------------------------------------------|-----------------------------------|-----------------|-----------------|
| Size | 0603x4 (1608x4) | 0402x4 (1005x4) | 0402x2 (1005x2) |
| Termination construction | 8p4R, Convex | 8p4R, Convex | 4p2R, Convex |
| Resistance Tolerance | ±5% (E24 series) | | |
| Resistance Range | 10 ~ 1M (E24 series), Jumper (0) | | |
| TCR (ppm/°C) | ± 200 ppm/°C | ± 300 ppm/°C | ± 300 ppm/°C |
| Max. dissipation at T _{amb} =70°C | 1/10 Watt | 1/16 Watt | 1/16 Watt |
| Max. Operation Voltage (DC or RMS) | 50V | 25V | 25V |
| Max. overload voltage | 100V | 50V | 50V |
| Climatic category (IEC 60068) | 55/155/56 | | 55/125/56 |
| Basic Specification | JIS C 5202 / IEC 60115-1 | | |
| Circuit Mode : R1=R2(=R3=R4) | | | |

Note :

1. Power derating curve, and detail specification please refer to specific data sheets.
2. Lead Free (Pb free) products are available upon customer's request.

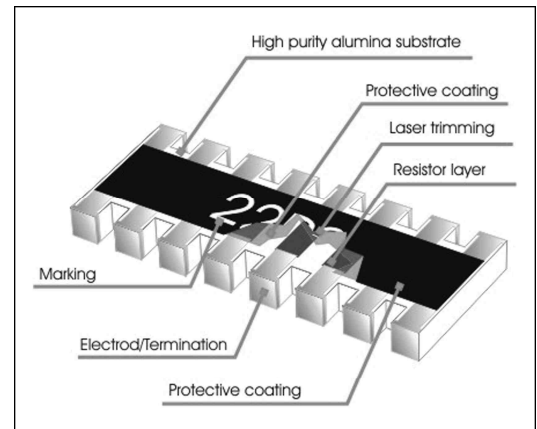
Chip Resistors

WA06W Chip Resistors Array 16P8R

Description

The resistors array is constructed in a high grade ceramic body (aluminum oxide). Internal metal electrodes are added at each end and connected by a resistive paste that is applied to the top surface of the substrate. The composition of the paste is adjusted to give the approximate resistance required and the value is trimmed to within tolerance by laser cutting of this resistive layer.

The resistive layer is covered with a protective coat. Finally, the two external end terminations are added. For ease of soldering the outer layer of these end terminations is a Lead-tin or Tin (Pb free) solder alloy.



Quick Reference Data

| Item | General Specification |
|--------------------------------------------|-----------------------------|
| Series No. | WA06W |
| Size | 1606 (0602x8) |
| Termination construction | Convex type |
| Resistance Tolerance | ±5% (E24 series) |
| Resistance Range | 10 ~ 100K , Jumper (0) |
| TCR (ppm/°C) | ± 200 ppm/°C |
| Max. dissipation at T _{amb} =70°C | 1/16 W |
| Max. Operation Voltage (DC or RMS) | 25V |
| Max. overload voltage | 50V |
| Climatic category (IEC 60068) | 55/125/56 |
| Circuit Mode | R1=R2=R3=R4=R5=R6=R7=R8 |

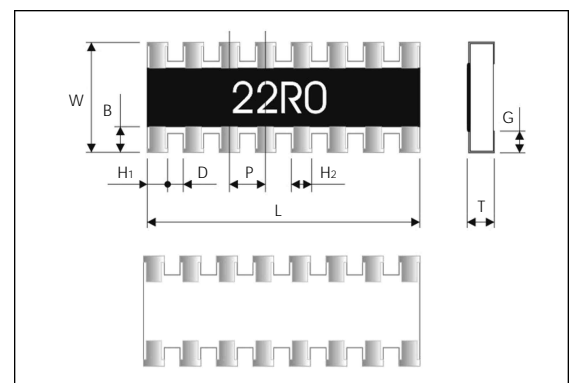
Note :

- Power derating curve, and detail specification please refer to specific data sheets.
- Lead Free (Pb free) products are available upon customer's request.

Physical Dimensions

Unit: mm

| | WA06W |
|----|-------------|
| L | 4.00 ± 0.20 |
| W | 1.60 ± 0.15 |
| T | 0.45 ± 0.10 |
| B | 0.30 ± 0.20 |
| G | 0.30 ± 0.20 |
| D | 0.20 ± 0.10 |
| P | 0.50 ± 0.20 |
| H1 | 0.40 ± 0.20 |
| H2 | 0.30 ± 0.10 |



Chip Resistors

Chip Resistors Array : Concave Termination

Feature

1. High reliability and stability
2. Reduced size of final equipment
3. Lower assembly costs and higher surface mounted efficiency
4. Higher component and equipment reliability
5. Strong body and terminations
6. Excellence performance in surface mounting assembly.

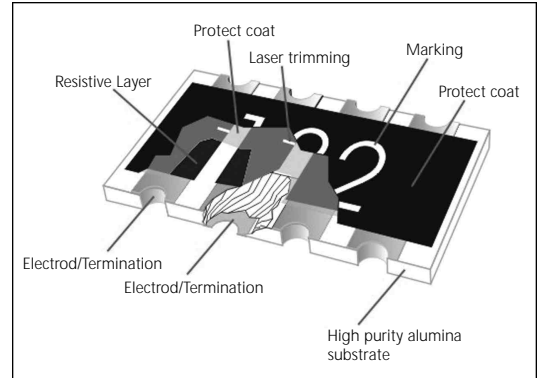
Application

1. Consumer electrical equipment, PDA, Digital Camcoder, ...
2. EDP, Computer application
3. Mobile phone, Telecom
4. DIMM

Description

The resistors array is constructed in a high grade ceramic body (aluminum oxide). Internal metal electrodes are added at each end and connected by a resistive paste that is applied to the top surface of the substrate. The composition of the paste is adjusted to give the approximate resistance required and the value is trimmed to within tolerance by laser cutting of this resistive layer.

The resistive layer is covered with a protective coat. Finally, the two external end terminations are added. For ease of soldering the outer layer of these end terminations is a Lead-tin or Tin solder alloy. Marking code description is depended on component size and tolerance. Following figure shown the construction of a Chip-R array.



Quick Reference Data

| Item | General Specification | |
|--------------------------------------------|-----------------------|---------------------|
| Series No. | WA06T | |
| Size | 0603x4 (1608x4) | |
| Termination construction | Concave type | |
| Resistance Tolerance | ±5% (E24 series) | |
| Resistance Range | 10 ~ 1M , Jumper (0) | |
| TCR (ppm/°C) | ± 200 ppm/°C | |
| Max. dissipation at T _{amb} =70°C | 1/16 W | |
| Max. Operation Voltage (DC or RMS) | 50V | |
| Max. overload voltage | 100V | |
| Climatic category (IEC 60068) | 55/125/56 | |
| Circuit Mode | R1=R2=R3=R4 | |
| | L | 3.20 +0.20/-0.10 mm |
| | W | 1.60 +0.20/-0.10 mm |
| | T | 0.60 ± 0.20 mm |
| | P | 0.80 ± 0.10 mm |
| | A | 0.60 ± 0.15 mm |
| | B | 0.35 ± 0.15 mm |
| | C | 0.50 ± 0.15 mm |
| | G | 0.50 ± 0.15 mm |

- Note :
1. Power derating curve, and detail specification please refer to specific data sheets.
 2. Lead Free (Pb free) products are available upon customer's request.

Chip Resistors

Test and Requirements

For WR Series, WA Series, and WT Series

(Detail please refer to specific data sheet)

| Test | Procedure / Test Method | Requirement | |
|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|--------|
| | | Resistor | Jumper |
| DC resistance | JIS C 5202 5.1 / IEC 60115-1 4.5 DC resistance values measured at the test voltages specified below : <10 @0.1V, <100 @0.3V, <1K @1.0V, <10K @3V, <100K @10V, <1M @25V, <10M @30V | Within the specified tolerance | < 50m |
| Temperature Coefficient of Resistance | JIS C 5202 5.2 / IEC 60115-1 4.8.4.2 $\frac{R_2 - R_1}{R_1 (t_2 - t_1)} \times 10^6 \quad (\text{ppm}/^\circ\text{C})$ R1 : Resistance at reference temperature R2 : Resistance at test temperature t1 : room temperature; t2 : LCT or UCT | Within the specified TCR | N/a |
| Short Time Overload | JIS C 5202 5.5 / IEC 60115-1 4.13 Permanent resistance change after a 5sec application of a voltage 2.5xU _R or max. overload voltage, whichever is less. | R/R max ±(2%+0.10) | < 50m |
| Resistance to Solder Heat | JIS C 5202 6.4 / IEC 60115-1 4.18 Unmounted chip with a solder bath, 260°C±5°C, 10±1 sec | R/R max. ±(1%+0.05) | < 50m |
| Solderability | JIS C 5202 6.5 / IEC 60115-1 4.17 Termination SnPb base : Unmounted chips completely immersed for 2±0.5 sec. in a solder bath at 230±5°C Termination Sn base (lead free) : Unmounted chip completely immersed in a lead free solder bath, 245°C±5°C, 3±1 sec | 95% coverage min., good tinning and no visible damage | |
| Leaching Test | JIS C 5202 6.4 / IEC 60115-1 4.18 Unmounted chip with a solder bath, 260°C±5°C, 60±1 sec | Ditto | |
| Temperature Cycling | JIS C 5202 7.4 / IEC 60115-1 4.19 30min at LCT, 30min at UCT, 5 cycles | R/R max. ±(1%+0.05) | < 50m |
| Damp heat (Humidity loaded in steady state) | JIS C 5202 7.9 1000+48/-0 hours@40±2°C, 90~95% RH; loaded with Pn or Vmax; 1.5 hours ON, 0.5 hours OFF | 10 R<1M : R/R max. ±(3%+0.10) R<10 , R 1M : R/R max. ±(5%+0.10) | < 50m |
| Load Life (Endurance) | JIS C 5202 7.10 / IEC 60115-1 4.25.1 1000+48/-0 hours@70±2°C; loaded with Pn or Vmax; 1.5 hours ON, 0.5 hours OFF | Ditto | Ditto |
| Bending | JIS C 5202 6.1.4 / IEC 115-1 4.33 Resistors mounted on a 90mm glass epoxy resin PCB(FR4), bending once or 10sec : >2mm for 2512 and 2010; >3mm for 1206, 0805, 0603, and 0402 | No visual damaged, R/R max. ±(1%+0.05) | < 50m |

For WWxxX Series

(Detail please refer to specific data sheet.)

| Test | Procedure / Test Method | Requirement | |
|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|--------|
| | | Resistor | Jumper |
| Temperature Coefficient of Resistance | JIS C 5202 5.2 / IEC 60115-1 4.8.4.2 $\frac{R_2 - R_1}{R_1 (t_2 - t_1)} \times 10^6 \quad (\text{ppm}/^\circ\text{C})$ R1 : Resistance at reference temperature R2 : Resistance at test temperature t1 : room temperature; t2 : LCT or UCT | Within the specified TCR | |
| Short Time Overload | JIS C 5202 5.5 / IEC 60115-1 4.13 Permanent resistance change after a 5sec application of a voltage 2.5xU _R or max. overload voltage, whichever is less. | R/R max. ±(2%+0.005) | |
| Resistance to Solder Heat | JIS C 5202 6.4 / IEC 60115-1 4.18 Unmounted chip with a solder bath, 260°C±5°C, 10±1 sec | R/R max. ±(1%+0.005) | |
| Solderability | JIS C 5202 6.5 / IEC 60115-1 4.17 Termination SnPb base : Unmounted chips completely immersed for 2±0.5 sec. in a solder bath at 230±5°C Termination Sn base (lead free) : Unmounted chip completely immersed in a lead free solder bath, 245°C±5°C, 3±1 sec | 95% coverage min., good tinning and no visible damage | |
| Leaching Test | JIS C 5202 6.4 / IEC 60115-1 4.18 Unmounted chip with a solder bath, 260°C±5°C, 60±1 sec | Ditto | |
| Temperature Cycling | JIS C 5202 7.4 / IEC 60115-1 4.19 30min at LCT, 30min at UCT, 5 cycles | R/R max. ±(1%+0.005) | |
| Damp heat (Humidity loaded in steady state) | JIS C 5202 7.9 1000+48/-0 hours@40±2°C, 90~95% RH; loaded with Pn or Vmax; 1.5 hours ON, 0.5 hours OFF | R/R max. ±(3%+0.005) | |
| Load Life (Endurance) | JIS C 5202 7.10 / IEC 60115-1 4.25.1 1000+48/-0 hours@70±2°C; loaded with Pn or Vmax; 1.5 hours ON, 0.5 hours OFF | Ditto | |
| Bending | JIS C 5202 6.1.4 / IEC 115-1 4.33 Resistors mounted on a 90mm glass epoxy resin PCB(FR4), bending once for 10sec : >2mm for 2512 and 2010; >3mm for 1206, 0805, 0603 | No visual damaged, R/R max. ±(1%+0.005) | |

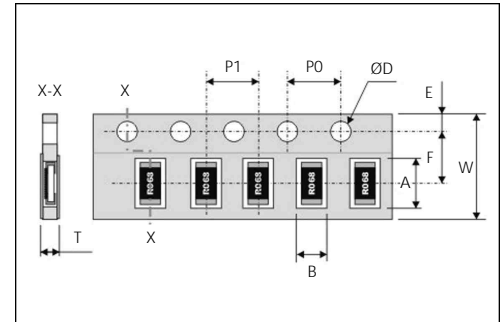
Chip Resistors

Packing on Tape and Reel

Paper Tape Specifications for WR, WF, WW Series and WA, WT Series

Unit: mm

| Component Size / Series | W | F | E | P0 | ØD |
|------------------------------------------------------------------|-----------|-----------|-----------|-----------|---------------------------------------|
| 1206, 0805, 0603, 0402, WA06X, WA06T, WA04X, WA04Y, WA04P, WT04X | 8.00±0.30 | 3.50±0.20 | 1.75±0.10 | 4.00±0.10 | Ø1.50 ^{+0.1} _{-0.0} |
| WA06W | 12.0±0.10 | 5.50±0.05 | | | |
| WR02W | 8.00±0.20 | 3.50±0.05 | | | |

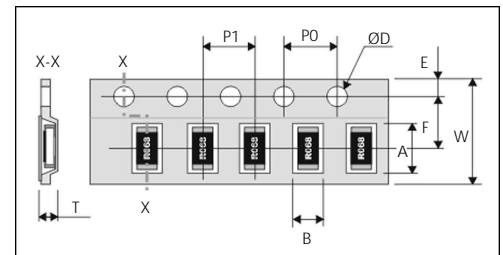


| Component Size / Series | A | B | P1 | T |
|---------------------------|--------------|--------------|-----------|-----------|
| 1206 (3216), WA06X, WA06T | 3.60±0.20 | 2.00±0.20 | 4.00±0.10 | Max. 1.0 |
| 0805 (2012) | 2.40±0.20 | 1.65±0.20 | | |
| 0603 (1608) | 1.90±0.20 | 1.10±0.20 | | |
| 0402 (1005) | 1.20±0.10 | 0.70±0.10 | 2.00±0.10 | 0.40±0.05 |
| WA04X | 2.20±0.20 | 1.20±0.20 | 2.00±0.05 | Max. 0.6 |
| WA04Y, WA04P | 1.15±0.10 | 1.15±0.10 | 2.00±0.05 | 0.45±0.05 |
| WT04X | 3.45+0.20/-0 | 1.85+0.20/-0 | 4.00±0.10 | 0.85±0.05 |
| WA06W | 1.80+0.2/-0 | 4.20+0.2/-0 | 4.00±0.10 | 0.65±0.05 |
| WR02X | 0.70±0.05 | 0.40±0.05 | 2.00±0.05 | 0.30±0.05 |

Plastic Tape Specifications for WR, WF, WW Series of Chip-R

Unit: mm

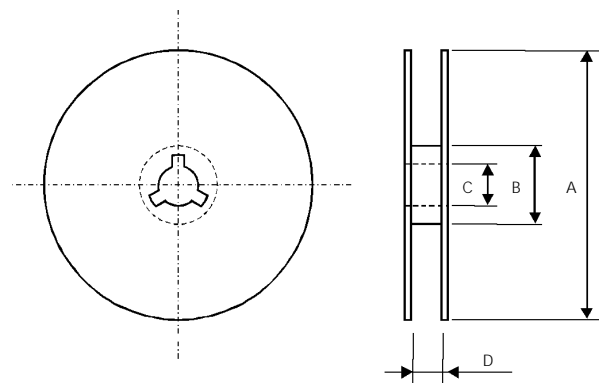
| Component Size | 2512 (6432) | 2010 (5025) | 1218 (3248) |
|----------------|---------------------------------------|-------------|-------------|
| A | 6.90±0.20 | 5.50±0.20 | 3.55±0.30 |
| B | 3.60±0.20 | 2.80±0.20 | 4.90±0.20 |
| W | 12.00±0.30 | | |
| F | 5.50±0.1 | | |
| E | 1.75±0.10 | | |
| P1 | 4.00±0.10 | | |
| P0 | 4.00±0.10 | | |
| ØD | Ø1.50 ^{+0.1} _{-0.0} | | |
| T | Max. 1.2 | | |



Reel Dimensions

Unit: mm

| Reel / Tape | A | B | C | D |
|------------------------|------------|------------|----------|-------------|
| 7" reel for 8mm tape | Ø178.0±2.0 | Ø60.0±1.0 | 13.0±0.2 | 9.0 ± 0.50 |
| 7" reel for 12mm tape | | | | 12.4 ± 1.00 |
| 10" reel for 8mm tape | Ø254.0±2.0 | Ø100.0±1.0 | 13.0±0.2 | 9.0 ± 0.50 |
| 10" reel for 12mm tape | | | | 14.0 ± 0.20 |
| 13" reel for 8mm tape | Ø330.0±2.0 | Ø100.0±1.0 | 13.0±0.2 | 9.0 ± 0.50 |



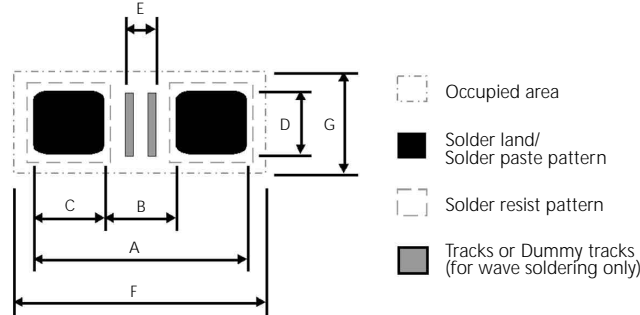
Typical Taping Quantity

| Component Size / Series | Q'ty per reel | Reel diameter |
|---------------------------------------------|---------------|---------------|
| 1210, 1206, 0805, 0603, WA06X, WA06T, WT04X | 5,000 pcs | 7" reel |
| 0201, 0402, WA04X, WA04Y, WA04P | 10,000 pcs | 7" reel |
| WA06W | 5,000 pcs | 7" reel |
| 2512, 2010 | 4,000 pcs | 7" reel |
| 1218 | 3,000 pcs | 10" reel |
| 1206, 0805, 0603 | 10,000 pcs | 10" reel |
| 0402, WA04X, WA04Y | 20,000 pcs | 10" reel |
| 0402 | 70,000 pcs | 13" reel |
| WA04X, WA04Y | 40,000 pcs | 13" reel |
| 1206, 0805, 0603 | 20,000 pcs | 13" reel |

Chip Resistors

Footprint Design

Footprint Design for WRxx Series, WFxx Series, WWxx Series :



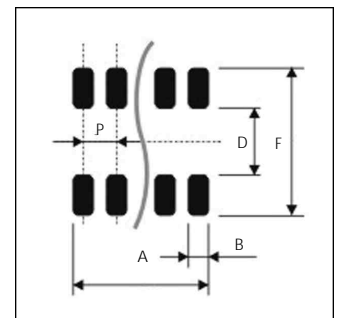
Unit: mm

| Size | Reflow Soldering | | | | | | | Processing remarks | Placement Accuracy |
|------|------------------|------|------|------|------|------|------|----------------------------------------------|--------------------|
| | A | B | C | D | E | F | G | | |
| 0201 | 0.75 | 0.30 | 0.30 | 0.30 | 0.20 | 1.10 | 0.50 | IR or hot plate soldering | ± 0.05 |
| 0402 | 1.50 | 0.50 | 0.50 | 0.60 | 0.10 | 1.90 | 1.00 | | ± 0.15 |
| 0603 | 2.10 | 0.90 | 0.60 | 0.90 | 0.50 | 2.35 | 1.45 | | ± 0.25 |
| 0805 | 2.60 | 1.20 | 0.70 | 1.30 | 0.75 | 2.85 | 1.90 | | ± 0.25 |
| 1206 | 3.80 | 2.00 | 0.90 | 1.60 | 1.60 | 4.05 | 2.25 | | ± 0.25 |
| 1218 | 3.80 | 2.00 | 0.90 | 4.80 | 1.40 | 4.20 | 5.50 | | ± 0.25 |
| 2010 | 5.60 | 3.80 | 0.90 | 2.80 | 3.40 | 5.85 | 3.15 | | ± 0.25 |
| 2512 | 7.00 | 3.80 | 1.60 | 3.50 | 3.40 | 7.25 | 3.85 | | ± 0.25 |
| Size | Wave Soldering | | | | | | | Proposed number & Dimensions of dummy tracks | Placement Accuracy |
| A | B | C | D | E | F | G | | | |
| 0603 | 2.70 | 0.90 | 0.90 | 0.80 | 0.15 | 3.40 | 1.90 | 1x (0.15x0.80) | ± 0.25 |
| 0805 | 3.40 | 1.30 | 1.05 | 1.30 | 0.20 | 4.30 | 2.70 | 1x (0.20x1.30) | ± 0.25 |
| 1206 | 4.80 | 2.30 | 1.25 | 1.70 | 1.25 | 5.90 | 3.20 | 3x (0.25x1.70) | ± 0.25 |
| 1218 | 4.80 | 2.30 | 1.25 | 4.80 | 1.30 | 5.90 | 5.60 | 3x (0.25x4.80) | ± 0.25 |
| 2010 | 6.30 | 3.50 | 1.40 | 2.50 | 3.00 | 7.00 | 3.60 | 3x (0.75x2.50) | ± 0.25 |
| 2512 | 8.50 | 4.50 | 2.00 | 3.20 | 3.00 | 9.00 | 4.30 | 3x (1.00x3.20) | ± 0.25 |

Footprint Design for Array Resistor/Attenuator :

Unit: mm

| Symbol | 0603*4 array | 0402*4 array | WA04Y, WA04P | WA06W |
|--------|------------------|------------------|------------------|------------------|
| A | 2.85 +0.10/-0.05 | 1.80 +0.15/-0.05 | 1.20 ± 0.05 | 3.85 +0.20/-0.05 |
| B | 0.45 ± 0.05 | 0.30 ± 0.05 | 0.40 +0/-0.05 | 0.28 +0/-0.05 |
| D | 0.80 ± 0.10 | 0.50 ± 0.1 | 0.50 ± 0.05 | 1.00 +0.10/-0.20 |
| P | 0.80 | 0.50 | 0.65 | 0.50 |
| F | 3.10 ± 0.30 | 2.00 +0.40/-0.20 | 1.50 +0.20/-0.10 | 3.20 ± 0.40 |



Footprint Design for 10P8R Network Resistor :

Unit: mm

| Symbol | WT04X |
|--------|------------------|
| W1 | 0.35 ± 0.05 |
| W2 | 0.50 ± 0.05 |
| H2 | 0.80 ± 0.10 |
| P1 | 0.70 ± 0.05 |
| P2 | 0.65 ± 0.05 |
| A | 3.20 ± 0.10 |
| F | 2.80 +0.40/-0.20 |

