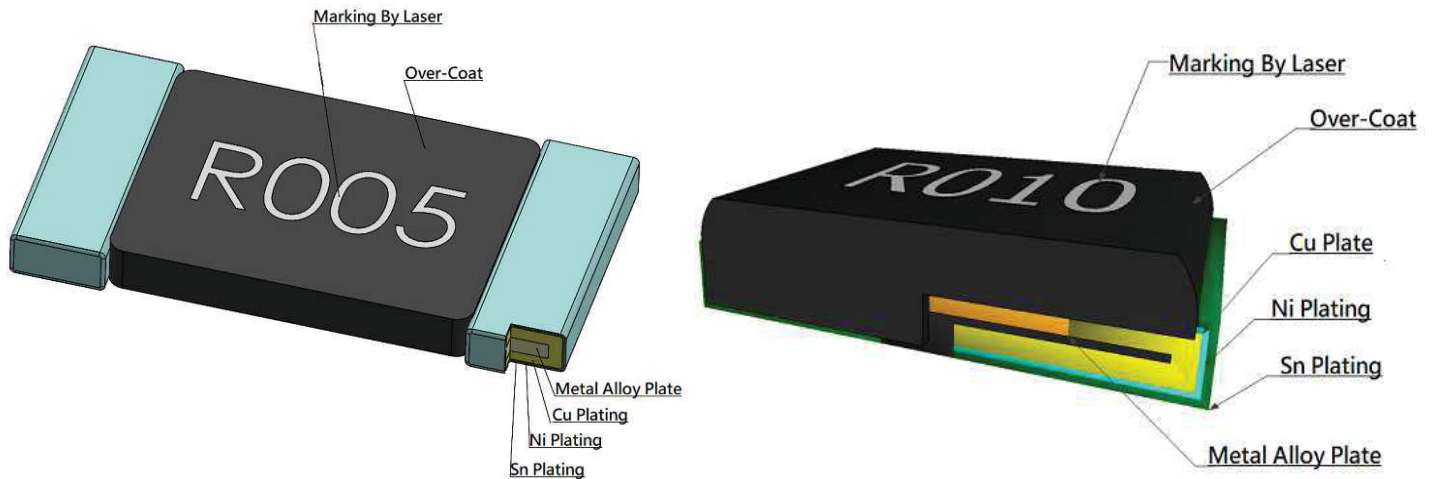


■ Metal Alloy Low Resistance Chip Resistor — MR Series



■ Application

- Entertainment equipment
- Power Supply
- Measuring instrument
- Industrial equipment
- Battery management system

■ Features

- Low Resistance / Low TCR/ Low Inductance(Only *Z)
- Excellent long term stability
- RoHs compliant and halogen free.
- Lead free.
- High precision current sensing and voltage division.
- AEC-Q200 Compliant

■ Parts Number Explanation

■ Example:

| | | | | | | |
|---------------------|--------------------|----------------------------------|-------------------------------|-------------------------|--------------------------------------|--|
| MR | 2512 | 20 | F | R004 | M | Z |
| Product Type | Size (Inch) | Rated Power | Tolerance | Resistance | Material | Optional |
| | 2512 2818 | 20=2.00W 30=3.00W 50=5.00W | F : ±1% G : ±2% J : ±5% | R005=5.0mR R010=10mR | M : MnCu F : FeCrAl R : NiCrAl | Z:Normal Type(Low inductance) G:Anti-Surge Type |



MR Series Metal Alloy Low-Resistance Resistor Product Specifications

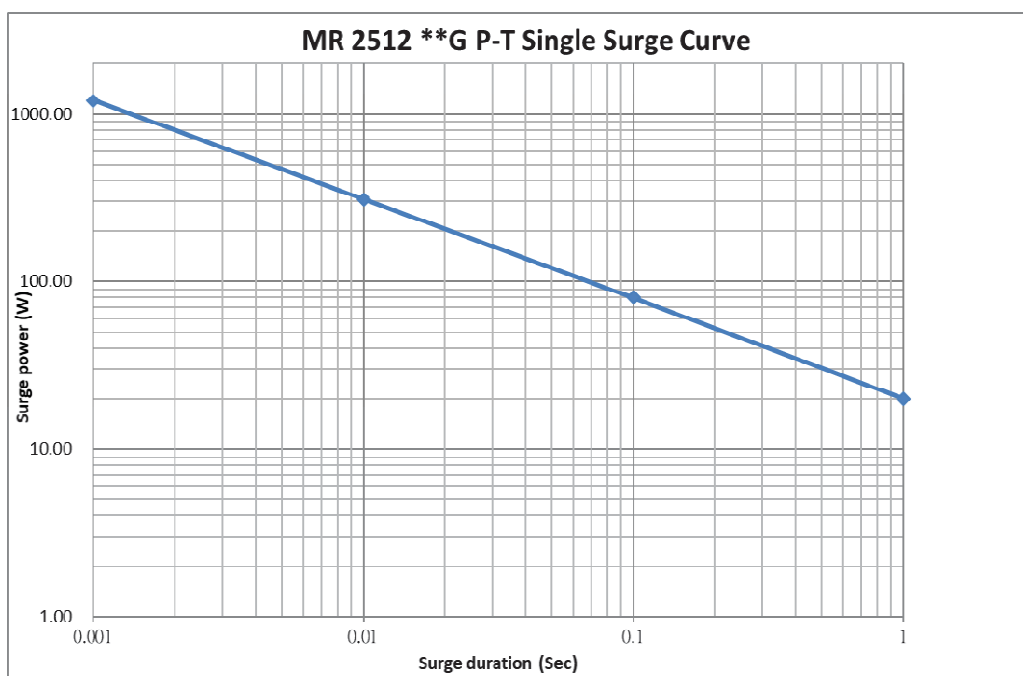
| | |
|--------------|---------------|
| Document No. | S-10-12-09-12 |
| Revised Date | 2022/04/21 |
| Page No. | 2/8 |

Standard Electrical Specifications

| Type | Rating Power at 70°C | T.C.R. (ppm/°C) | Max. Rating Current | Max. Overload Current | Resistance Range (mΩ) | Material | Operating Temperature Range (°C) |
|---------------------------|----------------------|-----------------|---------------------|-----------------------|----------------------------------|--------------------|----------------------------------|
| | | | | | 1.0% (F) 2.0% (G) 5.0% (J) | | |
| MR2512*Z ^{note3} | 2W | ≤ ±50 | 31.62A | 70.71A | 2~20 | R002~R020 : MnCu | - 55 ~ + 170 |
| | 3W | ≤ ±50 | 38.73A | 86.60A | 2~20 | R002~R020 : MnCu | |
| MR2512*G | 2W | ≤ ±100 | 44.72A | 100.00A | 1 | R001~R004 : MnCu | |
| | | ≤ ±50 | 31.62A | 70.71A | 2~50 | R005~R050 : FeCrAl | |
| | 3W | ≤ ±100 | 54.77A | 122.47A | 1 | R001~R003 : MnCu | |
| | | ≤ ±50 | 38.73A | 86.60A | 2~50 | R004~R050 : FeCrAl | |
| MR2818*Z ^{note3} | 5W ^{note2} | ≤ ±250 | 70.71A | 141.42A | 1 | R001~R007 : MnCu | - 65 ~ + 170 |
| | | ≤ ±200 | 50.00A | 100.00A | 2~7 | | |
| | 7W ^{note1} | ≤ ±75 | 25.00A | 50.00A | 8~50 | R008~R050 : NiCrAl | |

Notes:

- The MR2818 is rated at 7 W with maximum surface temperature of 180 °C and maximum terminal temperature of 70 °C.
- The MR2818 is rated at 5 W with maximum terminal temperature of 100 °C.
- Inductance characteristics MR 2512*Z, MR 2818*Z ≤ 5nH

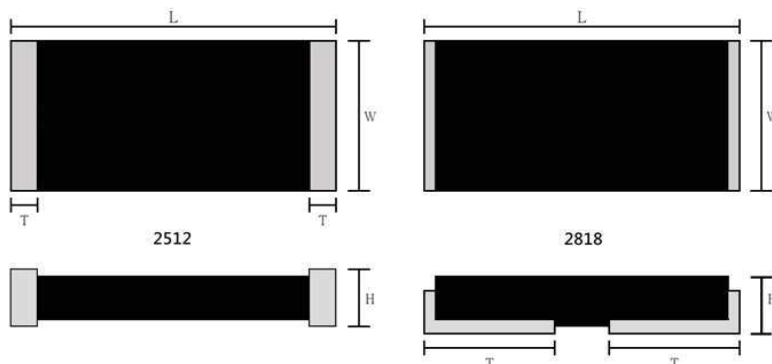




MR Series Metal Alloy Low-Resistance Resistor Product Specifications

Document No. S-10-12-09-12
 Revised Date 2022/04/21
 Page No. 3/8

■ Type Dimension



■ Dimension

Unit : mm

| Type | Power Rating | Resistance Range | L | W | H | T |
|----------|--------------|------------------|------------|------------|------------|------------|
| MR2512*Z | 2W | 2~20mΩ | | | 0.70±0.254 | 0.95±0.254 |
| | 3W | 2~20mΩ | | | 0.70±0.254 | 0.95±0.254 |
| MR2512*G | 2W | 1mΩ | 6.35±0.254 | 3.10±0.254 | 0.90±0.254 | 1.9±0.254 |
| | 2W | 2mΩ~4mΩ | | | 0.90±0.254 | 0.80±0.254 |
| | 2W | 5mΩ~50mΩ | | | 0.90±0.254 | 0.80±0.254 |
| | 3W | 1mΩ~3mΩ | | | 1.10±0.254 | 0.80±0.254 |
| | 3W | 4mΩ | | | 1.10±0.254 | 0.80±0.254 |
| | 3W | 5mΩ~50mΩ | | | 0.90±0.254 | 0.80±0.254 |
| MR2818*Z | 5W | 1~50mΩ | 7.15±0.254 | 4.95±0.254 | 1.65±0.254 | 2.90±0.254 |



MR Series Metal Alloy Low-Resistance Resistor Product Specifications

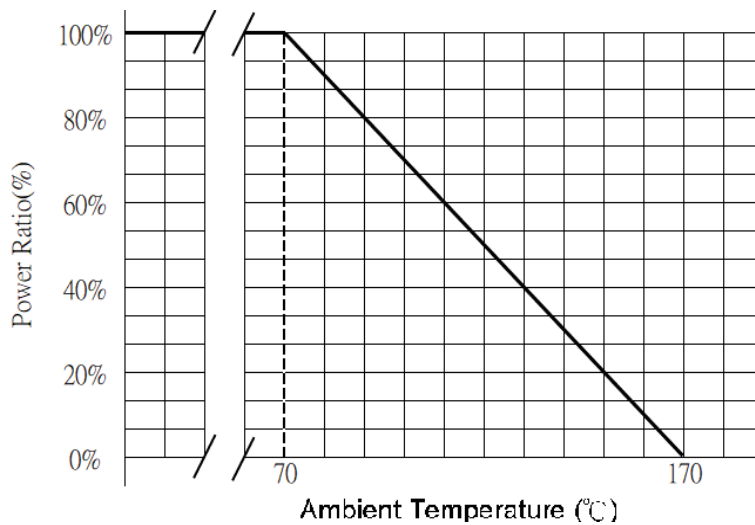
| | |
|--------------|---------------|
| Document No. | S-10-12-09-12 |
| Revised Date | 2022/04/21 |
| Page No. | 4/8 |

■ Performance Characteristics

Power Derating Curve

The Operating Temperature Range: -55°C ~+170°C.

For resistors operated in ambient temperatures above 70°C, power rating must be derating in accordance with the curve as below :



■ Rating Current

The following equation may be used to determine the DC (Direct Current) or AC (Alternating Current) (RMS, root mean square value) of normal rated power. However, if the result value exceeds the highest current of regulated standards, the highest normal rated power is to be used

$$I = \sqrt{P/R}$$

I = Rating current (A)

P= Rating Power (W)

R= Resistance(Ω)

■ Marking Format:

- Marking By Laser
- All the products marking are 4 digits.
- “R” designates the decimal location in ohms
e.g. 3mΩ the product marking is R003.
10mΩ the product marking is R010.
- The criteria to distinguishing the mark on the surface of products are that characters can be identified.



MR Series Metal Alloy Low-Resistance Resistor Product Specifications

Document No. S-10-12-09-12
 Revised Date 2022/04/21
 Page No. 5/8

Reliability Test and Requirement

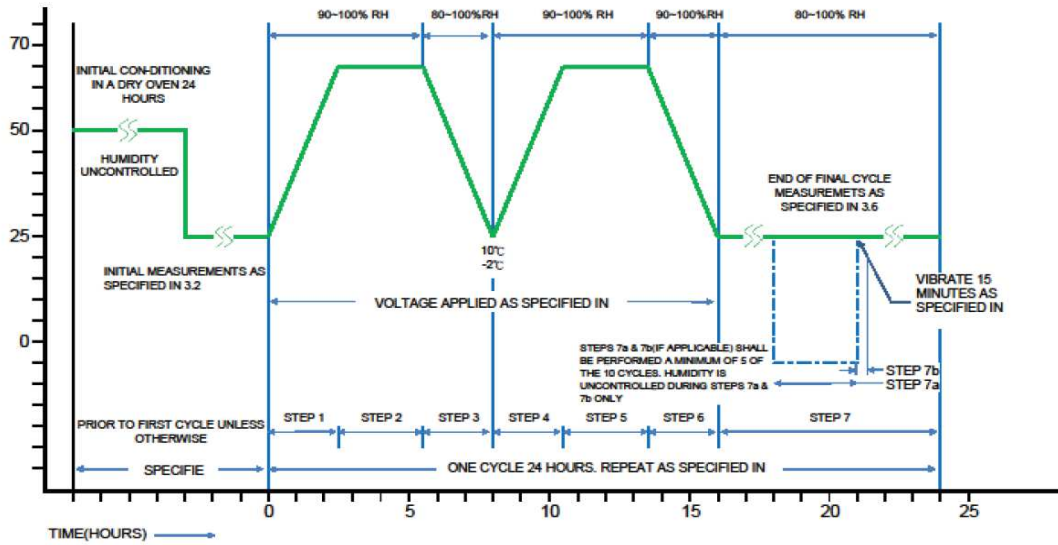
| Test Item | Test Method | Procedure | Requirements |
|---|---|--|---|
| Temperature Coefficient of Resistance (T.C.R) | JIS-C-5201-1 4.8 IEC-60115-1 4.8 | At 25°C /+125°C, 25°C is the reference temperature | Refer to Ratings |
| Short Time Overload | JIS-C-5201-1 4.13 IEC-60115-1 4.13 | The number of rated power are as follows: <ul style="list-style-type: none"> MR2512-2W: 5 times of rated power MR2512-3W: 5 times of rated power MR2818-5W: 4 times of rated power for 5 seconds. | $\Delta R/R1 \leq \pm 1.0\%$ |
| High Temperature Exposure | JIS-C5201-1 4.25 IEC 60068-2-2 | At 170°C for 1000 hours. | $\Delta R/R1 \leq \pm 1.0\%$ |
| Resistance to Soldering Heat | JIS-C-5201-1 4.18 IEC-60115-1 4.18 | 260±5°C for 10 seconds. | $\Delta R/R1 \leq \pm 0.5\%$ |
| Temperature Cycling | JESD22 Method JA-104 | 1000 Cycles (-55°C to +155°C) Measurement at 24±4 hours after test conclusion. 30min maximum dwell time at each temperature extreme. | $\Delta R/R1 \leq \pm 1.0\%$ |
| Biased Humidity | MIL-STD-202 Method 103 | 1,000 hours; 85°C / 85% RH, 10% of operating power. Measurement at 24±4 hours after test conclusion. | $\Delta R/R1 \leq \pm 1.0\%$ |
| Load Life (Endurance) | JIS-C-5201-1 4.25 IEC-60115-1 4.25.1 | 70±2°C, RCWV or Max. working voltage whichever is less for 1000 hrs with 1.5 hrs "ON" and 0.5 hr "OFF" . | $\Delta R/R1 \leq \pm 1.0\%$ |
| Solderability | JIS-C-5201-1 4.17 IEC-60115-1 4.17 | 245±5°C for 3 seconds. | >95% coverage |
| Dielectric Withstanding Voltage | JIS-C5201-1 4.7 | Applied 500VAC for 1 minute. | No short or burned on the appearance. |
| Core Body Strength | JIS-C5201-1 4.15 | Central part pressurizing force : 5N , 10 seconds | No broken |
| Terminal Strength (SMD) | AEC Q200-006 | Pressurizing force : 17.7N , 60 seconds | No broken |
| Bending Strength | JIS-C-5201-1 4.33 IEC-60115-1 4.33 | Bending once for 2mm , 10 seconds | $\Delta R/R1 \leq \pm 0.5\%$ No broken |
| Moisture Resistance | MIL-STD 202 Method 106 | T=24 hours / Cycle ,10Cycles . Steps 7a& 7b not required. Unpowered . (Figure 1) | $\Delta R/R1 \leq \pm 0.5\%$ |



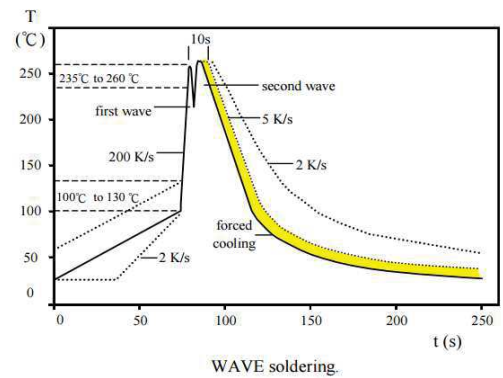
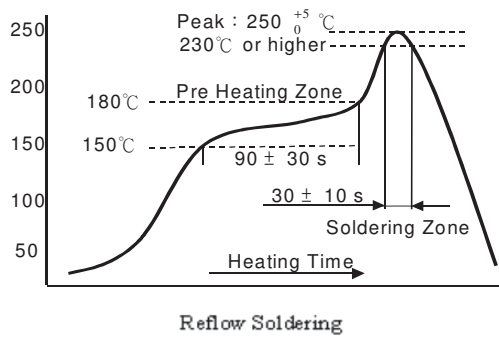
MR Series Metal Alloy Low-Resistance Resistor Product Specifications

| | |
|--------------|---------------|
| Document No. | S-10-12-09-12 |
| Revised Date | 2022/04/21 |
| Page No. | 6/8 |

Figure 1



Soldering Profile





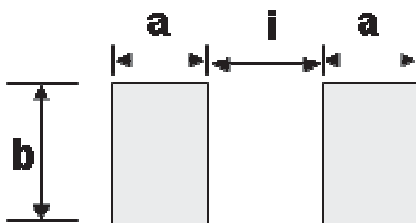
MR Series Metal Alloy Low-Resistance Resistor Product Specifications

Document No. S-10-12-09-12

Revised Date 2022/04/21

Page No. 7/8

Recommend Land Pattern Design



Dimension

Unit: mm

| TYPE | Resistance Range | a | b | i |
|------------------|------------------|------|------|------|
| MR2512*Z – 2W/3W | 2mΩ~20mΩ | 2.50 | 4.50 | 3.80 |
| MR2512*G – 2W | 1mΩ | 3.00 | 4.50 | 1.45 |
| MR2512*G – 2W | 2mΩ~50mΩ | 2.50 | 4.50 | 3.80 |
| MR2512*G – 3W | 1mΩ~50mΩ | 2.50 | 4.50 | 3.80 |
| MR2818*Z – 5W | 1mΩ~50mΩ | 3.50 | 5.30 | 0.60 |

Packing Quantity

| TYPE | PCS /Reel |
|---------------------|-----------|
| MR2512*Z-2W/3W | 4,000 |
| MR2512*G-2W,1m~50mR | 4,000 |
| MR2512*G-3W,1m~4mR | 3,000 |
| MR2512*G-3W,5m~50mR | 4,000 |
| MR2818-5W | 3,500 |



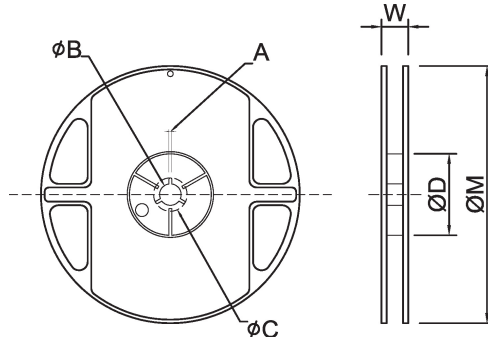
MR Series Metal Alloy Low-Resistance Resistor Product Specifications

| | |
|--------------|---------------|
| Document No. | S-10-12-09-12 |
| Revised Date | 2022/04/21 |
| Page No. | 8/8 |

Appendix For SMD Chip Resistor

● Packaging Information

■ Reel Dimensions

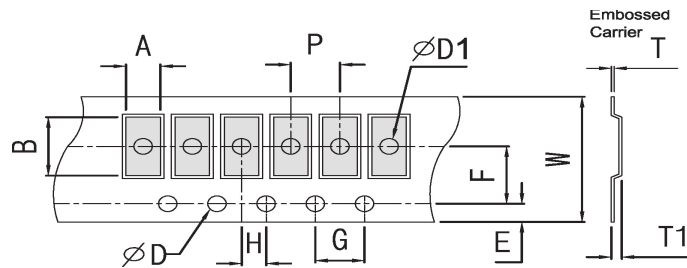


■ Dimension

Unit: mm

| Reel Type / Tape | A | φB | φC | φD | W | φM |
|-----------------------------|---------|----------|----------|----------|----------|---------|
| 7" reel for 12 mm embossed | 2.5±0.5 | 13.5±0.5 | 17.7±0.5 | 60.0±0.5 | 16.2±0.5 | 178±1.0 |
| 13" reel for 16 mm embossed | 2.3±0.5 | 13.5±0.5 | 17.7±0.5 | 99.0±0.5 | 20.7±0.5 | 330±1.0 |

■ Embossed Dimensions



■ Dimension

Unit: mm

| Item | W | P | E | F | φD | φD1 | G | H | A | B | T1 | T |
|-----------------------|-----------|----------|-----------|----------|-----------------------------------|-----------------------------------|----------|----------|-----------|-----------|-----------|-----------|
| MR2512 | 12.0±0.30 | 4.0±0.10 | 1.75±0.10 | 5.5±0.10 | 1.50 ^{+0.1} ₀ | 1.55±0.10 | 4.0±0.10 | 2.0±0.10 | 3.50±0.10 | 6.75±0.10 | 0.90±0.20 | 0.20±0.10 |
| MR2512*G 3W,1m~4mR | 12.0±0.30 | 4.0±0.10 | 1.75±0.10 | 5.5±0.10 | | 1.55±0.10 | 4.0±0.10 | 2.0±0.10 | 3.50±0.10 | 6.75±0.10 | 1.30±0.20 | 0.20±0.10 |
| MR2818 | 16.0±0.30 | 8.0±0.10 | 1.75±0.10 | 7.5±0.10 | | 1.50 ^{+0.1} ₀ | 4.0±0.10 | 2.0±0.10 | 5.21±0.10 | 7.69±0.10 | 1.97±0.10 | 0.30±0.05 |

■ Storage Temperature

Temperature : 25±5°C, Humidity : 60±20%

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for [Current Sense Resistors - SMD category](#):

Click to view products by [Ever Ohms manufacturer](#):

Other Similar products are found below :

[CRL0603-FW-R700ELF](#) [PFS35-200RF1](#) [CD2015FC-0.10-1%](#) [PR2512FKF7W0R004L](#) [RC1005F124CS](#) [CSNL2512FT5L00](#)

[RL73K3AR56JTDF](#) [RL7520WT-R001-F](#) [RL7520WT-R020-F](#) [LRC-LR2512LF-01-R820J](#) [65709-330](#) [SP1R12J](#) [RL7520WT-R039-G](#)

[RL7520WT-R002-F](#) [RL7520WT-R005-F](#) [KRL1632E-C-R200-F-T5](#) [KRL1632E-C-R200-F-T1](#) [Y14880R02000B9R](#) [RLP73M2AR075FTDF](#)

[SR731ERTTP5R10F](#) [SR731ERTTP100J](#) [SR731ERTTP6R80F](#) [SR731ERTTP3R9J](#) [SR731ERTTP8R2J](#) [SR731ERTTP2R0J](#)

[SR731ERTTP4R7J](#) [SR731ERTTP9R1J](#) [SR731ERTTP1R0J](#) [SR731ERTTP2R2J](#) [SR731ERTTP5R1J](#) [SR731ERTTP6R8J](#) [SR731ERTTP9R10F](#)

[FCSL64R007JER](#) [73L4R10G](#) [73L4R75G](#) [73L4R33G](#) [73M1R051F](#) [73WL4R020J](#) [73L2R68J](#) [73L2R22J](#) [73L2R33J](#) [CC1512FC-0.015-5%](#)

[ULRG2-2512-R0075-F-LF-SLT](#) [KDV08DR220ET](#) [KDV12DR240ET](#) [SLN3TTED80L6F](#) [JW104X15X4](#) [JW105X19X5](#) [HVR06FTEV2403](#)

[JW104X5X4](#)