

# Low Value Current Sense Surface Mount Chip Resistors

## LRCS / LVC Series

- 0402, 0603 and 0805 sizes  
(larger sizes refer to our LRF Series)
- Resistance R020 (20mΩ) to 1R0 (1000mΩ)
- Designed for current sensing in power electronic systems
- RoHS compliant

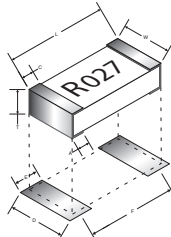


All parts are Pb-free and comply with EU Directive 2011/65/EU amended by (EU) 2015/863 (RoHS3)

## Electrical Data

|                           |        | LRCS/LVC0402                                         | LRCS/LVC0603                                                            | LRCS/LVC0805                                                            |
|---------------------------|--------|------------------------------------------------------|-------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Power rating @70°C        | watts  | 0.063                                                | 0.1                                                                     | 0.125: R02 to <R10<br>0.25: R10 to 1R0                                  |
| Resistance Range          | ohms   | R05 to 1R0                                           | R02 to 1R0                                                              | R02 to 1R0                                                              |
| Isolation voltage         | volts  | 50V                                                  | 100V                                                                    | 200V                                                                    |
| TCR                       | ppm/°C | ±400: R05- R10<br>±300: R101- R50<br>±200: R501- 1R0 | ±600: R02- R05<br>±400: R051- R10<br>±300: R101- R50<br>±200: R501- 1R0 | ±600: R02- R05<br>±400: R051- R10<br>±300: R101- R50<br>±200: R501- 1R0 |
| Resistance tolerance      | %      | 1(F), 5(J)                                           |                                                                         |                                                                         |
| Standard values           |        | E24 preferred                                        |                                                                         |                                                                         |
| Ambient temperature range | °C     | -55 to +155                                          |                                                                         |                                                                         |

## Physical Data

| Dimensions (mm) & weight (mg) |              |               |               |               |              |        |      |      |     |  |
|-------------------------------|--------------|---------------|---------------|---------------|--------------|--------|------|------|-----|---------------------------------------------------------------------------------------|
|                               | L            | W             | T             | C             | A            | Weight | D    | E    | F   |                                                                                       |
| LRCS/LVC 0402                 | 1<br>±0.05   | 0.5<br>±0.05  | 0.32<br>±0.10 | 0.25<br>±0.10 | 0.2<br>±0.10 | 0.7    | 0.65 | 0.65 | 0.9 |                                                                                       |
| LRCS/LVC 0603                 | 1.6<br>±0.10 | 0.8<br>±0.10  | 0.45<br>±0.10 | 0.3<br>±0.20  | 0.3<br>±0.20 | 2.0    | 1    | 0.9  | 1.6 |                                                                                       |
| LRCS/LVC 0805                 | 2<br>±0.15   | 1.25<br>±0.15 | 0.55<br>±0.10 | 0.3<br>±0.20  | 0.4<br>±0.25 | 5.3    | 1.4  | 0.95 | 2   |                                                                                       |

## Construction

A resistor element is applied to an alumina substrate. The product is adjusted to the value and protected. Marking is applied to 0603 and 0805 sizes. A wraparound conductor is applied to join the top and bottom sides. The terminations are electroplated with a Ni barrier layer prior to plating with a Sn finish.

## Solvent Resistance

The body protection and marking are resistant to all normal industrial solvents suitable for printed circuits.

## Flammability

The resistor will not burn or emit incandescent particles under any condition of applied temperature or overload.

## Solderability

95% min coverage (MIL-STD 202F / 208H, 235C 2 secs)

## General Note

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LRCS / LVC Series

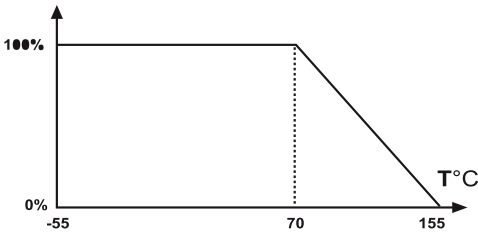
Marking

The LRCS0402 is not marked, the LRCS0603 is marked with 3 digits and LRCS0805 with 4 digits.  
e.g. 100mΩ is marked as R10 (3digit) and R100 (4digit) and 35mΩ is marked as 035 (3digit) or R035 (4digit)

Performance Data

|                                                     |     | Maximum                                             |
|-----------------------------------------------------|-----|-----------------------------------------------------|
| Load at rated power (1000hrs cyclic load at 70°C)   | ΔR% | ±1% + 0.05Ω                                         |
| De-rating from rated power at 70°C)                 |     | See Graph                                           |
| Short term overload (6.25 x rated power for 5s)     | ΔR% | ±0.5% + 0.05Ω<br>±1% + 0.05Ω(0.25W LRCS0805 rating) |
| Dry heat (96Hrs, no load, +155°C)                   | ΔR% | ±0.5% + 0.05Ω                                       |
| Temperature rapid change (-55 / +150°C, 100 cycles) | ΔR% | ±0.5% + 0.05Ω                                       |
| Damp heat steady state                              | ΔR% | ±0.5% + 0.05Ω                                       |
| Resistance to solder heat (260°C for 10s)           | ΔR% | ±0.5% + 0.05Ω                                       |
| Low Temperature Operation                           | ΔR% | ±0.5% + 0.05Ω                                       |
| Insulation Resistance (100V, 60s)                   |     | >1000MΩ                                             |

Power de-rating graph



Packaging

The standard packing for LRCS parts is on 8mm wide paper tape wound on 178mm diameter reels.

Ordering Procedure

This product has two valid part numbers:

European (Welwyn) Part Number: LRCS0603-R027FT5 (0603, 27 milliohms ±1%, Pb-free)

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L | R | C | S | 0 | 6 | 0 | 3 | - | R | 0 | 2 | 7 | F | T | 5 |
| 1 |   |   |   | 2 |   |   |   |   | 3 |   |   |   | 4 | 5 |   |

| 1<br>Type | 2<br>Size | 3<br>Value                       | 4<br>Tolerance     | 5<br>Packing            |
|-----------|-----------|----------------------------------|--------------------|-------------------------|
| LRCS      | 0402      | E24 = 3/4 characters<br>R = ohms | F = ±1%<br>J = ±5% | Tape & reel             |
|           | 0603      |                                  |                    | T10 0402 10,000/reel    |
|           | 0805      |                                  |                    | T5 0603, 0805 5000/reel |

USA (IRC) Part Number: LVC-LVC0603LF-R027-F (0603, 27 milliohms ±1%, Pb-free)

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L | V | C | - | L | V | C | 0 | 6 | 0 | 3 | L | F | - | R | 0 | 2 | 7 | - | F |
| 1 |   | 2 |   | 3 |   | 4 |   | 5 |   | 6 |   |   |   |   |   |   |   |   |   |

| 1<br>Family | 2<br>Model | 3<br>Size | 4<br>Termination | 5<br>Value                       | 6<br>Tolerance     | Packing              |
|-------------|------------|-----------|------------------|----------------------------------|--------------------|----------------------|
| LVC         | LVC        | 0402      | LF = Pb-free     | E24 = 3/4 characters<br>R = ohms | F = ±1%<br>J = ±5% | Tape & reel          |
|             |            | 0603      |                  |                                  |                    | 0402 10,000/reel     |
|             |            | 0805      |                  |                                  |                    | 0603, 0805 5000/reel |

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