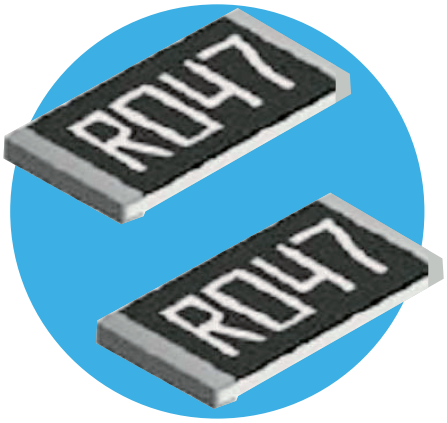
# Resistors

# 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

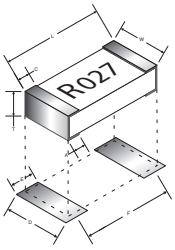
All parts are Pb-free and comply with EU Directive 2011/65/EU amended by (EU) 2015/863 (RoHS3)

## 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 ±0.05 | 0.5 ±0.05 | 0.32 ±0.10 | 0.25 ±0.10 | 0.2 ±0.10 | 0.7 | 0.65 | 0.65 | 0.9 |
| **LRCS/LVC 0603** | 1.6 ±0.10 | 0.8 ±0.10 | 0.45 ±0.10 | 0.3 ±0.20 | 0.3 ±0.20 | 2.0 | 1 | 0.9 | 1.6 |
| **LRCS/LVC 0805** | 2 ±0.15 | 1.25 ±0.15 | 0.55 ±0.10 | 0.3 ±0.20 | 0.4 ±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**
TT Electronics reserves the right to make changes in product specification without notice or liability.
All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

BI Technologies IRC Welwyn

www.ttelectronics.com/resistors

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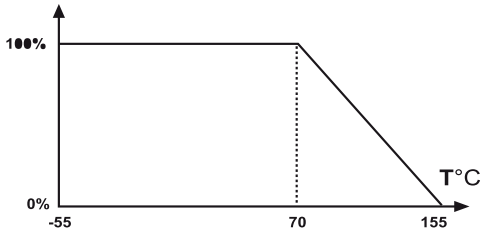
## Marking

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% | Tape & reel | | |
| | 0603 | | J = ±5% | 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% | Tape & reel | |
| | | 0603 | | | J = ±5% | 0402 | 10,000/reel |
| | | 0805 | | | | 0603, 0805 | 5000/reel |

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