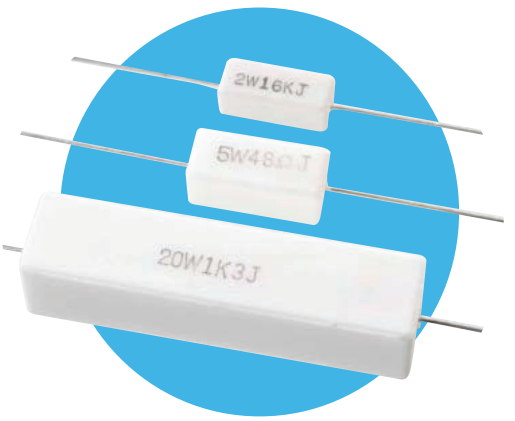
# Resistors

# Ceramic Case Resistors – Wirewound / Metal Oxide




**SQP / CAF / CAW Series**

- 2 watts to 25 watts
- Resistance 0R1 to 200K
- High overload capability
- RoHS compliant
- Flameproof ceramic case with inorganic potting material

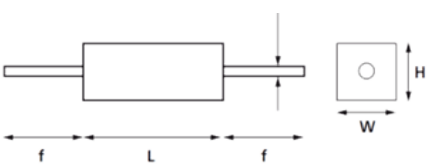
All parts are Pb-free and comply with EU Directive 2011/65/EU amended by (EU) 2015/863 (RoHS3)

## Electrical Data

| | | SQP2 / CA-2 | SQP3 / CA-3 | SQP5 / CA-5 | SQP7 / CA-7 | SQP7S | SQP10 / CA-10 | SQP15 / CA-15 | SQP20 / CA-20 | CAW25 |
|---|---|---|---|---|---|---|---|---|---|---|
| Power rating at 70°C | watts | 2 | 3 | 5 | 7 | 7 | 10 | 15 | 20 | 25 |
| Limiting element voltage | volts dc or ac rms | 250 | 300 | 350 | 500 | 350 | 700 | 700 | 750 | 750 |
| Resistance range – wirewound (CAW) | ohms | 0R1-27R | 0R1-39R | 0R1-47R | 0R1-680R | 1R0-100R | 0R1-910R | 1R0-1K0 | 2R0-1K2 | 2R0-1K2 |
| Resistance range – oxide (CAF) | ohms | 28R-120K | 40R-150K | 48R-150K | 681R-200K | 101R-150K | 911R-200K | 1K1-200K | 1K3-200K | - |
| Resistance tolerance | % | 5, 10 | | | | | | | | |
| TCR | ppm/°C | <20R: 400 ≥20R: 350 | | | | | | | | |
| Isolation voltage | volts | 1000 | | | | | | | | |
| Standard values | | E24 preferred | | | | | | | | |
| Thermal impedance | °C/W | 50 | 45 | 30 | 26 | 26 | 21 | 16 | 12 | 10 |
| Ambient temperature range | °C | -55 to +155 | | | | | | | | |

## Physical Data

| Dimensions (mm) and weight (g) | | | | | | |
|---|---|---|---|---|---|---|
| Type | L max. | W max. | H max. | f min. | d (±0.1) | Wt. nom. |
| SQP2 / CA-2 | 19 | 8 | 8 | 23 | 0.7 | 2.2 |
| SQP3 / CA-3 | 23 | 9 | 9 | 27 | 0.7 | 3.5 |
| SQP5 / CA-5 | 23 | 11 | 10 | 30 | 0.75 | 5 |
| SQP7 / CA-7 | 36 | 11 | 10 | 30 | 0.75 | 8.2 |
| SQP7S | 26 | 10 | 10 | 30 | 0.75 | 6 |
| SQP10 / CA-10 | 50 | 11 | 10 | 30 | 0.75 | 11 |
| SQP15 / CA-15 | 50 | 13.5 | 12.5 | 30 | 0.75 | 17.4 |
| SQP20 / CA-20 | 61 | 15.5 | 14.5 | 30 | 0.75 | 25 |
| CAW25 | 65 | 15.5 | 14.5 | 30 | 0.75 | 26.7 |




Min bend radius, all types 1.6 mm

Alternate body shape
(CAW-A / CAF-A)

**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

### Construction

A high purity ceramic rod, with force fit end caps onto which is wound a wire element: or a deposited metal oxide film (depending on value). The element is fitted into a ceramic case with fireproof insulation cement.

### Termination Details

**Material** The tinned copper lead wires are internally welded to the resistance element end caps.

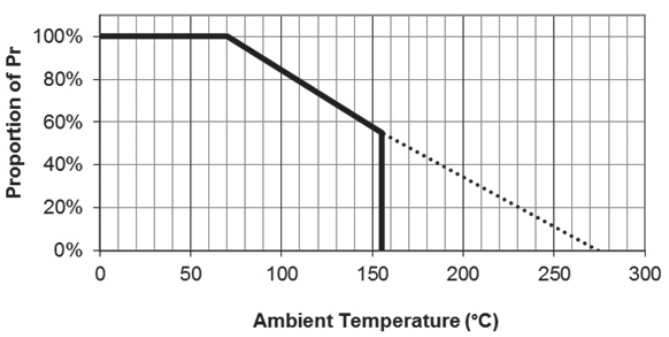
**Solderability** The terminations meet the requirements of IEC 115-1 Clause 4.17.3.2

**Strength** The terminations meet the requirements of IEC 86.2.21

## Performance Data

| | | Maximum |
|---|---|---|
| Load at rated power (1000hrs at 70˚C) | ΔR% | ≤100K: 5% +0.05Ω, >100K: 10% |
| Derating from rated power at 70˚C | | See Graph |
| Short term overload (6.25xPr for 5s) | ΔR% | 2% +0.05Ω |
| Damp heat steady state (56 days, 40˚C, ≥90% RH) | ΔR% | 2% +0.05Ω |
| Temperature rapid change | ΔR% | 2% +0.05Ω |
| Resistance to solder heat | ΔR% | 1% +0.05Ω |
| Pulse handling | | Data available by request |

**Temperature Derating**




### Marking

Type reference, resistance value and tolerance are legend marked onto the upper surface.

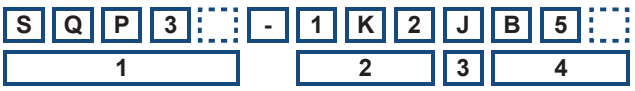
### Flammability

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

# Ordering Procedure

This product has two valid part numbers:

**European (Welwyn) Part Number: SQP3-1K2JB5** (SQP3, 1.2 kilohms ±5%, Pb-free)




| 1<br>Type | 2<br>Value | 3<br>Tolerance | 4<br>Packing & Termination Finish | | |
|---|---|---|---|---|---|
| SQP2, SQP3, SQP5, SQP7 SQP7S, SQP10, SQP15, SQP20 | E24 = 3/4 characters<br>R = ohms<br>K = kilohms | J = ±5% | Pb-free only | | |
| | | K = ±10% | B5 | SQP2 | 3600/box |
| | | | | SQP3 | 3000/box |
| | | | | SQP5 | 2400/box |
| | | | B15 | SQP7 | 1800/box |
| | | | | SQP7S | 2400/box |
| | | | | SQP10 | 1500/box |
| | | | B1 | SQP15 | 840/box |
| | | | | SQP20 | 720/box |

**USA (IRC) Part Number: CAF31201JLF** (CAF3, 1.2 kilohms ±5%, Pb-free)


| 1<br>Type | 2<br>Size | 3<br>Body Shape | 4<br>Value | 5<br>Tolerance | 6<br>Termination Finish | Packing | |
|---|---|---|---|---|---|---|---|
| CAF, CAW | 2 | Omit for standard | 3 digits + multiplier<br>R = ohms for values <100 ohms | J = ±5% | LF = Pb-free | 2 | 3600/box |
| | 3 | A= Alternate (2, 5, 7 & 10W only) | | K = ±10% | | 3 | 3000/box |
| | 5 | | | | | 5 | 2400/box |
| | 7 | | | | | 7 | 1800/box |
| | 10 | | | | | 10 | 1500/box |
| | 15 | | | | | 15 | 840/box |
| | 20 | | | | | 20 | 720/box |
| CAW | 25 | | | | | | |