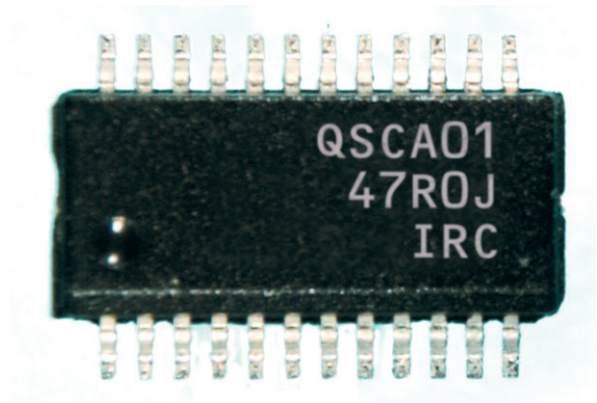


## Surface Mount QSOP Resistor Networks

### QSOP Series

- Reliable, no internal cavity
- High resistor density - .025" lead spacing
- Standard JEDEC 16, 20, and 24 pin packages
- Ultra-stable TaNSil® resistors on silicon substrate
- RoHS compliant and Sn/Pb terminations available



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

IRC's TaNSil® QSOP resistor networks are the perfect solution for high volume applications that demand a small wiring board footprint. The 0.025" lead spacing provides higher lead density, increased component count, lower resistor cost, and high reliability.

The tantalum nitride film system on silicon provides precision tolerance, exceptional TCR tracking, low cost and miniature package. Excellent performance in harsh, humid environments is a trademark of IRC's self-passivating TaNSil® resistor film.

The QSOP series is ideally suited for the latest surface mount assembly techniques and each lead can be 100% visually inspected. The compliant gull wing leads relieve thermal expansion and contraction stresses created by soldering and temperature excursions.

For applications requiring high performance resistor networks in a low cost, surface mount package, specify IRC QSOP resistor networks.

### Electrical Data

|   |  |
|---|--|
| <b>Resistance Range</b>   | 10 to 250KΩ                                |
| <b>Absolute Tolerance</b>   | To ±0.1%                                   |
| <b>Ratio Tolerance to R1</b>  | To ±0.05%                                  |
| <b>Absolute TCR</b>   | To ±25ppm/°C                               |
| <b>Tracking TCR</b>   | To ±5ppm/°C                                |
| <b>Element Power Rating @ 70°C</b>  |  |
| <b>Isolated Schematic</b>   | 100mW                                      |
| <b>Bussed Schematic</b>   | 50mW                                       |
| <b>Package Power Rating @ 70°C</b>  | 16-Pin 750mW<br>20-Pin 1.0W<br>24-Pin 1.0W |
| <b>Rated Operating Voltage (not to exceed <math>\sqrt{P \times R}</math>)</b> | 100 Volts                                  |
| <b>Operating Temperature</b>  | -55°C to +125°C                            |
| <b>Noise</b>  | <-30dB                                     |

### Environmental Data

| <b>Test Per MIL-PRF-83401</b>    | <b>Typical Delta R</b> | <b>Max Delta R</b> |
|----------------------------------|------------------------|--------------------|
| <b>Thermal Shock</b>             | ±0.02%                 | ±0.1%              |
| <b>Power Conditioning</b>        | ±0.03%                 | ±0.1%              |
| <b>High Temperature Exposure</b> | ±0.03%                 | ±0.05%             |
| <b>Short-time Overload</b>       | ±0.02%                 | ±0.05%             |
| <b>Low Temperature Storage</b>   | ±0.03%                 | ±0.05%             |
| <b>Life</b>                      | ±0.05%                 | ±0.1%              |

#### 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.

## QSOP Series

### Manufacturing Capability Data

| Absolute TCR (ppm/°C) | ISOLATED SCHEMATIC A |                      |                            |                         | BUSSED SCHEMATIC B |                      |                            |                         |
|-----------------------|----------------------|----------------------|----------------------------|-------------------------|--------------------|----------------------|----------------------------|-------------------------|
|                       | Ohmic Range (Ω)      | Available Tolerances | Available Ratio Tolerances | Best Tracking (±ppm/°C) | Ohmic Range (Ω)    | Available Tolerances | Available Ratio Tolerances | Best Tracking (±ppm/°C) |
| 250                   | 10-25                | F G J                | F G                        | 100                     | 10-25              | F G J                | F G                        | 200                     |
|                       | 26-50                | D F G J              | C D F G                    | 50                      | 26-50              | F G J                | D F G                      | 100                     |
|                       | 51-200               | C D F G J            | C D F G                    | 10                      | 51-100             | D F G J              | C D F G                    | 50                      |
|                       | 201-250K             | B C D F G J          | A B C D F G                | 5                       | 101-200            | D F G J              | B C D F G                  | 25                      |
|                       |                      |                      |                            |                         | 201-500            | B C D F G J          | B C D F G                  | 20                      |
|                       |                      |                      |                            |                         | 501-100K           | B C D F G J          | A B C D F G                | 5                       |
| 100                   | 26-50                | D F G J              | C D F G                    | 50                      | 26-50              | F G J                | D F G                      | 100                     |
|                       | 51-200               | C D F G J            | C D F G                    | 5                       | 51-100             | D F G J              | C D F G                    | 50                      |
|                       | 201-250K             | B C D F G J          | A B C D F G                | 5                       | 101-200            | D F G J              | B C D F G                  | 25                      |
|                       |                      |                      |                            |                         | 201-500            | B C D F G J          | B C D F G                  | 20                      |
|                       |                      |                      |                            |                         | 501-100K           | B C D F G J          | A B C D F G                | 5                       |
| 50                    | 26-50                | D F G J              | C D F G                    | 50                      | 51-100             | D F G J              | C D F G                    | 50                      |
|                       | 51-200               | C D F G J            | C D F G                    | 10                      | 101-200            | D F G J              | B C D F G                  | 25                      |
|                       | 201-250K             | B C D F G J          | A B C D F G                | 5                       | 201-500            | B C D F G J          | B C D F G                  | 20                      |
|                       |                      |                      |                            |                         | 501-100K           | B C D F G J          | A B C D F G                | 5                       |
| 25                    | 51-200               | C D F G J            | C D F G                    | 10                      | 201-500            | B C D F G J          | B C D F G                  | 20                      |
|                       | 201-250K             | B C D F G J          | A B C D F G                | 5                       | 501-100K           | B C D F G J          | A B C D F G                | 5                       |

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## QSOP Series

### Physical Data

| # OF PINS | DIMENSION "D" | ZD REF |
|-----------|---------------|--------|
| 16        | 0.193" ±0.004 | 0.009" |
| 20        | 0.341" ±0.004 | 0.058" |
| 24        | 0.341" ±0.004 | 0.033" |

Note: N = number of pins (16, 20, 24)

Note: All dimensions exclude mold flash and end flash which shall not exceed 0.006" per side. Drawing proportions not to scale.

Note: Lead Coplanarity 0.004" Max.

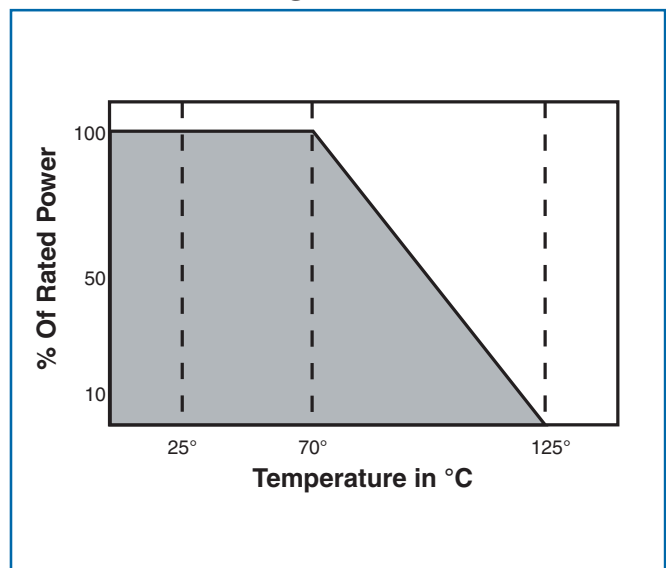
### Schematic Data

**Schematic A Isolated**

**Schematic B Bussed**

Note: N = number of pins (16, 20, 24)

### Power Derating Curve



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## QSOP Series

### Ordering Data

**Prefix** ..... GUS - QS8A - 01 - 1002 - F B

**Style, Schematic and Termination** .....

- QS8A = 16-pin, 8 Isolated Resistors, with standard Sn/Pb terminations
- QS8ALF = 16-pin, 8 Isolated Resistors, with 100% matte tin, Pb-free terminations
- QS8B = 16-pin, 15 Bussed Resistors, with standard Sn/Pb terminations
- QS8BLF = 16-pin, 15 Bussed Resistors, with 100% matte tin, Pb-free terminations
  
- QS0A = 20-pin, 10 Isolated Resistors, with standard Sn/Pb terminations
- QS0ALF = 20-pin, 10 Isolated Resistors, with 100% matte tin, Pb-free terminations
- QS0B = 20-pin, 19 Bussed Resistors, with standard Sn/Pb terminations
- QS0BLF = 20-pin, 19 Bussed Resistors, with 100% matte tin, Pb-free terminations
  
- QSCA = 24-pin, 12 Isolated Resistors, with standard Sn/Pb terminations
- QSCALF = 24-pin, 12 Isolated Resistors, with 100% matte tin, Pb-free terminations
- QSCB = 24-pin, 23 Bussed Resistors, with standard Sn/Pb terminations
- QSCBLF = 24-pin, 23 Bussed Resistors, with 100% matte tin, Pb-free terminations

**Absolute TCR Code** .....

00 = ±250 ppm/°C; 01 = ±100 ppm/°C; 02 = ±50 ppm/°C; 03 = ±25 ppm/°C

**Resistance Code** .....

4-Digit Resistance Code  
 Ex: 1002 = 10KΩ, 50R1 = 50.1Ω

**Absolute Tolerance Code** .....

J = ±5%; G = ±2%; F = ±1%; D = ±0.5%; C = ±0.25%; B = ±0.1%

**Ratio Tolerance Code (optional)** .....

G = ±2%; F = ±1%; D = ±0.5%; C = ±0.25%; B = ±0.1%; A = ±0.05%

**Packaging**

Specify tubes or tape & reel.

For additional information or to discuss your specific requirements, please contact our Applications Team using the contact details below.

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