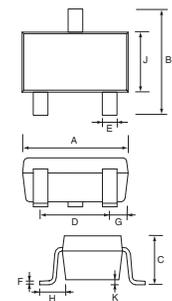


## features

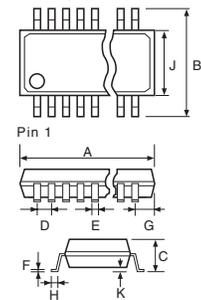
- Thin film (metal film) resistor array on silicon wafer
- Excellent resistance matching, TCR tracking and stabilities
- Custom circuits are available with flexible layout (Different resistance combinations possible)
- High integration saves board space and overall assembly costs
- Excellent reliability with standard molded IC package
- Suitable for reflow soldering
- Products with lead-free terminations meet EU RoHS and China RoHS requirements

## dimensions and construction

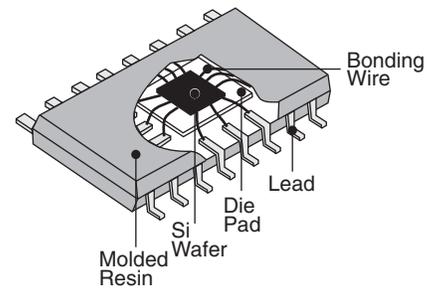
### SOT-23



### QSOP, SOIC-N



| Package Symbol | Package | Pins | Dimensions inches (mm) |                |                |                 |                |                |                |                |                |                |
|----------------|---------|------|------------------------|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|
|                |         |      | A ±0.2                 | B ±0.2         | C ±0.2         | D ±0.1          | E ±0.1         | F ±0.1         | G ±0.1         | H ±0.2         | J ±0.2         | K ±0.1         |
| S03            | SOT-23  | 3    | .115<br>(2.92)         | .091<br>(2.3)  | .037<br>(0.95) | .075<br>(1.910) | .017<br>(0.44) | .005<br>(0.13) | .020<br>(0.51) | .021<br>(0.53) | .051<br>(1.3)  | .004<br>(0.11) |
| Q16            | QSOP    | 16   | .193<br>(4.90)         | .236<br>(5.99) | .063<br>(1.60) | .025<br>(0.635) | .010<br>(0.25) | .008<br>(0.20) | .008<br>(0.20) | .026<br>(0.66) | .150<br>(3.81) | .007<br>(0.18) |
| Q20            |         | 20   | .058<br>(1.47)         |                |                |                 |                |                |                |                |                |                |
| Q24            |         | 24   | .033<br>(0.84)         |                |                |                 |                |                |                |                |                |                |
| N08            | SOIC-N  | 8    | .190<br>(4.83)         | .050<br>(1.27) | .016<br>(0.41) | .020<br>(0.52)  | .008<br>(0.20) | .026<br>(0.66) | .150<br>(3.81) | .007<br>(0.18) |                |                |
| N14            |         | 14   | .341<br>(8.66)         |                |                |                 |                |                |                |                |                |                |
| N16            |         | 16   | .390<br>(9.91)         |                |                |                 |                |                |                |                |                |                |



## ordering information

### RBA, RBB

| RBA  | Q20   | T                           | TEB                       | 1002                                   | B   | E                                     | B  | T  |
|--|---|-----------------------------|---------------------------|--|---|---------------------------------------|--|--|
| <b>Circuit Code</b>  | <b>Package Symbol</b>   | <b>Termination Material</b> | <b>Packaging</b>          | <b>Nominal Resistance</b>              | <b>Absolute Tolerance</b>                                       | <b>T.C.R.</b>                         | <b>Relative Res. Toler.</b>  | <b>T.C.R. Tracking</b>                                       |
| RBA: Bussed resistor network<br>RBB: High speed bussed network | Package type symbol + number of pins<br>Q16, Q20, Q24: QSOP<br>N08, N14, N16: SOIC narrow | T: Sn<br>(L: Sn/Pb)         | TEB: 13" embossed plastic | B, C, D, F: 4 digits<br>G, J: 3 digits | B: ±0.1%<br>C: ±0.25%<br>D: ±0.5%<br>F: ±1%<br>G: ±2%<br>J: ±5% | T: ±10<br>E: ±25<br>C: ±50<br>H: ±100 | A: ±0.05%<br>B: ±0.1%<br>C: ±0.25%<br>D: ±0.5%<br>F: ±1%<br>G: ±2%<br>Blank: Not specified | Y: ±05<br>T: ±10<br>E: ±25<br>C: ±50<br>Blank: Not specified |

For further information on packaging, please refer to Appendix A.

Specifications given herein may be changed at any time without prior notice. Please confirm technical specifications before you order and/or use.

3/03/17

## ordering information (continued)

### RTX

|                              |                                      |                             |  |                    |
|------------------------------|--------------------------------------|-----------------------------|--|--------------------|
| <b>RTX</b>                   | <b>S03</b>                           | <b>T</b>                    | <b>TE</b>                                      | <b>7011</b>        |
| <b>Circuit Code</b>          | <b>Package Symbol</b>                | <b>Termination Material</b> | <b>Packaging</b>                               | <b>Custom Code</b> |
| RTX: SOT-23 Resistor network | Package type symbol + number of pins | T: Sn<br>(L: Sn/Pb)         | TE: 7" embossed plastic (RTX, RTY SOT-23 only) |                    |

### RDA, RDB

|  |  |                             |                           |   |   |                             |
|--|--|-----------------------------|---------------------------|---|---|-----------------------------|
| <b>RDA</b>   | <b>Q20</b>   | <b>T</b>                    | <b>TEB</b>                | <b>471J</b>                                     | <b>511J</b>                                     | <b>E</b>                    |
| <b>Circuit Code</b>  | <b>Package Symbol</b>  | <b>Termination Material</b> | <b>Packaging</b>          | <b>Nominal Resistance &amp; Tolerance of R1</b> | <b>Nominal Resistance &amp; Tolerance of R2</b> | <b>T.C.R.</b>               |
| RDA: Dual terminator network<br>RDB: Differential terminator network | Package type symbol + number of pins<br>Q16, Q20: QSOP<br>N16: SOIC narrow | T: Sn<br>(L: Sn/Pb)         | TEB: 13" embossed plastic | 3 digits: G: ±2%,<br>J: ±5%                     | 3 digits: G: ±2%,<br>J: ±5%                     | E: ±25<br>C: ±50<br>H: ±100 |

## ratings

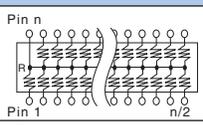
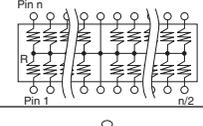
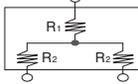
| Package                      |           | QSOP   |      |      | SOIC |      |      | SOT-23 |
|------------------------------|-----------|--|------|------|------|------|------|--------|
| Package Symbol               |           | Q16  | Q20  | Q24  | N08  | N14  | N16  | S03    |
| <b>Package Power Rating</b>  |           | 0.8W   | 1.0W | 1.0W | 0.4W | 0.6W | 0.8W | 0.2W   |
| <b>Resistance Range</b>      | 10Ω ~ 1kΩ | Power rating 200mW/resistor element *  |      |      |      |      |      |        |
|                              | 1.1kΩ ~   | Power rating 50mW/resistor element *   |      |      |      |      |      |        |
| <b>Max. Working Voltage</b>  |           | 100V   |      |      |      |      |      |        |
| <b>Rated Voltage</b>         |           | √ Rated power x nominal resistance value, rated voltage should not exceed max. working voltage |      |      |      |      |      |        |
| <b>Rated Ambient Temp.</b>   |           | +70°C  |      |      |      |      |      |        |
| <b>Operating Temp. Range</b> |           | -55°C ~ +125°C **  |      |      |      |      |      |        |

Above ratings are based on the thermal resistance using multi-layer circuit board (EIA/JESD51). For mounting on a mono-layer board, power derating shall be needed. Please contact us about conditions.

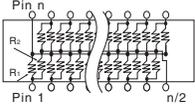
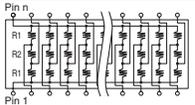
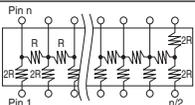
\* Total power consumption of all elements should not exceed the package power rating.

\*\* About operating temperature range -55°C ~ +155°C. We can provide custom devices. Please contact us.

## applications and ratings

| Circuit Code | Circuit Schematics  | Number of Pins    | T.C.R. (x10 <sup>-6</sup> /K) | Resistance Range (Ω) E24 & Absolute Tolerance |                |
|--------------|---|-------------------|-------------------------------|---|----------------|
|              |   |                   |                               | F: ±1%  | G: ±2%, J: ±5% |
| RBA          |  | 8, 14, 16, 20, 24 | E: ±25                        | 100 ~ 100k                                    | 100 ~ 100k     |
|              |   |                   | C: ±50                        | 51 ~ 100k                                     | 51 ~ 100k      |
|              |   |                   | H: ±100                       | 30 ~ 100k                                     | 10 ~ 100k      |
| RBB          |  | 8, 14, 16, 20, 24 | E: ±25                        | 100 ~ 100k                                    | 100 ~ 100k     |
|              |   |                   | C: ±50                        | 51 ~ 100k                                     | 51 ~ 100k      |
|              |   |                   | H: ±100                       | 30 ~ 100k                                     | 10 ~ 100k      |
| RTX, RTY     |  | 3(SOT-23 only)    | E: ±25                        | 100 ~ 40k                                     | 100 ~ 40k      |
|              |   |                   | C: ±50                        | 51 ~ 40k                                      | 51 ~ 40k       |
|              |   |                   | H: ±100                       |   |                |

## applications and ratings (continued)

| Circuit Code | Circuit Schematics  | Number of Pins | T.C.R.       | Resistance Range ( $\Omega$ ) E24 & Absolute Tolerance<br>G: $\pm 2\%$ , J: $\pm 5\%$ |
|--------------|---|----------------|--------------|---|
| RDA          |  | 16, 20         | E: $\pm 25$  | R1= 150 ~ 10k<br>R1: R2= 1:1 ~ 1:4  |
|              |   |                | C: $\pm 50$  |   |
|              |   |                | H: $\pm 100$ |   |
| RDB          |  | 16, 20         | E: $\pm 25$  | R1= 150 ~ 10k<br>R1: R2= 1:1 ~ 1:4  |
|              |   |                | C: $\pm 50$  |   |
|              |   |                | H: $\pm 100$ |   |
| RLA          |  | 14, 16         | H: $\pm 100$ | 1k ~ 30k  |

## environmental applications

### Performance Characteristics

| Parameter                    | Requirement $\Delta R \pm(\%+0.05\Omega)$ |              | Test Method   |
|------------------------------|---|--------------|---|
|                              | Limit                                     | Typical      |   |
| Resistance                   | Within specified tolerance                |              | 25°C  |
| T.C.R.                       | Within specified T.C.R.                   |              | +25°C/-55°C, +25°C/+125°C   |
| Resistance to Soldering Heat | $\pm 0.1\%$                               | $\pm 0.05\%$ | 260°C $\pm 5^\circ\text{C}$ , 10 seconds $\pm 1$ second                           |
| Rapid Change of Temperature  | $\pm 0.5\%$                               | $\pm 0.05\%$ | -55°C (30 minutes), +125°C (30 minutes), 100 cycles                               |
| Moisture Resistance          | $\pm 0.5\%$                               | $\pm 0.05\%$ | 40°C $\pm 2^\circ\text{C}$ , 90 - 95% RH, 1000 hours, 1.5 hr ON, 0.5 hr OFF cycle |
| Endurance at 70°C            | $\pm 0.25\%$                              | $\pm 0.05\%$ | 70°C $\pm 2^\circ\text{C}$ , 1000 hours, 1.5 hr ON, 0.5 hr OFF cycle              |
| High Temperature Exposure    | $\pm 0.25\%$                              | $\pm 0.1\%$  | +125°C, 1000 hours  |

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