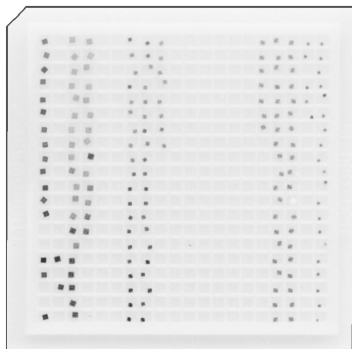


Center Tap Chip Resistor

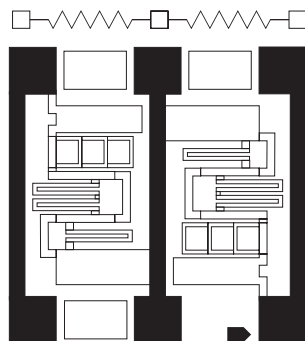


Actual Size

Center tap chip resistors allow for greater flexibility of hybrid layout design by utilizing the smallest area for two resistors. Since both resistors are from the same film system, excellent tracking is inherent in the chip. Connecting to the center tap yields half the value: connecting the two resistors in parallel results in one quarter value on equal value resistor styles.

CHIP DIAGRAM

Equal Value (S30R, A30R series)



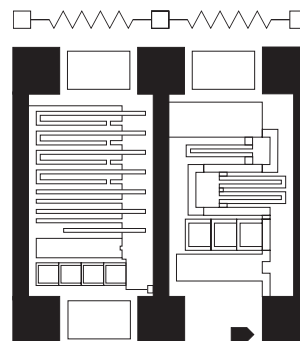
FEATURES

- 30 Mil Square Size.
- Resistance Range:
(Silicon Substrate)
Equal value - 4.7 ohms to 1M total
Unequal value - 4.7 ohms to 500K per resistor
(Alumina Substrate)
Equal value - 4.7 ohms to 52K total
Unequal value - 4.7 ohms to 26K per resistor
- Gold terminations with Tamelox® or Tantalum nitride resistor film.
- 4 digit custom marking available
- Low value indicator for unequal values

TYPICAL PERFORMANCE

| | ABS |
|-----|-----|
| TCR | 50 |
| TOL | 1 |

Unequal value (S30V, A30V series)



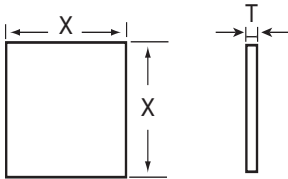
HYBRID

STANDARD ELECTRICAL SPECIFICATIONS

| TEST | SPECIFICATIONS | | CONDITIONS |
|-----------------------------|--|------------------------|--------------------|
| MATERIAL | TAMELOX® | TANTALUM NITRIDE | |
| Resistance Range | 4.7 - 1M ohm Silicon | 4.7 - 52K ohms alumina | |
| TCR: | | | |
| Tracking | ± 2ppm/°C | ±5ppm/°C | - 55°C to +125°C |
| Absolute | ± 50ppm/°C | ±100ppm/°C | - 55°C to +125°C |
| Absolute Tolerance: | ± 20% to ± 0.1% | | |
| Resistance Ratio Accuracy | ± 2% Standard | | |
| Power Rating: | 250mW | | @ + 70°C |
| Stability (ΔR Ratio) | Less than 0.1% Max. ΔR/R (0.05% typical) | | 2,000 hrs. @ +70°C |
| Voltage Coefficient | > 5ppm/Volt | | |
| Working Voltage | 100V Max. all styles | | |
| Operating Temperature Range | - 55°C to + 125°C | | |
| Storage Temperature Range | - 55°C to + 125°C | | |
| Noise | - 35dB | | |
| Thermal EMF | 0.08μV/°C | | |
| Shelf Life Stability | 100ppm | | 1 Year @ +25°C |

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DIMENSIONS



| SUBSTRATE | ALUMINA ¹ | SILICON |
|--------------------|--|----------------------------------|
| Thickness (Mils) | 10 ± 2 | 14 ± 2 |
| Isolation Layer | None | SiO ₂ (10,000 Å Min.) |
| Metallization | Gold (15,000 Å) | Gold (15,000 Å) |
| Die Size (X) | 30 x 30 ± 3 MIL | 30 x 30 ± 3 MIL |
| Terminations | 4 Mils Square Min. | 4 Mils Square Min. |
| Packaging Standard | 2" Square Waffle Pack (400 Max. per Package) | |

¹ Alumina has the benefit of the higher thermal conductivity and superior high frequency characteristics, however the resistance range is limited by the poorer line resolution versus silicon, because of the surface finish.

MECHANICAL SPECIFICATIONS

| | |
|--------------------|--------------------|
| Resistive Element | Tamelox® |
| Termination Pads | Gold |
| Substrate Material | Silicon or Alumina |

FULL LOT TRACEABILITY TO WAFER LEVEL

| | |
|---|---|
| Visual Criteria | MIL-STD-833 Method 2032 Class H |
| Thermal Shock (MIL-STD-202, Method 107, Test Condition C) | 0.05% Max. ΔR/R (0.02% Typical) |
| High Temperature Exposure (125°C, 100 Hours in Air) | 0.10% Max. ΔR/R (0.07% Typical) |
| Low Temperature Operation (MIL-PRF-55342 Paragraph 4.7.4) | 0.05% Max. ΔR/R (0.025% Typical) |
| Moisture Resistance (MIL-STD-202 Method 106) | 0.25% Max. ΔR/R (0.05% Typical) |
| Short Time Overload (5 x Rated Power 25°C, 5 sec.) | 0.25% Max. ΔR/R (0.05% Typical) |
| Resistance Ratio Accuracy | ± 2% Standard or ± 0.1 ohm whichever is greater (0.05% available) |

**How to Order**

| Substrate | Chip Type/Size | Ratio Tolerance | TCR Characteristic | Ohmic Value | Absolute Tolerance | Element Technology |
|--|---|---|--|--|---|--|
| S = Silicon (SiO ₂) | Center Tap Chip Resistors | S = $\pm 2.0\%$ (Standard) | E = ± 25 ppm/ $^{\circ}\text{C}$ C = ± 50 ppm/ $^{\circ}\text{C}$ K = ± 100 ppm/ $^{\circ}\text{C}$ | The first three digits are significant figures and the last digit specifies the number of zeros to follow. Example: 1R00 = 1 ohm 10R0 = 10 ohms 12R5 = 12.5 ohms 1000 = 100 ohms 1001 = 1000 ohms NOTE: For Unequal values (S30V, S30I Styles) List Both Nominals Example: 25K/10K = 2502/1002 Max. Value/Resistor on Alumina is: A30 26K/26K Tamelox [®] Film | B = $\pm 0.1\%$ C = $\pm 0.2\%$ D = $\pm 0.5\%$ F = $\pm 1.0\%$ G = $\pm 2.0\%$ J = $\pm 5.0\%$ M = Values less than 10 ohms use ± 1 ohm X = Special | N = Tamelox [®] Gold Pads T = Ta ₂ N with Gold Pads |
| | 30R = (0.030 x 0.030), Equal value 30V = (0.030 x 0.030) Unequal Value | A = $\pm 1.0\%$ D = $\pm 0.5\%$ C = $\pm 0.2\%$ B = $\pm 0.1\%$ N = Not Applicable | NOTES: Best available under 100 ohms ± 100 ppm/ $^{\circ}\text{C}$ | | | |
| A = Alumina Al ₂ O ₃ (99.6% purity) | | | | | | |

Example: S30RSC1002FN is a 30 mil square center tap chip resistor on silicon with a TCR of ± 50 ppm/ $^{\circ}\text{C}$, resistance value of 10K ohms, and absolute tolerance of $\pm 1\%$, Tamelox[®] Resistor Film. Gold pads.