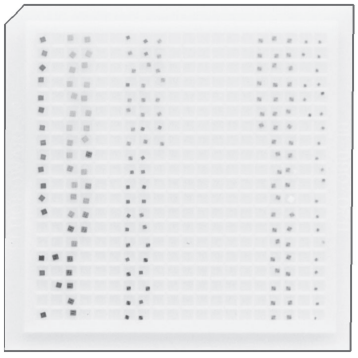
Single Value Chip Resistors



Actual Size

Single value chip resistors are manufactured using Thin Film technology and are available with improved performance and size when compared to thick film counterparts. Vishay Thin Film offers a wide resistance range.

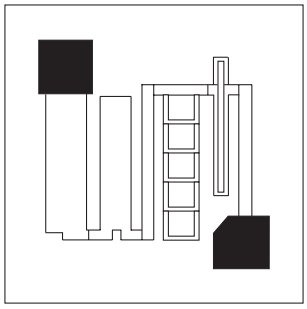
FEATURES

- 20, 40, 50 Mil Square Size.
- Resistance Range:
- (Silicon Substrate)
  20 x 20 size - 4.7 ohms to 1M ohm
- (Alumina Substrate)
  20 x 20 size - 4.7 ohms to 45K ohms
- Consult factory for optional sizes with higher resistance values

TYPICAL PERFORMANCE

	ABS
TCR	50
TOL	0.1

SCHEMATIC AND PATTERN



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STANDARD ELECTRICAL SPECIFICATIONS		
TEST	**SPECIFICATIONS**	**CONDITIONS**
SIZE	**20 x 20**	
Resistance Range	4.7 - 1M ohm	
Absolute TCR	± 50ppm/°C (Tamelox®)	+ 25°C
Power Rating:	20 x 20 = 125mW, 250mW	@ + 70°C
Stability: ΔR Ratio	Less than 0.1% Max. ΔR/R (0.05% Typical)	1,000 hrs. @ + 70°C
Working Voltage	100V Max. all sizes	
Operating Temperature Range	-55°C to + 125°C	
Noise	<-35 dB	

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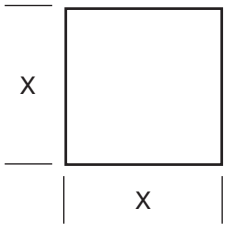
DIMENSIONS in inches and millimeters



Dimensions: 0.020 x 0.020 ±0.003

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)	20 x 20 ±3 MIL	20 x 20 40 x 40 ±3 MIL 50 x 50 ±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.

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MECHANICAL SPECIFICATIONS	
Resistive Element	Tamelox®
Substrate Material	Silicon or Alumina
Terminals	Gold

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)

How to Order

Substrate	Chip Type/Size	TCR Characteristic	Ohmic Value	Absolute Tolerance	Element Technology
S = Silicon ($Si0_2$) **A** = Alumina Al_2O_3 (99.6% purity) Alumina is available on 20 mil square size only.	Single Value Chip Resistors **20** = (0.020 x 0.020)	**C** = ± 50ppm/°C (std.) **E** = ± 25ppm/°C **K** = ± 100ppm/°C (≤ 100Ω) **NOTES:** Best available under 100 ohms ±100 ppm/°C	The first three digits are significant figures and the last digit specifies the number of zeros to follow. e.g. **1R00** = 1 ohm **10R0** = 10 ohms **12R5** = 12.5 ohms **1000** = 100 ohms **1001** = 1,000 ohms Max. Value/Resistor on Alumina is: A20 50K Tamelox® Film	**B** = ±0.1% **C** = ±0.2% **D** = ±0.5% **F** = ±1.0% **G** = ±2.0% **J** = ±5.0% **M** = Values less than 10 ohms use ±1 ohm **X** = Special	**N** = Tamelox® Gold Pads **T** = Ta_2N with Gold Pads

Example: **S20C6801FN** is a 20 mil square single value chip resistor on silicon with a TCR of ±50 ppm/°C, resistance value of 6.8K ohms, and absolute tolerance of ±1%, Tamelox® Resistor Film.

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