



# THIN FILM CHIP RESISTOR ARRAYS

ACAS 0606 AT and ACAS 0612 AT Precision Series



## Precision Thin Film Chip Resistor Arrays Superior Moisture Resistivity

### KEY BENEFITS

- Two or four resistor values on one substrate
- Superior moisture resistivity: < 0.5 % (85 °C; 85 % RH; 56 days)
- High power rating:  $P_{70} = 125$  mW per resistor
- ESD capability: 1000 V, human body model
- AEC-Q200 qualified
- TCR tracking down to 10 ppm/K ( $\pm 5$  ppm/K) and tolerance matching down to 0.1 % ( $\pm 0.05$  %)
- RoHS-compliant components, compatible with lead (Pb)-free and lead-bearing soldering processes

### APPLICATIONS

- Precision analog circuits
- Voltage dividers
- Feedback circuits
- DC/DC converters
- Signal conditioning

## Precision Thin Film Chip Resistor Array Superior Moisture Resistivity

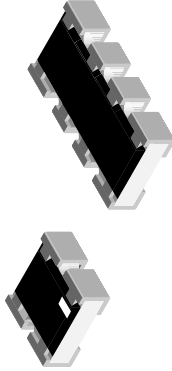
### FEATURES

- Superior moisture resistivity,  $|\Delta R/R| < 0.5\%$  (85 °C, 85 % RH; 1000 h)
- Rated dissipation  $P_{70}$  up to 125 mW per resistor
- ESD capability 1000 V, human body model
- TCR tracking down to 10 ppm/K ( $\pm 5$  ppm/K) and tolerance matching down to 0.1 % ( $\pm 0.05\%$ )
- AEC-Q200 qualified
- Compliant to RoHS directive 2002/95/EC



### APPLICATIONS

- Precision analogue circuits
- Voltage divider
- Feedback circuits
- Signal conditioning



ACAS 0606 AT and ACAS 0612 AT precision automotive grade thin film chip resistor arrays with convex terminations combine the proven reliability of discrete chip resistors with the advantages of chip resistor arrays. Defined tolerance matching and TCR tracking make this product perfectly suited for applications with outstanding requirements towards stable fixed resistor ratios. Four equal resistor values or two pairs are available for the ACAS 0612 AT, whereas the ACAS 0606 AT is available either with two equal or two different resistor values. Find out more about Vishay's automotive grade product requirements at: [www.vishay.com/applications](http://www.vishay.com/applications)

### TECHNICAL SPECIFICATIONS

DESCRIPTION	ACAS 0606 AT	ACAS 0612 AT
EIA size	0606	0612
Metric size	RR 1616MM	RR 1632M
Configuration, isolated	2 x 0603	4 x 0603
Design:	AE	AE
All equal values (AE)		TP
Two pairs of values (TP)		
Different values (DF)	DF	
Resistance values		47 Ω to 150 kΩ <sup>(1)</sup>
Absolute tolerance		± 0.5 %, ± 0.25 %
Tolerance matching <sup>(2)</sup>		0.5 % (equivalent to ± 0.25 %)
		0.25 % (equivalent to ± 0.125 %)
		0.1 % (equivalent to ± 0.05 %)
Absolute temperature coefficient		± 50 ppm/K, ± 25 ppm/K
Temperature coefficient tracking <sup>(2)</sup>		50 ppm/K (equivalent to ± 25 ppm/K)
		25 ppm/K (equivalent to ± 12.5 ppm/K)
		15 ppm/K (equivalent to ± 7.5 ppm/K)
		10 ppm/K (equivalent to ± 5 ppm/K)
Max. resistance ratio $R_{min}/R_{max}$		1:20
Rated dissipation: $P_{70}$ <sup>(3)</sup>	0.125 W	0.125 W
Element	0.2 W	0.4 W
Package		
Operating voltage, $U_{max}$ , AC/DC		75 V
Permissible film temperature		155 °C
Insulation voltage ( $U_{ins}$ ) against ambient and between integrated resistors, continuous		75 V

### Notes

- <sup>(1)</sup> Resistance values to be selected from E24 and E96.
- <sup>(2)</sup> In applications with defined resistance ratios like voltage dividers or feedback circuits, an array with a defined tracking of e.g. 10 ppm/K is required to replace discrete resistors with a temperature coefficient of resistance of  $\pm 5$  ppm/K. Furthermore, in order to achieve the same tolerance of  $\pm 0.05\%$  of individual resistors, an array requires a matching of 0.1 %.
- <sup>(3)</sup> The power dissipation on the resistor generates a temperature rise against the local ambient, depending on the heat flow support of the printed-circuit board (thermal resistance). The rated dissipation applies only if the permitted film temperature is not exceeded. These resistors do not feature a limited lifetime when operated within the permissible limits.

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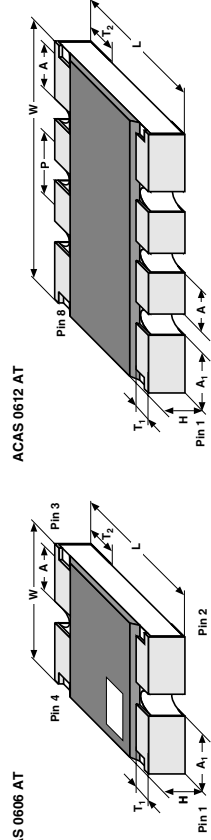
For technical questions, contact [filmresistors.thinfilmmarray@vishay.com](mailto:filmresistors.thinfilmmarray@vishay.com)

MAXIMUM RESISTANCE CHANGE AT RATED POWER <sup>(1)</sup>			
DESCRIPTION	ACAS 0606 AT	ACAS 0612 AT	
Configuration, isolated	2 x 0603	4 x 0603	
Operation mode	Standard	Power	Power
Rated power per element, $P_{70}$	0.1 W	0.125 W	0.125 W
Rated power per package, $P_{70}$	0.15 W	0.2 W	0.4 W
Film temperature	125 °C	155 °C	155 °C
Max. resistance change at $P_{70}$	± 0.1 %	± 0.25 %	± 0.25 % <sup>(3)</sup>
$\Delta R/R$ max., after:	± 0.25 %	± 0.5 %	± 0.5 %
Max. relative resistance change (relative drift) at $P_{70}$	0.1 % <sup>(2)</sup>	0.25 % <sup>(3)</sup>	0.25 % <sup>(3)</sup>
$\Delta R/R$ max., after:	0.25 % <sup>(3)</sup>	0.5 % <sup>(4)</sup>	0.5 % <sup>(4)</sup>

### Notes

- <sup>(1)</sup> Figures are given for arrays with equal values, design type AE
- <sup>(2)</sup> Equivalent to ± 0.05 %
- <sup>(3)</sup> Equivalent to ± 0.125 %
- <sup>(4)</sup> Equivalent to ± 0.25 %

### DIMENSIONS



Revision 21-Dec-09

DIMENSIONS - chip resistor array, mass and relevant physical dimensions									
TYPE	L (mm)	W (mm)	H (mm)	P (mm)	A <sub>1</sub> (mm)	A (mm)	T <sub>1</sub> (mm)	T <sub>2</sub> (mm)	MASS (mg)
ACAS 0606 AT	1.5 ± 0.15	1.6 ± 0.15	0.45 ± 0.1	-	0.6 ± 0.1	0.4 ± 0.1	0.3 ± 0.15	0.4 ± 0.15	3.6
ACAS 0612 AT	1.5 ± 0.15	3.2 ± 0.15	0.45 ± 0.1	0.8 ± 0.1	0.6 ± 0.1	0.4 ± 0.1	0.3 ± 0.15	0.4 ± 0.15	6.8