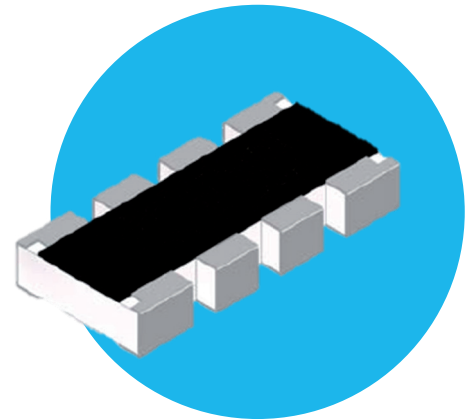


Ultra-Precision Chip Array

UPCA Series

- Ultra-precision thin film technology
- Four matched resistor elements in 1206 footprint
- Tight tolerance down to $\pm 0.1\%$ with ratio to $\pm 0.05\%$
- Low tracking TCR down to $\pm 5\text{ppm}/^\circ\text{C}$



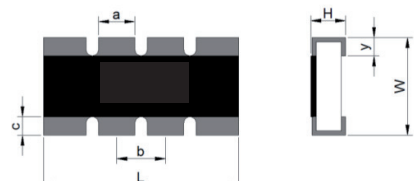
 All parts are Pb-free and comply with EU Directive 2011/65/EU amended by (EU) 2015/863 (RoHS3)

Electrical Data

		UPCA164
Power rating per resistor element @70°C	watts	0.1
Package power rating @70°C	watts	0.4
Limiting element voltage	volts	75
Maximum overload voltage	volts	150
Resistance range	ohms	20R – 200K
Resistance tolerance	%	$\pm 1, \pm 0.5, \pm 0.25, \pm 0.1,$
Matching tolerance	%	± 0.05
TCR (20 to 125°C)	ppm/°C	$\pm 50, \pm 25$
Tracking TCR (20 to 125°C)	ppm/°C	± 5
Standard values		E24, E96, E192
Ambient temperature range	°C	-55 to +155

Physical Data

Type	L	W	H	a	b	c	y	Wt. nom
UPCA164	3.20 ± 0.15	1.50 ± 0.15	0.40 ± 0.04	0.40 ± 0.1	0.80 ± 0.1	0.40 ± 0.15	0.30 ± 0.15	9.0



Marking

3-digit marking is used on the component. E.g. 103 = 10k Ω . EIA-96 codes are used for E96 values. Other values and custom networks are unmarked. All relevant information is recorded on the primary package or reel.

Solvent Resistance

The component is resistant to all normal industrial cleaning solvents suitable for printed circuits.

Construction

A thin-film material is selectively deposited on an alumina substrate together with metallic contacts at each end of the resistor. The unadjusted resistors are heat treated to give the required TCR and stability, and then a precisely controlled laser trim process adjusts the resistance value. Epoxy protection is applied and wrap-around terminations are added and plated with nickel then tin. Each resistor is measured immediately before packing into tape.

General Note

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UPCA Series

Performance Data

Test	Method	±ΔR% maximum (+0.05Ω)
Load life	1000 hours cyclic rated power @ 70°C	0.5
Humidity load	1000 hours cyclic rated power @40°C, 90-95% RH	0.5
Short term overload	Lesser of 6.25 x rated power & max. overload voltage for 5 secs	0.2
Temperature cycle	5 cycles -55°C to +155°C	0.25
Bending strength	90mm FR4, 3mm deflection for 10 secs	0.1
Resistance to solder heat	260 ±5°C for 10secs	0.1
Solderability	235 ±5°C for 2secs	95% min. coverage
Adhesion	5N force for 10 secs	No damage
Insulation resistance	150Vdc for 1 min	≥10G
Isolation	150Vrms for 1 minute	No breakdown

Circuit Diagram

$R1 = R2 = R3 = R4$

Custom networks on request,
e.g. $R1 = R2 \neq R3 = R4$
or $R1 \neq R2 \neq R3 \neq R4$

De-rating Curve

Recommended Land Pattern

Dimensions mm	A	B	C	I	P
UPCA164	3.10	2.85	0.45	0.80	0.80

Packaging

UPCA164 is packed in 8mm paper tape on a 7 inch reel of 5000 pieces.

Dimensions mm	A	B	W	E	F	P0	P1	P2	ØD0	T
UPCA164	2.0 ±0.2	3.6 ±0.2	8.0 ±0.3	1.75 ±0.1	3.5 ±0.2	4.0 ±0.1	4.0 ±0.1	2.0 ±0.1	1.55 ±0.05	1.0 max.

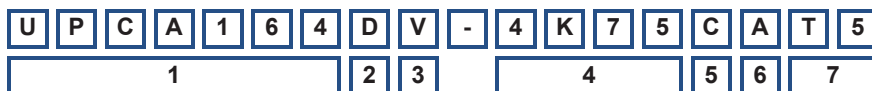
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UPCA Series

Ordering Procedure

Example: UPCA164DV-4K75CAT5 (UPCA164 with TCR of 25ppm/°C absolute and 5ppm/°C tracking, 4.75 kilohms, tolerance of 0.25% absolute and 0.05% ratio, 5000 reel, Pb-free)



1	2	3	4	5	6	7
Type	Absolute TCR	Tracking TCR	Value	Absolute Tolerance	Ratio Tolerance	Packing
UPCA164	D = ±25ppm/°C C = ±50ppm/°C	V = ±5ppm/°C	3/4 characters R = ohms K = kilohms	B = ±0.1% C = ±0.25% D = ±0.5% F = ±1%	A = ±0.05%	T5 = 5000/reel

Custom Network Example: UPCA164CN-0001T5 (UPCA164 custom network reference 0001, 5000 reel, Pb-free)



1	2	3	4
Type	Circuit	Reference	Packing
UPCA164	CN = Custom network	4 digit code	T5 = 5000/reel

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