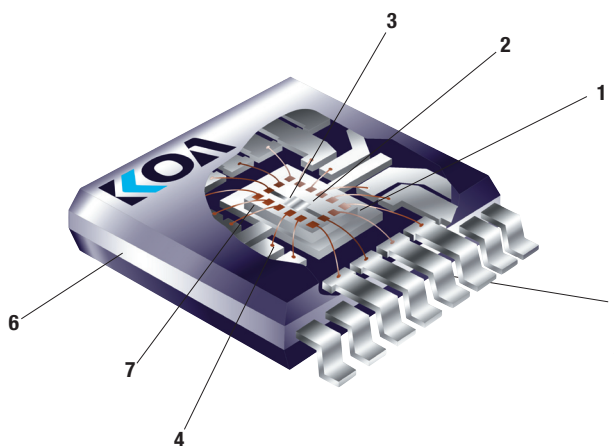
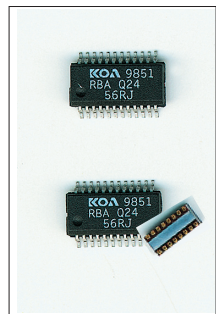


KOA'S INTEGRATED PASSIVE COMPONENTS

THIN FILM ON SILICON (TFOS)

KPC



STRUCTURE

- 1 Die pad
- 2 Silicon substrate
- 3 Circuit
- 4 Bonding pad
- 5 Lead
- 6 Mold resin
- 7 Gold wire bonding

IDENTIFICATION

TYPE	COATING COLOR	MARKING
KPC	Black	White Ink or Laser

Products with Pb-free terminations meet EU-RoHS and China-RoHS requirements

NETWORKS
(PASSIVE COMPONENTS)

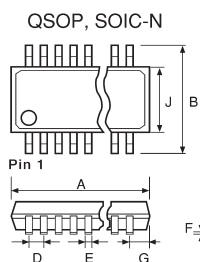
FEATURES

- Excellent performance and reliability due to thin film on silicon wafer technology and molded construction
- Excellent resistance matching, TCR tracking and stability characteristics
- High integration saves board space and reduces overall assembly costs
- Excellent reliability with standard molded IC package
- Wide variations of standard packages like QSOP, SOIC, SOT
- Meets or exceeds IEC 60115-1, JIS C 5201-1, JIS C 5101-1
- Suitable for reflow soldering
- **Customer specific circuits on request**

APPLICATIONS

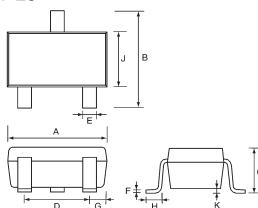
- Highly accurate peripheral resistors for analog operational amplifiers
- Automotives, Analog instrumentations, IC-testers
- Computers, Data communications, Network systems
- Operational amplifiers, Terminations, Pull-up/Pull-down

DIMENSIONS (mm)



SOT type

SOT-23



Package Symbol	Package	Number of Pins	Dimensions (mm)										Taping & Q'ty/Reel TE	Weight (g) 1000pcs
			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	2.92	2.3	0.95	1.91	0.44	0.13	0.51	0.53	1.3	0.11	3,000	9
Q16	QSOP	16	4.90	5.99	1.60	0.635	0.25	0.20	0.20	0.66	3.81	0.18	2,500	76
Q20		20	8.66						1.47					125
Q24		24	8.66						0.84					129
N08	SOIC-N	8	4.83	5.99	1.60	1.27	0.41	0.20	0.52	0.66	3.81	0.18	2,500	73
N14		14	8.66											150
N16		16	9.91											153

Contact our sales representatives before you use our products for applications including automotives, medical equipment and aerospace equipment. Malfunction or failure of the products in such applications may cause loss of human life or serious damage.

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

KOA'S INTEGRATED PASSIVE COMPONENTS

THIN FILM ON SILICON (TFOS)

KPC

GENERAL RATINGS FOR RESISTOR NETWORKS

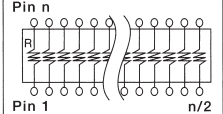
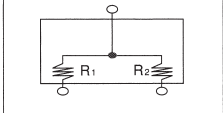
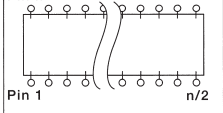
	PACKAGE / PIN COUNT						
	QSOP			SOIC			SOT-23
	Q16	Q20	Q24	N08	N14	N16	S03
PACKAGE POWER RATING	0.8 W	1.0 W	1.0 W	0.4 W	0.6 W	0.8 W	0.2 W
RESISTANCE RANGE	10 Ω ~ 1 kΩ						
MAX. WORKING VOLTAGE	100 V						
RATED VOLTAGE	√ Rated Power x Nominal Resistance Value, Rated Voltage should not exceed Max. Working Voltage.						
RATED AMBIENT TEMP.	+ 70° C						
OPERATING TEMP. RANGE	- 55° C ... + 125° C**						

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

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

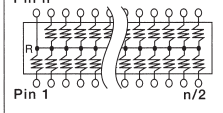
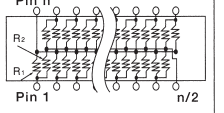
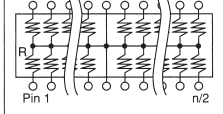
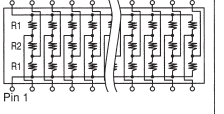
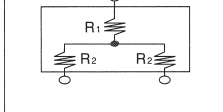
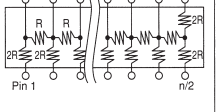
** Operating temperature range -55° C ... +155° C can be provided as custom devices. Please contact KOA for this.

STANDARD RESISTOR NETWORKS

Circuit Code	Circuit Schematics	Number of Pins	T.C.R. (×10 ⁻⁶ /K)	Resistance Range (Ω) E24 and Absolute Tolerance				Relative Resistance tol.	T.C.R. Tracking (×10 ⁻⁶ /K)	Tolerance & T.C.R. combinations upon request
				B:±0.1%, C:±0.25%	D:±0.5%	F:±1%	G:±2%, J:±5%			
*RIA		8, 14, 16 *20, *24	T:±10 E:±25 C:±50 H:±100	510~100k	510~100k 100~*510k 51~*510k	510~100k 100~*510k 51~*510k	510~100k 100~*510k 51~*510k	A: 0.05 B: 0.1 C: 0.25 D: 0.5 F: 1 G: 2	Y: 5 T: 10 E: 25 C: 50	
RTY	 Max. total resistance in a package 200kΩ	3 SOT-23 Only	T:±10 E:±25 C:±50 H:±100	1k~40k 1k~150k	1k~40k 51~200k	1k~40k 51~200k	1k~40k 30~200k	A: 0.05 B: 0.1 C: 0.25 D: 0.5 F: 1 G: 2	Y: 5 T: 10 E: 25 C: 50	
*RNX	 Custom Resistor Networks	8, 14, 16 20, 24	T:±10 E:±25 C:±50 H:±100	510~100k	510~100k 100~510k 51~510k	510~100k 100~510k 51~510k	510~100k 100~510k 30~510k	A: 0.05 B: 0.1 C: 0.25 D: 0.5 F: 1 G: 2	Y: 5 T: 10 E: 25 C: 50	

**For RIA 20, 24pin, 200kΩ is highest resistance.

**Please inquire of us about your custom devices and circuits. (Different resistance combination available) Depending on the circuit and package, much higher resistances are possible.

Circuit Code	Circuit Schematics	Number of Pins	T.C.R. (×10 ⁻⁶ /K)	Resistance Range (Ω) E24 and Absolute Tolerance		Circuit Code	Circuit Schematics	Number of Pins	T.C.R. (×10 ⁻⁶ /K)	Resistance Range (Ω) (E24 and Resistance Tolerance)
				F:±1%	G:±2%, J:±5%					
RBA		8, 14, 16 20, 24	E:±25 C:±50 H:±100	100~100k 51~200k 30~100k	100~100k 51~200k 10~100k	RDA		16, 20	E:±25 C:±50 H:±100	R1= 150~10k R1:R2= 1:1~1:4
RBB		8, 14, 16 20, 24	E:±25 C:±50 H:±100	100~100k 51~100k 30~100k	100~100k 51~100k 10~100k	RDB		16, 20	E:±25 C:±50 H:±100	R1= 150~10k R1:R2= 1:1~1:4
RTX		3 SOT-23 Only	E:±25 C:±50 H:±100	100~40k 51~40k	100~40k 51~40k	RLA		14, 16	H:±100	1k~30k

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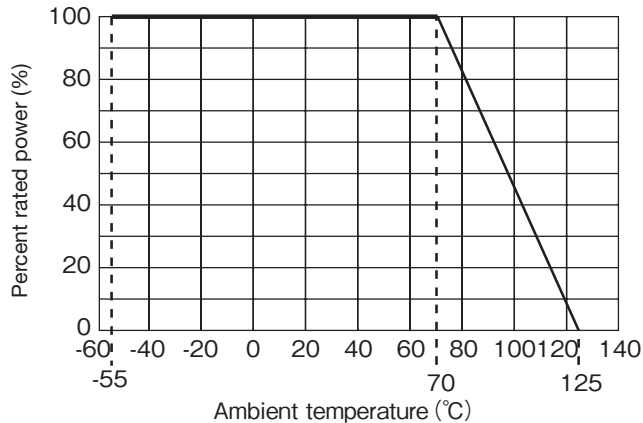
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KOA'S INTEGRATED PASSIVE COMPONENTS

THIN FILM ON SILICON (TFOS)

KPC

DERATING CURVE

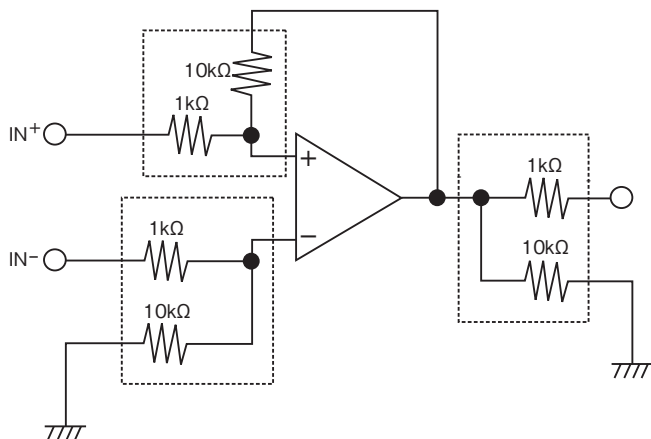


For resistors operated at an ambient temperature of +70°C or above, the power rating shall be derated in accordance with the above derating curve.

MERIT OF THIN FILM RESISTOR NETWORKS

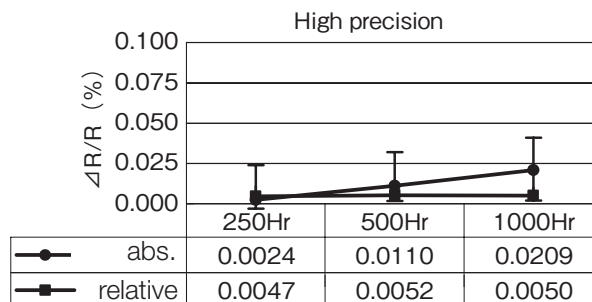
Metal thin film resistors formed by sputtering method have very similar characteristic among pair resistors. When their characteristic of T.C.R., aging, etc. for relative precision is requested, it's very suitable to apply thin film resistor networks to utilize the characteristic as below.

APPLICATION EXAMPLES OF PAIR RESISTORS



TYPICAL CHARACTERISTICS

Rated Load at 70°C (Typical: 1kΩ, 8 resistors/package)



TYPE DESIGNATION (HOW TO ORDER)

Resistor Networks : RIA, RBA, RBB

RIA	Q20	T	TE	1002	B	E	B	T
Circuit Code	Package Symbol	Terminal Surface Material	Taping	Nominal Resistance	Absolute Resistance Tolerance	T.C.R. (×10⁻⁶/K)	Relative Resistance Tolerance	T.C.R. Tracking (×10⁻⁶/K)
RIA : Isolated resistor network RBA: Bussed resistor network RBB: High speed bussed network	Package type symbol+ Number of pins Q16, Q20, Q24 : QSOP N08, N14, N16 : SOIC Narrow	T:Sn (L:Sn/Pb)	TE: Plastic embossed	4 digits 3 digits	B:±0.1% C:±0.25% D:±0.5% F:±1% G:±2% J:±5%	T:±10 E:±25 C:±50 H:±100	A:0.05% B:0.1% C:0.25% D:0.5% F:1% G:2%	Y:05 T:10 E:25 C:50 *Blank*: Not specified

Resistor Networks : RNX, RTX, RTY

RNX	Q20	T	TE	5001
Circuit Code	Package Symbol	Terminal Surface Material	Taping	Custom Code
RNX: Dual terminator network RTX,RTY: SOT-23 Resistor network	Package type symbol+ Number of pins	T:Sn (L:Sn/Pb)	TE: Plastic embossed	

Resistor Networks : RDA, RDB

RDA	Q20	T	TE	471J	511J	H
Circuit Code	Package Symbol	Terminal Surface Material	Taping	Nominal Resistance & Tolerance of R1	Nominal Resistance & Tolerance of R2	T.C.R. (×10⁻⁶/K)
RDA: Dual terminator network RDB: Differential terminator network	Same as above (Except T24, Q24, N14)	T:Sn (L:Sn/Pb)	TE: Plastic embossed	3 digits J:±5% G:±2%	3 digits J:±5% G:±2%	E:±25 C:±50 H:±100

Contact us when you have control request for environmental hazardous material other than the substance specified by EU-RoHS.

Please contact KOA about product names and ordering codes for products which are not mentioned above.

For further information on taping, please refer to "PACKAGING" at the back pages.