General Description & Background Information

These thin film passive components are designed for EMI/RFI filtering and impedance matching applications. The integrated passive components are produced using a silicon based technology that reduces the size and the weight of using individual components while improving their electrical performance.

This network product line contains resistors, capacitors and diodes in various configurations. KOA's Integrated Passive Components product line is ideal for use in laptop computers, PCMCIA cards and memory applications where board real estate and functionality are crucial.

ORDERING & SPECIFYING INFORMATION

RCA	Q	20	(Optional)	B	501K / 101K	(Optional)
Circuit Type	Construction	No. of Pins	T.C.R.	Packaging	R / C	Ratio Tol.
RIA - Resistor Isolated RBA - Resistor Bussed Single Common RBB - Resistor Bussed Center Common RDA - Dual Terminator RNX - Custom Resistor Network RCA - AC Terminator Isolated ACA - AC Terminator Single Common ACB - AC Terminator Dual Common ACC - AC Terminator Quad Common TFA - T-Filter LFA - L-Filter DNA - Diode Network DSA - Shottky Diode Network RNX - R-Net Custom RCX - RC-Net Custom AP(x) - 1EEE1284 Terminator See pages 4 - 8 for details	N = Narrow SOIC W = Wide SOIC Q = QSOP Pack T = TSSOP Pack D = DIP Pack See pages 9 - 11	08 14 16 18 20 24	T = ±10ppm/°C E = ±25 ppm/°C C = ±50 ppm/°C H = ±100 ppm/°C	B = 13 " Embossed Plastic Tape & Reel See page 15 For details	2 significant digits + the number of zeros followed by the tolerance M = ±20% K = ±10% J = ±5% G = ±2% F = ±1% D = ±.5% C = ±.25% B = ±.1% Resistance Range 10Ω - 1MΩ (E24) Capitance Range 20pf - 250pf (E24)	A = ±0.05% B = ±0.1% C = ±0.25% D = ±0.5% F = ±1% G = ±2%

CAPACITOR RATINGS

No.	ITEM	TEST METHODS	REQUIREMENT
1	Capacitance	JIS C 5102 7.8 Measuring Frequency 1KHz Measuring Frequency 1VRMS	
2	Capacitance Tolerance		J: ±5%, K: ±10%, M: ±20%
3	Capacitance Temperature Characteristic	JIS C 5102 7.12	0±250ppm/°C
4	Voltage Rating	DC Voltage for 10 seconds across the capacitor	100V DC
5	Breakdown Voltage	DC Voltage for 1 millisecond across the capacitor	500V DC
6	Electrostatic Discharge	MIL-STD-883C method 3015.3 100pF 1.5K Ω	±2KV MIN.

RESISTOR RATINGS

No.	ITEM	TEST METHODS	REQUIREMENT
1	Resistance	JIS C 5202 5.1 Method A	
2	Resistance Tolerance	Method A	B: ±0.1%, C: ±0.2%, D: ±0.5%, F: ±1%, G: ±2%, J: ±5%
3	Resistance Temperature Characteristic	JIS C 5202 5.2 Method B	H: 0±100ppm/°C C: ±50ppm/°C E: ±25ppm/°C T: ±10ppm/°C
4	Insulation Resistance	JIS C 5202 5.6 Measuring Voltage 100V	10,000 MΩ MIN.
5	Power Rating @ 70°C	Resistor: 10Ω ~ 1KΩ Package: 1.2KΩ ~ 1MΩ	NO8: 0.4W, T16: 0.8W, Q16: 0.8W N16: 0.8W, T20: 1.0W, T24: 1.0W Q20: 1.0W, Q24: 1.0W, W16: 1.0W, W20: 1.2W 25mW
6	Voltage Rating	Resistors shall have a rated DC or AC (R.M.S.) working voltage corresponding to the power rating, as determined from the following equation: In no case shall the rated DC or AC (R.M.S.) working voltage be greater than 100V. $E = \sqrt{P \cdot R}$	E : Rated Voltage [V] P : Rated Power [W] R : Resistance [Ω]

SPEER ELECTRONICS, INC.

THIN FILM
KOA'S INTEGRATED PASSIVE COMPONENTS
CIRCUIT TYPE

RIA - Isolated Resistor Network

Electrical Characteristics:

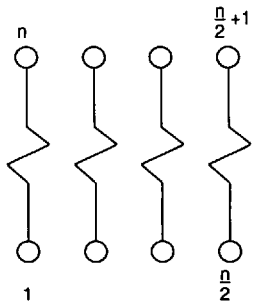
Resistance Range	10 ohm - 1M ohm
Resistance Tolerance	0.1%, 0.25%, 0.5%, 1%, 2%, 5%
T.C.R.	10, 25, 50, 100ppM/°C
Power Ratings (Per Element)	10 to 1K - (100mW) and 1.2K - 1M (25mW)
Max. Working Voltage	100V

Available Pin Configurations:

n = Number of Pins

See Page 8 for available pin/package configurations.

General Circuit Schematic:



RBA - Resistor Bussed Single Common

Electrical Characteristics:

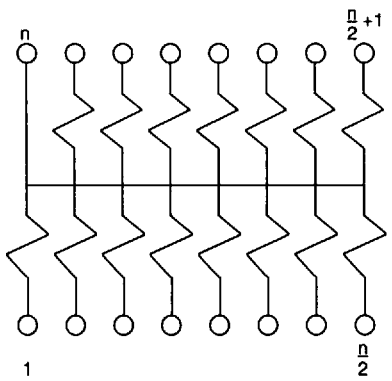
Resistance Range	10 ohm - 1M ohm
Resistance Tolerance	0.1%, 0.25%, 0.5%, 1%, 2%, 5%
T.C.R.	10, 25, 50, 100ppM/°C
Power Ratings (Per Element)	10 to 10K - (100mW) and 1.2K - 1M (25mW)
Max. Working Voltage	100V

Available Pin Configurations:

n = Number of Pins

See Page 8 for available pin/package configurations.

General Circuit Schematic:



RBB - Bussed Resistor Center Common

Electrical Characteristics:

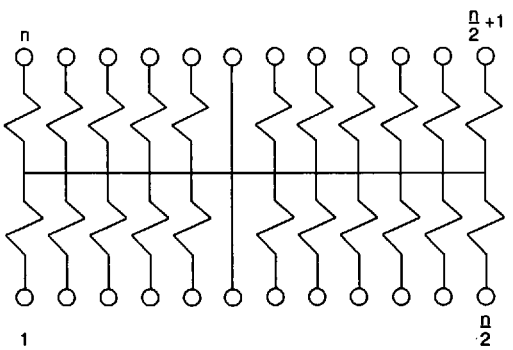
Resistance Range	10 ohm - 1M ohm
Resistance Tolerance	0.1%, 0.25%, 0.5%, 1%, 2%, 5%
T.C.R.	10, 25, 50, 100ppM/°C
Power Ratings (Per Element)	10 to 1K - (100mW) and 1.2K - 1M (25mW)
Max. Working Voltage	100V

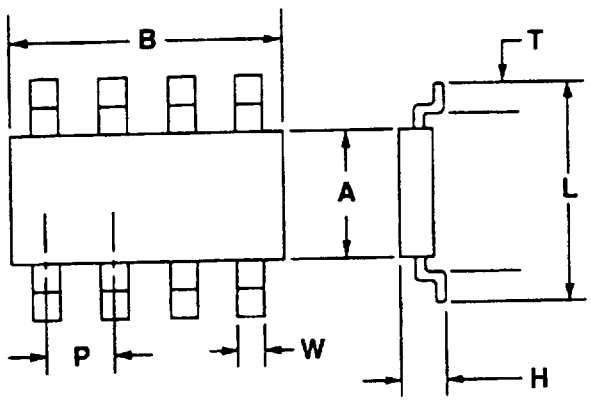
Available Pin Configurations:

n = Number of Pins

See Page 8 for available pin/package configurations.

General Circuit Schematic:



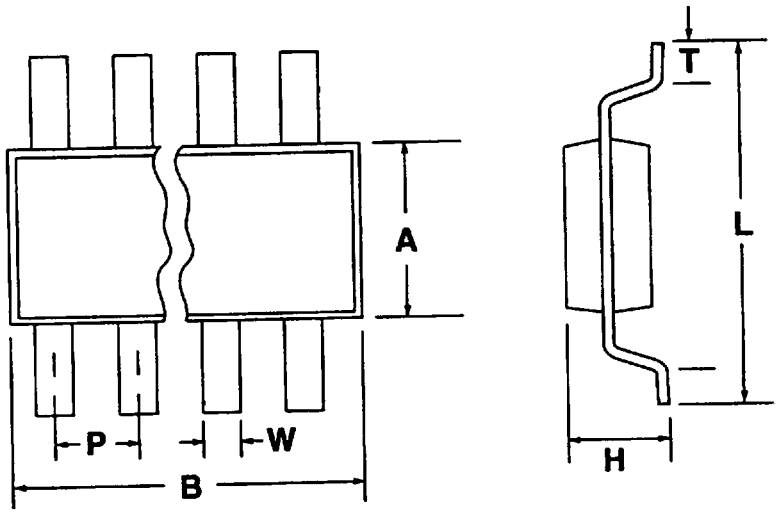


NARROW SOIC (N)

DIMENSION (mils)	8 PIN NARROW	14 PIN NARROW	16 PIN NARROW
L	236	236	236
A	150	150	150
B	190	340	390
H	63	63	63
P	50	50	50
W	16	16	16
T	26	26	26

WIDE SOIC (W)

STYLE	16 PIN WIDE	20 PIN WIDE
L	408	408
A	300	300
B	410	500
H	97	97
P	50	50
W	16	16
T	26	26

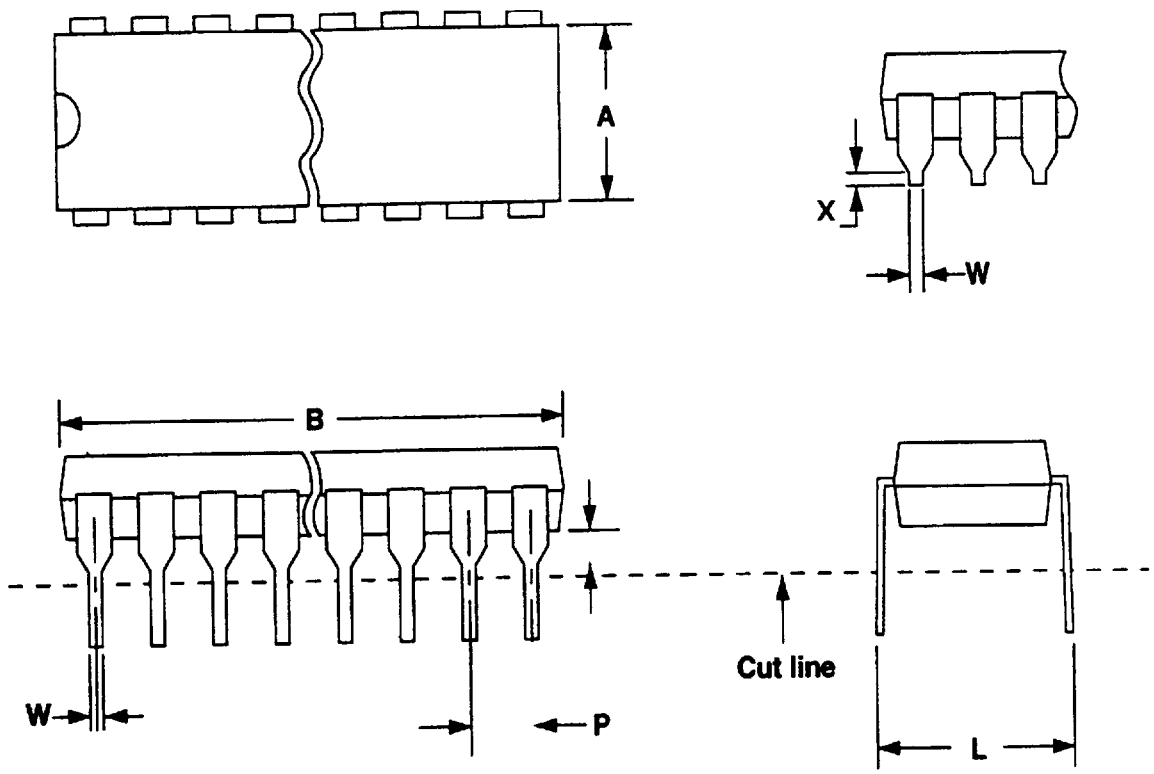


QSOP PACKAGE (Q)

	16	20	24
STYLE	NARROW	NARROW	NARROW
L	236	236	236
A	150	150	150
B	190	340	340
H	63	63	63
P	25	25	25
W	10	10	10
T	26	26	26

TSSOP DIMENSIONS (T)

DIMENSION	20 PIN NARROW	
	mm	mil
L	6.40	252
A	4.40	173
B	6.50	256
H	1.1	43.31
P	0.65	25.6
W	0.22	8.7
T	0.60	24



DIP DIMENSIONS (D)

PIN COUNT	DIP DIMENSIONS (INCHES)						
	B ± 0.004	W ± 0.004	P ± 0.004	A ± 0.005	X	Y	L
20	1.024	1.018	1.100	0.250	0.01min. 0.115 max.	0.165 min. 0.167 max.	0.350

CONSTRUCTION

Substrate	Silicon
Resistor	Ta Al
Molding	Epoxy/LLL94
Die Connect	Gold Wire Bonding (all)
Lead	Copper Alloy/Tin - Lead Plating (Sn-Pb)

MARKING

Manufacturer	KOA
Assembly Year/Week	9517 (1995, 17 week)
Type Designation	RIA xx xx xxxxxxxxx
Pin 1 Designation	Molded Mark
Marking Method	YAG Laser or Stamp (color: white)

MECHANICAL

No.		TEST METHODS	REQUIREMENT
1	Solderability	After steam aging, immerse in the Solder (H63A) of 230±5° for 3 ± 0.5 seconds.	Approximately 95% of the terminal should be covered with new solder.
2	Terminal Strength	After soldering the parts to a PCB, perform a pull test with 1Kgf in any direction for 10 seconds.	No evidence of damage. Δ C/C within ±1% Δ R/R within ±1%
3	Vibration	After soldering the parts to a PCB perform a vibration test with 10Hz to 2KHz at 15 ± 1.5gs, 4 hours/plane.	No evidence of damage. Δ C/C within ±1% Δ R/R within ±1%
4	Mechanical Shock	1500g 0.5m seconds, 5 times to bath direction.	No evidence of damage.
5	Resistance to Soldering Heat	Immerse in the solder (H63A) of 260 ± 5°C for 10 ± 1 seconds.	No evidence of damage. Δ C/C within ±1% Δ R/R within ±1%
6	Resistance to Solvent	Immerse in the IPA (JIS K 8839) of 23°C for 30 ± 5 seconds.	No outstanding damage. and marking can be easily judged.

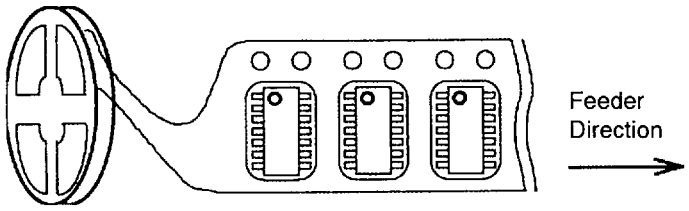
ENVIRONMENTAL APPLICATONS

No.	ITEM	TEST METHODS	REQUIREMENT
1	Low Temperature Characteristics	Store at -40 ± 3°C for 1000 hours	No evidence of damage. Δ C/C within ±1% Δ R/R within ±1%
2	Resistance of Heat	Store at 125 ± 2°C for 1000 hours	No evidence of damage. Δ C/C within ±1% Δ R/R within ±1%
3	Moisture Endurance	Temperature : 40±2°C Humidity : 90 ~ 95% 1000 hours	No evidence of damage. Δ C/C within ±1% Δ R/R within ±1%
4	Temperature Cycling	100 cycles between -40°C/30 minutes and +125°C/30 minutes	No evidence of damage. Δ C/C within ±1% Δ R/R within ±1%
5	Pressure Cooker	Temperature : 121°C Humidity : 100% Pressure : 2 atm 168 hours	No evidence of damage. Δ C/C within ±1% Δ R/R within ±1%

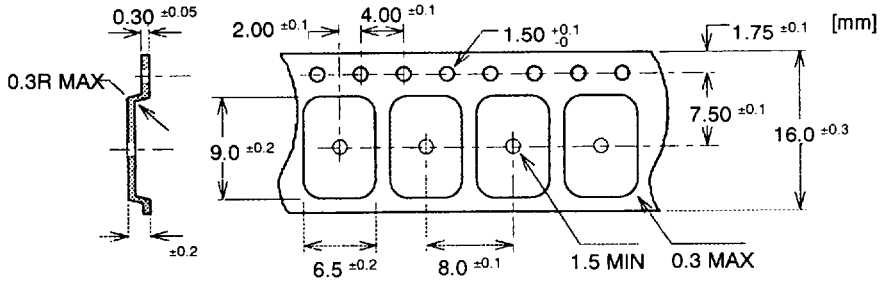
TAPE & REEL:

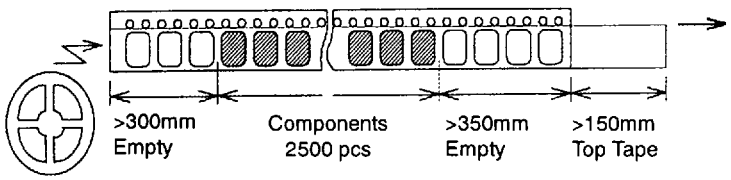
TAPING

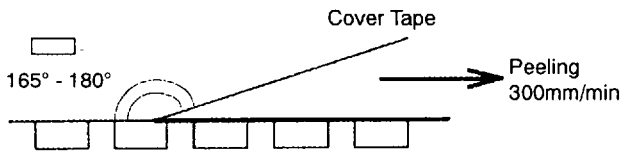
- Embossed plastic carrier tape, 16mm width and 8mm pitch.
- 2,500 pieces per reel.
- Pin #1 shall be adjacent to sprocket holes.



- Electrostatic Discharge Preventive embossed carrier tape.







REEL DIMENSIONS