



Series **100,**
200,
400

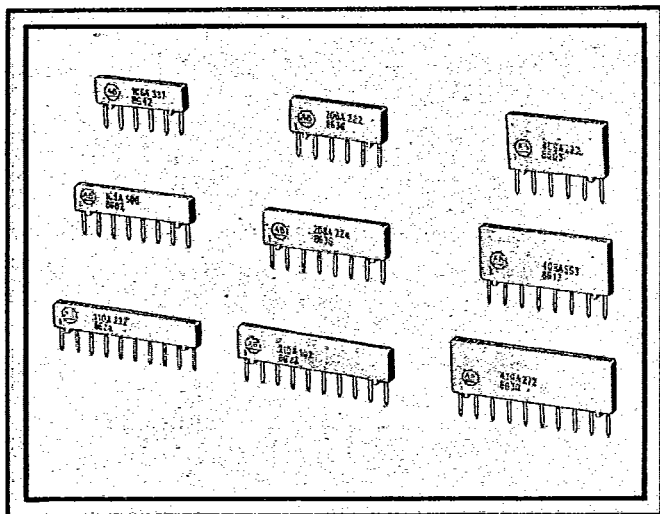
Cermet Resistor Networks

I-SIP

Single In-Line Package

FEATURES

- Solid Ceramic Body, with V-Groove
- Triple-Strength Leads
- 0.100 Inch (2,54mm) Lead Spacing
- Three Package Heights (0.190 in., .250 in., 0.350 in.)
- 6, 8 and 10 Pins
- Automatically Insertable
- Permanent Laser Marking
- Part Markings – Side and Top
- Exclusive Allen-Bradley Cermet Ink Performance



SPECIFICATIONS

General Capabilities

I-SIP — Single In-Line Package:

- A unique packaging concept for single in-line resistor networks.
- Provides standard cermet resistor networks and custom network designs.
- Standard circuits available in 6, 8 and 10 pin packages and in three package profiles.

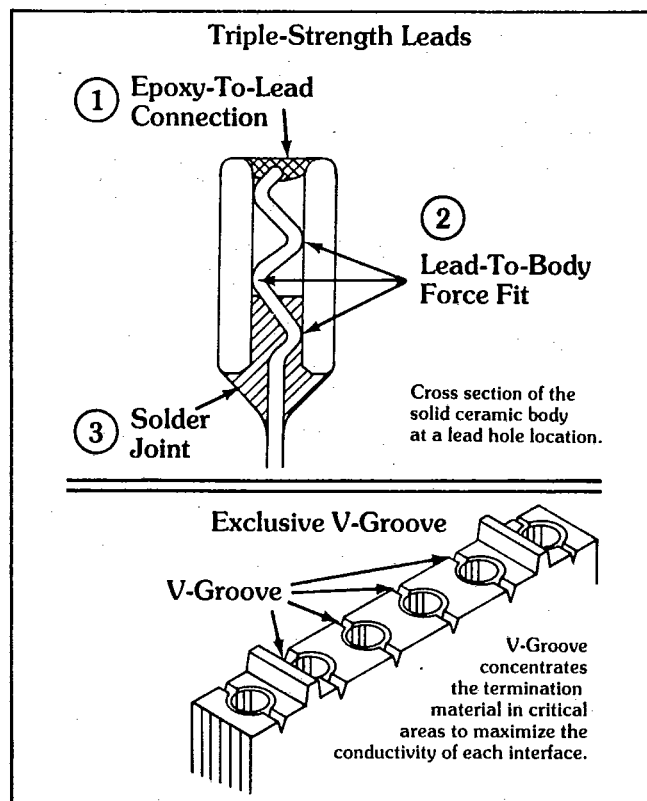
Applications

- Pull-up and pull-down arrays
- Transmission line terminators
- Current limiting resistors
- ECL termination networks
- A wide array of custom designs

For Applications Information refer to the following Allen-Bradley Application Notes:

- Digital System Resistor Arrays: EC5410-4.1
- ECL Terminator Networks: EC5410-4.2
- Resistive Attenuator Pads: EC5410-4.3

Rugged New Package



Standard Resistance Values

Series 106A, 108A, 110A, 106B, 108B, 110B, 206A, 208A, 210A, 206B, 208B, 210B, 406A, 408A, 410A, 406B, 408B and 410B Resistor Networks

Series 106E, 108E, 110E, 206E, 208E, 210E, 406E, 408E and 410E Resistor Networks

R (Ohms)				
22	180	1.2K	6.8K	47K
33	220	1.5K	8.2K	56K
39	270	1.8K	10K	68K
47	330	2K	12K	100K
56	390	2.2K	15K	120K
68	470	2.7K	18K	150K
82	560	3.3K	22K	180K
100	680	3.9K	27K	220K
120	820	4.7K	33K	470K
150	1K	5.6K	39K	1M

R1/R2	Zo (Characteristic Impedance)
81/130	50
120/200	75
160/260	100
180/390	123
220/330	132
330/390	179
330/470	194
330/680	222
3K/6.2K	2.02K

For intermediate values between 22 ohms and 1 megohm not listed above, consult Allen-Bradley Co., Greensboro, NC.

Standard Network Specifications

Resistor tolerance - $\pm 2\%$ or ± 1 ohm whichever is greater, $\pm 1\%$ available.

Temperature coefficient of resistance - ± 100 ppm/ $^{\circ}$ C.

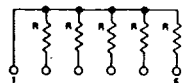
Operating temperature range - -55° C to $+125^{\circ}$ C.

■ At $+70^{\circ}$ C power derates linearly from full rated power to 0 wattage at $+150^{\circ}$ C.

■ Rated continuous working voltage (RCWV), based on nominal resistance (R) in ohms, is $\sqrt{\text{Individual Resistor Power Rating (see Table)} \times R}$ or 100 volts, whichever is less.

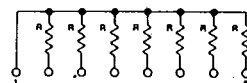
Network Series Designation	Power Dissipation Rating (up to 70° C Ambient)
106A, 108A, 110A	■ 125 mw/per resistor
206A, 208A, 210A	■ 200 mw/per resistor
406A, 408A, 410A	■ 250 mw/per resistor
106B, 108B, 110B	■ 250 mw/per resistor
206B, 208B, 210B	■ 400 mw/per resistor
406B, 408B, 410B	■ 500 mw/per resistor
106E, 108E, 110E	■ 125 mw/per resistor
206E, 208E, 210E	■ 200 mw/per resistor
406E, 408E, 410E	■ 250 mw/per resistor

Standard Network Schematic Diagrams

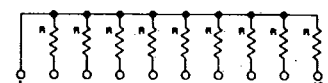


Low Profile
Medium Profile
High Profile

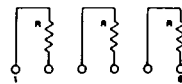
106A
206A
406A



108A
208A
408A

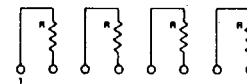


110A
210A
410A

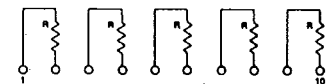


Low Profile
Medium Profile
High Profile

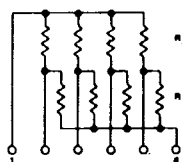
106B
206B
406B



108B
208B
408B

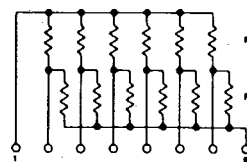


110B
210B
410B

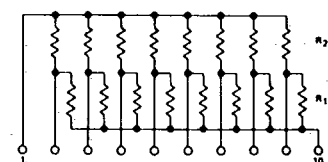


Low Profile
Medium Profile
High Profile

106E
206E
406E



108E
208E
408E



110E
210E
410E

Custom Resistor Networks

When an Allen-Bradley standard resistor network does not fit your exact application, consider our custom resistor networks. The following is a summary of Allen-Bradley custom single-in-line resistor network capabilities:

Resistance range – 8 ohms to 20 megohms. Requests for custom resistor networks can best be met when the total number of different resistor values is limited to a small number.

Tolerance (absolute) – Standard $\pm 2\%$. Special to $\pm 0.5\%$.

Resistance matching or ratio – Low as $\pm .25\%$.

Temperature coefficient of resistance (TCR) – $\pm 100 \text{ ppm}/^\circ \text{C}$.

TCR tracking – Depends on resistance range and number of resistors. Typical tracking is $\pm 50 \text{ ppm}/^\circ \text{C}$ or $\pm 100 \text{ ppm}/^\circ \text{C}$.

Temperature range of operation – Industrial (0°C to $+70^\circ \text{C}$), Military (-55°C to $+125^\circ \text{C}$) and other ranges available.

User-trimmable option – Resistor networks can be designed to permit the user to actively calibrate the networks in a system. Resistors can be trimmed under actual circuit operating conditions, providing in-circuit settability. Trimming methods include lasers, sand abrasion, and mechanical.

PACKAGE POWER RATINGS (WATTS) (up to 70°C ambient) ■

Package Height (Profile)	Number of Pins			
	4	6	8	10
Low Profile (.190")	—	.6	.9	1.1
Medium Profile (.250")	—	.6	.8	1.0
High Profile (.350")	.7	1.0	1.3	1.8

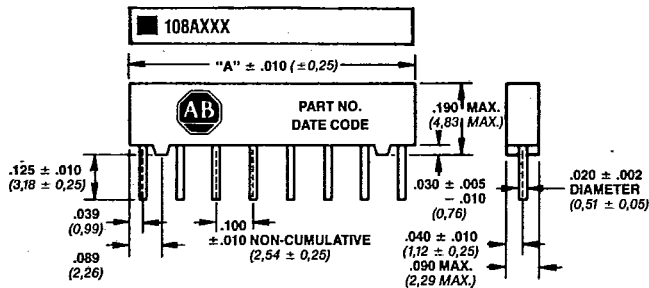
■ At 70°C power derates linearly from full rated power to 0 wattage at $+150^\circ \text{C}$.

CONSULT FACTORY.

DIMENSIONS

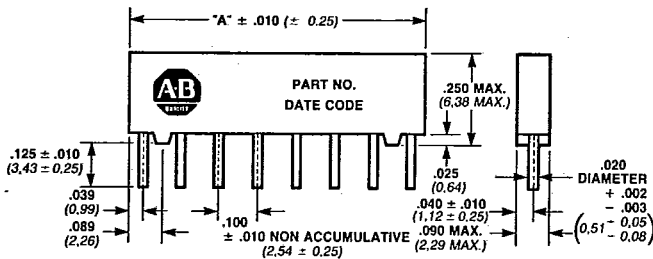
NOT TO SCALE

Low Profile 100 Series



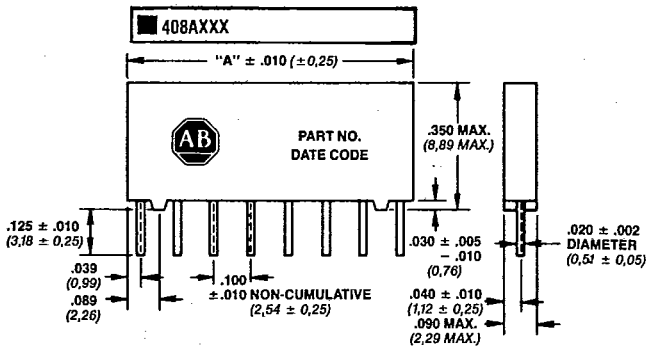
Pkg. Style	No. of Pins	"A" Dimension
106	6	.578 (14,68)
108	8	.778 (19,76)
110	10	.978 (24,84)

Medium Profile 200 Series



Pkg. Style	No. of Pins	"A" Dimension
206	6	.578 (14,68)
208	8	.778 (19,76)
210	10	.978 (24,84)

High Profile 400 Series



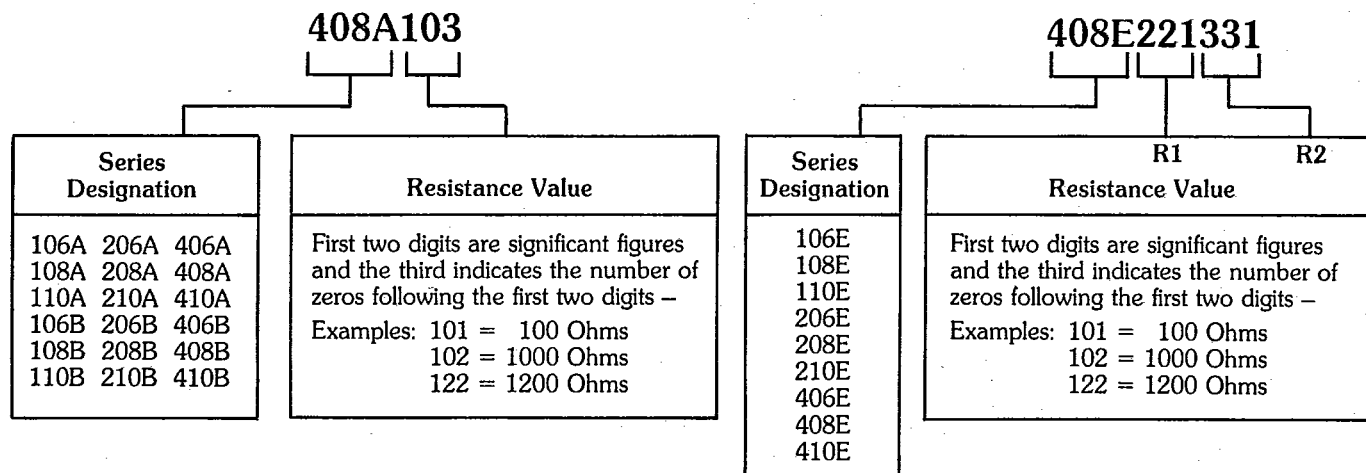
Pkg. Style	No. of Pins	"A" Dimension
404	4	.378 (9,60)
406	6	.578 (14,68)
408	8	.778 (19,76)
410	10	.978 (24,84)

TOLERANCES

Dimensional Tolerance $\pm .005$ (0,13)
Angular Tolerance $\pm 5^\circ$ Except as Specified.

Basic dimensions in inches.
Dimensions shown in parentheses are in millimeters

Explanation of Part Numbers



Typical Performance Test Capabilities

Test Group	Order Of Test	Examination or Test	Test Method Per MIL-R-83401 (Paragraph)	Post Test Requirements
I	1	Visual and Mechanical Examination	4.6.2	In accordance with applicable requirements.
	2	Thermal Shock	4.6.3	Resistance change ± 0.25 percent maximum.
	3	DC Resistance	4.6.5	In accordance with applicable requirements.
II	1	Solderability	4.6.6	Resistance change ± 0.25 percent maximum.
	2	Resistance to Solvents	4.6.7	Resistance change ± 0.25 percent maximum. Marking shall remain legible.
III	1	Resistance Temperature Characteristic	4.6.8	Within specified limits (normally ± 100 ppm/ $^{\circ}$ C or ± 250 ppm/ $^{\circ}$ C).
	2	Low Temperature Operation	4.6.9	Resistance change ± 0.25 percent maximum.
	3	Short Time Overload	4.6.10	Resistance change ± 0.25 percent maximum.
	4	Terminal Strength	4.6.11	Resistance change ± 0.25 percent maximum.
IV	1	Dielectric Withstanding Voltage	4.6.12	Resistance change ± 0.25 percent maximum. No mechanical damage, arcing or breakdown.
	2	Insulation Resistance	4.6.13	10^{11} Ohms minimum.
	3	Resistance to Soldering Heat	4.6.14	Resistance change ± 0.25 percent maximum.
	4	Moisture Resistance	4.6.15	Resistance change ± 0.5 percent maximum.
V	1	Shock (Specified Pulse)	4.6.16	Resistance change ± 0.25 percent maximum.
	2	Vibration, High Frequency	4.6.17	Resistance change ± 0.25 percent maximum.
VI	1	Life	4.6.18	Resistance change ± 0.5 percent maximum.
VII	1	High Temperature Exposure	4.6.19	Resistance change ± 0.5 percent maximum.
	2	Low Temperature Storage	4.6.20	Resistance change ± 0.25 percent maximum.

INSPECTION CONDITIONS: Unless otherwise specified, all measurements are understood to be made at the following initial inspection conditions:

- Normal atmospheric pressure.
- Relative humidity of 40 ± 10 percent.
- Ambient temperature of $24^{\circ} \pm 2^{\circ}$ C.

NOTE: During an inspection or qualification, all the networks shall be subjected to the inspections of Test Group I. The total samples are then divided into Groups II to VII inclusive, and subjected to the tests and inspections of the particular group.