

EIA RS-155-B

# EIA STANDARD

*Fixed Wirewound  
Power Resistors*

**RS-155-B**  
*(Revision of RS-155-A)*



*August 1970*

*Engineering Department*  
**ELECTRONIC INDUSTRIES ASSOCIATION**

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## FIXED WIREWOUND POWER RESISTORS

(From EIA Standard RS-155 and Standards Proposal No. 1034, formulated under the cognizance of EIA Working Group P-1.4 on Wirewound Resistors.)

### SCOPE

This Standard covers fixed wirewound power type resistors with initial tolerances of 1% and 5% of 3 styles and 24 power ratings. Standard ratings, tolerances, and test requirements are included.

### 1. RESISTOR STYLES

- 1.1 Strip Style – CRW20 through CRW24 – see page 3.
  - 1.1.1 Strip Style – CRW17 through CRW19 – see page 4.
- 1.2 Tubular, Open End Style – see page 5.
- 1.3 Axial Lead Type – see page 6.

### 2. ELECTRICAL CHARACTERISTICS AND STYLES

#### 2.1 Type Designation

Type designation shall be in the following form:

CRW 20  
|  
Style

V  
|  
Characteristic

1002  
|  
Resistance

F  
|  
Tolerance

2.1.1 *Style* – The style is identified by a three letter symbol CRW or NRW (applicable to axial lead styles only) followed by a two digit number. Throughout this specification, reference to CRW on the axial styles will also imply NRW. The CRW letters identify EIA Standard style of power type wirewound fixed resistors and the NRW letters identify EIA Standard style power wirewound non-inductively wound fixed resistors. The number identifies the size of resistor.

2.1.2 *Characteristic* – The characteristic designation is a one-letter symbol which identifies the characteristics of the unit as shown on Table I.

2.1.3 *Resistance* – The nominal resistance value in ohms is identified by a four digit number. The first three digits represent significant figures and the last digit specifies the number of zeros to follow. Where fractional values of an ohm are required the letter R shall be substituted

TABLE I. CHARACTERISTIC

| Max. Ambient Temp.                                         | E                                                                  | G                                                                  | H                                                                                                                                                                                                 | V                                                                                 |
|------------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                                            | 350°C                                                              | 275°C                                                              | 350°C                                                                                                                                                                                             | 350°C                                                                             |
| Temp. Coefficient                                          | 0±30PPM/°C,<br>20Ω & above,<br>±50PPM 5 to 20Ω,<br>100PPM below 5Ω | 0±30PPM/°C,<br>20Ω & above,<br>±50PPM 5 to 20Ω,<br>100PPM below 5Ω | <i>For Temp.<br/>above 25°C:</i><br>0±30PPM/°C,<br>20Ω & above,<br>±50PPM 5 to 20Ω,<br>100PPM below 5Ω.<br><i>For Temp.<br/>below 25°C:</i><br>0±60PPM/°C,<br>5Ω & above,<br>±100PPM<br>below 5Ω. | 260PPM/°C for<br>.25Ω per sq. in.<br>of winding<br>area & above,<br>400PPM below. |
| *Max. per-<br>cent change<br>in resistance<br>during tests | Diel. Strength                                                     | 0.2                                                                | 0.2                                                                                                                                                                                               | 0.2                                                                               |
|                                                            | Thermal Shock                                                      | 0.5                                                                | 1                                                                                                                                                                                                 | 2                                                                                 |
|                                                            | Momen. Over.                                                       | 0.5                                                                | 1                                                                                                                                                                                                 | 1                                                                                 |
|                                                            | Moisture Res.                                                      | 1                                                                  | 2                                                                                                                                                                                                 | 3                                                                                 |
|                                                            | Load Life                                                          | 3                                                                  | 5                                                                                                                                                                                                 | 5                                                                                 |
|                                                            | Vibration                                                          | 0.2                                                                | 0.3                                                                                                                                                                                               | 0.2                                                                               |

\*An additional 0.05Ω is added to the percent change in each test to allow for resistance measurement error.

TABLE II. STANDARD VALUES

| Standard Values for 1% Tolerance |      |      |      |      |      | Standard Values for 5% Tolerance |     |     |     |
|----------------------------------|------|------|------|------|------|----------------------------------|-----|-----|-----|
| 1.00                             | 1.47 | 2.15 | 3.16 | 4.64 | 6.81 | 1.0                              | 1.8 | 3.3 | 5.6 |
| 1.02                             | 1.50 | 2.21 | 3.24 | 4.75 | 6.98 |                                  |     |     |     |
| 1.05                             | 1.54 | 2.26 | 3.32 | 4.87 | 7.15 |                                  |     |     |     |
| 1.07                             | 1.58 | 2.32 | 3.40 | 4.99 | 7.32 | 1.1                              | 2.0 | 3.6 | 6.2 |
| 1.10                             | 1.62 | 2.37 | 3.48 | 5.11 | 7.50 |                                  |     |     |     |
| 1.13                             | 1.65 | 2.43 | 3.57 | 5.23 | 7.68 |                                  |     |     |     |
| 1.15                             | 1.69 | 2.49 | 3.65 | 5.36 | 7.87 | 1.2                              | 2.2 | 3.9 | 6.8 |
| 1.18                             | 1.74 | 2.55 | 3.74 | 5.49 | 8.06 |                                  |     |     |     |
| 1.21                             | 1.78 | 2.61 | 3.83 | 5.62 | 8.25 |                                  |     |     |     |
| 1.24                             | 1.82 | 2.67 | 3.92 | 5.76 | 8.45 | 1.3                              | 2.4 | 4.3 | 7.5 |
| 1.27                             | 1.87 | 2.74 | 4.02 | 5.90 | 8.66 |                                  |     |     |     |
| 1.30                             | 1.91 | 2.80 | 4.12 | 6.04 | 8.87 |                                  |     |     |     |
| 1.33                             | 1.96 | 2.87 | 4.22 | 6.19 | 9.09 | 1.5                              | 2.7 | 4.7 | 8.2 |
| 1.37                             | 2.00 | 2.94 | 4.32 | 6.34 | 9.31 |                                  |     |     |     |
| 1.40                             | 2.05 | 3.01 | 4.42 | 6.49 | 9.53 |                                  |     |     |     |
| 1.43                             | 2.10 | 3.09 | 4.53 | 6.65 | 9.76 | 1.6                              | 3.0 | 5.1 | 9.1 |

## Notes:

Values not shown will be considered nonstandard.

1 to 10 decade shown, use decade multipliers for the other values.

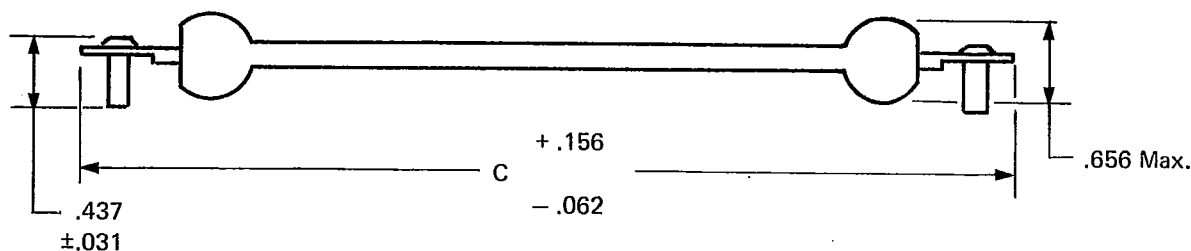
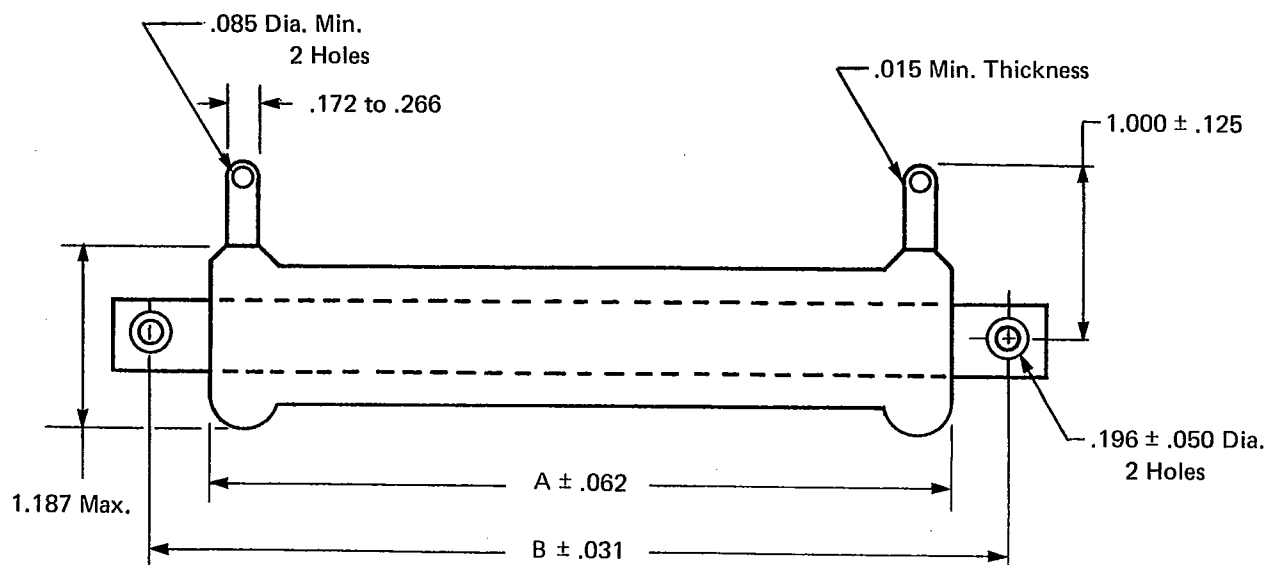


Documents

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## 1. RESISTOR STYLES

## 1.1 Strip Style



| Style | Dimensions |       |       | Wattage | Maximum Resistance Value |
|-------|------------|-------|-------|---------|--------------------------|
|       | A          | B     | C     |         |                          |
| CRW20 | 1.250      | 2.000 | 2.500 | 21      | 8.25 K                   |
| CRW21 | 2.000      | 2.750 | 3.250 | 31      | 16.2 K                   |
| CRW22 | 3.500      | 4.250 | 4.750 | 53      | 36.5 K                   |
| CRW23 | 4.750      | 5.500 | 6.000 | 68      | 51.1 K                   |
| CRW24 | 6.000      | 6.750 | 7.250 | 91      | 68.1 K                   |

## Notes:

1. Available only in characteristic H and V.
2. The minimum resistance value is 1.0 ohms.
3. Should not be subjected to high frequency vibration.