



ANSI/EIA RS-452-78

Approved April 10, 1978

EIA STANDARD

EIA RS-452

FIXED FILM RESISTORS —

HIGH RESISTANCE/HIGH VOLTAGE

RS-452



APRIL 1978



Engineering Department

ELECTRONIC INDUSTRIES ASSOCIATION

NOTICE

EIA engineering standards are designed to serve the public interest through eliminating misunderstandings between manufacturers and purchasers, facilitating interchangeability and improvement of products, and assisting the purchaser in selecting and obtaining with minimum delay the proper product for his particular need. Existence of such standards shall not in any respect preclude any member or non-member of EIA from manufacturing or selling products not conforming to such standards, nor shall the existence of such standards preclude their voluntary use by those other than EIA members whether the standard is to be used either domestically or internationally.

Recommended standards are adopted by EIA without regard to whether or not their adoption may involve patents on articles, materials, or processes. By such action, EIA does not assume any liability to any patent owner, nor does it assume any obligation whatever to parties adopting the recommended standards.

This EIA Recommended Standard is considered to have international standardization implications, but the IEC activity has not progressed to the point where a valid comparison between the EIA Recommended Standard and the IEC Recommendation can be made.

Published by

ELECTRONIC INDUSTRIES ASSOCIATION

Engineering Department

2001 Eye Street, N. W., Washington, D. C. 20006

© Electronic Industries Association 1979

All rights reserved

PRICE: \$7.80

Printed in U.S.A.



Documents

Document Sharing Hub

FIXED FILM RESISTORS — HIGH RESISTANCE/HIGH VOLTAGE

(From EIA Standards Proposal No. 1267, formulated under the cognizance of EIA Working Group P-1.2 on Precision Film.)

1. SCOPE

This Standard describes requirements for a fixed film type resistor distinguished, in general, by its high resistance value and its ability to operate at high voltage levels. This Standard is intended as a guide for commercial users of this type resistor.

2. STYLES AND CHARACTERISTICS**2.1 Type Designations**

The type designation shall be as follows:

<u>HR04</u>	<u>K</u>	<u>10M0</u>	<u>F</u>
STYLE	TEMPERATURE COEFFICIENT	RESISTANCE	TOLERANCE

2.2 Style

The style shall be identified by the letters HR and a two digit number. The letters HR to signify resistor of type covered by this Standard. Odd numbers (05, 07, etc.) identify Axial Lead resistors. Even numbers (04, 06, etc.) identify Flat Radial Lead resistors.

2.3 Temperature Coefficient

The temperature coefficient shall be identified by a single letter as follows:

<u>TEMPERATURE COEFFICIENT</u>		
<u>SYMBOL</u>	<u>T. C. PPM/°C</u>	<u>T. C. %/°C</u>
K	± 100	± .01
D	± 300	± .03

2.4 Resistance

The resistance value shall be identified by a three digit number and a letter designating the multiplier. The letter "K" denotes the decimal point for "kilo", thousands of ohms. The letter "M" denotes the decimal point for mega, millions of ohms.

DESIGNATION OF RESISTANCE VALUES

<u>DESIGNATION</u>	<u>VALUE</u>
1k00	1,000 ohms
10k0	10,000 ohms
100k	100,000 ohms
1m00	1,000,000 ohms
10m0	10,000,000 ohms
100m	100,000,000 ohms



2.5 Tolerance

The reference tolerance shall be identified by a single letter as follows:

RESISTANCE TOLERANCE

<u>SYMBOL</u>	<u>TOLERANCE</u>
F	1%
G	2%
J	5%
K	10%

The tighter tolerances may not be available in the high ohmic values.

2.6 Size and Characteristics

The style, wattage, dimensions, rated ambient temperature, resistance value and maximum continuous working voltage shall be in accordance with Table I.

2.7 Standard Values

The standard values for every decade shall follow the sequence demonstrated for the "10 to 100" decade in Table II.

2.8 Supplementary Insulation

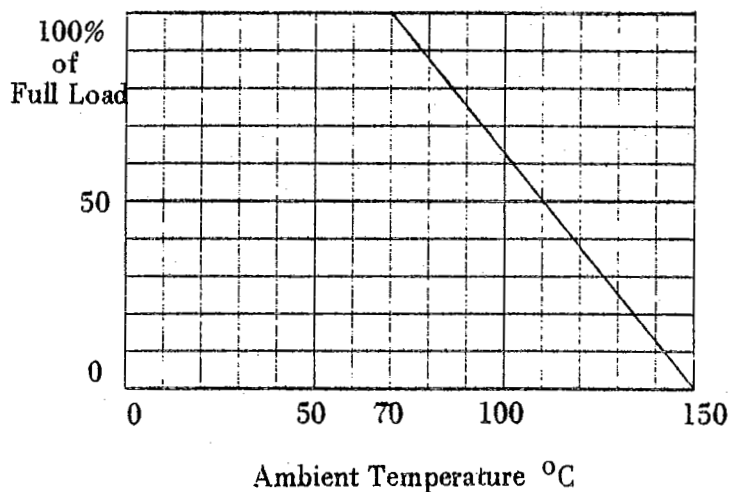
The larger styles of these resistors have maximum continuous working voltage ratings in excess of insulation capability of their protective encapsulation. Supplementary insulation and/or special mounting arrangements must be provided by user.

3. DEFINITIONS

3.1 Wattage

Power rating is based on continuous full load operation at rated ambient temperature of 70°C. For operation at higher ambient temperatures, resistors shall be derated in accordance with 3.1.1.

3.1.1 DERATING CURVE FOR HIGH AMBIENT TEMPERATURE



In no case shall the maximum continuous working voltage be exceeded.



Documents
Document Sharing Hub

3.2 Voltage

The rated dc continuous working voltage, or the approximate sine-wave r.m.s. continuous working voltage at commercial line frequency, corresponds to the power rating as determined from the following formula.

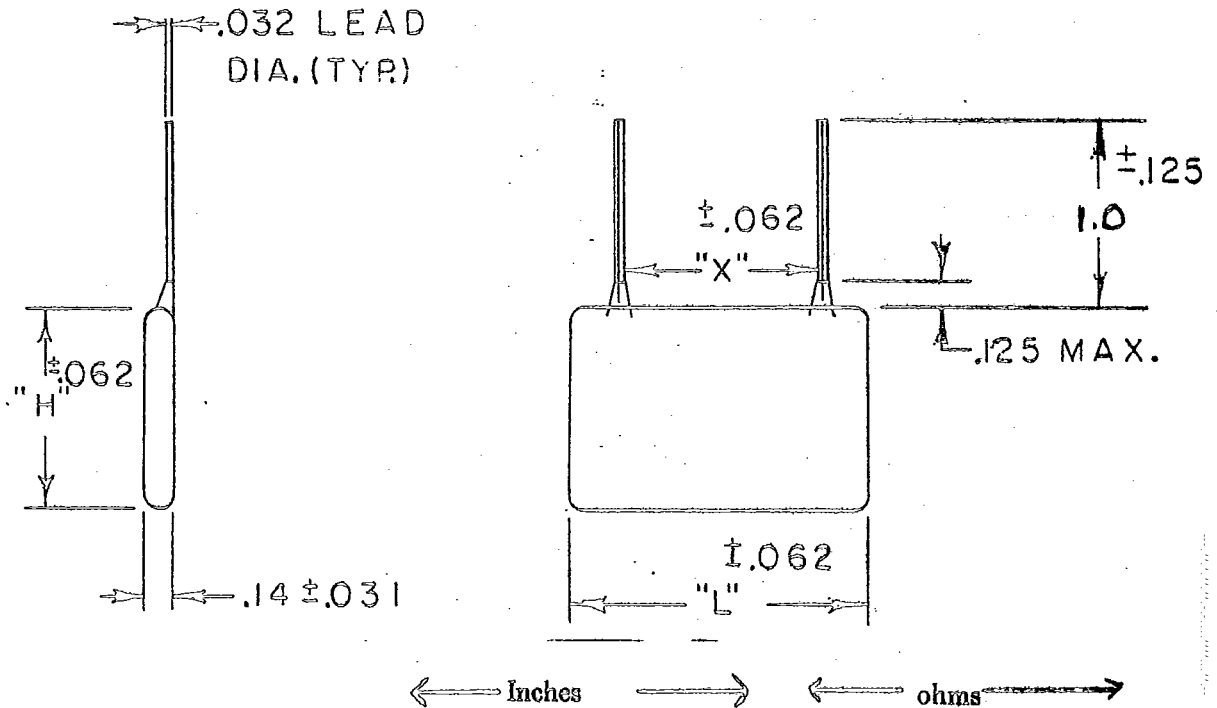
$$E = PR$$

Where E = Rated Voltage

P = Power Rating

R = Nominal Resistance

In no case shall the rated continuous working voltage exceed the applicable maximum working voltage from Table 1.



STYLE	WATTAGE AT 70°C	MAX. WORKING kV	"H"	"L"	"X"	RES. MIN.	VALUE MAX.
HR 04	1.0	10	.53	1.06	.75	1m00	150m
HR 08	2.0	10	1.06	1.06	.75	1m00	150m
HR 12	3.0	15	1.06	1.56	1.12	1m00	301m
HR 16	2.0	20	.56	2.06	1.61	1m00	301m
HR 20	4.0	20	1.06	2.06	1.61	1m00	499m

TABLE 1A

INCHES	mm	INCHES	mm
.031	.78	.56	14.22
.032	.81	1.00	25.40
.053	1.35	1.06	26.92
.062	1.57	1.12	28.45
.075	1.91	1.56	39.62
.125	3.12	1.61	40.89
.140	3.56	2.06	52.32