

PERFORMANCE SPECIFICATION SHEET

RESISTOR, FIXED, WIREWOUND (POWER TYPE),
STYLES RW29, RW30 1/, RW31, RW32 1/, RW33, RW34 1/,
RW35, RW36 1/, RW37, RW38, RW39 1/, and RW47

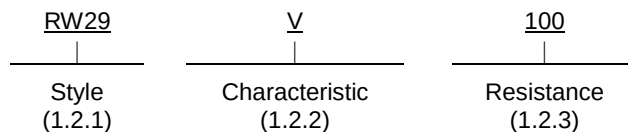
This specification is approved for use by all Departments
and Agencies of the Department of Defense.

The requirements for acquiring the product described herein
shall consist of this specification sheet and [MIL-PRF-26](#).

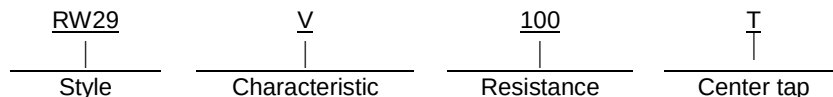
1. SCOPE

1.1 Scope. This specification covers the associated requirements for styles RW29, RW30 1/, RW31, RW32 1/, RW33, RW34 1/, RW35, RW36 1/, RW37, RW38, RW39 1/, and RW47, wirewound inductive (V) and noninductive (N) resistors.

1.2 Part or Identifying Number (PIN). Resistors covered by this specification are identified by a PIN which consists of the style designation, characteristic, and coded resistive value. The PIN is derived in accordance with [MIL-PRF-26](#) and is in the following form:



* The PIN is in the following form when the resistor has a center tap:



NOTE: Center tapped resistors are inactive for new design.

1.2.1 Style. The style is identified by the two-letter symbol "RW" followed by a two-digit number.

1.2.2 Characteristic. The characteristic is identified by a single letter that identifies the maximum continuous operating temperature (surface hot spot), the minimum insulation resistance value at the end of the moisture resistance test, and the resistance temperature characteristic in accordance with [table I](#).

Comments, suggestions, or questions on this document should be addressed to: DLA Land and Maritime, ATTN: VAT, Post Office Box 3990, Columbus, Ohio 43218-3990 or by email Resistor@dla.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <https://assist.dla.mil/>.



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1.2.3 Resistance. The nominal resistance expressed in ohms is identified by a three-digit number; the first two digits represent significant figures and the last digit specifies the number of zeroes to follow. When resistance values less than 10 ohms are required, the letter "R" is substituted for one of the significant digits to represent the decimal point. When the letter "R" is used, succeeding digits of the group represent significant figures as shown in the following example.

R10 = 0.1 ohm
1R0 = 1.0 ohm

1/ Not to be used for new design. For replacement purposes only.

Minimum and maximum resistance values are as specified herein. The standard values for every decade should follow the sequence demonstrated for the "10 to 100" decade in accordance with [MIL-PRF-26](#).

TABLE I. Characteristic.

Symbol	Maximum continuous operation temperature <u>1/</u>	Minimum insulation resistance at end of moisture resistance	Resistance temperature characteristic (ppm/°C)
V <u>2/</u> N <u>3/</u>	350°C	100 Megohms	0 ±260 ≥ 20 ohms
			0 ±400 ≥ 10 ohms to <20 ohms
			0 +400, -200 ≥ 1 ohm to <10 ohms
			0 +500, -100 ≥ 0.499 ohm to <1 ohm
			0 +650, -100 ≥ 0.1 ohm to < 0.499 ohm

1/ This temperature is also the maximum permissible hot-spot surface temperature.

2/ Inductive wirewound.

3/ Noninductive wirewound.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in sections 3 and 4 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract (see [6.2](#)).

DEPARTMENT OF DEFENSE SPECIFICATION

[MIL-PRF-26](#) - Resistor, Fixed, Wire Wound (Power Type), General Specification for.

(Copies of these documents are available online at <http://quicksearch.dla.mil/>).

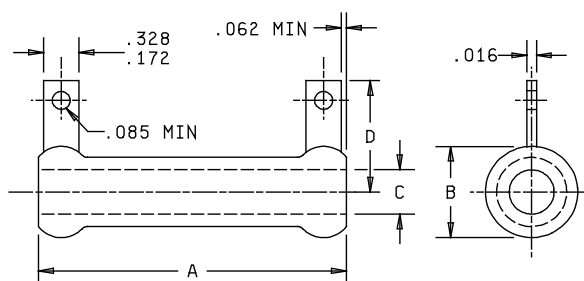
2.3 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein (except for related specification sheets), the text of this document takes precedence unless otherwise noted. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

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3. REQUIREMENTS

3.1 General. The requirements for acquiring the product described herein shall consist of this document and MIL-PRF-26.

3.2 Interface and physical dimension. The resistor shall meet the interface and physical dimensions specified on figure 1 and as specified herein.



Style	A ±0.062	B (Max)	C	D ±0.125
RW29	1.750	.500	.172 (Min)	.625
RW30 1/	1.000	.594	.187 (Min)	
RW31	1.500		.312 +.016, -.125	
RW32 1/	2.000		.187 (Min)	
RW33	3.000	.906	.516 +.046, -.047	.812
RW34 1/	3.000		.500 +.062, -.031	
RW35	4.000		.750 +.156, -.047	
RW36 1/	4.000		.703 (Min)	
RW37	6.000	1.312	.750 +.156, -.047	1.219
RW38	8.000		.703 (Min)	
RW39 1/	12.000		.703 (Min)	
RW47	10.500		.703 (Min)	

1/ Not to be used for new design. For replacement purposes only.

Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm
.016	.41	.125	3.18	.500	12.70	.812	20.62	1.750	44.45	10.500	266.70
.031	.79	.156	3.96	.516	13.11	.906	23.01	2.000	50.80	12.000	304.80
.046	1.17	.172	4.37	.594	15.09	1.000	25.40	3.000	76.20		
.047	1.19	.187	4.75	.625	15.88	1.219	30.96	4.000	101.60		
.062	1.57	.312	7.92	.703	17.86	1.312	33.32	6.000	152.40		
.085	2.16	.328	8.33	.750	19.05	1.500	38.10	8.000	203.20		

NOTES:

- Dimensions are in inches.
- Metric equivalents are given for general information only.
- Unless otherwise specified, tolerance is ±0.010 (0.25 mm).

FIGURE 1. Styles RW29, RW30, RW31, RW32, RW33, RW34, RW35, RW36, RW37, RW38, RW39, and RW47.

3.3 Power rating. The power rating shall be as specified in table II, based on full load operation at an ambient temperature of 25°C.

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TABLE II. Power rating.

Resistor style	Power rating in watts	
	Characteristic	
	N	V
RW29	11	11
RW30	---	11
RW31	14	14
RW32	---	17
RW33 <u>1/</u>	26	26
RW34 <u>1/</u>	---	43

Resistor style	Power rating in watts	
	Characteristic	
	N	V
RW35 <u>1/</u>	55	55
RW36 <u>1/</u>	---	78
RW37 <u>1/</u>	113	113
RW38 <u>1/</u>	159	159
RW39 <u>1/</u>	---	240
RW47 <u>1/</u>	210	210

1/ The power rating of center-tapped resistors shall be 90 percent of those shown.

3.4 Resistance. The minimum and maximum nominal resistance values shall be as specified in table III.

TABLE III. Minimum and maximum nominal resistance values.

Resistor style	Resistance value (ohms) Minimum	Resistance value (kohms) Maximum	
		Characteristic V	Characteristic N
RW29	0.10	5.6	2.7
RW30 <u>1/</u>		2.7	---
RW31		6.8	3.3
RW32 <u>1/</u>		10	---
RW33		18	8.1
RW34 <u>1/</u>		30	---
RW35		43	20
RW36 <u>1/</u>		56	---
RW37		91	43
RW38		150	75
RW39 <u>1/</u>		200	---
RW47		180	81

1/ Not to be used for new design. For replacement purposes only.

3.4.1 Standard resistance values. For standard resistance values see [MIL-PRF-26](#).

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3.5 Resistance tolerance. These resistors have a resistance range of 0.10 ohms to 200 kohms with the following resistance tolerances:

- a. Resistors of less than 1 ohm in resistance value shall have a tolerance of ± 10 percent of the nominal resistance value. If center-tapped, the resistance tolerance between tap and terminal shall be ± 10 percent.
- b. Resistors of 1 ohm and over in resistance value shall have a tolerance of ± 5 percent of the nominal resistance value. If center-tapped, the resistance tolerance between tap and terminal shall be ± 10 percent.

3.6 Thermal shock. The resistors shall not change in resistance in excess of $\pm(2$ percent $+0.05$ ohm).

3.7 Short-time overload. The resistors shall not change in resistance in excess of $\pm(2$ percent $+0.05$ ohm).

3.8 High-temperature exposure. The resistors shall not change in resistance in excess of $\pm(2$ percent $+0.05$ ohm).

3.9 Moisture resistance. The resistors shall not change in resistance in excess of $\pm(2$ percent $+0.05$ ohm).

3.10 Low-temperature storage. The resistors shall not change in resistance in excess of $\pm(2$ percent $+0.05$ ohm).

3.11 Life. The resistors shall not change in resistance in excess of $\pm(3$ percent $+0.05$ ohm).

3.12 Solderability. Solderability is applicable to this specification.

3.13 Terminal strength. The resistors shall not change in excess of $\pm(1$ percent $+0.05$ ohm).

3.14 Dielectric withstanding voltage (barometric pressure, reduced, not applicable). The resistors shall not change in resistance in excess of $\pm(.1$ percent $+0.05$ ohm).

3.15 Pure tin. The use of pure tin, as an underplate or final finish is prohibited both internally and externally. Tin content of resistor components and solder shall not exceed 97 percent, by mass. Tin shall be alloyed with a minimum of 3 percent lead, by mass (see 6.6).

4. VERIFICATION

4.1 Sampling and inspection. Sampling and inspection shall be in accordance with MIL-PRF-26.

4.2 Short-time overload. The maximum voltages shall be in accordance with table IV.

4.3 Dielectric withstanding voltage.

4.3.1 Atmospheric pressure. The magnitude of test voltage shall be 1,000 volts rms.

4.3.2 Barometric pressure (reduced). The test voltage shall be 200 volts rms.

4.4 Terminal strength. The applied force shall be 10 pounds.

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TABLE IV. Maximum voltages for short-time overload.

Resistor style	Voltage (Max)	Resistor style	Voltage (Max)
RW29	1200	RW35	3000
RW30	450	RW36	3000
RW31	1000	RW37	5000
RW32	1400	RW38	7000
RW33	2400	RW39	12000
RW34	2400	RW47	10000

5. PACKAGING.

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Service or Defense Agency, or within the military services system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Notes. In addition to the notes specified herein, the notes specified in MIL-PRF-26 are applicable to this specification.

6.2 Acquisition requirements. Acquisition requirements are as specified in [MIL-PRF-26](#).

- Title, number, and date of this specification, and the complete PIN (see [1.2](#)).
- Unless otherwise specified (see [2.1](#)), the versions of the individual documents referenced will be those in effect on the date of release of the solicitation.
- Packaging instructions (see [5.1](#)).
- Whether bracket assembly is required (see [6.4.1](#)).

6.3 Supplementary insulation. Where potential to ground is over 500 volts, supplementary insulation should be provided.

6.4 Mounting. These resistors should not be mounted by their terminals.

6.4.1 Bracket assemblies. When required, bracket assemblies (mounting hardware) are available for these resistors under [MS75009](#), Bracket Assembly, Resistor (Power type).

6.5 Derating. Resistors shall be derated, when necessary, in accordance with figure 2.

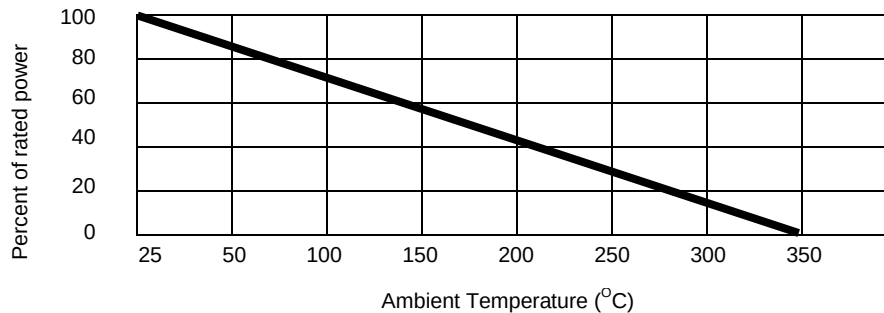


FIGURE 2. Derating curve for high ambient temperatures.

6.6 Tin whisker growth. The use of alloys with tin content greater than 97 percent, by mass, may exhibit tin whisker growth problems after manufacture. Tin whiskers may occur anytime from a day to years after manufacture and can develop under typical operating conditions, on products that use such materials. Conformal coatings applied over top of a whisker-prone surface will not prevent the formation of tin whiskers. Alloys of 3 percent lead, by mass, have shown to inhibit the growth of tin whiskers. For additional information on this matter, refer to [ASTM-B545](#) (Standard Specification for Electrodeposited Coatings of Tin).

6.7 Amendment notations. The margins of this specification are marked with asterisks to indicate modification generated by this amendment. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations.

Custodians:
Army - CR
Navy - EC
Air Force - 85
DLA - CC

Preparing activity:
DLA - CC

(Project 5905-2016-051)

Review activities:
Army - MI
Navy - AS
Air Force - 19

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