

INCH-POUND  
MIL-R-22684/2C  
w/Amendment 2  
27 May 2016  
SUPERSEDING  
MIL-R-22684/2C  
w/Amendment 1  
5 February 2009

## MILITARY SPECIFICATION

### RESISTOR, FIXED, FILM, INSULATED, STYLE RL20

This specification is inactive for design after 21 November 1968. Use [MIL-PRF-39017/2](#).

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-22684](#).

#### 1. SCOPE

1.1 Scope. This specification covers the associated requirements for insulated, film, fixed resistors of 2-percent and 5-percent resistance tolerance. These resistors are capable of full-load operation at an ambient temperature of 70°C and have a resistance-temperature characteristic of  $\pm 200$  parts per million per degree Celsius (ppm/°C). Designers are CAUTIONED on using these resistors in high power pulse applications (see [6.3](#)).

1.2 Part or Identifying Number (PIN). Resistors covered by this specification are identified by a PIN which consists of the basic number of this specification and a coded dash number taken from [table 1](#). The PIN is in the following form:

<u>M22684/02</u>	-	<u>1001</u>
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Performance specification number		Coded dash number

The coded dash number is derived in accordance with paragraph 6.2.2 of [MIL-PRF-22684](#).

#### 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.

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](mailto: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/>

AMSC N/A



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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.

DEPARTMENT OF DEFENSE SPECIFICATION

MIL-PRF-22684 - Resistor, Fixed, Film (Insulated), General Specification.

(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, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 General. The requirements for acquiring the product described herein shall consist of this document and MIL-PRF-22684.

3.2 Interface and physical dimensions. Resistors shall meet the interface and physical dimensions specified on figure 1, as applicable.

3.3 Power rating. The power rating shall be 1/2 watt based on full load operation at an ambient temperature of 70°C.

3.4 Voltage rating. The maximum continuous working voltage shall not exceed 350 volts.

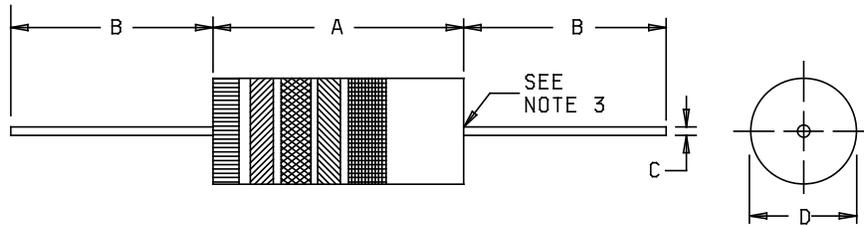
3.5 Resistance values and resistance tolerances. The minimum and maximum standard resistance values and associated resistance tolerances shall be as listed in table I.

3.6 Terminal type. The terminal type available shall be in accordance with MIL-PRF-22684 and table I.

3.7 Dielectric withstanding voltage. Resistors shall be tested as specified in MIL-PRF-22684. The magnitude of test voltage shall be as follows:

Atmospheric pressure	-	700 volts rms
Barometric pressure	-	400 volts rms

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Ltr	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.283	0.416	7.19	10.57
B	1.375	1.625	34.92	41.28
C	.026	0.036	0.66	0.91
D	0.108	0.161	2.74	4.09

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. The end of the body shall be that point at which the diameter equals the nearest drill size larger than 250 percent of the nominal lead diameter. The leads shall be solderable to within .125 inch (3.18 mm) of the resistor body.

FIGURE 1. Configuration and dimensions.

3.8 Insulation resistance. Resistors shall be tested as specified in MIL-PRF-22684 except the insulation resistance shall be not less than 100 megohms.

3.9 Moisture resistance. Resistors shall be tested as specified in MIL-PRF-22684 except the change in resistance shall not exceed 1.5 percent.

3.10 Life. Resistors shall be tested as specified in MIL-PRF-22684 except the change in resistance shall not exceed 2.0 percent.

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Table I. PIN designation. (M22684/02-)

Dash No.	Type Designation	Resistance tolerance (percent)	Nominal total resistance value (in Ohms)	Terminal	Dash No.	Type Designation	Resistance tolerance (percent)	Nominal total resistance value (in Ohms)	Terminal
0227	RL20S4R3G	2	4.3	S	0035	RL20S510G	2	51	S
0228	RL20S4R3J	5			0036	RL20S510J	5		
0229	RL20S4R7G	2	4.7		0037	RL20S560G	2	56	
0230	RL20S4R7J	5			0038	RL20S560J	5		
0231	RL20S5R1G	2	5.1		0039	RL20S620G	2	62	
0232	RL20S5R1J	5			0040	RL20S620J	5		
0233	RL20S5R6G	2	5.6		0041	RL20S680G	2	68	
0234	RL20S5R6J	5			0042	RL20S680J	5		
0235	RL20S6R2G	2	6.2		0043	RL20S750G	2	75	
0236	RL20S6R2J	5			0044	RL20S750J	5		
0237	RL20S6R8G	2	6.8		0045	RL20S820G	2	82	
0238	RL20S6R8J	5			0046	RL20S820J	5		
0239	RL20S7R5G	2	7.5		0047	RL20S910G	2	91	
0240	RL20S7R5J	5			0048	RL20S910J	5		
0241	RL20S8R2G	2	8.2		0049*	RL20S101G	2	100	
0242	RL20S8R2J	5			0050	RL20S101J	5		
0243	RL20S9R1G	2	9.1		0051	RL20S111G	2	110	
0244	RL20S9R1J	5			0052	RL20S111J	5		
0001	RL20S100G	2	10		0053	RL20S121G	2	120	
0002	RL20S100J	5			0054	RL20S121J	5		
0003	RL20S110G	2	11		0055	RL20S131G	2	130	
0004	RL20S110J	5			0056	RL20S131J	5		
0005	RL20S120G	2	12		0057	RL20S151G	2	150	
0006	RL20S120J	5			0058	RL20S151J	5		
0007	RL20S130G	2	13		0059	RL20S161G	2	160	
0008	RL20S130J	5			0060	RL20S161J	5		
0009	RL20S150G	2	15		0061	RL20S181G	2	180	
0010	RL20S150J	5			0062	RL20S181J	5		
0011	RL20S160G	2	16		0063	RL20S201G	2	200	
0012	RL20S160J	5			0064	RL20S201J	5		
0013	RL20S180G	2	18		0065	RL20S221G	2	220	
0014	RL20S180J	5			0066	RL20S221J	5		
0015	RL20S200G	2	20		0067	RL20S241G	2	240	
0016	RL20S200J	5			0068	RL20S241J	5		
0017	RL20S220G	2	22		0069	RL20S271G	2	270	
0018	RL20S220J	5			0070	RL20S271J	5		
0019	RL20S240G	2	24		0071	RL20S301G	2	300	
0020	RL20S240J	5			0072	RL20S301J	5		
0021	RL20S270G	2	27		0073	RL20S331G	2	330	
0022	RL20S270J	5			0074	RL20S331J	5		
0023	RL20S300G	2	30		0075	RL20S361G	2	360	
0024	RL20S300J	5			0076	RL20S361J	5		
0025	RL20S330G	2	33		0077	RL20S391G	2	390	
0026	RL20S330J	5			0078	RL20S391J	5		
0027	RL20S360G	2	36		0079	RL20S431G	2	430	
0028	RL20S360J	5		0080	RL20S431J	5			
0029	RL20S390G	2	39	0081	RL20S471G	2	470		
0030	RL20S390J	5		0082	RL20S471J	5			
0031	RL20S430G	2	43	0083	RL20S511G	2	510		
0032	RL20S430J	5		0084	RL20S511J	5			
0033	RL20S470G	2	47	0085	RL20S561G	2	560		
0034	RL20S470J	5		0086	RL20S561J	5			

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Table I. PIN designation (M22684/02-) - continued.

Dash No.	Type Designation	Resistance tolerance (percent)	Nominal total resistance value (in Ohms)	Terminal
0087	RL20S621G	2	620	S
0088	RL20S621J	5		
0089	RL20S681G	2	680	
0090	RL20S681J	5		
0091	RL20S751G	2	750	
0092	RL20S751J	5		
0093	RL20S821G	2	820	
0094	RL20S821J	5		
0095	RL20S911G	2	910	
0096	RL20S911J	5		
0097	RL20S102G	2	1,000	
0098	RL20S102J	5		
0099	RL20S112G	2	1,100	
0100	RL20S112J	5		
0101	RL20S122G	2	1,200	
0102	RL20S122J	5		
0103	RL20S132G	2	1,300	
0104	RL20S132J	5		
0105	RL20S152G	2	1,500	
0106	RL20S152J	5		
0107	RL20S162G	2	1,600	
0108	RL20S162J	5		
0109	RL20S182G	2	1,800	
0110	RL20S182J	5		
0111	RL20S202G	2	2,000	
0112	RL20S202J	5		
0113	RL20S222G	2	2,200	
0114	RL20S222J	5		
0115	RL20S242G	2	2,400	
0116	RL20S242J	5		
0117	RL20S272G	2	2,700	
0118	RL20S272J	5		
0119	RL20S302G	2	3,000	
0120	RL20S302J	5		
0121	RL20S332G	2	3,300	
0122	RL20S332J	5		
0123	RL20S362G	2	3,600	
0124	RL20S362J	5		
0125	RL20S392G	2	3,900	
0126	RL20S392J	5		
0127	RL20S432G	2	4,300	
0128	RL20S432J	5		
0129	RL20S472G	2	4,700	
0130	RL20S472J	5		
0131	RL20S512G	2	5,100	
0132	RL20S512J	5		
0133	RL20S562G	2	5,600	
0134	RL20S562J	5		
0135	RL20S622G	2	6,200	
0136	RL20S622J	5		
0137	RL20S682G	2	6,800	
0138	RL20S682J	5		

Dash No.	Type Designation	Resistance tolerance (percent)	Nominal total resistance value (in Ohms)	Terminal
0139	RL20S752G	2	7,500	S
0140	RL20S752J	5		
0141	RL20S822G	2	8,200	
0142	RL20S822J	5		
0143	RL20S912G	2	9,100	
0144	RL20S912J	5		
0145	RL20S103G	2	10,000	
0146	RL20S103J	5		
0147	RL20S113G	2	11,000	
0148	RL20S113J	5		
0149	RL20S123G	2	12,000	
0150	RL20S123J	5		
0151	RL20S133G	2	13,000	
0152	RL20S133J	5		
0153	RL20S153G	2	15,000	
0154	RL20S153J	5		
0155	RL20S163G	2	16,000	
0156	RL20S163J	5		
0157	RL20S183G	2	18,000	
0158	RL20S183J	5		
0159	RL20S203G	2	20,000	
0160	RL20S203J	5		
0161	RL20S223G	2	22,000	
0162	RL20S223J	5		
0163	RL20S243G	2	24,000	
0164	RL20S243J	5		
0165	RL20S273G	2	27,000	
0166	RL20S273J	5		
0167	RL20S303G	2	30,000	
0168	RL20S303J	5		
0169	RL20S333G	2	33,000	
0170	RL20S333J	5		
0171	RL20S363G	2	36,000	
0172	RL20S363J	5		
0173	RL20S393G	2	39,000	
0174	RL20S393J	5		
0175	RL20S433G	2	43,000	
0176	RL20S433J	5		
0177	RL20S473G	2	47,000	
0178	RL20S473J	5		
0179	RL20S513G	2	51,000	
0180	RL20S513J	5		
0181	RL20S563G	2	56,000	
0182	RL20S563J	5		
0183	RL20S623G	2	62,000	
0184	RL20S623J	5		
0185	RL20S683G	2	68,000	
0186	RL20S683J	5		
0187	RL20S753G	2	75,000	
0188	RL20S753J	5		
0189	RL20S823G	2	82,000	
0190	RL20S823J	5		

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Table I. PIN designation (M22684/02-) - continued.

Dash No.	Type Designation	Resistance tolerance (percent)	Nominal total resistance value (in Ohms)	Terminal	Dash No.	Type Designation	Resistance tolerance (percent)	Nominal total resistance value (in Ohms)	Terminal
0191	RL20S913G	2	91,000	S	0209	RL20S224G	2	220,000	S
0192	RL20S913J	5			0210	RL20S224J	5		
0193	RL20S104G	2	100,000		0211	RL20S244G	2	240,000	
0194	RL20S104J	5			0212	RL20S244J	5		
0195	RL20S114G	2	110,000		0213	RL20S274G	2	270,000	
0196	RL20S114J	5			0214	RL20S274J	5		
0197	RL20S124G	2	120,000		0215	RL20S304G	2	300,000	
0198	RL20S124J	5			0216	RL20S304J	5		
0199	RL20S134G	2	130,000		0217	RL20S334G	2	330,000	
0200	RL20S134J	5			0218	RL20S334J	5		
0201	RL20S154G	2	150,000		0219	RL20S364G	2	360,000	
0202	RL20S154J	5			0220	RL20S364J	5		
0203	RL20S164G	2	160,000		0221	RL20S394G	2	390,000	
0204	RL20S164J	5			0222	RL20S394J	5		
0205	RL20S184G	2	180,000		0223	RL20S434G	2	430,000	
0206	RL20S184J	5			0224	RL20S434J	5		
0207	RL20S204G	2	200,000		0225	RL20S474G	2	470,000	
0208	RL20S204J	5			0226	RL20S474J	5		

4. VERIFICATION

4.1 Sampling and inspection. Sampling and inspection procedures shall be in accordance with Group A inspection and Group B inspection of [MIL-PRF-22684](#) and as specified herein.

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 The notes specified in [MIL-PRF-22684](#) are applicable to this specification.

6.2 Acquisition requirements. Acquisition documents must specify the following:

- a. Title, number, date of this specification, and complete PIN (see 1.2).
- b. 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.
- c. Packaging requirements.

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6.3 Pulse applications. Designers are CAUTIONED on using these resistors in high power pulse applications. Since they have not been qualified nor tested for such applications, damage and premature failure are possible. These resistors only see a one time pulse (Short-time overload) as part of the group B inspection of this specification. Designers MAY CONSIDER using DLA Land and Maritime drawing [03005](#) for high power pulse applications.

6.4 Amendment notification. The margins of this specification are marked with vertical lines 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 and relationship.

Custodians:

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

Preparing activity:  
DLA - CC

(Project 5905-2016-045)

Review activities:

Army - AR, MI

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.dla.mil>.