

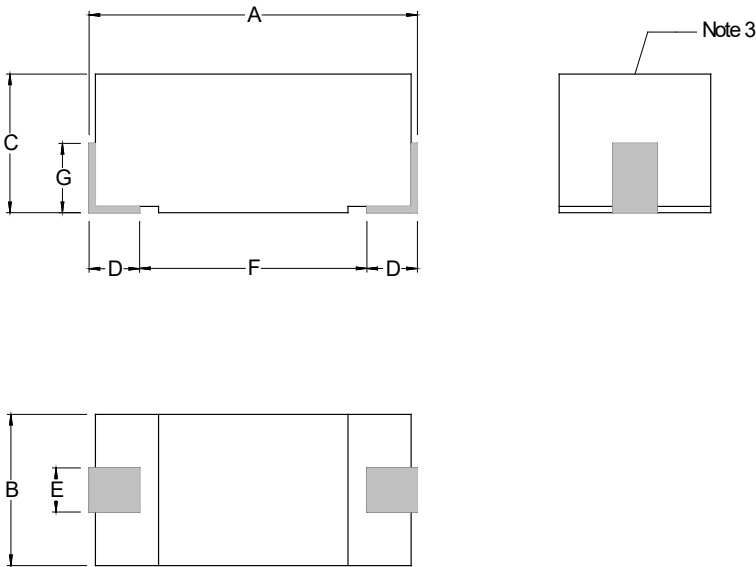
MIL-PRF-39010/18
W/AMENDMENT 2
14 December 2022
SUPERSEDING
MIL-PRF-39010/18
W/AMENDMENT 1
26 July 2017

PERFORMANCE SPECIFICATION SHEET

COILS, RADIO FREQUENCY, SHIELDED,
MOLDED, FIXED, SURFACE MOUNT
ESTABLISHED RELIABILITY & NON-ESTABLISHED RELIABILITY

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

The requirements for acquiring the product herein shall
consist of this specification sheet and MIL-PRF-39010



- Notes:
- 1. Dimensions in inches
 - 2. Metric equivalents are given for general information only
 - 3. Marking shall be on top surface of the coil

	Inches	mm
A	0.490 to 0.520	12.44 to 13.21
B	0.230 to 0.250	5.84 to 6.35
C	0.210 to 0.230	5.33 to 5.84
D	0.050 Min	1.27 Min
E	0.055 to 0.075	1.40 to 1.91
F	0.330 (Ref. Only)	8.38 (Ref.Only)
G	0.110 (Ref. Only)	2.79 (Ref. Only)

FIGURE 1. Dimensions and configurations.



REQUIREMENTS

Interface and physical dimensions: See Figure 1

Material: Ferrite core with ferrite sleeve

Weight: 1.2 grams maximum

Operating temperature range: -55°C to +105°C

Dielectric withstanding voltage: Test voltage 500Vrms

Barometric pressure: Test condition C, (70,000ft) and a test voltage of 200Vrms

Electrical characteristics: See table I and table II

Inductance and tolerance: See table I

Q values: See table I

Self-resonant frequency: See table I

DC resistance: See table I

Percent coupling: 3 percent maximum with 0.050 inch spacing between coils

Temperature rise: 15°C. Test performed with coil mounted on SMD test substrate

Terminal (Bond) strength: 2 pounds when tested in accordance with [MIL-STD-883](#), method 2011, test condition F, coil mounted on SMD test substrate.

Points of test voltage application for dielectric withstanding voltage, barometric pressure and insulation resistance: Between the terminals of the coil connected together and a piece of conductive rubber which is sufficient in size to cover at least the entire surface opposite the terminals. The conductive rubber is to be held firmly in place against the coil surface during test.

Solderability: [MIL-STD-202-208](#); test condition B. Both end terminations are to be immersed simultaneously. Rates of immersion, dwell time and withdrawal are human controlled.

Resistance to solvents: Test is not applicable

Resistance to soldering heat: [MIL-STD-202-210](#), test condition C. Mounting board to be SMD test substrate per this document. Test to be performed after final electrical in qualification subgroup II; or after final electrical in group B subgroup 3 inspection.

Overload: Test coil shall be mounted on SMD test substrate.

Low temperature storage: Test coil shall be mounted on SMD test substrate.

Vibration: Test coil shall be mounted on SMD test substrate.

Mechanical shock: Test coil shall be mounted on SMD test substrate.

Life: Test coil shall be mounted on SMD test substrate.

MIL-PRF-39010/18
W/AMENDMENT 2

Moisture resistance: [MIL-STD-202-106](#); polarization voltage not required. Step 7a shall be performed during any five of the first eight cycles only. Step 7b is not applicable. Test coil shall be mounted on SMD test substrate.

SMD test substrate: Material shall be a minimum of 95 percent alumina with metallized areas for part mounting. The substrate shall not cause, or contribute to, any failure in any test which it is used.

Coil mounting: Test coils are to be soldered to the SMD test substrate metallized areas using Sn63 solder, or equivalent, by any suitable method that does not exceed a temperature of 265°C and a solder time period greater than five seconds.

Table II electrical characteristics (final): For any subgroup test requiring coils to be mounted to an SMD test substrate, the electrical characteristics (final) measurements are to be referenced to the electrical characteristic (initial) measurements determined after the test coil is mounted to the test substrate.

Part marking: These parts shall be laser marked.

Part or identifying number (PIN): M39010/18-***** (dash number from table 1)

MIL-PRF-39010/18
W/AMENDMENT 2

Table I Electrical characteristics (initial) and dash numbers

Dash Number 1/	Inductance μ H 2/	Inductance Tolerance $\pm$ percent	Q minimum 2/	Test frequency (MHz)	Self Resonant Frequency min (MHz) 3/	DC resistance (25°C) max (ohms) 4/	Rated DC current (mA) 4/	Incremental current
A150**	15	5, 10	40	2.5	42	0.80	395	300
A160**	16	5	40	2.5	38	0.89	375	250
A180**	18	5,10	40	2.5	38	0.89	375	250
A200**	20	5	40	2.5	35	0.96	360	210
A220**	22	5, 10	40	2.5	35	0.96	360	210
A240**	24	5	40	2.5	32	1.19	325	195
A270**	27	5,10	40	2.5	32	1.19	325	195
A300**	30	5	40	2.5	29	1.37	300	160
A330**	33	5, 10	40	2.5	29	1.37	300	160
A360**	36	5	40	2.5	25	1.93	255	150
A390**	39	5,10	40	2.5	25	1.93	255	150
A430**	43	5	40	2.5	23	2.11	245	135
A470**	47	5, 10	40	2.5	23	2.11	245	135
A510**	51	5	40	2.5	21	2.23	235	124
A560**	56	5,10	40	2.5	21	2.23	235	124
A620**	62	5	40	2.5	18	2.70	215	122
A680**	68	5, 10	40	2.5	18	2.70	215	122
A750**	75	5	40	2.5	10.5	2.44	225	120
A820**	82	5,10	40	2.5	10.5	2.44	225	120
A910**	91	5	40	2.5	10	3.12	200	113
A101**	100	5, 10	40	2.5	10	3.12	200	113
A111**	110	5	55	.79	9.7	3.60	185	98
A121**	120	5,10	55	.79	9.7	3.60	185	98
A131**	130	5	55	.79	8.5	4.10	175	84
A151**	150	5, 10	55	.79	8.5	4.10	175	84
A161**	160	5	55	.79	8.0	4.40	170	76
A181**	180	5,10	55	.79	8.0	4.40	170	76
A201**	200	5	55	.79	7.5	5.00	160	67
A221**	220	5, 10	55	.79	7.5	5.00	160	67
A241**	240	5	55	.79	7.0	5.80	145	60
A271**	270	5,10	55	.79	7.0	5.80	145	60
A301**	300	5	55	.79	6.5	6.40	140	55
A331**	330	5, 10	55	.79	6.5	6.40	140	55
A361**	360	5	60	.79	6.2	7.40	130	46
A391**	390	5,10	60	.79	6.2	7.40	130	46
A431**	430	5	60	.79	5.7	9.50	115	43
A471**	470	5, 10	60	.79	5.7	9.50	115	43
A511**	510	5	60	.79	4.7	10.5	110	40
A561**	560	5,10	60	.79	4.7	10.5	110	40
A621**	620	5	60	.79	4.5	11.8	105	38

See footnotes at end of table.

MIL-PRF-39010/18
W/AMENDMENT 2

Table I Electrical characteristics (initial) and dash numbers

Dash Number 1/	Inductance μ H 2/	Inductance Tolerance $\pm$ percent	Q minimum 2/	Test frequency (MHz)	Self Resonant Frequency min (MHz) 3/	DC resistance (25°C) max (ohms) 4/	Rated DC current (mA) 4/	Incremental current
A681**	680	5, 10	60	.79	4.5	11.8	105	38
A751**	750	5	60	.79	4.2	13.0	100	33
A821**	820	5, 10	60	.79	4.2	13.0	100	33
A911**	910	5	60	.79	3.8	17.5	85	29
A102**	1,000	5, 10	60	.79	3.8	17.5	85	29
A112**	1,100	5	45	.25	3.0	22.1	75	28
A122**	1,200	5, 10	45	.25	3.0	22.1	75	28
A132**	1,300	5	45	.25	2.8	26.5	70	27
A152**	1,500	5, 10	45	.25	2.8	26.5	70	27
A162**	1,600	5	45	.25	2.6	29.9	65	24
A182**	1,800	5, 10	45	.25	2.6	29.9	65	24
A202**	2,000	5	45	.25	2.4	33.8	60	22
A222**	2,200	5, 10	45	.25	2.4	33.8	60	22
A242**	2,400	5	45	.25	2.2	47.3	50	20
A272**	2,700	5, 10	45	.25	2.2	47.3	50	20
A302**	3,000	5	45	.25	2.0	53.0	45	19
A332**	3,300	5, 10	45	.25	2.0	53.0	45	19
A362**	3,600	5	45	.25	1.9	73.8	40	17
A392**	3,900	5, 10	45	.25	1.9	73.8	40	17
A432**	4,300	5	45	.25	1.7	81.6	38	15
A472**	4,700	5, 10	45	.25	1.7	81.6	38	15
A512**	5,100	5	44	.25	1.6	98.9	36	14
A562**	5,600	5, 10	44	.25	1.6	98.9	36	14
A622**	6,200	5	40	.25	1.4	111	34	13
A682**	6,800	5, 10	40	.25	1.4	111	34	13
A752**	7,500	5	40	.25	1.2	119	32	12
A822**	8,200	5, 10	40	.25	1.2	119	32	12
A912**	9,100	5	40	.25	1.0	139	30	11
A103**	10,000	5, 10	40	.25	1.0	139	30	11

1/ The complete dash number will include two additional letters (indicated by **). The first additional letter will indicate the inductance tolerance (e.g. J = $\pm 5\%$, K = $\pm 10\%$) and the second additional letter will indicate the product level (e.g. C, M, P, R, S) and will be added to the end of the dash number.

2/ Inductance and Q are tested using HP4194A with test fixture 16034E, or equivalent.

3/ Self resonant frequency tested using HP8753C, HP4291A, HP4194A or equivalent

4/ The rated dc current is based on 90°C ambient temperature with a 15°C rise.

MIL-PRF-39010/18
W/AMENDMENT 2

Table II Electrical characteristics (final)

Inspection Group	Allowable variation from initial measurement	Allowable variation from initial measurement	Allowable percent from specified minimum value in electrical characteristics (initial) table	Allowable percent from specified minimum value in electrical characteristics (initial) table
	Inductance (percent)	DC resistance	Self-resonant frequency	Q
Qualification inspection				
Group II	±5			-10
Group IV	±10	±(5% + 0.001 ohm)	<u>1</u> /	-20
Group VI	±10	±(2% + 0.001 ohm)	<u>1</u> /	-20
Group B inspection				
Subgroup 1	±10	±(2% + 0.001 ohm)	<u>1</u> /	-20
Subgroup 3	±5			-10
Subgroup 4	±10	±(5% + 0.001 ohm)	<u>1</u> /	-20

1/ The self-resonant frequency shall not be less than the value specified in table I

Amendment notations. The margins of this specification are marked with vertical lines to indicate modifications 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.

Referenced documents: In addition to [MIL-PRF-39010](#), this document references:

MIL-STD-202-106

MIL-STD-202-208

MIL-STD-202-210

MIL-STD-883

MIL-PRF-39010/18
W/AMENDMENT 2

Custodians:

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

Preparing activity:
DLA - CC

Review activities:

| Army – AR, CR4, MI
Navy – AS, CG, MC, OS, SH
Air Force – 19

(Project 5950-2022-080)

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