

## INCH-POUND

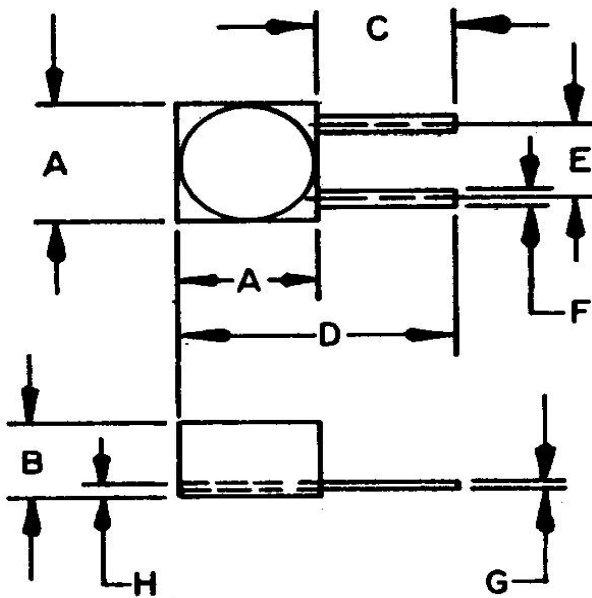
MS21367G  
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 SUPERSEDING  
 MS21367F(USAF)  
 9 June 1976

## MILITARY SPECIFICATION SHEET

COILS, RADIO FREQUENCY, ENCAPSULATED, FIXED,  
 MICRO-MINIATURE, SHIELDED (IRON CORE)  
 TYPES LT10K354 TO LT10K383 INCL.

This specification is approved for use by all Depart-  
 ments and Agencies of the Department of Defense.

The requirements for acquiring the products described  
 herein shall consist of this specification and MIL-PRF-15305.



Ltr	Dimensions in inches with metric equivalents (mm) in parentheses	
	Minimum	Maximum
A	.090 (2.29)	.110 (2.79)
B	---	.065 (1.65)
C	.210 (5.33)	---
D	.350 (8.89)	REF
E	.080 (2.03)	.110 (2.79)
F	.010 (0.25)	.014 (0.36)
G	.002 (0.05)	.003 (0.08)
H	.005 (0.13)	NOM

## NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Coils are held rigidly by the body during vibration and mechanical shock testing.
4. The "G" dimension is not applicable within one-sixteenth of the body of the coil.

FIGURE 1. Dimensions and configuration.

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### REQUIREMENTS:

Design, construction, and physical dimensions: See figure 1.

Style: LT10.

Grade: 1.

Class: A.

Core material: Powdered iron.

Lead material: Beryllium copper with an electro-tin plating .0001 to .0002 inch thickness composed of 60 percent tin minimum and 40 percent lead maximum.

Weight: .03 gram, maximum.

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

Ambient temperature: 90°C maximum.

Temperature rise: 15°C maximum.

Power dissipation: 20.5 mW, maximum. Maximum power is the wattage dissipated by the coil when rated dc current produces a 15°C temperature rise at 90°C ambient.

Terminal pull: 227 grams minimum.

Terminal bend: 2 operations minimum.

Terminal twist: Not applicable.

Altitude: 70,000 feet.

Shock, specified pulse: Method 213 of MIL-STD-202, test condition I, is applicable.

Dielectric withstanding voltage:

At sea level: Method 301 of MIL-STD-202, test voltage 140 V rms minimum.

At reduced barometric pressure: Method 105 of MIL-STD-202, test condition C, test voltage 50 V rms minimum.

Percent coupling: 3 percent maximum.

Resistance to soldering heat: Method 210 of MIL-STD-202, test condition A, is applicable.

Electrical characteristics: See table I, table II, and table III.

Inductance: See table I.

Q values: See table I.

Self-resonant frequency (SRF): See table I.

DC resistance (DCR): See table I.

Part or Identifying Number (PIN): MS21367 - (dash number from table I).

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TABLE I. Electrical characteristics (initial).

Dash number 1/	Type designation	Nominal Inductance ( $\mu$ H)	Q (min)	Test frequency (MHz)	SRF min (MHz)	DC resistance (ohms) at 25°C (max)	Rated dc current (mA)
-1	LT10K354	.015 $\pm$ 30%	40	50	250	.065	492
-2	LT10K355	.022 $\pm$ 30%	40	50	250	.090	418
-3	LT10K356	.033 $\pm$ 30%	40	50	250	.115	370
-4	LT10K357	.047 $\pm$ 30%	40	50	250	.120	360
-5	LT10K358	.068 $\pm$ 30%	40	50	250	.150	324
-6	LT10K359	.100 $\pm$ 30%	40	50	250	.170	304
-7	LT10K360	.120 $\pm$ 20%	35	25	250	.140	335
-8	LT10K361	.150 $\pm$ 20%	40	25	250	.160	313
-9	LT10K362	.180 $\pm$ 20%	40	25	250	.190	287
-10	LT10K363	.220 $\pm$ 20%	40	25	250	.210	274
-11	LT10K364	.270 $\pm$ 20%	40	25	250	.240	256
-12	LT10K365	.330 $\pm$ 20%	40	25	250	.250	251
-13	LT10K366	.390 $\pm$ 20%	40	25	200	.280	237
-14	LT10K367	.470 $\pm$ 20%	40	25	175	.310	225
-15	LT10K368	.560 $\pm$ 20%	40	25	170	.450	185
-16	LT10K369	.680 $\pm$ 20%	40	25	165	.620	159
-17	LT10K370	.820 $\pm$ 20%	35	25	160	.650	155
-18	LT10K371	1.00 $\pm$ 20%	35	25	135	.730	145
-19	LT10K372	1.20 $\pm$ 10%	35	7.9	120	1.00	125
-20	LT10K373	1.50 $\pm$ 10%	32	7.9	110	1.20	114
-21	LT10K374	1.80 $\pm$ 10%	32	7.9	95	1.50	102
-22	LT10K375	2.20 $\pm$ 10%	35	7.9	80	1.70	96
-23	LT10K376	2.70 $\pm$ 10%	35	7.9	70	2.00	89
-24	LT10K377	3.30 $\pm$ 10%	37	7.9	65	2.20	84
-25	LT10K378	3.90 $\pm$ 10%	37	7.9	60	2.80	75
-26	LT10K379	4.70 $\pm$ 10%	40	7.9	55	3.10	71
-27	LT10K380	5.60 $\pm$ 10%	40	7.9	50	3.30	69
-28	LT10K381	6.80 $\pm$ 10%	40	7.9	45	3.80	64
-29	LT10K382	8.20 $\pm$ 10%	40	7.9	43	5.00	56
-30	LT10K383	10.0 $\pm$ 10%	40	7.9	40	5.60	53

1/ The dash number added to MS military standard number constitutes the MS PIN; for example MS21367-1.

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TABLE II. Electrical characteristics (final). (For .015  $\mu$ H through 1.0  $\mu$ H) 1/

Inspection group	Allowable variation from Initial measurement		Allowable percent from specified minimum value in electrical characteristics (initial) table	
	Inductance (percent)	DC resistance	Self-resonant frequency	Q
Qualification inspection				
Group II	$\pm 5$	---	---	-10
Group III	$\pm 10$	$\pm(3\% +.001 \text{ ohm})$	-10	-15
Group IV	$\pm 5$	$\pm(2\% +.001 \text{ ohm})$	-10	-10
Conformance inspection group C				
Subgroup I	$\pm 5$	---	---	-10
Subgroup II	$\pm 5$	$\pm(2\% +.001 \text{ ohm})$	-10	-10
Subgroup III	$\pm 10$	$\pm(3\% +.001 \text{ ohm})$	-10	-15

TABLE III. Electrical characteristics (final). (For 1.2  $\mu$ H through 10  $\mu$ H) 1/

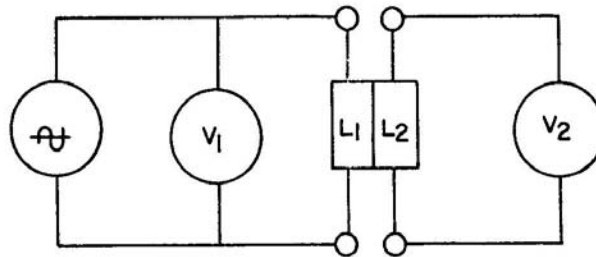
Inspection group	Allowable variation from Initial measurement		Allowable percent from specified minimum value in electrical characteristics (initial) table	
	Inductance (percent)	DC resistance	Self-resonant frequency	Q
Qualification inspection				
Group II	$\pm 2$	---	---	-10
Group III	$\pm 5$	$\pm(3\% +.001 \text{ ohm})$	-8	-10
Group IV	$\pm 2$	$\pm(2\% +.001 \text{ ohm})$	-10	-10
Conformance inspection group C				
Subgroup I	$\pm 2$	---	---	-10
Subgroup II	$\pm 2$	$\pm(2\% +.001 \text{ ohm})$	-10	-10
Subgroup III	$\pm 5$	$\pm(3\% +.001 \text{ ohm})$	-8	-10

1/ The test fixture in the diagram below or its equivalent shall be used for electrical measurements. Inductance values are effective inductance as indicated on a HP260A or equivalent, Q meter, when tested in the test fixture. Inductance of 10  $\mu$ H or less are corrected for residual meter and test fixture inductance which is typically .050  $\mu$ H.

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## NOTES:

1. Polarization during moisture resistance test is not applicable.
2. The percent coupling between two radio frequency coils is to be determined by measuring the voltage induced in a coil when a voltage is applied to an adjacent coil. Percent coupling is not to be measured for parts with nominal inductances of less than 1.0  $\mu\text{H}$ . The measurement is to be performed at 10 kHz for nominal inductance values from 1.0  $\mu\text{H}$  through 100  $\mu\text{H}$  and at 1 kHz for nominal inductance values greater than 100  $\mu\text{H}$ . The measurement circuit is shown in the figure below.



Equipment for 1 kHz and 10 kHz consists of General Radio Audio Oscillator and Power Amplifier type 1308-A, or equivalent and Model 400 vacuum tube voltmeter, or equivalent.

The coils to be tested shall be taped or otherwise secured such that the bodies of the coils are kept parallel and in contact with each other to insure maximum coupling as shown in the figure below.



The voltage levels shall be as low as possible to permit reliable readings of  $V_2$ . The inductance shall be measured with .02 volt injection voltage on a Hewlett-Packard model 260A Q-meter or equivalent.

The percent coupling is to be calculated using the equation:

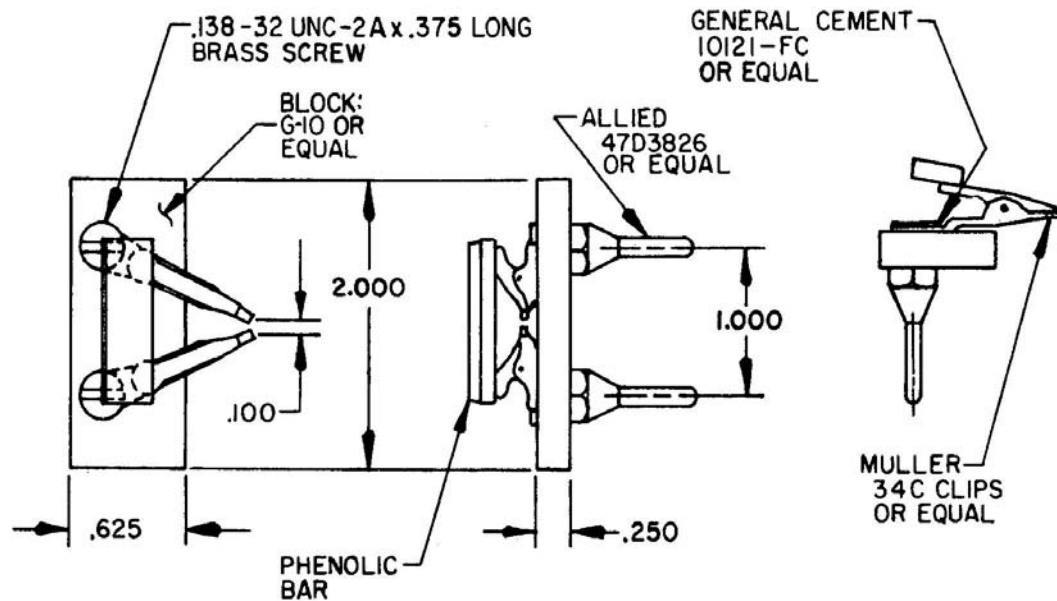
$$\text{Percent coupling} = \sqrt{\frac{L_1}{L_2}} \times \frac{V_2}{V_1} \times 100$$

where:  $L_1$  = effective inductance of primary coil (measured at standard Q-meter test frequency)  
 $L_2$  = effective inductance of secondary coil (measured at standard Q-meter test frequency)  
 $V_1$  = voltage measured across primary  
 $V_2$  = voltage measured across secondary

3. For dielectric withstanding voltage, barometric pressure and insulation resistance units shall be placed on flat metal plate with leads insulated from surface. Measurement of dielectric withstanding voltage, barometric pressure and insulation resistance shall be between the leads of the coil connected together and the metal plate.
4. The marking shall be as specified in MIL-PRF-15305 except that the marking shall be on the unit package or container.

FIGURE 1. Typical coil test fixture.

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FIGURE 1. Typical coil test fixture - Continued.

Changes from previous issue. The margins of this specification are marked with vertical lines to indicate where changes from the previous issue were made. 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 to the last previous issue.

Referenced documents. In addition to MIL-PRF-15305, this document references MIL-STD-202.

Custodians:  
Air Force - 11  
DLA - CC

Preparing activity:  
DLA - CC

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