AE031Y100008

Ver.4.00

SPECIFICATION

RADIAL LEADED INDUCTORS

LH L 16 Type

TAIYO YUDEN

1. SCOPE

These specifications apply to automatically inserting Radial lead inductor. LH L 16 Type.

2. PART NUMBERING SYSTEM

Example) LH △ L △ 16 □□ 101 K

① ② ③ ④ ⑤ ⑥

① Type

② Configuration

③ External dimensions

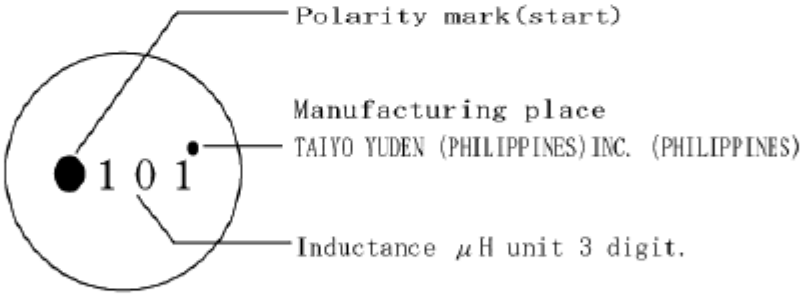
④ Packing code("TB":Ammo packing/ "NB":Bulk)

⑤ Nominal Inductances

⑥ Inductance tolerances

3. MARKING

Example) 〈MARK〉 101 → (10×10¹) → 〈INDUCTANCE〉 100[μH]



4. Electrical characteristics	→	Refer to Table 1
5. Appearance, dimensions and shape of lead	→	Refer to Fig 1
6. Structural diagram	→	Refer to Fig 2
7. Environment test performances and mechanical performances	→	Refer to Table 2
8. Packing specification	→	Refer to Table 5

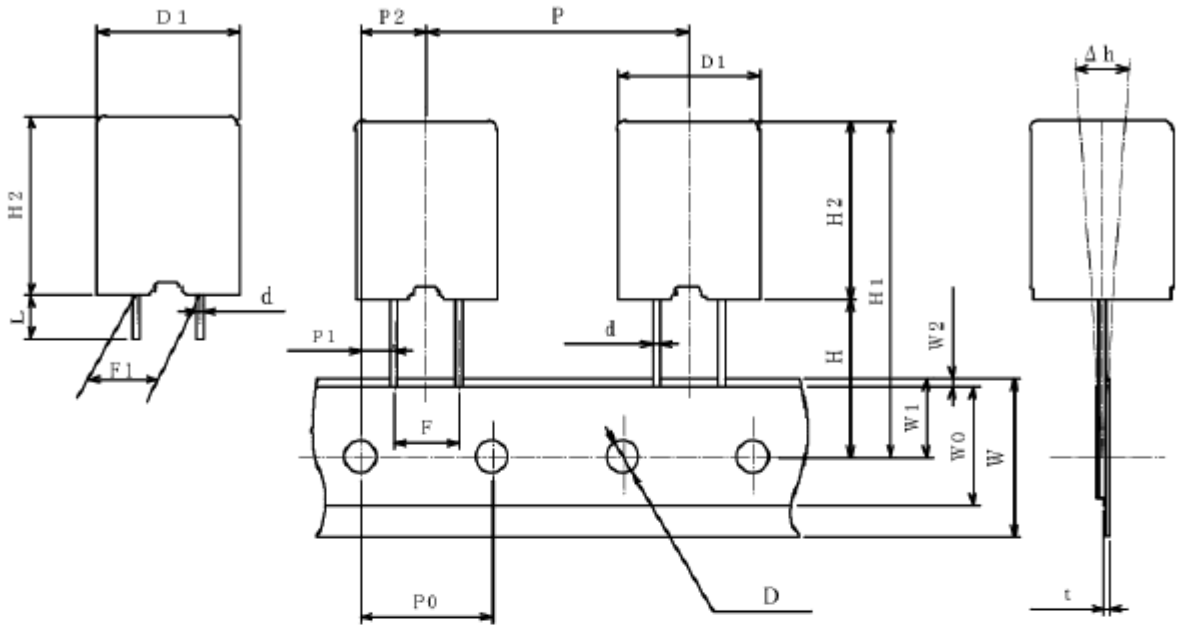
LH L 16 Type electrical characteristics　　Table 1

Ordering Code	Nominal Inductance [H]	Inductance tolerance [%]	Q (min)	DC resistance (max) [Ω]	Self resonant frequency (min) [MHz]	Rated current (max) [A]	Measuring frequency [MHz]
LH L 16□□ 470 K	47 μ	± 10	70	0.046	4.5	3.7	2.52
LH L 16□□ 680 K	68 μ		70	0.054	3.9	3.3	
LH L 16□□ 101 K	100 μ		60	0.077	2.7	2.9	0.796
LH L 16□□ 151 K	150 μ		60	0.11	2.3	2.4	
LH L 16□□ 221 K	220 μ		60	0.15	1.9	2.0	
LH L 16□□ 331 K	330 μ		40	0.21	1.6	1.5	
LH L 16□□ 471 K	470 μ		30	0.28	1.4	1.3	
LH L 16□□ 681 K	680 μ		20	0.35	1.2	1.1	
LH L 16□□ 102 J	1.0 m	± 5	20	0.74	0.84	0.86	0.252
LH L 16□□ 152 J	1.5 m		20	0.93	0.69	0.75	
LH L 16□□ 222 J	2.2 m		20	1.4	0.56	0.60	
LH L 16□□ 332 J	3.3 m		20	2.2	0.49	0.50	
LH L 16□□ 472 J	4.7 m		20	2.6	0.41	0.40	
LH L 16□□ 682 J	6.8 m		20	3.9	0.35	0.33	
LH L 16□□ 103 J	10 m		70	7.3	0.26	0.25	L: 1kHz Q:0.0796

□□ : Please specify packing code. ("TB":Taping. "NB":Bulk)

Appearance, Dimensions and shape of lead Fig 1

〈 Bulk (NB) 〉 〈 Taping (TB) 〉

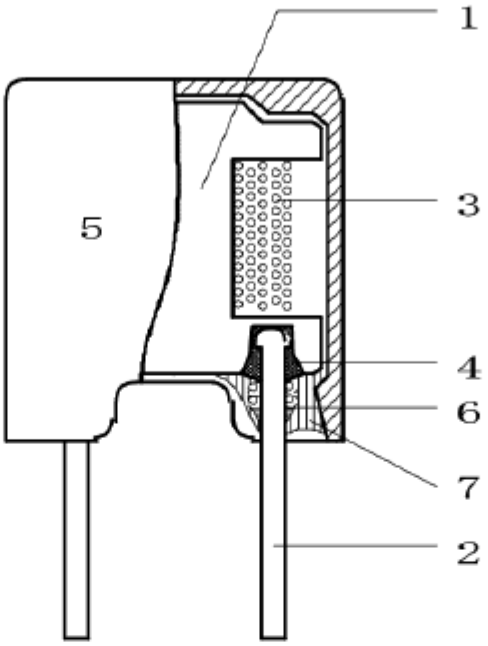


Unit : [mm]

Item	Symbol	Dimensions	Item	Symbol	Dimensions
Diameter of the component body	D1	ϕ 17.0 max	Carrier tape width	W	18.0 + 1.0 / −0.5
Distance between top of body and center of sprocket hole	H1	41.0 max	Hold down tape width	W0	12.5 min
Distance between low of body and center of sprocket hole	H	18.0 +2.0/−0	Distance between the upper edges of carrier tape and sprocket hole	W1	9.0±0.5
Height of the component body	H2	21.0 max	Distance between the upper edges of carrier tape and the hold down tape	W2	※3 3.0 max
Pitch of the component body	P	30.0±1.0	Diameter of sprocket holes	D	ϕ 4.0±0.2
Pitch of the sprocket holes	P0	※1 15.0±0.3	Lead diameters	d	0.8±0.05
Distance between center of terminal and sprocket hole, center of body and sprocket hole	P1	3.75±0.7	Total thickness of the combined carrier tape and hold down tape	t	0.6±0.3
	P2	7.50±1.3			
Distance between centers of component leads	F	7.5±0.5	Maximum deviation of the component body in the tape plane	Δh	0±2.0
	F1	※2 7.5±1.0			
Lengh of lead	L	5.0±1.0			

※1 : Accumulated error for 20 pitches is ± 1 mm.
※2 : Dimension F1 is root of read termination.
※3 : Binding tape must not protrude from base tape.

Structural diagram Fig 2



No.	Function	Material generic name
1	Ferrite core	Ni-Zn ferrite
2	Lead terminal	Solder coated copper ply steel wire (Sn/Cu , Sn)
3	Winding wire	Polyurethane enamelde copper wire
4	Adhesive	Epoxy based adhesive
5	Case	PBT resin (UL94V-0)
6	Solder	Tin(Sn) alloy solder (Sn/Cu/Ag)
7	Resin	Epoxy based adhesive

Operating temperature range	－２５ ～ ＋１０５ [℃] (Including self-generated heat.)
Storage temperature range	－４０ ～ ＋ ８５ [℃]

No.	Item	Specification	Test conditions.
	Electrical performances		
1	Inductance	Refer to Table 1	Measured by HP4285A+42851A Q meter. Measured by HP4262A LCR meter.
2	Q	Refer to Table 1	Measured by HP4285A+42851A Q meter.
3	Self-resonance frequency	Refer to Table 1	Measured by HP4191A and 4192A.
4	DC-resistance	Refer to Table 1	Measured by Milli ohm meter.
5	Rated current	Refer to Table 1	The maximum DC value having inductance decrease within 10% and temperature increase within 30 deg. By the application of DC bias.
6	Withstanding voltage	No abnormality as breakdown	Between terminal and overcoating 500V DC shall be applied for 1 minute.
7	Insulating resistance	100 MΩ or more	Between terminal and core 500V DC shall be applied for 1 minute, after which measurement shall be made.
8	Over current test	There shall be no scorch or short of wire.	The current twice of the rated shall be applied to the coil for 5 minutes.
	Environment test performances		
9	Terminal strength (Bending)	No, abnormality such as cut lead, or looseness.	Suspend a mass at the end the terminal, incline the body through angle of 90° and return it to initial position. This operation is done over a period of 2-3 sec. Then second bend in the opposite direction shall be made. Number of bends : 5 N (0.5lkgf)/2 times.
10	Terminal strength (Tensile force)	No abnormality such as cut lead, or looseness.	Apply the stated tensile force gradually in the direction to draw terminal. Tensile force : 10 N (1.02kgf)/1 time.
11	Vibration	Refer to Table 3 No abnormality.	2 hours each in the X, Y, and Z directions with the sample attached to PC board. Sweeping for 1 minute in the range of 10-55-10 Hz and 1.5mm amplitude.
12	Resistance to soldering heat	Refer to Table 3 No abnormality.	* Solder bath method: Immersed in H63A solder at 260±5℃ for 10±1 sec. Immersion depth is up to 1.5mm from the insulator. 4 to 24 hours of recovery under the standard condition after the removal from solder bath. * Solder iron method: Bit temperature is 350 ±10℃. Application time of soldering iron is within 5±1 sec. However, without much pressure to the terminal pin.
13	Solderability	A new uniform coating of solder shall cover a minimum of 75% of the surface being immersed.	Immersed in H63A solder at 235±5℃ for 2± 0.5 sec. Immersion depth is up to 1.5 mm from the insulator.
14	Inductance temperature characteristic	Inductance change: within ± 7%	To be measured in the range of -25 to +105℃. The value at 20℃ is used as the standard.

L16 Table 2

No.	Item	Specification	Test conditions
15	Temperature cycle	Refer to Table 4	-25℃ to +105℃, to be retained for each 30 minutes, 10 cycle.
16	Humidity life with load	Refer to Table 4	The rated current shall be applied to the coil at an ambient temperature of 40 ± 2℃ with relative humidity 90～95% for 1000(+48/-0)hours. Then it shall be subjected to standard atmospheric conditions for 1～2 hours, after which measurement shall be made.
17	High temperature life	Refer to Table 4	+105±2℃, 1000(+48/0)hours. 1 to 2 hours of recovery under the standard condition after the removal from test chamber.
18	Low temperature life	Refer to Table 4	The coil shall be stored at a temperature of -40±3℃ for 1000(+48/0)hours. Then it shall be subjected to standard atmospheric conditions for 1～2 hours, after which measurement shall be made.

Standard test condition	Unless specified, all tests shall be conducted under the condition of 5～35℃ temperature and 45～85% humidity as specified in JIS 5020. Should any doubt arise determination of test results, a further test shall be conducted under the condition of 20±2℃ temperature and 60～70% humidity.

〈Table 3〉

The exterior	No abnormality
Inductance change	Within ±5%
Q change	Within ±30%

〈Table 4〉

The exterior	No abnormality
Inductance change	Within ±10%
Q change	Within ±30%

《 On control 》

- Class-Ⅰ and Class-Ⅱ ozone depleting substances(ODS), etc, which are regulated by the Federal Law for Atomosphere Purification, are not included in the products nor it applied to the products at any stage of manufacturing processes.
- The specific bromide flame proof materials are not used at all.
- This product is not classified as a strategic material (or service) stipulated in the export trade control ordinance separate Table under Japan's Foreign Exchange and foreign trade control Act.

《 Handling 》

- If inductors are dropped on the floor or a hard surface they should not be used.

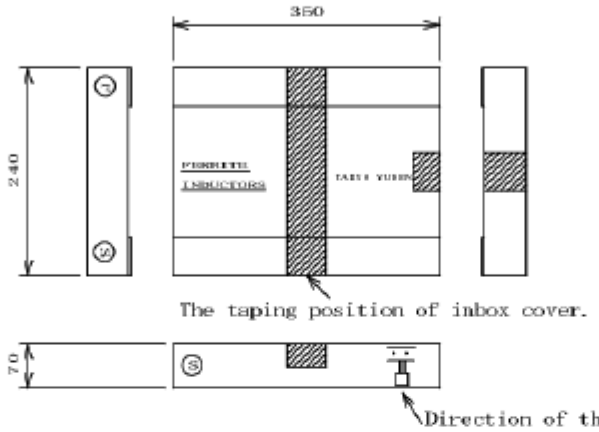
《 Note 》

- At using TAIYO YUDEN products of this specification and in case of using the lead free soldering, We request to use them after confirming of adhesion, temperature of resistance to soldering heat, solderability and soldering shape situation etc sufficiently.
- Washing by supersonic waves shall be avoided.

1. Taping and Folded packing (TB) ⇒ 1 Box 250 pcs.

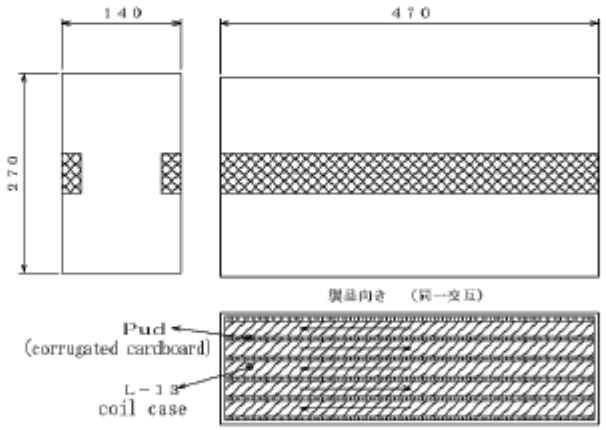
- Each fold shall compose of 10 pcs. Of taped items and a blank space on alternately.
- There is an equivalent of 12 or more sections of leader space (not taped with items) at the start and at the end of the taping.
- "S" and "F" markings on the inbox signifies the folloing.
  "S" : The winding direction of the product is pulled out on the start winding portion of the item if the tape is pulled out on this side.
  "F" : The winding direction of the product is pulled out on the finish winding portion of the item if the tape is pulled out on this side.

- Dimensions of outbox for Taping and Folded packing. (Reference values)



Unit:[mm]

2. Bulk packing (NB) ⇒ 1 Box 500 pcs. (max)



Unit:[mm]

3. Package Marking
   ① Customer name
   ② Customer parts number
   ③ Taiyo Yuden parts number
   ④ Quantity
   ⑤ Lot No
   ⑥ Manufacturer

4. Please take note of the following precautions when handling the products.

- Avoid from dropping the item of subjecting it to excessive shock or vibration.
- Must comply with the precautions marked on the carton.

SPECIAL NOTICE

■ All of the contents specified here are subject to change without notice due to technical improvements, etc. Therefore, please check latest version of the components specifications carefully before practical application or usage of the components. Please note that Taiyo Yuden Co,.Ltd. shall not be responsible for any of deficiency to components or equipments to be used, which are caused under the condition other than specified in the specification.

■ This product is developed, designed and intended for use in general electronics equipments. (for AV, household, office supply, information service, telecommunications, etc.). Before incorporating the components into any equipments in the field such as aerospace, aviation, nuclear control, submarine, transportation, (automotive driving and control, passenger protection,
train control, ship control), transportation signal, disaster prevention, medical, public information network etc. where higher safety and reliability are especially required, please contact Taiyo Yuden Co., Ltd. for more detail in advance.
And before incorporating the components or devices into the equipments not mentioned in the above, if there is possibility of direct damage or injury to human body, please contact Taiyo Yuden Co., Ltd. for more detail in advance.