Notice for TAIYO YUDEN products

Please read this notice before using the TAIYO YUDEN products.

REMINDERS

Product information in this catalog is as of October 2012. All of the contents specified herein are subject to change without notice due to technical improvements, etc. Therefore, please check for the latest information carefully before practical application or usage of the Products.

Please note that Taiyo Yuden Co., Ltd. shall not be responsible for any defects in products or equipment incorporating such products, which are caused under the conditions other than those specified in this catalog or individual specification.

- Please contact Taiyo Yuden Co., Ltd. for further details of product specifications as the individual specification is available.
- Please conduct validation and verification of products in actual condition of mounting and operating environment before commercial shipment of the equipment.
- All electronic components or functional modules listed in this catalog are developed, designed and intended for use in general electronics equipment.(for AV, office automation, household, office supply, information service, telecommunications, (such as mobile phone or PC) etc.). Before incorporating the components or devices into any equipment in the field such as transportation,(automotive control, train control, ship control), transportation signal, disaster prevention, medical, public information network (telephone exchange, base station) etc. which may have direct influence to harm or injure a human body, please contact Taiyo Yuden Co., Ltd. for more detail in advance. Do not incorporate the products into any equipment in fields such as aerospace, aviation, nuclear control, submarine system, military, etc. where higher safety and reliability are especially required.

In addition, even electronic components or functional modules that are used for the general electronic equipment, if the equipment or the electric circuit require high safety or reliability function or performances, a sufficient reliability evaluation check for safety shall be performed before commercial shipment and moreover, due consideration to install a protective circuit is strongly recommended at customer's design stage.

- The contents of this catalog are applicable to the products which are purchased from our sales offices or distributors (so called "TAIYO YUDEN's official sales channel").

 It is only applicable to the products purchased from any of TAIYO YUDEN's official sales channel.
- Please note that Taiyo Yuden Co., Ltd. shall have no responsibility for any controversies or disputes that may occur in connection with a third party's intellectual property rights and other related rights arising from your usage of products in this catalog. Taiyo Yuden Co., Ltd. grants no license for such rights.
- Caution for export

 Certain items in this catalog may require specific procedures for export according to "Foreign Exchange and Foreign Trade Control Law" of Japan, "U.S. Export Administration Regulations", and other applicable regulations.

Should you have any question or inquiry on this matter, please contact our sales staff.

LEADED NORMAL MODE CHOKE COILS FOR DC AND SIGNAL LINES



WAVE

FEATURES

- Use of high loss ferrite materials for excellent high frequency noise absorption.
- High impedance for normal mode applications.
- 05 RD type available in taping for automatic insertion.
- 06 BT type is designed for high current applications (3A).

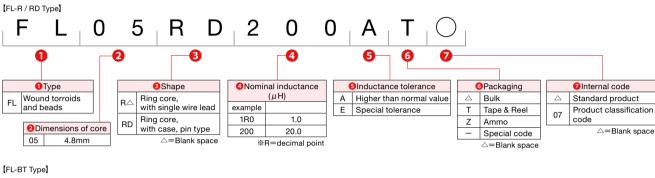
APPLICATIONS

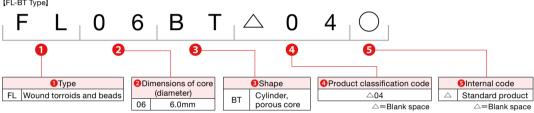
• Absorption of high frequency noise from digital equipment data lines.

OPERATING TEMP.

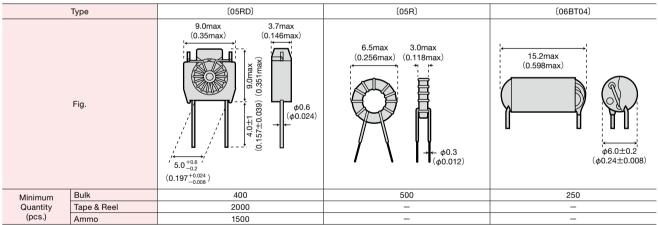
■ -25°C~105°C (Including self-generated heat)

ORDERING CODE



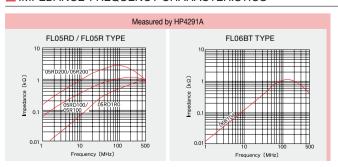


■ EXTERNAL DIMENSIONS/MINIMUM QUANTITY



Unit : mm (inch)

■ IMPEDANCE-FREQUENCY CHARACTERISTICS



Please contact TAIYO YUDEN for further information in regard to other characteristics.

^{*} This catalog contains the typical specification only due to the limitation of space. When you consider the purchase of our products, please check our specification. For details of each product (characteristics graph, reliability information, precautions for use, and so on), see our Web site (http://www.ty-top.com/).

Ordering code	EHS (Environmental Hazardous Substances)	Inductance [µH]	Impedance (Ω) (typical)	DC Resistance (Ω) (max)	Rated current (A) (max)
FL05RD 1R0E□	RoHS	1.0+1.0	800 (at 400MHz)	0.08	0.5
FL05R 100A	RoHS	10 min.	900 (at 200MHz)	0.05	- 1.5
FL05RD 100A□	RoHS				
FL05R 200A-07	RoHS	20 min.	2000 (at 100MHz)	0.08	
FL05RD 200A	RoHS	20 mm.			
FL06BT 04	RoHS	_	1000 (at 150MHz)	0.05	3.0

[☐]Please specify the packaging code (T: Tape & reel, Z: ammo, Blank space: bulk)

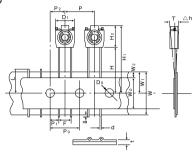
^{*} This catalog contains the typical specification only due to the limitation of space. When you consider the purchase of our products, please check our specification. For details of each product (characteristics graph, reliability information, precautions for use, and so on), see our Web site (http://www.ty-top.com/).

1)Minimum Quantity

Tuno	Minimum Quantity (pcs.)			
Type	Bulk	Tape & Reel	Ammo	
FL05R	500	_	_	
FL05RD	400	2000	1500	
FL06BT	250	_	_	

②Taping dimensions

FL05RD



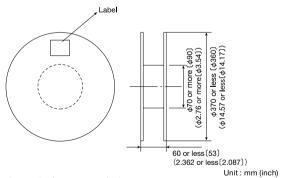
Type	Symbol	Dimension
	D ₁	9.0 max. (0.354 max.)
	H ₂	9.0 max. (0.354 max.)
	Т	3.7 max. (0.146 max.)
	H ₁	31.0 max. (1.22 max.)
	Н	18.0±1.0 (0.709±0.039)
	Р	12.7±1.0 (0.500±0.039)
	P ₀	12.7±0.3 (0.500±0.012) **1
	P ₁	3.85±0.8 (0.152±0.031)
	P ₂	6.35±1.3 (0.250±0.051)
FLAFED	W ₁	$9.0^{+0.75}_{-0.5} \ (0.354^{+0.030}_{-0.020})$
FL05RD	F	$5.0^{+0.6}_{-0.2} \ (0.197^{+0.024}_{-0.008})$
	d	φ0.6 (φ0.024)
	△h	0±2.0 (0±0.079)
	W	18.0 ^{+1.0} _{-0.5} (0.709 ^{+0.024} _{-0.008})
	W _o	12.5 min. (0.492 min.)
	W ₂	3.0 min. (0.118 min.) **2
	l	0 max. (0 max.)
	D ₀	4.0±0.3 (0.157±0.012)
	L	11.0 max. (0.433 max.)
	t	0.7±0.2 (0.028±0.008)

*1 Accumulated error for 20 pitches shall be within ±2mm.*2 Pasting tape shall not exceed paste board.

Unit : mm (inch)

③Reel size

FL05RD



Dimensions in parenthesis are measured value.

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Operating temperature Range					
LA Type					
CAL45 Type					
LHL					
FBA/FBR					
	-20~+03 U				
FL05 Type	$-25\sim\pm105\%$				
FL06BT Type	[
[Test Method and Remarks] LA·CA·FL: Including self-generated he					
LHL : Including self-generated he	eat eat				
2. Storage temperature Bange					
2. Storage temperature Range					
LA Type					
CAL45 Type					
LHL	-40∼+85°C				
FBA/FBR	-40°+763C				
FL05 Type					
FL06BT Type					
1 EGGB1 Type					
3. Rated current					
LA Type					
CAL45 Type					
LHL					
	Within the specified tolerance				
FBA/FBR					
FL05 Type					
FL06BT Type					
Test Method and Remarks					
	wing inductance within 10% and temperature incease within 40°C (LA:20°C) by the application of DC bias.				
	wing inductance decrease within 10% (LHLC08, LHLC10: within 30%) and temperature increase within the following specified				
temperature by the applica					
	25°C (LHL08, LHL10, LHL13)				
	30°C (LHL16, LHLP□□)				
	10°C (LHLC08, LHLC10)				
	arance abnormality by continuous current application for 30 min. Change after the application shall be within $\pm 20\%$ of the initial value.				
	electrial characteristics during current application.				
FL: The maximum DC value ha	ving temperature rise within specified value.				
4. Impedance					
LA Type					
CAL45 Type					
LHL					
E E	Table 1 and				
	Within the specified tolerance				
FBA/FBR	Within the specified tolerance				
FBA/FBR FL05□ Type					
FBA/FBR FL05□ Type FL06BT Type	Within the specified tolerance Refer to individual specification				
FBA/FBR FL05□ Type FL06BT Type [Test Method and Remarks]	Refer to individual specification				
FBA/FBR FL05□ Type FL06BT Type [Test Method and Remarks] FB : Measuring equipment : Impe	Refer to individual specification dance analyzer (HP4191A) or its equivalent				
FBA/FBR FL05□ Type FL06BT Type [Test Method and Remarks] FB : Measuring equipment : Impe Measuring frequency : Spec	Refer to individual specification dance analyzer (HP4191A) or its equivalent lifted frequency				
FBA/FBR FL05□ Type FL06BT Type [Test Method and Remarks] FB : Measuring equipment : Impe- Measuring frequency : Spec FL06BT : Measuring equipment : 4291/	Refer to individual specification dance analyzer (HP4191A) or its equivalent ified frequency 4 (HP) or its equivalent				
FBA/FBR FL05□ Type FL06BT Type [Test Method and Remarks] FB : Measuring equipment : Impe Measuring frequency : Spec	Refer to individual specification dance analyzer (HP4191A) or its equivalent ified frequency 4 (HP) or its equivalent				
FBA/FBR FL05□ Type FL06BT Type [Test Method and Remarks] FB : Measuring equipment : Impe- Measuring frequency : Spec FL06BT : Measuring equipment : 4291/	Refer to individual specification dance analyzer (HP4191A) or its equivalent ified frequency 4 (HP) or its equivalent				
FBA/FBR FL05□ Type FL06BT Type [Test Method and Remarks] FB : Measuring equipment : Impe- Measuring frequency : Spec FL06BT : Measuring equipment : 4291/ Measuring frequency : Spec	Refer to individual specification dance analyzer (HP4191A) or its equivalent ified frequency 4 (HP) or its equivalent				
FBA/FBR FL05□ Type FL06BT Type [Test Method and Remarks] FB : Measuring equipment : Imper Measuring frequency : Spec FL06BT : Measuring equipment : 4291/ Measuring frequency : Spec 5. Inductance LA Type	Refer to individual specification dance analyzer (HP4191A) or its equivalent ified frequency 4 (HP) or its equivalent ified frequency				
FBA/FBR FL05□ Type FL06BT Type [Test Method and Remarks] FB : Measuring equipment : Imper	Refer to individual specification dance analyzer (HP4191A) or its equivalent ified frequency 4 (HP) or its equivalent				
FBA/FBR FL05□ Type FL06BT Type [Test Method and Remarks] FB : Measuring equipment : Imperiment Measuring frequency : Spec FL06BT : Measuring equipment : 4291 Measuring frequency : Spec 5. Inductance LA Type CAL45 Type	Refer to individual specification dance analyzer (HP4191A) or its equivalent ified frequency 4 (HP) or its equivalent ified frequency				
FBA/FBR FL05□ Type FL06BT Type [Test Method and Remarks] FB : Measuring equipment : Imperior Measuring frequency : Specton S	Refer to individual specification dance analyzer (HP4191A) or its equivalent ified frequency A (HP) or its equivalent ified frequency Within the specified tolerance				
FBA/FBR FL05□ Type FL06BT Type [Test Method and Remarks] FB : Measuring equipment : Impe Measuring frequency : Spec FL06BT : Measuring equipment : 4291/ Measuring frequency : Spec 5. Inductance LA Type CAL45 Type LHL□□□ FBA/FBR FL05□ Type	Refer to individual specification dance analyzer (HP4191A) or its equivalent ified frequency 4 (HP) or its equivalent ified frequency				
FBA/FBR FL05□ Type FL06BT Type [Test Method and Remarks] FB : Measuring equipment : Imperior Measuring frequency : Specton S	Refer to individual specification dance analyzer (HP4191A) or its equivalent ified frequency A (HP) or its equivalent ified frequency Within the specified tolerance				
FBA/FBR FL05 Type FL06BT Type [Test Method and Remarks] FB : Measuring equipment : Imper Measuring frequency : Spec FL06BT : Measuring equipment : 4291/ Measuring frequency : Spec 5. Inductance LA Type CAL45 Type LHL	Refer to individual specification dance analyzer (HP4191A) or its equivalent ified frequency A (HP) or its equivalent ified frequency Within the specified tolerance				
FBA/FBR FL05 Type FL06BT Type [Test Method and Remarks] FB : Measuring equipment : Imper Measuring frequency : Spec FL06BT : Measuring equipment : 4291/ Measuring frequency : Spec 5. Inductance LA Type CAL45 Type LHL	Refer to individual specification dance analyzer (HP4191A) or its equivalent ified frequency A (HP) or its equivalent ified frequency Within the specified tolerance				
FBA/FBR FL05 Type FL06BT Type [Test Method and Remarks] FB : Measuring equipment : Impe Measuring frequency : Spec FL06BT : Measuring equipment : 4291/ Measuring frequency : Spec 5. Inductance LA Type CAL45 Type LHL TBA/FBR FL05 Type FL06BT Type [Test Method and Remarks] LA, CA : Measuring equipment : LC Measuring frequency : S	Refer to individual specification dance analyzer (HP4191A) or its equivalent ified frequency A (HP) or its equivalent ified frequency Within the specified tolerance Within the specified tolerance CR meter (HP4285A + HP42851A or its equivalent) pecified frequency				
FBA/FBR FL05 Type FL06BT Type [Test Method and Remarks] FB : Measuring equipment : Impe Measuring frequency : Spec FL06BT : Measuring equipment : 4291 Measuring frequency : Spec 5. Inductance LA Type CAL45 Type LHL	Refer to individual specification dance analyzer (HP4191A) or its equivalent ified frequency A (HP) or its equivalent ified frequency Within the specified tolerance Within the specified tolerance CR meter (HP4285A + HP42851A or its equivalent) pecified frequency CR meter (HP4285A+HP42851A or its equivalent)				
FBA/FBR FL05□ Type FL06BT Type [Test Method and Remarks] FB : Measuring equipment : Imper Measuring frequency : Spec FL06BT : Measuring equipment : 4291/ Measuring frequency : Spec 5. Inductance LA Type CAL45 Type LHL□□□ FBA/FBR FL05□ Type [Test Method and Remarks] LA, CA : Measuring equipment : LC Measuring frequency : S LHL□□□ : Measuring equipment : LC LL	Refer to individual specification dance analyzer (HP4191A) or its equivalent ified frequency A (HP) or its equivalent ified frequency Within the specified tolerance Within the specified tolerance CR meter (HP4285A + HP42851A or its equivalent) pecified frequency CR meter (HP4285A+HP42851A or its equivalent) CR meter (HP4285A) or its equivalent (at 1kHz)				
FBA/FBR FL05 Type FL06BT Type [Test Method and Remarks] FB : Measuring equipment : Impe Measuring frequency : Spec FL06BT : Measuring equipment : 4291/ Measuring frequency : Spec 5. Inductance LA Type CAL45 Type LHL	Refer to individual specification dance analyzer (HP4191A) or its equivalent ified frequency A (HP) or its equivalent ified frequency Within the specified tolerance Within the specified tolerance CR meter (HP4285A + HP42851A or its equivalent) pecified frequency cR meter (HP4285A+HP42851A or its equivalent) CR meter (HP4263A) or its equivalent (At 1kHz) pecified frequency				
FBA/FBR FL05 Type FL06BT Type [Test Method and Remarks] FB : Measuring equipment : Impe Measuring frequency : Spec FL06BT : Measuring equipment : 4291 Measuring frequency : Spec 5. Inductance LA Type CAL45 Type LHL FBA/FBR FL05 Type FL06BT Type [Test Method and Remarks] LA, CA : Measuring equipment : LC Measuring frequency : S LHL Measuring equipment : LC Measuring frequency : S LHL Measuring equipment : LC Measuring frequency : S LHC05R : Measuring equipment : LC Measuring frequency : S FL05R : Measuring equipment : H	Refer to individual specification dance analyzer (HP4191A) or its equivalent ified frequency A (HP) or its equivalent ified frequency Within the specified tolerance Within the specified tolerance CR meter (HP4285A + HP42851A or its equivalent) pecified frequency CR meter (HP4285A) or its equivalent (at 1kHz) pecified frequency P4262A or its equivalent				
FBA/FBR FL05 Type FL06BT Type [Test Method and Remarks] FB : Measuring equipment : Impe Measuring frequency : Spec FL06BT : Measuring equipment : 4291/ Measuring frequency : Spec 5. Inductance LA Type CAL45 Type LHL	Refer to individual specification dance analyzer (HP4191A) or its equivalent ified frequency A (HP) or its equivalent ified frequency Within the specified tolerance Within the specified tolerance CR meter (HP4285A + HP42851A or its equivalent) pecified frequency CR meter (HP4285A) or its equivalent (at 1kHz) pecified frequency P4262A or its equivalent				
FBA/FBR FL05□ Type FL06BT Type [Test Method and Remarks] FB : Measuring equipment : Impe Measuring frequency : Spec FL06BT : Measuring equipment : 4291/ Measuring frequency : Spec 5. Inductance LA Type CAL45 Type LHL□□□ FBA/FBR FL05□ Type FL06BT Type [Test Method and Remarks] LA, CA : Measuring equipment : L4 Measuring frequency : S LHL□□□ : Measuring equipment : L4 Measuring frequency : S FL05R□ : Measuring equipment : H Measuring frequency : S Measuring frequency : S HL05R□ : Measuring equipment : H Measuring frequency : S	Refer to individual specification dance analyzer (HP4191A) or its equivalent ified frequency A (HP) or its equivalent ified frequency Within the specified tolerance Within the specified tolerance CR meter (HP4285A + HP42851A or its equivalent) pecified frequency CR meter (HP4285A) or its equivalent (at 1kHz) pecified frequency P4262A or its equivalent				
FBA/FBR FL05□ Type FL06BT Type [Test Method and Remarks] FB : Measuring equipment : Impe Measuring frequency : Spec FL06BT : Measuring equipment : 4291/ Measuring frequency : Spec 5. Inductance LA Type CAL45 Type LHL□□□ FBA/FBR FL05□ Type FL06BT Type [Test Method and Remarks] LA, CA : Measuring equipment : L6 Measuring frequency : S LHL□□□ : Measuring equipment : L6 Measuring frequency : S FL05R□ : Measuring equipment : L6 Measuring frequency : S FL05R□ : Measuring equipment : H Measuring frequency : 14 6. Q	Refer to individual specification dance analyzer (HP4191A) or its equivalent ified frequency A (HP) or its equivalent ified frequency Within the specified tolerance Within the specified tolerance CR meter (HP4285A + HP42851A or its equivalent) pecified frequency CR meter (HP4285A+HP42851A or its equivalent) cR meter (HP4263A) or its equivalent (at 1kHz) pecified frequency P4262A or its equivalent its				
FBA/FBR FL05 Type FL06BT Type [Test Method and Remarks] FB : Measuring equipment : Impe Measuring frequency : Spec FL06BT : Measuring equipment : 4291/ Measuring frequency : Spec 5. Inductance LA Type CAL45 Type LHL	Refer to individual specification dance analyzer (HP4191A) or its equivalent ified frequency A (HP) or its equivalent ified frequency Within the specified tolerance Within the specified tolerance CR meter (HP4285A + HP42851A or its equivalent) pecified frequency CR meter (HP4285A) or its equivalent (at 1kHz) pecified frequency P4262A or its equivalent				
FBA/FBR FL05 Type FL06BT Type [Test Method and Remarks] FB : Measuring equipment : Impe Measuring frequency : Spec FL06BT : Measuring equipment : 4291 Measuring frequency : Spec 5. Inductance LA Type CAL45 Type LHL FBA/FBR FL05 Type FL06BT Type [Test Method and Remarks] LA, CA : Measuring equipment : LC Measuring frequency : S LHL Measuring frequency : S LHL Measuring frequency : S FL05R : Measuring equipment : LC Measuring frequency : S FL05R : Measuring equipment : H Measuring frequency : 14 G. Q LA Type CAL45 Type	Refer to individual specification dance analyzer (HP4191A) or its equivalent ified frequency A (HP) or its equivalent ified frequency Within the specified tolerance Within the specified tolerance CR meter (HP4285A + HP42851A or its equivalent) pecified frequency CR meter (HP4285A+HP42851A or its equivalent) cR meter (HP4263A) or its equivalent (at 1kHz) pecified frequency P4262A or its equivalent its				
FBA/FBR FL05 Type FL06BT Type [Test Method and Remarks] FB : Measuring equipment : Impe Measuring frequency : Spec FL06BT : Measuring equipment : 4291/ Measuring frequency : Spec 5. Inductance LA Type CAL45 Type LHL	Refer to individual specification dance analyzer (HP4191A) or its equivalent ified frequency A (HP) or its equivalent ified frequency Within the specified tolerance Within the specified tolerance CR meter (HP4285A + HP42851A or its equivalent) pecified frequency CR meter (HP4285A+HP42851A or its equivalent) cR meter (HP4263A) or its equivalent (at 1kHz) pecified frequency P4262A or its equivalent its				
FBA/FBR FL05 Type FL06BT Type [Test Method and Remarks] FB : Measuring equipment : Impe Measuring frequency : Spec FL06BT : Measuring equipment : 4291 Measuring frequency : Spec 5. Inductance LA Type CAL45 Type LHL FBA/FBR FL05 Type FL06BT Type [Test Method and Remarks] LA, CA : Measuring equipment : LC Measuring frequency : S LHL Measuring frequency : S LHL Measuring frequency : S FL05R : Measuring equipment : LC Measuring frequency : S FL05R : Measuring equipment : H Measuring frequency : 14 G. Q LA Type CAL45 Type	Refer to individual specification dance analyzer (HP4191A) or its equivalent ified frequency A (HP) or its equivalent ified frequency Within the specified tolerance Within the specified tolerance CR meter (HP4285A + HP42851A or its equivalent) pecified frequency CR meter (HP4285A+HP42851A or its equivalent) cR meter (HP4263A) or its equivalent (at 1kHz) pecified frequency P4262A or its equivalent its				
FBA/FBR FL05 Type FL06BT Type [Test Method and Remarks] FB : Measuring equipment : Imperiments in Measuring frequency : Spec FL06BT : Measuring equipment : 4291/ Measuring frequency : Spec S. Inductance LA Type CAL45 Type LHL Type LHL Type [Test Method and Remarks] LA, CA : Measuring equipment : LA Measuring frequency : Spec Section	Refer to individual specification dance analyzer (HP4191A) or its equivalent ified frequency A (HP) or its equivalent ified frequency Within the specified tolerance Within the specified tolerance CR meter (HP4285A + HP42851A or its equivalent) pecified frequency CR meter (HP4285A+HP42851A or its equivalent) cR meter (HP4263A) or its equivalent (at 1kHz) pecified frequency P4262A or its equivalent its				
FBA/FBR FL05 Type FL06BT Type [Test Method and Remarks] FB : Measuring equipment : Imperiments in Measuring frequency : Spec FL06BT : Measuring equipment : 4291/ Measuring frequency : Spec Standard in Measuring fr	Refer to individual specification dance analyzer (HP4191A) or its equivalent ified frequency A (HP) or its equivalent ified frequency Within the specified tolerance Within the specified tolerance CR meter (HP4285A + HP42851A or its equivalent) pecified frequency CR meter (HP4285A+HP42851A or its equivalent) cR meter (HP4263A) or its equivalent (at 1kHz) pecified frequency P4262A or its equivalent its				
FBA/FBR FL05□ Type FL06BT Type [Test Method and Remarks] FB : Measuring equipment : Impe Measuring frequency : Spec FL06BT : Measuring equipment : 4291/ Measuring frequency : Spec 5. Inductance LA Type CAL45 Type LHL□□□ FBA/FBR FL05□ Type FL06BT Type [Test Method and Remarks] LA, CA : Measuring equipment : L4 Measuring frequency : S LHL□□□ : Measuring equipment : L4 Measuring frequency : S FL05R□ : Measuring equipment : L4 Measuring frequency : S FL05R□ : Measuring equipment : H Measuring frequency : S FL05R□ : Measuring equipment : H Measuring frequency : S FL05R□ : Measuring equipment : H Measuring frequency : S FL05R□ : Measuring equipment : H Measuring frequency : S FL05R□ : Measuring equipment : H Measuring frequency : Tippe FL06BT Type FL06BT Type	Refer to individual specification dance analyzer (HP4191A) or its equivalent ified frequency A (HP) or its equivalent ified frequency Within the specified tolerance Within the specified tolerance CR meter (HP4285A + HP42851A or its equivalent) pecified frequency CR meter (HP4285A+HP42851A or its equivalent) cR meter (HP4263A) or its equivalent (at 1kHz) pecified frequency P4262A or its equivalent its				
FBA/FBR FL05 Type FL06BT Type [Test Method and Remarks] FB : Measuring equipment : Impe Measuring frequency : Spec FL06BT : Measuring equipment : 4291/ Measuring frequency : Spec 5. Inductance LA Type CAL45 Type LHL	Refer to individual specification dance analyzer (HP4191A) or its equivalent (filed frequency A (HP) or its equivalent (lifed frequency) Within the specified tolerance Within the specified tolerance CR meter (HP4285A + HP42851A or its equivalent) pecified frequency R meter (HP4285A) or its equivalent (at 1kHz) pecified frequency PR meter (HP4263A) or its equivalent (at 1kHz) pecified frequency P4262A or its equivalent (at 1kHz) Within the specified tolerance				
FBA/FBR FL05□ Type FL06BT Type [Test Method and Remarks] FB : Measuring equipment : Impe Measuring frequency : Spec FL06BT : Measuring equipment : 4291 Measuring frequency : Spec 5. Inductance LA Type CAL45 Type LHL□□□ FBA/FBR FL05□ Type FL06BT Type [Test Method and Remarks] LA, CA : Measuring equipment : LC Measuring frequency : S LHL□□□ : Measuring equipment : LC Measuring frequency : S FL05R□ : Measuring equipment : LC Measuring frequency : S FL05R□ : Measuring equipment : H Measuring frequency : 1H 6. Q LA Type CAL45 Type LH□□□ FBA/FBR FL05□ Type FL06BT HQ FL07BT	Refer to individual specification dance analyzer (HP4191A) or its equivalent (fided frequency (A (HP) or its equivalent (Iffed frequency)) Within the specified tolerance Within the specified tolerance CR meter (HP4285A + HP42851A or its equivalent) pecified frequency R meter (HP4285A + HP42851A or its equivalent) CR meter (HP4263A) or its equivalent (at 1kHz) pecified frequency Pace (HP4285A or its equivalent (A (HZ)) Within the specified tolerance Within the specified tolerance				
FBA/FBR FL05□ Type FL06BT Type [Test Method and Remarks] FB : Measuring equipment : Imperiment in Measuring frequency : Spector Measuring frequency : Measuring frequency : Spector Measuring frequency : Measuring frequency : Measuring frequency : Measuring frequency : Spector Measuring frequency : Measuring frequency : Measuring frequency : Measuring frequency : Spector Measuring frequency : Sp	Refer to individual specification dance analyzer (HP4191A) or its equivalent (lifed frequency A (HP) or its equivalent (lifed frequency A (HP4285A + HP42851A or its equivalent) (lifed frequency A (HP4285A + HP42851A or its equivalent) (lifed frequency A (HP4285A) or its equivalent (lifed frequency A (HP4285A) or its equivalent) (lifed frequency A				
FBA/FBR FL05□ Type FL06BT Type [Test Method and Remarks] FB : Measuring equipment : Imperiment in Measuring frequency : Spector Measuring frequency : Measuring frequency : Spector Measuring frequency : Measuring frequency : Measuring frequency : Measuring frequency : Spector Measuring frequency : Measuring frequency : Measuring frequency : Measuring frequency : Spector Measuring frequency : Sp	Refer to individual specification dance analyzer (HP4191A) or its equivalent (fided frequency (A (HP) or its equivalent (Iffed frequency)) Within the specified tolerance Within the specified tolerance CR meter (HP4285A + HP42851A or its equivalent) pecified frequency R meter (HP4285A + HP42851A or its equivalent) CR meter (HP4263A) or its equivalent (at 1kHz) pecified frequency Pace (HP4285A or its equivalent (A (HZ)) Within the specified tolerance Within the specified tolerance				

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RELIABILITY DATA					
7. DC Resisitance					
LA Type	T				
CAL45 Type	1				
LHL					
FBA/FBR	Within the specified tolerance				
FL05 Type	-				
FL06BT Type	-				
[Test Method and Remarks]	1				
	hmmeter (A&D AD5812 or its equivalent)				
LHL : Measuring equipm	ient: DC ohmmeter				
8. Self resonance frequency					
LA Type	Within the specified tolerance				
CAL45 Type	Within the specified tolerance				
LHL					
FBA/FBR					
FL05 Type					
FL06BT Type					
Test Method and Remarks	1				
LA: Measuring equipment: Network a	ınalyzer (Anritsu MS620J or its equivalent)				
LHL□□□ (except LHLP): Measuring e	equipment : (HP4191A, 4192A) its equivalent				
9. Temperature characteristic					
LA Type	△L/L: Within ±5%				
CAL45 Type	EDE. Within 2070				
LHL	△L/L: Within ±7% (except LHLP16: Within ±20%)				
FBA/FBR					
FL05□ Type					
FL06BT Type					
Test Method and Remarks					
LA: Change of maximum inductance of	eviation in step 1 to 5				
Step Ter	mperature (°C)				
1	20				
2 —25 (Minimur	n operating temperature)				
3 20 (Star	lard temperature)				
4 +85 (Maximui	n operating temperature)				
5	20				
	described in the standard of the				
LHL□□□ : Change of maximum inductance deviation in step 1 to 5 Temperature at step 1 : 20°C					
	linimum operating temperature				
	°C (Standard temperature)				
Temperature at step 4 : N Temperature at step 5 : 2	laximum operating temperature				
Tomporature at stop 0 : 2	70				
10. Tensile strength test					
LA Type					
CAL45 Type	No abnormality such as cut lead, or looseness.				
LHL 🗆 🗆 🗆					
FBA/FBR	No abnormality such as cut lead, or looseness.				
FL05 Type	No abnormality such as cut lead, or looseness.				
FL06BT Type					
<pre>[Test Method and Remarks] LA : Apply the stated tensile fo.</pre>	rce progressively in the direction to draw terminal.				
	uration (s)				
25	5				
CA : Apply the stated tensile for	rce progressively in the direction to draw terminal.				
	uration (s)				
10	10				
LHL□□□ : Apply the stated tensile for	rce progressively in the direction to draw terminal.				
Nominal wire diameter	tensile ϕ d (mm) force (N) duration (s)				
0.3<φd≦	0.5 5				
0.5<φd≦	0.8 10 30±5				
0.8<φd≦	1.2 25				
FDA/FDD . The heady of a common to	abell he fined and a topole face of 00±4N shall be applied to the lead using in the oxide direction of the company during 10±4 according				
	shall be fixed and a tensile force of 20±1N shall be applied to the lead wire in the axial diretion of the component during 10±1 seconds. In the direction to draw terminal, and gradually apply the tensile force of 4.9N.				
11. Over current					
LA Type	No emission of emplo pe firing				
CAL45 Type	No emission of smoke no firing.				
LHL	There shall be no scorch or short of wire.				
	LHLC08,LHLC10: There shall be no firing.				
FBA/FBR					
FL05D Type					
FL06BT Type	I.				
[Test Method and Remarks] LHL \(\subseteq \subseteq \lambda \cdot \text{CAL45 Type} \): Measuring	current : Rated current×2				
Duration	: 5 min.				
Number o	f measuring : one time				

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12. Terminal strength: bending			
LA Type			
CAL45 Type	No absorbed the suite of suite and s		
LHL	No abnormality such as cut lead, or looseness.		
FBA/FBR			
FL05 Type			
FL06BT Type			

[Test Method and Remarks]
LA, CA: Suspend a weight of specified mass at the end of the terminals and incline the body through the angle of 90 degrees and return it to the 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: Two times.

	rannos or bondo i invo annos.	ramber of bende t two times.				
Nominal wire diameter tensile		Bending force	Mass reference weight			
	φd (mm)	(N)	(kg)			
	0.3<φd≦0.5	2.5	0.25			
	0.5<φd≦0.8	5	0.50			

LH·FB: Suspend a weight of specified mass at the end of the terminals and incline the body through the angle of 90 degrees and return it to the 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: Two times.

	rtamber er beriae i inte timeer				
Nominal wire diameter tensile ϕ d (mm)		Bending force (N)	Mass reference weight (kg)		
	0.3<φd≦0.5	2.5	0.25		
	0.5<φd≦0.8	5	0.5		
	0.8<φd≦1.2	10	1.0		

: Shall attain to specified force in 2 sec.

CAL45 : Applied force : 50N Duration

: Applied force : 50±3N

Speed

Duration

FBA

: 10 sec.

: 30±1 sec.

40.1.1.1					
13. Insulation resisitance: between the terminals and body					
LA Type					
CAL45 Type					
LHL	100MΩ min.				
FBA/FBR					
FL05□ Type					
FL06BT Type					
Test Method and Remarks] LHL□□□ : Applied voltage : 500 VDC Duration : 60 sec.	;				
14. Insulation resistance : between ter	minals and core				
LA Type					
CAL45 Type					
LHL					
FBA/FBR	1MΩ min. (Other than materail code MA)				
FL05 Type	TIMEZ THIII. (Other than material code with)				
FL06BT Type					
Test Method and Remarks FBA·FBR: Applied voltage: 100 VDC Duration: 60±5 sec					
15. Withstanding: between the termina	als and hody				
LA Type					
CAL45 Type					
LHL	No absorbed the cook of insulation demons				
FBA/FBR	No abnormality such as insulation damage				
FL05 Type					
FL06BT Type					
[Test Method and Remarks] LHL□□□: Accoding to JIS C5102. 7. 1. 3 (C) Metal global method Applied voltage: 500 VDC Duration: 60 sec.					
16. DC bias characteristic					
LA Type					
CAL45 Type	△L/L: Within −10%				
LHL					
FBA/FBR					
FL05 Type					
FL06BT Type					
Test Method and Remarks LA, CA: Measure inductance with appl	liation of rated current using LCR meter to compare it with the initial value.				
17. Body strength					
LA Type	L				
CAL45 Type	No abnormality as damage.				
LHL					
FBA/FBR	No abnormality such as cracks on body.				
FL05 Type	To account your as status on body.				
FL06BT Type					
	1				
[Test Method and Remarks] LA : Applied force : 30N Duration : 10 sec. Speed : Shall attain to	specified force in 2 sec.				

Press

1mm

Specimen

Pressing jig

1mm

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18 Resisitar	nce to vibration				
LA Type	noo to vibration	△L/L: Within ±5% Q: 30min			
CAL45 Type		△L/L: Within ±5%			
LHL		Appearance: No abnomality $\triangle L/L$: Within $\pm 5\%$ Q change: Within $\pm 30\%$ (LHLP: only $\triangle L/L$)			
FBA/FBR		Appearance : No abnomality Impedance change : Within ±20%			
FL05 Type		Appearance : No automaticy importance orange : Within ±2070			
FL06BT Type					
	d and Remarks				
LA, CA		2 hrs each in X, Y and Z directions total : 6hrs.			
		10 to 55 to 10Hz (1min.)			
		1.5mm			
		Soldering onto printed board. At least 1hr of recovery under the standard condition after the test, followed by the measurement within 2hrs.			
	riccovery	releast in or recovery under the standard condition after the test, followed by the measurement within 21115.			
LHLF		2 hrs each in X, Y and Z directions total: 6hrs.			
		10 to 55 to 10Hz (1min.)			
	Amplitude : 1.5mm (But don't exceed acceleration 196m/s ² (two power)) Mounting method : Soldering onto printed board.				
	Woulding method	Soldering Onto printed board.			
19. Resistan	nce to shock				
LA Type		No. of the Control of			
CAL45 Type		No significant abnormality in appearance			
LHL					
FBA/FBR					
FL05 Type					
FL06BT Type					
	d and Remarks]				
	: Drop test				
	material : concrete or vii	nyl tile			
Height					
Total ni	umber of drops: 10 time	5			
20. Solderab	oility				
LA Type	•				
CAL45 Type		At least 75% of terminal electrode is covered by new solder.			
LHL		At least 75% of terminal electrode is covered by new solder.			
FBA/FBR		At least 90% of terminal electrode is covered by new solder.			
FL05□ Type					
FL06BT Type	9	At least 75% of terminal electrode is covered by new solder.			
Test Method	d and Remarks]				
	Solder temperature : 23				
	Duration : 2:	£0.5 sec.			
тыпппп .	Solder temperature : 23	5+5°C			
		5.15 sec.			
		o to 1.5mm from bottom of case.			
		21.20			
	Solder temperature : 23 Duration : 35	0±5°C £1 sec.			
		1 sec. to 1.5mm from terminal root.			
FL05R□ : Solder temperature : 230±5°C					
		E.O. Sissec.			
	Immersion depth : Up	o to 2 to 2.5mm from terminal root.			
FL06BT :	Solder temperature : 23	0±5°C			
Duration : 3±1:					
	Immersion depth : Up	to 0.5 to 1.0mm from terminal root.			
21 Resisitar	nce to soldering heat				
LA Type	noo to condonnig node	No significant abnormality in appearance			
CAL45 Type		△L/L: Within ±5%			
LHL		No significant abnormality in appearance Inductance change: Within ±5% Q change: Within ±30%(LHLP: only △L/L)			
FBA/FBR		No significant abnormality in appearance Impedance change: Within ±20%			
FL05 Type		Refer to individual specification			
FL06BT Type		No significant abnormality in appearance			
	d and Remarks				
		CA) 270±5°C, (LA) 260±5°C			
		±0.5 sec. One time			
		nserted into substrate with t=1.6mm			
	Recovery : A	at least 1hr of recovery under the standard condition after the test, followed by the measurement within 2hrs.			
LHL	Solder bath method : S	older temperature : 260±5℃			
		Duration : 10±1 sec.			
	Manual and devices . C	Up to 1.5mm from the bottom of case.			
		colder temperature : $350\pm10^{\circ}$ C (At the tip of soldering iron) Duration : 5 ± 1 sec.			
	-	Up to 1.5mm from the bottom of case.			
		lo excessive pressing shall be applied to terminals.			
	Recovery : 4	to 24hrs of recovery under the standard condition after the test.			
FB :	Solder bath method · C	Condition 1 : Solder temperature : 260±5°C			
	as. sammonou . C	Duration : 10±1 sec.			
		Immersion depth : Up to 1.5mm from the terminal root.			
	C	Condition 2: Solder temperature: 350±5°C			
		Duration : 3±1 sec. Immersion depth : Up to 1.5mm from the terminal root.			
	Recovery : 3	hrs of recovery under the standard condition after the test.			
	•				
		60±5°C 10±1 sec. the terminal rect			
		Ip to 0.5 to 1.0mm from the terminal root. hrs of recovery under the standard condition after the test.			

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22. Resisitance to solvent			
LA Type	Diagona sucial the vitues and allowing of this nur		
CAL45 Type	Please avoid the ultrasonic cleaning of this product.		
LHL			
FBA/FBR	No significant abnormality in appearance	Impedance change: Within ±20%	
FL05 Type			
FL06BT Type			
T			

FL06BT Type

[Test Method and Remarks]
FB: Solvent temperature: 20~25°C
30±5 sec.

Solvent type : Acetone : 3hrs of recovery under the standard condition after the test. Recovery

23. Thermal shock			
LA Type	\triangle L/L: Within $\pm 10\%$ Q: 30min		
CAL45 Type	△L/L: Within ±10%		
LHL	Appearance: No abnormality	Inductance change: Within ±10%	Q change: Within ±30% (LHLP: only △L/L)
FBA/FBR	Appearance: No abnormality	Impedance change: Within ±20%	
FL05□ Type	Refer to individual specification		
FL06BT Type	Appearance: No abnormality	Impedance change: Within ±20%	

[Test Method and Remarks]

: Conditions for 1cycle

Step	Temperature (°C)	Duration (min.)
1	-25^{+0}_{-3}	30±3
2	Room temperature	Within 3
3	+85 ⁺² ₋₀	30±3
4	Room temperature	Within 3

Number of cycles: 5 cycles

Recovery: At least 1hr of recovery under the standard condition after the removal from test chamber, followed by the measurement within 2hrs.

LHL : Accoding to JIS C0025 Conditions for 1 cycle

Ste	ер	Temperature (°C)	Duration (min.)
1		Minimum operating temperature ⁺⁰ ₋₃	30±3
2	?	Room temperature	Within 3
3	}	Minimum operating temperature ⁺²	30±3
4		Room temperature	Within 3

Number of cycles : 10 cycles (LHL

: 5 cycles (FBA, FBR)
: 4 to 24hrs of recovery under the standard condition after the removal from the test chamber. (LHL Recovery

: 3hrs of recovery under the standard condition after the removal from the test chamber. (FBA, FBR)

FL : Accoding to JIS C0025 Conditions for 1 cycle

Step	Temperature (°C)	Duration (min.)
1	-25^{+0}_{-3}	30±3
2	Room temperature	Within 3
3	+85 ⁺² ₋₀	30±3
4	Room temperature	Within 3

Number of cycles: 10 cycles

: 1 to 2hrs of recovery under the standard condition after the removal from the test chamber.

24. Damp heat			
LA Type	\triangle L/L : Within \pm 10% Q : 30min		
CAL45 Type	△L/L: Within ±10%		
LHL			
FBA/FBR	Appearance : No abnormality	Impedance change: Within ±20%	
FL05□ Type			
FL06BT Type			

[Test Method and Remarks] LA, CA: Temperature: 40±2°C Humidity: 90~95%RH Duration

: At least 1hr of recovery under the standard removal from test chamber, followed by the measurement within 2hrs. Recovery

FB : Temperature : 60±2°C Humidity : 90~95%RH Duration 1000 hrs

Recovery : 1 to 2hrs of recovery under the standard condition after the removal from the test chamber.

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25 Loading	g under damp heat				
_A Type	ig under damp near	1/	L/L: Within ±10% Q:30min		
CAL45 Type	.0		△L/L: Within ±10%		
_HL□□□	· C			Industria about 1 Within ±100/	O shange : Within ±200/ (LULD : anh. (AL/L)
		P	ppearance: No abnormality	Imductance change: Within ±10%	Q change: Within ±30% (LHLP: only △L/L)
FBA/FBR					
FL05 Typ			Refer to individual specification		
FL06BT Typ		P	ppearance: No abnormality	Impedance change: Within ±20%	
LA, CA	Humidity : 9 Duration : 1 Applied current : Recovery : A	At least 1h	ent	removal from test chamber, followed by the	e measurement within 2hrs.
LHL[][][]	Humidity : 9 Duration : 1 Applied current : F		nrs ent	ndition after the removal from the test char	nber.
FL	Humidity : 9 Duration : 5 Applied current : F		−0) hrs ent	ndition after the removal from the test char	nber.
26. Loading	g at high temperature	re .			
LA Type			L/L: Within ±10% Q:30min		
CAL45 Type	e		∠L/L : Within ±10%		
LHL					
FBA/FBR					
FL05 Typ	ne .				
FL06BT Typ	pe lod and Remarks]				
	: Temperature : 8 Duration : 1	85±2°C 1000 hrs	ent		
LA, CA	: Temperature : 8 Duration : 1 Applied current : F	1000 hrs Rated curr		removal from test chamber, followed by the	e measurement within 2hrs.
LA, CA 27. Low ter	: Temperature : 8 Duration : 1 Applied current : F Recovery : A	1000 hrs Rated curr At least 1h		removal from test chamber, followed by the	e measurement within 2hrs.
27. Low ter	: Temperature : 8 Duration : 1 Applied current : F Recovery : A	1000 hrs Rated curre At least 1h	r of recovery under the standard	removal from test chamber, followed by the	e measurement within 2hrs.
27. Low ter LA Type CAL45 Type	: Temperature : 8 Duration : 1 Applied current : F Recovery : A	1000 hrs Rated current At least 1h	r of recovery under the standard LL/L: Within ±10% Q:30min LL/L: Within ±10%		
27. Low ter LA Type CAL45 Type	: Temperature : 8 Duration : 1 Applied current : F Recovery : A	1000 hrs Rated current At least 1h	r of recovery under the standard $\triangle L/L : Within \pm 10\% Q : 30min$	removal from test chamber, followed by the large state of the large s	e measurement within 2hrs. Q change: Within ±30% (LHLP: only △L/L)
27. Low ter LA Type CAL45 Type LHL	: Temperature : 8 Duration : 7 Applied current : F Recovery : //	1000 hrs Rated curr At least 1h	r of recovery under the standard \[\(\text{LL} \): Within \(\pm \text{10} \) \(\Q : 30\text{min} \) \[\text{L/L} : Within \(\pm \text{10} \) \(\text{L} \) \[\text{LP} \) within \(\pm \text{10} \) \[\text{LP} \]		
27. Low ter LA Type CAL45 Type LHL FBA/FBR FL05 Typ	: Temperature : 8 Duration : 1 Applied current : F Recovery : A Imperature life test	1000 hrs Rated curr At least 1h	LLL: Within ±10% Q:30min LLL: Within ±10% Q:30min LLL: Within ±10% q:ppearance: No abnormality	Inductance change : Within ±10%	
27. Low ter LA Type CAL45 Type CHL GAT Type CAL45 Type CAL45 Type FBA/FBR FLOS Typ FLOSBT Typ [Test Methol	: Temperature : 8 Duration : 1 Applied current : 6 Recovery : A Imperature life test Due De De De Dod and Remarks] : Temperature : -2 Duration : 100 Recovery : At	1000 hrs Rated curr At least 1hi At least 2 F A 25±2°C 00 hrs least 1hr o	ar of recovery under the standard LL/L: Within ±10% Q:30min LL/L: Within ±10% Appearance: No abnormality Refer to individual specification Appearance: No abnormality		Q change: Within ±30% (LHLP: only △L/L)
27. Low ter LA Type CAL45 Typpe CAL45 Typpe LHL	: Temperature : 8 Duration : 1 Applied current : F Recovery : A mperature life test de De De De Duration : 100 Recovery : At : Temperature : -4 Duration : 100 Recovery : 1 te	1000 hrs Rated curry At least 1hi 2 A F F A 25±2°C 00 hrs least 1hr o 40±3°C 00±24 hrs to 2hrs of re	r of recovery under the standard \[\(\L \) \) \] \[\L \] \[\L \) \] \[\L \] \[\L \) \] \[\L \]	Inductance change : Within ±10% Impedance change : Within ±20%	Q change : Within ±30% (LHLP: only △L/L) neasurement within 2hrs.
27. Low ter LA Type CAL45 Type CAL45 Type LHL CAL45 Type LHL CAL45 Type FBA/FBR FL05 Typ FL06BT Typ LTest Methol	: Temperature : 8 Duration : 1 Applied current : 6 Recovery : A Imperature life test Duration : 1 Duration : 1 Duration : 10 Recovery : 1 Temperature : -4 Duration : 100 Recovery : 1 Temperature : -4 Duration : 500	1000 hrs Rated curr At least 1hi 25±2°C 000 hrs least 1hr o 40±3°C 00±24 hrs to 2hrs of re 40±3°C 00(+12, -(0)(+12, -(0)	AL/L: Within ±10% Q:30min AL/L: Within ±10% Q:30min AL/L: Within ±10% Appearance: No abnormality Appea	Inductance change : Within ±10% Impedance change : Within ±20% moval from test chamber, followed by the r	Q change : Within ±30% (LHLP: only △L/L) neasurement within 2hrs.
27. Low ter LA Type CAL45 Type CAL45 Type LHL	: Temperature : 8 Duration : 1 Applied current : 6 Recovery : A Imperature life test Duration : 1 Duration : 1 Duration : 10 Recovery : 1 Temperature : -4 Duration : 100 Recovery : 1 Temperature : -4 Duration : 500	1000 hrs Rated curr At least 1hi 25±2°C 000 hrs least 1hr o 40±3°C 00±24 hrs to 2hrs of re 40±3°C 00(+12, -(0)(+12, -(0)	AL/L: Within ±10% Q:30min AL/L: Within ±10% Q:30min AL/L: Within ±10% Appearance: No abnormality Appea	Inductance change: Within ±10% Impedance change: Within ±20% moval from test chamber, followed by the relation after the removal from the test chamber.	Q change : Within ±30% (LHLP: only △L/L) neasurement within 2hrs.
27. Low ter 27. Low ter 27. Low ter 28. High te	: Temperature : 8 Duration : 1 Applied current : F Recovery : A mperature life test be pe lod and Remarks] : Temperature : -2 Duration : 100 Recovery : At : Temperature : -4 Duration : 100 Recovery : 1 te : Temperature : -4 Duration : 500 Recovery : 1 te	1000 hrs Rated curr At least 1hi 25±2°C 000 hrs least 1hr o 40±3°C 00±24 hrs to 2hrs of re 40±3°C 00(+12, -(0)(+12, -(0)	AL/L: Within ±10% Q:30min AL/L: Within ±10% Q:30min AL/L: Within ±10% Appearance: No abnormality Appea	Inductance change: Within ±10% Impedance change: Within ±20% moval from test chamber, followed by the relation after the removal from the test chamber.	Q change : Within ±30% (LHLP: only △L/L) neasurement within 2hrs.
27. Low ter 27. Low ter LA Type CAL45 Type CAL45 Type CAL45 Type CAL45 Type FBA/FBR FL05B Typ TC6B Typ TC6B Typ TC7B Typ TC8T Methol. A, CA	: Temperature : 8 Duration : 1 Applied current : 6 Recovery : / Imperature life test Duration : 1 Duration : 10 Recovery : At : Temperature : -4 Duration : 10 Recovery : 1 : Temperature : -4 Duration : 50 Recovery : 1 te : Temperature : -4 Duration : 50 Recovery : 1 te	1000 hrs Rated curr At least 1hi 25±2°C 000 hrs least 1hr o 40±3°C 00±24 hrs to 2hrs of re 40±3°C 00(+12, -(0)(+12, -(0)	AL/L: Within ±10% Q:30min AL/L: Within ±10% Q:30min AL/L: Within ±10% Appearance: No abnormality Appea	Inductance change: Within ±10% Impedance change: Within ±20% moval from test chamber, followed by the relation after the removal from the test chamber.	Q change : Within ±30% (LHLP: only △L/L) neasurement within 2hrs.
27. Low ter 27. Low ter LA Type CAL45 Type CAL45 Type CAL45 Type FBA/FBR FL050 Typ FL06BT Typ Test Methol. A, CA LHL 28. High te LA Type CAL45 Type CAL45 Type	: Temperature : 8 Duration : 1 Applied current : 6 Recovery : A mperature life test Duration : 1 Comperature life test Duration : 1 Comperature : -2 Duration : 1 Comperature : -4 Duration : 1 Comperature : -4 Duration : 5 Comperature : -4 Compe	1000 hrs Rated curr At least 1hi 25±2°C 00 hrs least 1hr o 40±3°C 00±24 hrs to 2hrs of re 40±3°C 00 trs (40±3°C 00 trs (40±3°C 00 trs (40±3°C	AL/L: Within ±10% Q:30min AL/L: Within ±10% Q:30min AL/L: Within ±10% Appearance: No abnormality Appea	Inductance change: Within ±10% Impedance change: Within ±20% moval from test chamber, followed by the relation after the removal from the test chamber, the removal from the test chamber.	Q change : Within ±30% (LHLP: only △L/L) neasurement within 2hrs. per.
27. Low ter LA Type CAL45 Type CAL45 Type LHL	: Temperature : 8 Duration : 1 Applied current : 6 Recovery : A mperature life test Duration : 1 Comperature life test Duration : 1 Comperature : -2 Duration : 1 Comperature : -4 Duration : 1 Comperature : -4 Duration : 5 Comperature : -4 Compe	1000 hrs Rated curr At least 1hi 25±2°C 00 hrs least 1hr o 40±3°C 00±24 hrs to 2hrs of re 40±3°C 00 trs (40±3°C 00 trs (40±3°C 00 trs (40±3°C	AL/L: Within ±10% Q:30min AL/L: Within ±10% Q:30min AL/L: Within ±10% Appearance: No abnormality Appea	Inductance change: Within ±10% Impedance change: Within ±20% moval from test chamber, followed by the relation after the removal from the test chamber.	Q change : Within ±30% (LHLP: only △L/L) neasurement within 2hrs.
27. Low ter LA Type CAL45 Type CAL45 Type LHL	: Temperature : 8 Duration : 1 Applied current : 6 Recovery : / Imperature life test Duration : 10 Recovery : At : Temperature : -4 Duration : 10 Recovery : 1 to : Temperature : -4 Duration : 500 Recovery : 1 to : Temperature : -4 Duration : 500 Recovery : 1 to : Temperature : -4 Duration : 500 Recovery : 1 to : Temperature ife test	1000 hrs Rated curr At least 1hi 2 A F F A 25±2°C 00 hrs least 1hr o 40±3°C 00±24 hrsr 00±24 hrsr 00 chrs of re 40±3°C 00 thrs 10 chrs of re	AL/L: Within ±10% Q:30min AL/L: Within ±10% Q:30min AL/L: Within ±10% Appearance: No abnormality	Inductance change: Within ±10% Impedance change: Within ±20% moval from test chamber, followed by the relation after the removal from the test chamber, the removal from the test chamber.	Q change : Within ±30% (LHLP: only △L/L) neasurement within 2hrs. per.
27. Low tel LA Type CAL45 Type CAL45 Type LHL	: Temperature : 8 Duration : 7 Applied current : F Recovery : A mperature life test be Duration : 10 Recovery : At : Temperature : -4 Duration : 10 Recovery : 1 to Temperature : -4 Duration : 10 Recovery : 1 to : Temperature : -4 Duration : 10 Recovery : 1 to mperature : -4 Duration : 50 Recovery : 1 to mperature life test dee	1000 hrs Rated curr At least 1hi 25±2°C 00 hrs least 1hr o 40±3°C 00±24 hrs of re 40±3°C 00 (±12, —(to 2 hrs of re	AL/L: Within ±10% Q:30min AL/L: Within ±10% Q:30min AL/L: Within ±10% Appearance: No abnormality	Inductance change: Within ±10% Impedance change: Within ±20% moval from test chamber, followed by the rition after the removal from the test chamber in the test chamber in the removal from the test chamber.	Q change : Within ±30% (LHLP: only △L/L) neasurement within 2hrs. per.
27. Low ter LA Type CAL45 Typi LHL	: Temperature : 8 Duration : 1 Applied current : F Recovery : A mperature life test be pe lod and Remarks] : Temperature : -2 Duration : 100 Recovery : At : Temperature : -4 Duration : 100 Recovery : 1 te : Temperature : -4 Duration : 500 Recovery : 1 te emperature life test be pe	1000 hrs Rated curr At least 1hi 25±2°C 00 hrs least 1hr o 40±3°C 00±24 hrs of re 40±3°C 00 (±12, —(to 2 hrs of re	AL/L: Within ±10% Q:30min AL/L: Within ±10% Q:30min AL/L: Within ±10% Appearance: No abnormality	Inductance change: Within ±10% Impedance change: Within ±20% moval from test chamber, followed by the relation after the removal from the test chamber, the removal from the test chamber.	Q change : Within ±30% (LHLP: only △L/L) neasurement within 2hrs. per.
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27. Low ter LA Type CAL45 Type CAL45 Type CAL45 Type FBA/FBR FL05 Typ FL06BT Tyg FBA/FBR FL05 Type FL05 Ty	: Temperature : 8 Duration : 1 Applied current : 6 Recovery : A mperature life test be pe lod and Remarks] : Temperature : -2 Duration : 100 Recovery : At : Temperature : -4 Duration : 100 Recovery : 1 to : Temperature : -4 Duration : 500 Recovery : 1 to : Temperature : -4 Duration : 500 Recovery : 1 to : Temperature : 105 Duration : 500 Recovery : 1 to : Temperature : 105 Duration : 100 Recovery : 1 to : Temperature : 105 Duration : 100 Recovery : 1 to : Temperature : 105 Duration : 100 Recovery : 1 to : Temperature : 105 Duration : 100 Recovery : 1 to : Temperature : 185 :	1000 hrs Rated curr At least 1hi	AL/L: Within ±10% Q:30min AL/L: Within ±10% Q:30min AL/L: Within ±10% Appearance: No abnormality	Inductance change: Within ±10% Impedance change: Within ±20% moval from test chamber, followed by the rition after the removal from the test chamber in the test chamber in the removal from the test chamber.	Q change : Within ±30% (LHLP: only △L/L) neasurement within 2hrs. per. Q change : Within ±30% (LHLP: only △L/L)

^{*} This catalog contains the typical specification only due to the limitation of space. When you consider the purchase of our products, please check our specification. For details of each product (characteristics graph, reliability information, precautions for use, and so on), see our Web site (http://www.ty-top.com/).

PRECAUTIONS

CAL Type, LH Type, FB Type, FL Type, LA Type

1. Circuit Design

Operating environment

Precautions

1. The products described in this specification are intended for use in general electronic equipment (office supply equipment, telecommunications systems, measuring equipment, and household equipment). They are not intended for use in mission-critical equipment or systems requiring special quality and high reliability (traffic systems, safety equipment, aerospace systems, nuclear control systems and medical equipment including life-support systems,) where product failure might result in loss of life, injury or damage. For such uses, contact TAIYO YUDEN Sales Department in advance

2. PCB Design

Precautions

◆Design 1. Please design insertion pitches as matching to that of leads of the component on PCBs.

Technical consider-

◆Design

1. When Inductors are mounted onto a PC board, hole dimensions on the board should match the lead pitch of the component, if not, it will cause breakage of the terminals or cracking of terminal roots covered with resin as excess stress travels through the terminal legs.

3. Considerations for automatic placement

Precautions

Adjustment of mounting machine

1. Excessive impact load should not be imposed on the products when mounting onto the PC boards. 2. Mounting and soldering conditions should be checked beforehand.

Technical considerations

◆Adjustment of mounting machine

1. When installing products, care should be taken not to apply distortion stress as it may deform the products.

4. Soldering

Precautions

◆Wave soldering
1. Please refer to the specifications in the catalog for a wave soldering.

2. Do not immerse the entire inductor in the flux during the soldering operation.

Lead free soldering

1. When using products with lead free soldering, we request to use them after confirming adhesion, temperature of resistance to soldering heat, soldering etc sufficiently

Recommended conditions for using a soldering iron:

•Put the soldering iron on the land-pattern. •Soldering iron's temperature - Below 350°C

· Duration - 3 seconds or less

•The soldering iron should not directly touch the inductor.

◆Reflow soldering

Technical considerations

1. As for reflow soldering, please contact our sales staff.

◆Lead free soldering 1. If products are used beyond the range of the recommended conditions, heat stresses may deform the products, and consequently degrade the reliability of the products.

5. Cleaning

Precautions

◆Cleaning conditions

CAL type, LH type, LA Type
 Please do not do cleaning by a supersonic wave

Technical Cleaning conditions

considerations

1. CAL type, LH type, LA Type

If washing by supersonic waves, supersonic waves may deform products

6. Handling

◆Handling

Keep the inductors away from all magnets and magnetic objects.

◆Mechanical considerations Precautions

 Please do not give the inductors any excessive mechanical shocks. 2. LH type

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

◆Packing

1. Please do not give the inductors any excessive mechanical shocks. In loading, please pay attention to handling indication mentioned in a packing box (a loading direction / number of maximum loading / fragile item). ◆Handling

Technical

1. There is a case that a characteristic varies with magnetic influence. Mechanical considerations

1. There is a case to be damaged by a mechanical shock.

considerations

2. LH type There is a case to be broken by a fall

◆Packing

1. There is a case that a lead wire could be deformed by a fall or an excessive shock

7. Storage conditions

◆Storage

1. To maintain the solderability of terminal electrodes and to keep the packing material in good condition, temperature and humidity in the storage area should be controlled.

Precautions

Recommended conditions Ambient temperature ~40°C

 Humidity Below 70% RH

The ambient temperature must be kept below 30°C. Even under ideal storage conditions, solderability of products electrodes may decrease as time passes. For this reason, inductors should be used within one year from the time of delivery In case of storage over 6 months, solderability shall be checked before actual usage

Technical considerations

Storage

1. Under a high temperature and humidity environment, problems such as reduced solderability caused by oxidation of terminal electrodes and deterioration of taping/packaging materials may take place

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Taiyo Yuden:

FL05RD100AT FL05RD100AZ FL05RD1R0E FL05RD1R0ET FL05RD1R0EZ FL05RD200A FL05RD200AT FL06BT04