Notice for TAIYO YUDEN products

Please read this notice before using the TAIYO YUDEN products.

REMINDERS

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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.

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TAIYO YUDEN

LEADED NORMAL MODE CHOKE COILS FOR DC AND SIGNAL LINES 🌄 🤅



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).

ORDERING CODE

APPLICATIONS

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

OPERATING TEMP.

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



EXTERNAL DIMENSIONS/MINIMUM QUANTITY

	Туре	(05RD)	(05R)	(06BT04)
	Fig.	9.0max (0.35max) (0.146max) (0.146max) (0.146max) (0.146max) (0.146max) (0.197-10.024) (0.197-10.024)	6.5max (0.256max) (0.118max)	15.2max (0.598max)
Minimum	Bulk	400	500	250
Quantity	Tape & Reel	2000	_	-
(pcs.)	Ammo	1500	_	_
		·		Linit : mm (inch)

IMPEDANCE-FREQUENCY CHARACTERISTICS



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



PART NUMBERS

Ordering code	EHS (Environmental Hazardous Substances)	Inductance [µH]	Impedance 〔Ω〕(typical)	DC Resistance 〔Ω〕(max)	Rated current (A) (max)
FL05RD 1R0E	RoHS	$1.0^{+1.0}_{-0.5}$	800 (at 400MHz)	0.08	0.5
FL05R 100A	RoHS	10 min	000 (at 0001411-)	0.05	
FL05RD 100A	RoHS	iu min.	900 (at 200MH2)	0.05	15
FL05R 200A-07	RoHS	20 min	2000 (at 100MH-)	0.09	1.5
FL05RD 200A	RoHS	20 min.		0.08	
FL06BT 04	RoHS	-	1000 (at 150MHz)	0.05	3.0

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



①Minimum Quantity

Turne	Minimum Quantity (pcs.)				
туре	Bulk	Tape & Reel	Ammo		
FL05R	500	-	-		
FL05RD	400	2000	1500		
FL06BT	250	-	-		

②Taping dimensions





Туре	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)
	W1	$9.0^{+0.75}_{-0.5}$ (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 $^{+0.024}_{-0.008}$)
	Wo	12.5 min. (0.492 min.)
	W2	3.0 min. (0.118 min.) **2
	l	0 max. (0 max.)
	Do	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 erro	r for 20 pitches sha	Il be within ±2mm. Unit : mm (inch)

*2 Pasting tape shall not exceed paste board.





Dimensions in parenthesis are measured value.

RELIABILITY DATA				
1. Operating temperature Range	1. Operating temperature Range			
LA Type				
CAL45 Type	25~+105°C			
FBA/FBR	-25~+85 C			
	-25~+105°C			
Test Method and Remarks				
LA·CA·FL : Including self-generated h	eat			
2. Storage temperature Bange				
LA Type				
CAL45 Type				
FBA/FBR				
FL05 Type				
FL06BT Type				
3. Rated current				
LA Туре				
CAL45 Type				
	 Within the specified tolerance			
FBA/FBR				
FL05 Type				
FL06BT Type				
[Test Method and Remarks]	aving inductance within 10% and temperature increase within 40°C (LA-20°C) by the application of DC bias			
LHL	wing inductance decrease within 10% (LHLC08, LHLC10: within 30%) and temperature increase within the following specified			
temperature by the applica	ation of DC bias.			
Reference temperature : 2				
FB : No disconnection or appea	arance abnormality by continuous current application for 30 min. Change after the application shall be within \pm 20% of the initial value.			
This is not guaranteed for	electrial characteristics during current application.			
FL : The maximum DC value ha	Iving temperature rise within specified value.			
4. Impedance				
LA Type				
CAL45 Type				
FBA/FBR	Within the specified tolerance			
FL05 Iype				
FL06B1 Type	Heter to individual specification			
[lest Method and Remarks] FB · Measuring equipment · Impe	dance analyzer (HP4191A) or its equivalent			
Measuring frequency : Spec	lifed frequency			
FL06BT : Measuring equipment : 4291	A (HP) or its equivalent			
Measuring frequency : Spec	med requency			
5. Inductance				
LA Type				
CAL45 Type	Within the specified tolerance			
FBA/FBR				
	Within the specified tolerance			
FLUGBT Type	I			
LA, CA : Measuring equipment : L	CR meter (HP4285A + HP42851A or its equivalent)			
Measuring frequency : S	pecified frequency			
LHL	CR meter (HP4285A+HP42851A or its equivalent)			
Measuring frequency : S	Sn liteter (nr +2004) Of its equivalent (at 1KH2) pecified frequency			
FL05R : Measuring equipment : HP4262A or its equivalent				
Measuring frequency : 1	(Hz			
6. Q				
LA Type	Within the specified tolerance			
CAL45 Type				
FBA/FBR				
FL05 Type				
FL06BT Type	<u> </u>			
[Test Method and Remarks]	ar (UD/295A + UD/2951A ar its aquivalant)			
Measuring frequency : Specified frequency				
LHL				
Measuring fr	LCR meter (HP4263A) or its equivalent (at 1kHz) requency Specified frequency			



7. DC Resis	itance							
LA Type								
CAL45 Type								
		Within the specif	Within the specified tolerance					
FBA/FBR								
FL05 Type	9							
FL06BT Type	е							
Test Metho	d and Rem	arks						
	asurina ea	linment · low (hmmeter (A&D AD	5812 or its equivalent)			
		easuring equip	nent · DC ohmmet	er	/			
		acaring equip.						
8 Self resor	nance frequ	ency						
	nance nequ	ency						
LA Type			within the specif	led tolerance				
CAL45 Type								
LHL								
FBA/FBB								
	<u></u>							
	*							
FL06BT Type	e							
Test Metho	d and Rem	arks						
LA : Measur	ring equipn	ent : Network	analyzer (Anritsu N	IS620J or its equivale	nt)			
LHL	except LHL	P): Measuring	equipment : (HP41	91A, 4192A) its equiva	alent			
9. Temperat	ture charac	teristic						
LA Type			\triangle L/L : Within ±	5%				
CAL45 Type			1					
			∧ / + \\/:+h-: '	70% (overst LUI Dia	Within ±2004			
				1 70 (except LHLP16 :	vvitnin ±20%)			
FBA/FBR								
FL05 Type	9							
FL06BT Type	е							
Test Metho	d and Rom	arks	1					
LA : Change	o of maxim	um inductanco	doviation in stop 1	to 5				
LA . Change	e or maxim	in inductance	deviation in step 1	10 5				
	Step	Te	mperature (°C)					
	1		20					
	-	OF (Minimu						
	2	-25 (IVIIIIIIII	m operating tempe	rature)				
	3	20 (Sta	ndard temperature)				
	4	+85 (Maximu	m operating tempe	erature)				
	5	· · ·	20					
LHL:	Change of Temperatu Temperatu Temperatu Temperatu Temperatu	maximum indu re at step 1 : 2 re at step 2 : 1 re at step 3 : 2 re at step 4 : 1 re at step 5 : 2	ctance deviation in 10°C Minimum operating 20°C (Standard tem Maximum operating 20°C	step 1 to 5 temperature perature) g temperature				
10. Tensile s	strength tes	t						
LA Type								
CAL45 Type			No abnormality s	such as cut lead, or lo	oseness.			
FBA/FBB			No abnormality s	such as out lead, or lo	osonoss			
			No abriormanty s		03611633.			
FL05 Iype	9		No abnormality s	such as cut lead, or lo	oseness.			
FL06BT Type	е							
Test Metho	d and Rem	arks						
LA :	Apply the	stated tensile for	orce progressively i	n the direction to drav	w terminal.			
	4.0.4-	(NI)	duration (a)					
	TORCE		Juration (S)					
	2	5	5					
CA :	Apply the	stated tensile fo	prce progressively i	n the direction to drav	w terminal.			
	force	e (N)	duration (s)					
	1	D	10					
	Apply the	stated topsile f	arce progressively	n the direction to draw	w terminal			
	Apply the		toppile t d (mm)	ferrer (N)	duration (-)			
	Nomina				uuration (s)			
		0.3<¢d≦	⊧0.5	5				
		0.5<¢d≦	0.8	10	30±5			
		0.8<ød≦	1.2	25				
	L							
FBA/FBR :			shall be fixed and	a tensile force of 20 \pm	1N shall be applied 1	to the lead wire in the axial diretion of the component during 10 ± 1 seconds.		
	The body of	of a component		to draw terminal.and	gradually apply the t	tensile force of 4 9N		
FLU5R_ :	The body Fix the body	bt a component by of a compon	ent in the direction					
FLU5R_ :	The body Fix the boo	bf a component dy of a compon	ent in the direction					
11 Over cui	The body of Fix the body	bf a component dy of a compon	ent in the direction					
11. Over cu	The body of Fix the boo	of a component	ent in the direction					
11. Over cur LA Type	The body of Fix the body of Fi	of a component	ent in the direction	moke no firing.				
11. Over cur LA Type CAL45 Type	The body o Fix the boo	of a component	ent in the direction	moke no firing.				
11. Over cur LA Type CAL45 Type	The body o Fix the boo	of a component	ent in the direction - No emission of s There shall be no	moke no firing. o scorch or short of wi	ire.			
11. Over cui LA Type CAL45 Type LHL	The body of Fix the boo	dy of a component	No emission of s There shall be no LHLC08,LHLC10	moke no firing. o scorch or short of wi	ire. firing.			
11. Over cur LA Type CAL45 Type LHL	The body of Fix the body rrent	dy of a component	No emission of s There shall be no LHLC08,LHLC10	moke no firing. o scorch or short of wi : There shall be no f	ire. firing.			
11. Over cur LA Type CAL45 Type LHL	The body of Fix the body rrent	dy of a componen	No emission of s There shall be no LHLC08,LHLC10	moke no firing. scorch or short of wi : There shall be no f	ire. firing.			
11. Over cui LA Type CAL45 Type LHL	The body of Fix the body rrent	dy of a component	No emission of s	moke no firing. 9 scorch or short of wi 1 There shall be no f	ire. firing.			
11. Over cui LA Type CAL45 Type LHL FBA/FBR FL05 Type FL06BT Type	The body of Fix the body of Fi	iy of a component	No emission of s	moke no firing. 9 scorch or short of wi 2 There shall be no f	ire. firing.			
11. Over cui LA Type CAL45 Type LHL FBA/FBR FL05 Type FL06BT Type [Test Metho	The body of Fix the body rrrent	arks]	No emission of s There shall be no LHLC08,LHLC10	moke no firing. o scorch or short of wi : There shall be no f	ire. firing.			
11. Over cut LA Type CAL45 Type LHL FBA/FBR FL05 Type FL06BT Type [Test Metho LHL //	The body of Fix the body of Fi	arks]	No emission of s There shall be no LHLC08,LHLC10	moke no firing. scorch or short of wi : There shall be no f : Rated current×2 : 5 min	ire. firing.			
11. Over cut LA Type CAL45 Type CAL45 Type LHL FBA/FBR FL05E Type FL06BT Type LHL LHL LHL	The body of Fix the body rrrent e e d and Rem. _A·CAL45 1	arks] ype: Measurin Duration Number	No emission of s There shall be no LHLC08,LHLC10 g current	moke no firing. scorch or short of wi : There shall be no f : Rated current×2 : 5 min. : one time	ire. firing.			



12. Terminal strength : bending		
LA Type	No abnormality such as cut lead, or looseness.	
CAL45 Type		
FBA/FBR		
FL05 Type		
LO6BT 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.				
Nominal wire diameter tensile	Bending force	Mass reference weight		
¢d (mm)	(N)	(kg)		
0.3<¢d≦0.5	2.5	0.25		
0.5<¢d≦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.				
Nominal wire diameter tensile	Bending force	Mass reference weight		
φd (mm)	(N)	(kg)		
0.3<¢d≦0.5	2.5	0.25		
0.5<¢d≦0.8	5	0.5		
0.8<ød≦1.2	10	1.0		

13. Insulation resisitance : between the	e terminals and body	
LA Type		
CAL45 Type		
	100MΩ min.	
FBA/FBR		
FL05 Type		
FL06BT Type		
[Test Method and Remarks]		
LHL		
Duration : 60 sec		

14. Insulation resistance : between terminals and core			
LA Type			
CAL45 Type			
FBA/FBR	1MΩ min. (Other than materail code MA)		
FL05 Type			
FL06BT Type			
[Test Method and Remarks] FBA·FBR : Applied voltage : 100 VDC Duration : 60±5 sec.			
15. Withstanding : between the termina	als and body		
LA Type			
CAL45 Type			
	No abnormality such as insulation damage		
FBA/FBR			
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			
	△L/L:Within —10%		

 CAL45 Type
 CAL45 Type

 LHL
 FBA/FBR

 FBA/FBR
 FL05E Type

 FL06BT Type
 FL06BT Type

 LA, CA : Measure inductance with application of rated current using LCR meter to compare it with the initial value.

17. Body strength LA Type No abnormality as damage. CAL45 Type LHL FBA/FBR No abnormality such as cracks on body. FL05 Type FL06BT Type [Test Method and Remarks] LA : Applied force : 30N Duration : 10 sec. : Shall attain to specified force in 2 sec. Speed Pressing jig Press ₩ CAL45 : Applied force : 50N Duration : 10 sec. Specimen Speed : Shall attain to specified force in 2 sec. FBA : Applied force : 50±3N 1mm 1mm Duration : 30±1 sec.



18. Resisita	ance to vibration				
LA Type		AL/L: Within ±5% Q:30min			
CAL45 Type					
		Appearance : No abnomality $\triangle L/L$: Within ±5% Q change : Within ±30% (LHLP : only $\triangle L/L$)			
FBA/FBR		Appearance : No abnomality Impedance change : Within ±20%			
FL05 Type	Э				
FL06BT Typ	e				
[Test Metho LA, CA	d and Remarks] : Directions : 2 Frequency range : Amplitude : Mounting method : 2 Poccurry	2 hrs each in X, Y and Z directions total : 6hrs. 10 to 55 to 10Hz (1min.) 1.5mm Soldering onto printed board. 4 locat the of recovery under the tandard condition after the test, followed by the measurement within 2hrs.			
LHL	Hecovery : At least 1hr of recovery under the standard condition after the test, followed by the measurement within 2hrs. HL				
	would ing method .	Joneonny onto printed board.			
19. Resista	nce to shock				
LA Type					
CAL45 Type)				
LHL					
FBA/FBR					
FL05 Type	Э				
FL06BT Typ	e				
Test Metho	od and Remarks				
LA, CA	: Drop test				
Impac	t material : concrete or vii	ıyl tile			
Height Total n	IIII Jumber of drops + 10 time	s			
20. Soldera	bility				
LA Type		At land 750/ of terminal electronic is a surged by many colder			
CAL45 Type)	At least 75% of terminal electrode is covered by new solder.			
		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	9				
FL 06BT Typ	e .	At least 75% of terminal electrode is covered by new solder.			
Test Metho	od and Bemarks				
LA, CA	Solder temperature : 23 Duration : 21	0±5℃ ±0.5 sec.			
	Soldor tomporaturo : 23	ε+ε ^γ Ο			
	Duration : 21	5_56			
	Immersion depth : Up	to 1.5mm from bottom of case.			
FB	: Solder temperature : 23 Duration : 31 Immersion depth : Up	0±5℃ ≤1 sec. > to 1.5mm from terminal root.			
FL05R	: Solder temperature : 23 Duration : 21 Immersion depth : Up	0±5℃ =0.5 sec. 5 to 2 to 2.5mm from terminal root.			
FL06B1	Solder temperature : 23				
	Immersion depth : Ur	1 sec.) to 0.5 to 1.0mm from terminal root			
21. Resisita	ance to soldering heat				
LA Type		No significant abnormality in appearance			
CAL45 Type)	△L/L : Within ±5%			
		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	Э	Refer to individual specification			
FL06BT Tvn	e	No significant abnormality in appearance Impedance change : Within ±20%			
Test Metho	d and Remarks				
LA, CA	Solder temperature : (Duration : 5	CA) 270±5℃, (LA) 260±5℃ .±0.5 sec. One time			
	Immersed conditions : In Recovery : A	serted into substrate with t=1.6mm t least 1hr of recovery under the standard condition after the test, followed by the measurement within 2hrs.			
	Solder bath method : S	older temperature : 260±5℃ Juration : 10±1 sec.			
	Manual soldering : S	bolder temperature : $350\pm10^{\circ}C$ (At the tip of soldering iron) Juration : 5 ± 1 sec.			
	Caution : N Recovery : 4	Up to 1.5mm from the bottom of case. Io excessive pressing shall be applied to terminals. I to 24hrs of recovery under the standard condition after the test.			
FB	Solder bath method : C	condition 1 : Solder temperature : 260±5°C			
	C	Immersion depth : Up to 1.5mm from the terminal root. Condition 2 : Solder temperature : 350±5°C			
		Duration 3±1 sec.			
	Recovery : 3	Immersion depth : Up to 1.5mm from the terminal root. hrs of recovery under the standard condition after the test.			
FL	: Solder condition : 2 Immersion depth : U Recovery : 3	60±5℃ 10±1 sec. Jp to 0.5 to 1.0mm from the terminal root. hrs of recovery under the standard condition after the test.			



22. Resisitance to solvent				
LA Type				
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				
Test Method and Remark	ks			
FB : Solvent temperature : 20~25°C				
Duration	: 30±5 sec.			
Solvent type	: Acetone			
Recovery	: 3hrs of reco	overy under the standard condition after the test.		

: 3hrs of recovery under the standard condition after the test.

23 Thermal shock

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

[Test Method and Remarks]

LA, CA : 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
hand an effected of Constant		

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 . +FB : Accoding to JIS C0025 Conditions for 1 cycle

Step	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		

Recovery

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

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

24. Damp heat	
LA Type	△L/L : Within ±10% Q : 30min
CAL45 Type	△L/L : Within ±10%
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 : 1000 hrs Recovery : At least 1hr of re	ecovery under the standard removal from test chamber, followed by the measurement within 2hrs.
FB : Temperature : 60±2°C Humidity : 90~95%RH Duration : 1000 hrs Recovery : 1 to 2hrs of recover	y under the standard condition after the removal from the test chamber.



	25. Loading under damp heat				
LA Type		△L/L : Within ±10% Q : 30min			
CAL45 Type	9	△L/L : Within ±10%			
		Appearance : No abnormality Imductance change : Within ±10% Q change : Within ±30% (LHLP : only △L/L)			
FBA/FBR					
		Refer to individual specification			
		Appearance : No abormality Impedance change : Within +20%			
Tost Moth	and Romarks	Appearance . No abnormality Impedance change . Within 22070			
LA, CA	E Temperature : 40 Humidity : 90 Duration : 10 Applied current : Ra Recovery : At	৮2°C ਅ95%RH 0 hrs ed current east 1hr of recovery under the standard removal from test chamber, followed by the measurement within 2hrs.			
LHL	: Temperature : 40 Humidity : 90 Duration : 10 Applied current : Ra Recovery : 1 t	±2°C ∽95%RH 0±24 hrs ed current ∙ 2hrs of recovery under the standard condition after the removal from the test chamber.			
FL	: Temperature : 60 Humidity : 90 Duration : 50 Applied current : Ra Recovery : 1 t	±3°C -95%RH I (+12, -0) hrs ed current I 2hrs of recovery under the standard condition after the removal from the test chamber.			
26. Loading	g at high temperature				
I A Type	5 5 1	△I / I · Within ±10% Q · 30min			
CAL 45 Type	2				
	, ,				
ERA/ERR					
	0				
FL05 Type					
FL06BT Typ	oe od and Remarks]				
FL06BT Typ [Test Metho LA, CA	be od and Remarks] : Temperature : 85 Duration : 10 Applied current : Ra Recovery : At	E2°C 0 hrs ed current east 1hr of recovery under the standard removal from test chamber, followed by the measurement within 2hrs.			
FL06BT Typ [Test Metho LA, CA 27. Low ter	be od and Remarks] : Temperature : 85 Duration : 10 Applied current : Ra Recovery : At mperature life test	E2°C 0 hrs ed current east 1hr of recovery under the standard removal from test chamber, followed by the measurement within 2hrs.			
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FL06BT Typ [Test Methol LA, CA 27. Low ter LA Type CAL45 Type	be od and Remarks] : Temperature : 85 Duration : 10 Applied current : Ra Recovery : At mperature life test	L2°C 0 hrs ed current east 1hr of recovery under the standard removal from test chamber, followed by the measurement within 2hrs.			
FL06BT Typ [Test Methol LA, CA 27. Low ter LA Type CAL45 Type LHL	be od and Remarks] : Temperature : 85 Duration : 10 Applied current : Ra Recovery : At mperature life test	L2°C 0 hrs ed current east 1hr of recovery under the standard removal from test chamber, followed by the measurement within 2hrs. △L/L : Within ±10% Q : 30min △L/L : Within ±10% △L/L : Within ±10% Appearance : No abnormality Inductance change : Within ±10% Q change : Within ±30% (LHLP : only △L/L)			
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 1 bin perature : 105±30

 Duration : 1000±24 hrs

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

 : Temperature : 85±3°C

 Duration : 500 (+12, -0) hrs

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

 FL



PRECAUTIONS

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

S. Circuit Beeger S. Circuit Beeger C. Circuit B		
Processor	1. Circuit De	sign
2. POB Design Protection P	Precautions	Operating environment 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.
Procession	2. PCB Desi	gn
Technical enclosed •••Eegin enclosed the market on manufact onto a PC band. Note diversel is a weeke stress travels through the terminal logs.	Precautions	 Design Please design insertion pitches as matching to that of leads of the component on PCBs.
3. Considerations for automatic plasment Precautions	Technical consider- ations	 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.
Adjustment of mounting machine Adjustment	3. Considera	ations for automatic placement
Adjustment of nounting machine consider above • Meet installing products, care should be taken not to apply distortion stress as it may deform the products. 4. Soldering • Wave coloring • Description • Descriptio	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.
Soldering Presetting P	Technical consider- ations	 Adjustment of mounting machine 1. When installing products, care should be taken not to apply distortion stress as it may deform the products.
	1 Soldoring	
- Put the soldering iron on the land-pattern - Put the soldering iron on the land-pattern - Soldering (ron should not directly souch the inductor Duration - 3 seconds or less - The soldering (ron should not directly souch the inductor Duration - 3 seconds or less - The soldering (ron should not directly souch the inductor Duration - 3 seconds or less - The soldering (ron should not directly souch the inductor Duration - 3 seconds or less - The soldering (ron should not directly souch the inductor Duration - 3 seconds or less - The soldering (ron should not directly souch the recommended conditions, heat stresses may deform the products, and consequently degrade the reliability of atoms - Soldering (ron should not directly souch the recommended conditions, heat stresses may deform the products, and consequently degrade the reliability of - atoms - Calk type. Lit type. La Type - Please do not do cleaning by a supersonic wave Preceautions - C. Alt. type. Lit type. La Type - Please do not do cleaning typ a supersonic waves may deform products B. Handling - Handling	Precautions	 Wave soldering Please refer to the specifications in the catalog for a wave soldering. Do not immerse the entire inductor in the flux during the soldering operation. Lead free soldering When using products with lead free soldering, we request to use them after confirming adhesion, temperature of resistance to soldering heat, soldering etc sufficiently.
Technical consider 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 Precaultors Cleaning conditions 6. Cleaning Cleaning conditions 1. CAL type, LH type, LA Type Please do not do cleaning by a supersonic wave. 7echnical ations Cleaning conditions 6. Handling If any type, LA Type, LH type, LA Type ations 6. Handling If washing by supersonic waves, supersonic waves may deform products. 7. Keep the inductors away from all magnets and magnetic objects. Mechanical consider- ins 9. Precautions 1. Nees the inductors any excessive mechanical shocks. 1. Please do not give the inductors any excessive mechanical shocks. 1. Hype acking by a mechanical shocks. 1. Please do not give the inductors any excessive mechanical shocks. 1. There is a case that a characteristic varies with magnetic influence. 9. Placking 1. There is a case to be downged by a mechanical shock. 1. There is a case to be downged by a mechanical shock. 1. There is a case to be before active swith magnetic influence. Mechanical considerations 1. There is a case to be deformed by a fall or an excessive shock. 7. Storage conditions 1. There is a case that a lead wire could be d		• 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 1. As for reflow soldering, please contact our sales staff.
5. Cleaning Precautions • Cleaning conditions • CAL type, LH type, LA type Please do not do cleaning by a supersonic wave. Technical consider- ations • Cleaning conditions consider- ations f. AL type, LH type, LA Type f. Altype, LH type, LA Type f. Handling . Reactions f. Inductors are dropped onto the floor or a hard surface they should not be used. Precautions f. Inductors are dropped onto the floor or a hard surface they should not be used. Precautions f. Inductors are dropped onto the floor or a hard surface they should not be used. Precautions	Technical consider- ations	 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.
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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. Recommended conditions • Ambient temperature 0~40°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 consider- ations • Storage • 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.	Technical consider- ations	 Handling There is a case that a characteristic varies with magnetic influence. Mechanical considerations There is a case to be damaged by a mechanical shock. H type There is a case to be broken by a fall. Packing There is a case that a lead wire could be deformed by a fall or an excessive shock.
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Technical consider 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.	Precautions	 ♦ 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. Recommended conditions Ambient temperature 0~40°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 be checked before actual usage
	Technical consider- ations	 Storage 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.

