

Reference Only

発行番号  
Issue No. S5-  
発行日  
Date of Issue  
発行区分  
Classification 初回 NEW

御中

納入仕様書

PRODUCT SPECIFICATION FOR INFORMATION

製品名称 POWER CHOKE COIL  
Product Description

製品品番 S 1 (F179F) Mn Core type  
Product Part Number

[ ETQ PAF\*\*\*\*\*FA type ]

仕様内容等の区分 個別仕様  
Classification of Spec Individual specification

適用（仕様機種等）  
Applications

上記以外の適用に際しては、事前に弊社担当者までご連絡ください。  
For other applications contact our person signed below

本仕様書の有効期限  
Term of Validity

Table with 2 columns: お得意様ご使用欄 (受領印欄) and CUSTOMER USE ONLY (Received Chop Column). The table body is empty.

松下電子部品株式会社  
LCRデバイスカンパニー コイルストラテジックビジネスユニット  
Matsushita Electronic Components Co., Ltd  
LCR Device Company  
Inductive Products Strategic Business Unit  
〒668-0298 兵庫県 出石郡出石町田多地1番地  
1, Tadachi, Izushi, Hyogo, 668-0298 Japan  
電話（代表） (0796)52-3181  
Tel (0796)52-3181(Representative)

Table with 3 columns: Manager, Supervisor, Engineer. Row 1: 発行部署名 Prepared by 但馬松下電器株式会社 Tajima Matsushita Electric Co.,Ltd. Row 2: Empty cells.

1. この製品の使用材料は、「化学物質の審査及び製造等の規制に関する法律」に基づき、すべて既存化学物質として記載されている材料です。

All the materials used in this product are registered material under the Law Concerning the Examination and Regulation of Manufacture, etc. of Chemical Substances.

2. 本製品は、モントリオール議定書で規制されているオゾン層破壊物質(ODC)を製造工程及び購入部品・材料で一切使用していません。

This product has not been manufactured with any ozone depleting chemical controlled under the Montreal Protocol.

3. この製品に使用している全ての材料には、臭素系特定難燃物質「PBBOs、PBBs」を含有していません。

All the materials used in this product contain no brominated materials of PBBOs or PBBs as the flame-retardant.

4. 納入仕様書の「有効期間」について  
有効期間は、特に、申し出のない限り(お客様の要望を含み)自動更新とします。  
その際、連絡書・仕様書は、発行致しません。

"The Term of Validity" of Product Specifications for Information  
Unless otherwise requested ( including from customer), the term of validity shall be renewed automatically.

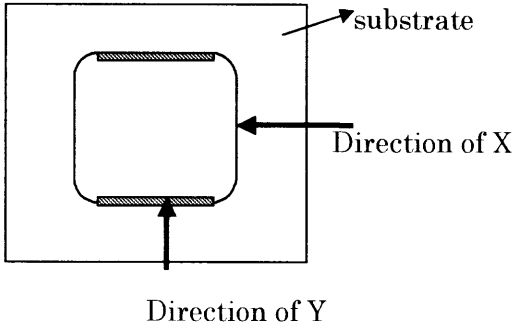
Then , informations and specifications shall be not issued.



# PRODUCT SPECIFICATION

Spec. No. (2 / 13)  
151-ETQPAF\*\*\*\*\*A-A

## 5. ENVIRONMENTAL CHARACTERISTIC

Items	Test conditions	Specification
1) Heat Resistance	120±2°C 96h	After the reliability tests, should meet the requirements of Insulation characteristic [item3.-1), 3.-2) ] and inductance should be within initial value ±5%  • Regarding the test for [item5.-5) ] no breakage of magnet shall occur.  • Regarding the test for [item 5.-4),5.-6),5.-7) ] no mechanical damage shall occur.
2) Cold Resistance	-40±2°C 96h	
3) Moisture Resist	60±2°C 95±3%RH 96h	
4) Thermal shock	-25±2°C 30min~room ambient 5min ~105±2°C 30min~room ambient 5min } 5 cycles	
5) Vibration	1.5mmMAX. total excursion 10~55~10Hz traversed in 1min. 2h in each of 3 mutually perpendicular	
6) Solder heat proof	(Preheating ) 160±10°C 60~120sec.→ (Retention time) 230°C or more. 35±5sec. and 260°C 5sec. MAX.	
7) Impact Resist.	980m/s <sup>2</sup> (100G) X Y Z Three directions.	
8) Electrode strength	The electrode of the sample coil is put up and solder is put up to the substrate. The static load of 4.9N(500gf) is added from two directions (X and Y) respectively for 10±2 seconds. * The substrate for the examination uses "Example of the pattern" of the attached paper.  	

**\* Non-washable notes**

Never wash the Power Choke Coil because liquid remaining on them may cause migration, erosion and irreparable damage.

R	Date	Ref. No.	Issued Date	Manager
	. . .		02.02.08 R-	M.Yoshihara
	. . .		Authorized Date	Supervisor
	. . .		02.02.08	K. Nakashima
	. . .			Engineer
	. . .			S.Shimomura

PRODUCT SPECIFICATION

Spec. No. (3 / 13)

151-ETQPAF\*\*\*\*\*A-A

[ATTACHED PAPER 1] ELECTRICAL CHARACTERISTICS

(1) HL type : High inductance / Low loss type

Parts name	Initial inductance at 25°C	Inductance at flat point at 25°C	Saturation current		Heat rating current ΔT=40K(°C) I <sub>o</sub> (A)	DC resistance at 20°C DCR (mΩ)
			at 25°C	at 100°C		
	L <sub>0</sub> (μH)	L <sub>1</sub> (μH)	I sat(A) min.	I sat(A) min.	Reference Only	max.
ETQPAF0R4H□□	1.4±30%	0.4±30%	37.0	30.2	27.2	0.65
ETQPAF1R2H□□	2.9±30%	1.2±30%	21.4	18.0	22.6	1.00
ETQPAF2R7H□□	4.6±30%	2.7±30%	15.5	12.5	17.5	1.56
ETQPAF4R8H□□	6.8±30%	4.8±30%	10.6	9.0	14.4	2.29
ETQPAF7R2H□□	9.7±30%	7.2±30%	8.6	7.3	12.0	3.31

(2) EX type : Big current type

Parts name	Initial inductance at 25°C	Inductance at flat point at 25°C	Saturation current		Heat rating current ΔT=40K(°C) I <sub>o</sub> (A)	DC resistance at 20°C DCR (mΩ)
			at 25°C	at 100°C		
	L <sub>0</sub> (μH)	L <sub>1</sub> (μH)	I sat(A) min.	I sat(A) min.	Reference Only	max.
ETQPAF0R7E□□	1.9±30%	0.7±30%	50.4	42.3	22.6	1.00
ETQPAF1R3E□□	2.9±25%	1.3±25%	36.7	30.0	17.5	1.56

(Note1) Measured frequency of inductance is 100kHz.

(Note2) Concerning the definition of L<sub>0</sub>&L<sub>1</sub>, please refer to "Attached paper 2"

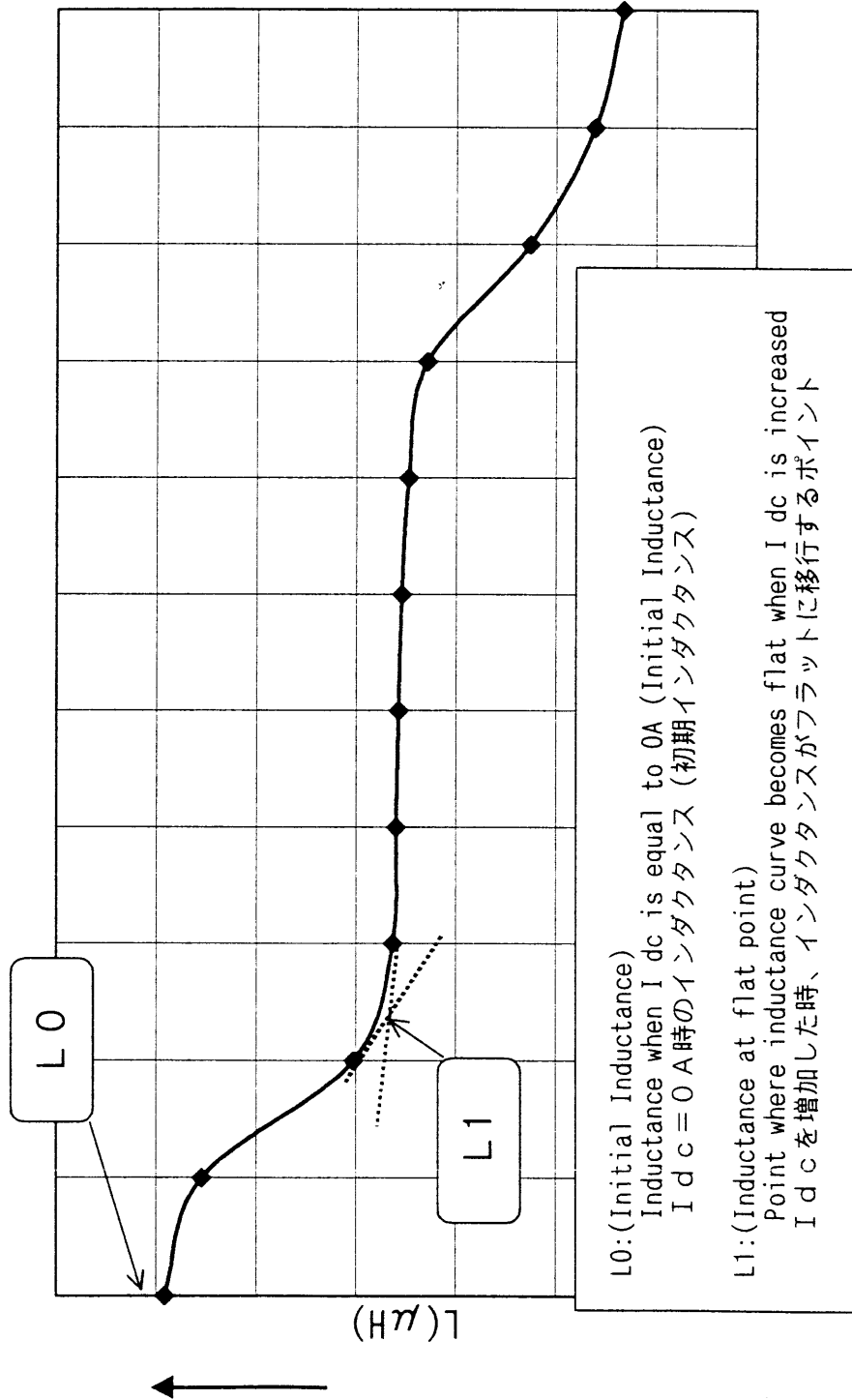
(Note3) Saturation current ( I sat ) is the current value that inductance (L<sub>1</sub>) decreases to 80% of initial value.

(Note4) Heat rating current ( I<sub>0</sub> ) is the actual value of the current at which the temperature rise of coil becomes 40K when DC current is flows.

Actually, to decide the heat rating, the temperature rise within the set shall be considered. Concerning the heat rating current ( I<sub>0</sub> ) when(Δ T) was decreased more, please contact to us.

R	Date	Ref. No.	Issued Date	Manager
	. . .		02.02.08 R-	M.Yoshihara
	. . .		Authorized Date	Supervisor
	. . .		02.02.08	K. Nakashima
	. . .			Engineer
	. . .			S.Shimomura

[ATTACHED PAPER2] L0, L1:Definition  
DC Bias Characteristic



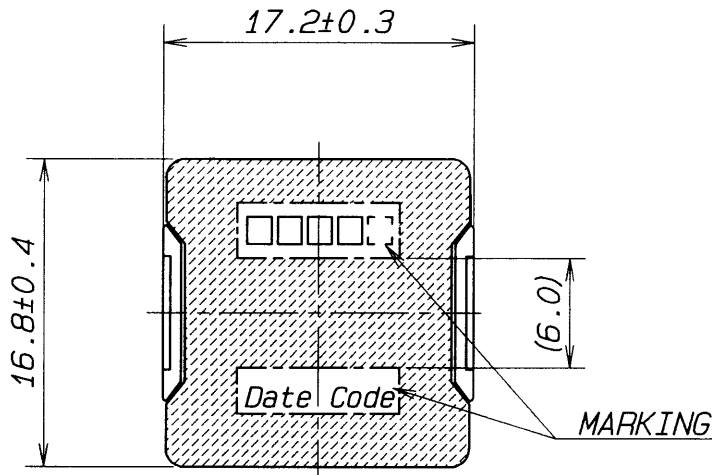
# SCHEMATIC DIAGRAM

Trigonometry

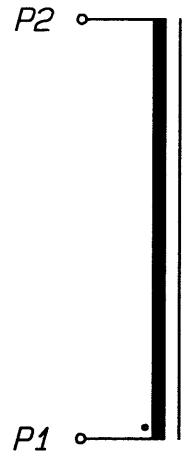
Unit: mm

R	Q'ty	Date	Ref.No.	R	Q'ty	Date	Ref.No.

(5/13)

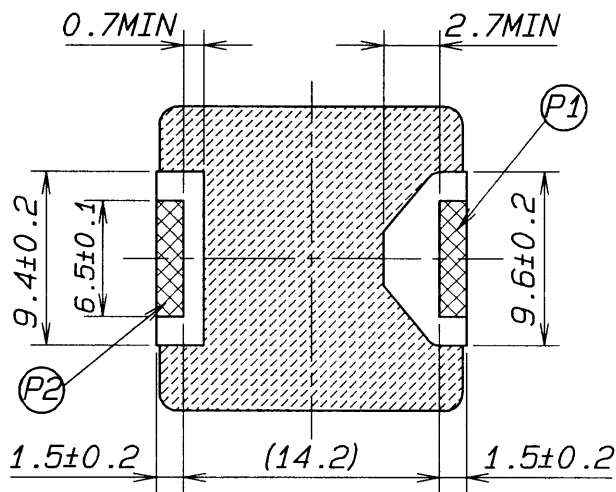
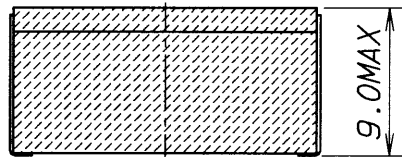


## CONNECTION

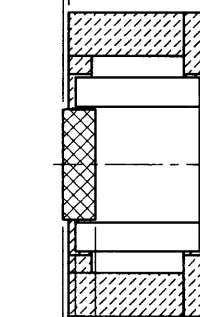


• : Polarity

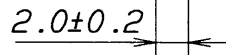
( ) : Reference value



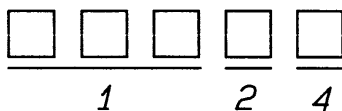
0.05MIN: Clearance between the Terminal face and the core face



0.3MIN: Clearance between the Terminal face and the mould resin

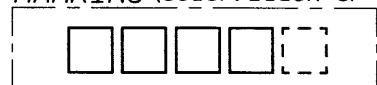


## Detail of MARKING



1	INDUCTANCE	Rated Inductance Code (Ex.) 8.2uH → 8R2 10.2uH → 102
2	TYPE	HL TYPE → H SP TYPE → S EX TYPE → E
4	SUFFIX	BLANK OR A, B, C, ...

MARKING (Color: Black or White)



Date Code

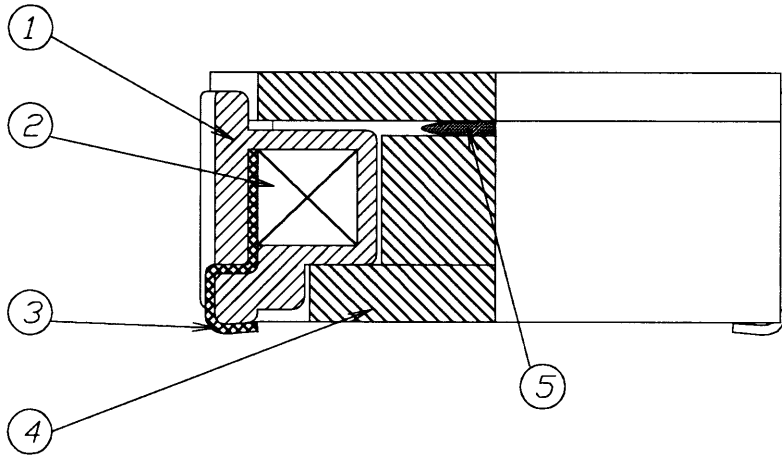
Spec. No.	151- } ETQPAF000000-G 111- }
Date	R- Manager : S.URABE
	Supervisor: K.NAKASHIMA
'99. 8. 3	Engineer: K.OMURA

# MATERIAL LIST

(6/13)

CUSTOMER'S NO. : \_\_\_\_\_

OUR PART NO. : ETQPAF\*\*\*\*\*A



No	PART NAME	MATERIAL
1	MOULD RESIN	POLYPHTHALAMIDE(PPA) POLYPHENYLENE SULFIDE(PPS)
2	COIL	MODIFIED EPOXY ACRYLIC ENAMELED RECTANGULAR CUPPER WIRE
3	TERMINAL	COPPER PLATE (SOLDER COATED : LEAD FREE)
4	CORE	FERRITE
5	ADHESIVE	EPOXY

R	Q'ty	Date	Ref.No.	R	Q'ty	Date	Ref.No.

Spec.No.	151- 111- } ETQPAF*****A-G
Date	R- '02 02 08
Manager :	M.YOSHIHARA
Supervisor:	K.NAKASHIMA
Engineer:	K.DMURA



**6. Packing specifications**

**1. Taping**

- 1) The commissure of the carrier tape and seal tape should not be appeared.  
However, in order to prevent from the missing, the products are occasionally re-sealed due to replace them.
- 2) The carrier tape cracks if the product is bent under 50mm or less in the radius.  
The seal tape might peel off.  
Please avoid using under 50mm or less in the radius.

**2. Packing**

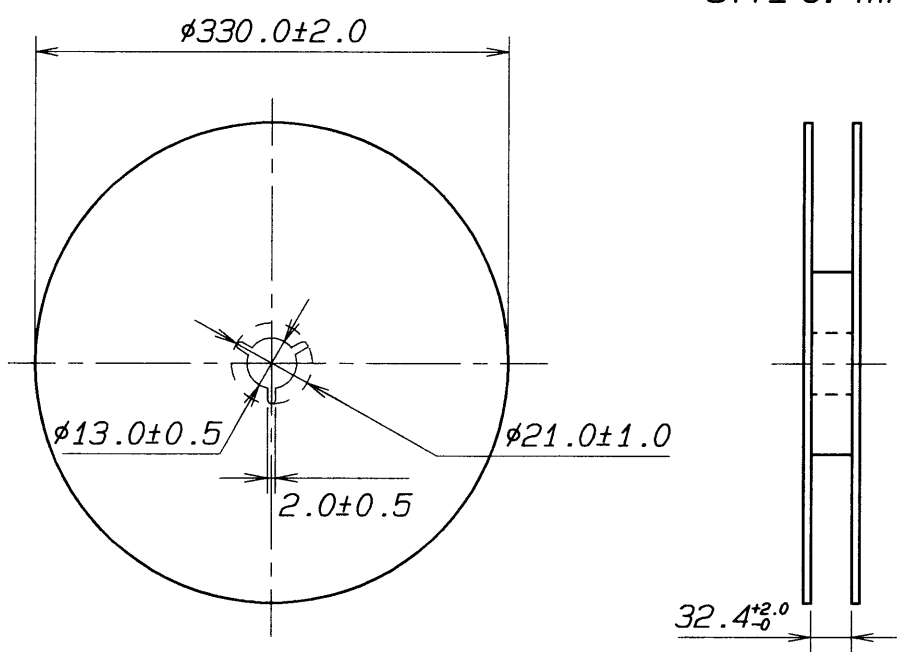
- 1) 1 reel ; 250 pieces. / 1pc ; 500 pieces.(inner)  
There shall not be empty pockets more than two, and those pockets are not consecutive.
- 2) The case must not be opposite direction, back side, or defective goods.
- 3) Insert method to carrier tape.  
Both terminals should be directed at rite angles against the tape, and insert from top side.
- 4) Method of winding up the reel.  
Guide hole should be located on right side, if the reel is pulled forward.
- 5) Marking  
Amount, lot No, and the manufacturer name are appeared on the wrapping.

R	Date	Ref. No.	Issued Date	Manager
	. . .		02.02.08 R-	M.Yoshihara
	. . .		Authorized Date	Supervisor
	. . .		02.02.08	K. Nakashima
	. . .			Engineer
	. . .			S.Shimomura

# Reel Dimensions Fig.1

Unit: mm

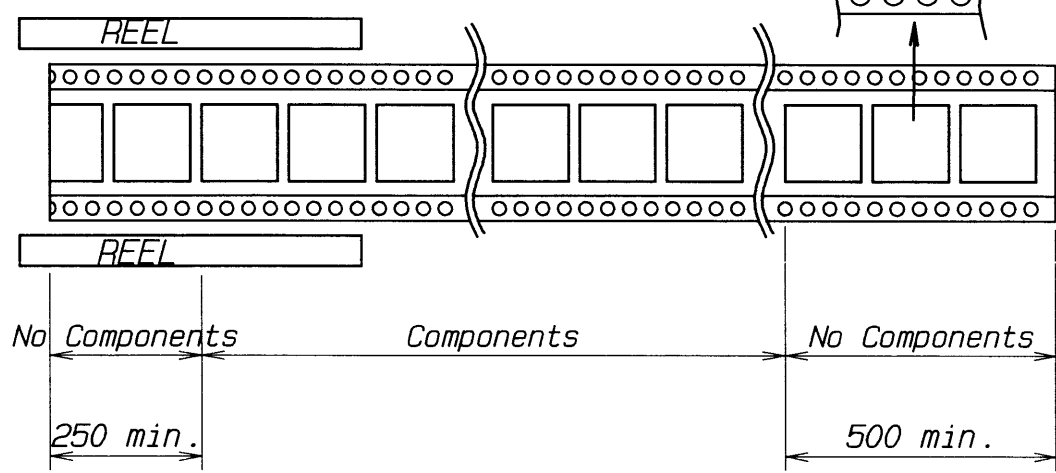
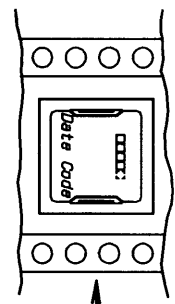
Fig.1



	MATERIALS
REEL	POLYSTYRENE
HUB	POLYSTYRENE

# Reel Dimensions Fig.2

Amount 250pcs



R	Q'ty	Date	Ref.No.	R	Q'ty	Date	Ref.No.

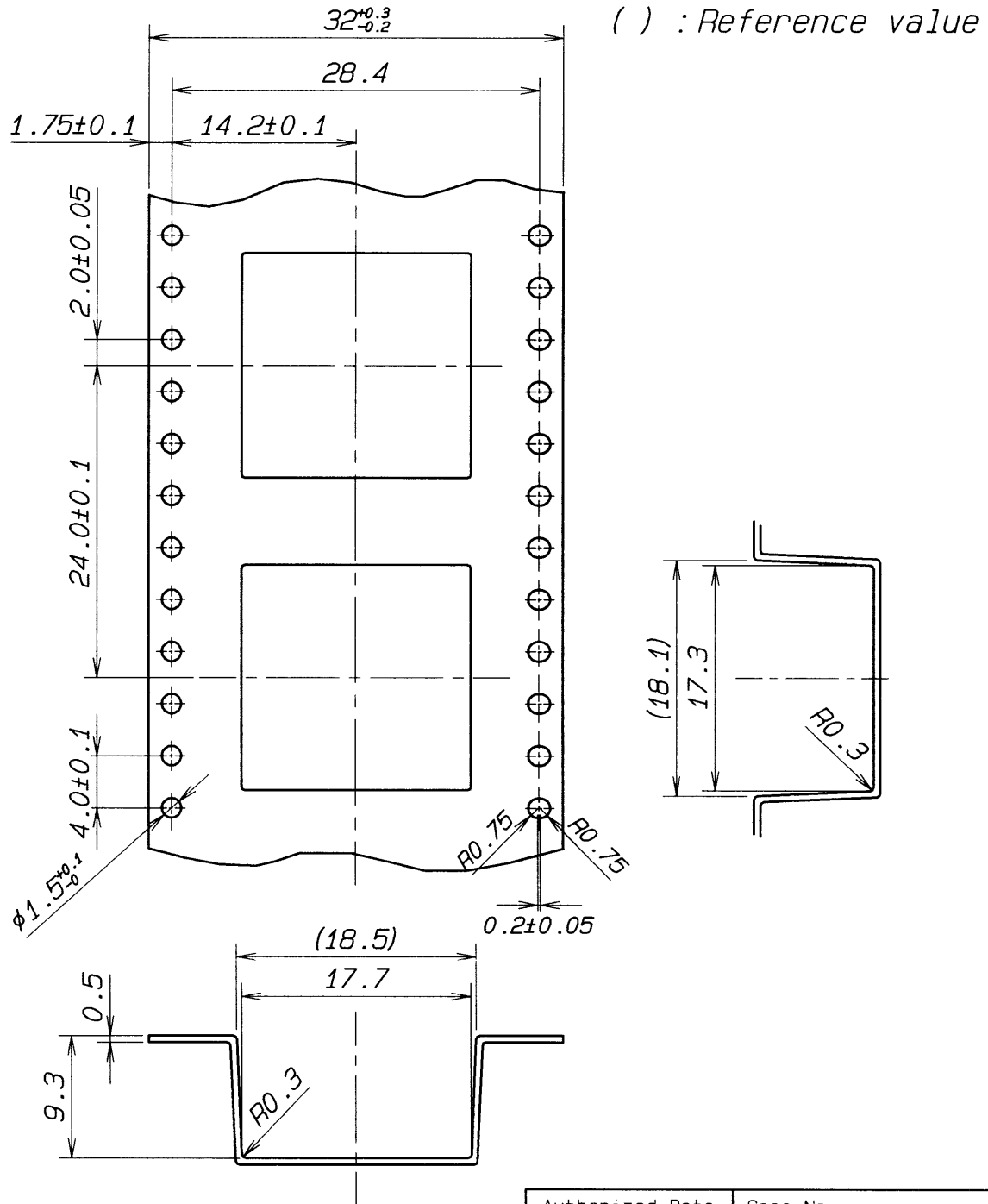
Authorized Date '99. 8. 3	Spec.No. 151- } ETQPAF*****A 111-
Issued Date R- '99. 8. 3	Manager : M. YOSHIHARA
	Supervisor: K. NAKASHIMA
	Engineer : K. OMURA

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# Embossed Carrier Dimensions Unit : mm

## Fig.2

ITEM	MATERIAL SPECIFICATIONS
CARRIER MATERIAL	POLYSTYRENE
TOPCOVER TAPE MATERIAL	POLYSTYRENE



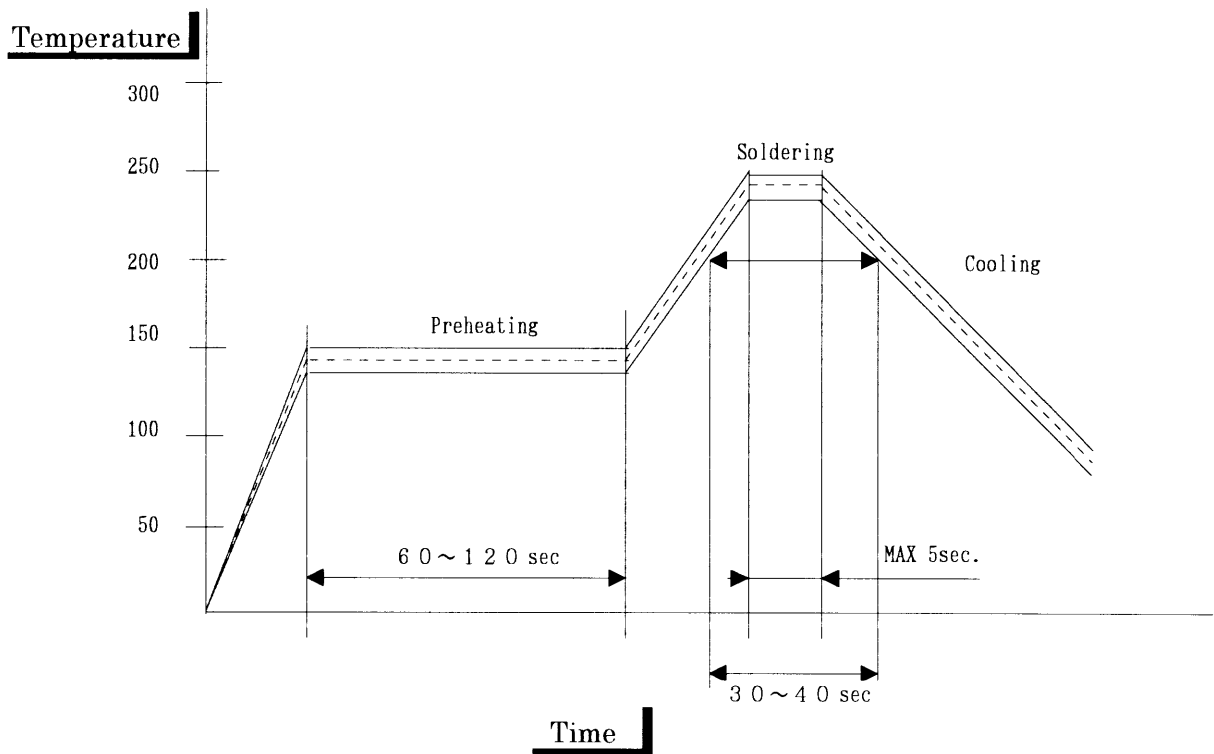
R	Q'ty	Date	Ref.No.	R	Q'ty	Date	Ref.No.

Authorized Date	Spec.No.
99. 8. 3	151- } ETQPAF*****A 111- }
Issued Date	Manager : M. YOSHIHARA
R- 99. 8. 3	Supervisor: K. NAKASHIMA
	Engineer : K. OMURA

**[ATTACHED PAPER 3] Reflow solder putting reference condition**

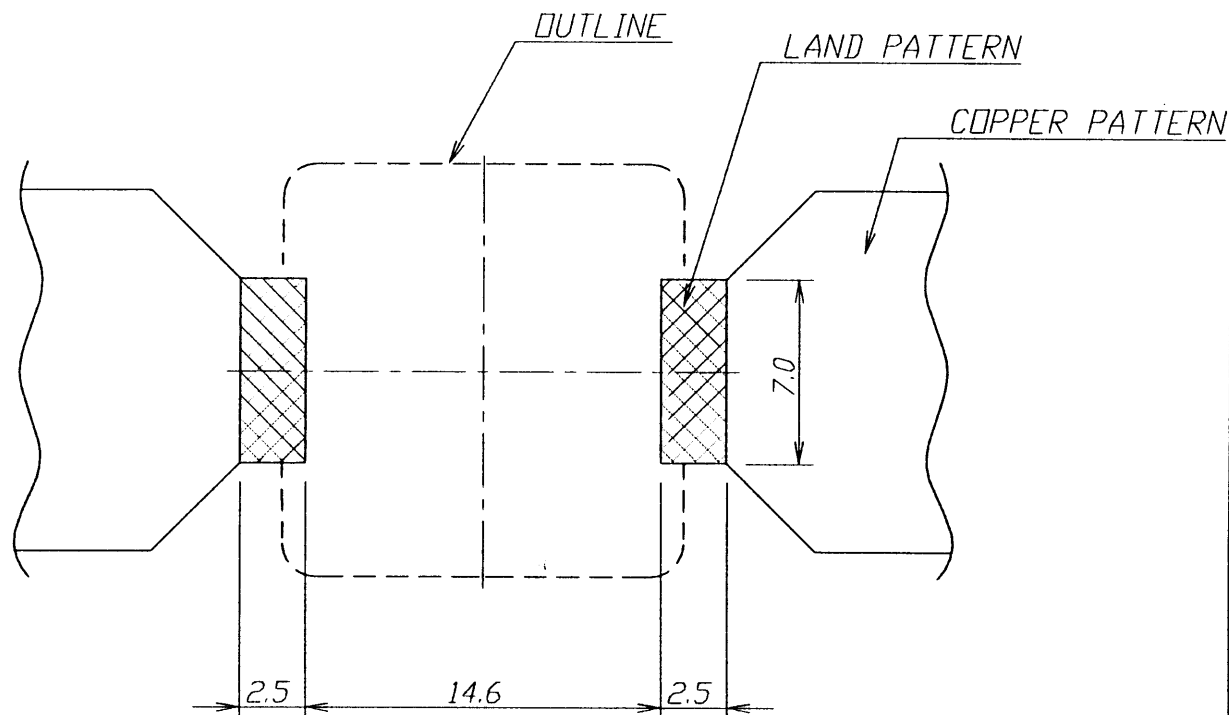
- Preheating : 60 to 120sec. at 160°C±10°C
- Peak temperature : MAX. 5sec. at 250±5°C
- Retention time : 30 to 40sec. at 230°C or more
- Remarks : The above are the reflow reference condition when eutectic solder is used

**Temperature profile of [Reflow soldering]**



R	Date	Ref. No.		Issued Date	Manager
	. . .			02.02.08 R-	M.Yoshihara
	. . .			Authorized Date	Supervisor
	. . .			02.02.08	K. Nakashima
	. . .				Engineer
	. . .				S.Shimomura

### Wiring pattern (REFERENCE ONLY)



The customer shall determine the land dimensions shown above after confirming accessibility regarding mounting and safety.

#### <Safety precautions>

- (1) This product employs a Mn ferrite core.  
Pay strict attention to the following points (a) and (b) when using it.
  - (a) Do not wire a copper pattern under this power choke coil.
  - (b) Maintain a safe distance between the power choke coil periphery and other parts and copper pattern to prevent accidents.

R	Q'ty	Date	Ref.No.	R	Q'ty	Date	Ref.No.

Spec.No. 151- 111- )	ETQPAF*****A-G	
Date R-	Manager : M.YOSHIHARA	
' 01. 11. 22	Supervisor: K.NAKASHIMA	
	Engineer: K.OMURA	

# PRODUCT SPECIFICATION

Spec. No. (12/13)  
151-ETQPAF\*\*\*\*\*A-A

## <Cautions for Safety>

### 1. Provision to Abnormal Condition

This power choke coil itself does not have any protective function in abnormal condition such as overload, short-circuit and open-circuit conditions, etc. Therefore, it shall be confirmed as the end product that there is no risk of smoking, fire, dielectric withstand voltage, insulation resistance, etc. in abnormal conditions to provide protective devices and/or protection circuit in the end product.

### 2. Temperature Rise

Temperature rise of power choke coil depends on the installation condition in end products.

It shall be confirmed in the actual end product that temperature rise of power choke coil is in the limit of specified temperature class.

### 3. Dielectric Strength

Dielectric withstanding test with higher voltage than specific value will damage insulating material and shorten its life.

### 4. Water

This power choke coil must not be used in wet condition by water, coffee or any liquid because insulation strength becomes very low in the condition.

### 5. Potting

If this power choke coil is potted in some compound, coating material of magnet wire might be occasionally damaged. Please ask us if you intend to pot this power choke coil.

### 6. Detergent

Please consult our company once in case of this because the confirmation of reliability etc. is needed when the washing medicine is used for the power choke coil.

R	Date	Ref. No.	Issued Date	Manager
	. . . . .		02.02.08 R-	M.Yoshihara
	. . . . .		Authorized Date	Supervisor
	. . . . .		02.02.08	K. Nakashima
	. . . . .			Engineer
	. . . . .			S.Shimomura

# PRODUCT SPECIFICATION

Spec. No. (13/13)  
151-ETQPAF\*\*\*\*\*A-A

## <Cautions for Use>

### 1. Storage Temperature

- 40°C ~ + 60°C

### 2. Use Temperature

#### •Minimum Temperature

- 20°C Ambient temperature of power choke coil

#### •Maximum Temperature

Insulation class of power choke coil

class A : 100 °C The value of temperature is including ambient of the transformer and temperature rise of power choke coil.

### 3. Model

When this power choke coil was used in a similar or new product to the original one, sometimes it might be unable to satisfy the specifications due to difference of condition of usage.

Please ask us if you would use this power choke coil in the manner such as above.

### 4. Drop

If the power choke coil suffered mechanical stress such as drop, characteristics may become poor (due to damage on coil bobbin, etc.).

Never use such stressed power choke coil.

R	Date	Ref. No.	Issued Date	Manager
	. . .		02.02.08 R-	M.Yoshihara
	. . .		Authorized Date	Supervisor
	. . .		02.02.08	K. Nakashima
	. . .			Engineer
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