JAMICON

客戶 編號

CUSTOMER :ROPLA **NO: T0809030**

承 認 書

APPROVE SHEET

品 名:鋁 質 電 解 電 容 器

PARTS : ALUMINUM ELECTROLYTIC CAPACITOR

客戶產品編號

USER NO. _____

凱美產品編號

CODE NO. **T Z (SERIES)**

承認欄(SIGNATURE)

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PLEASE RETURN US ONE COPY YOUR SIGNED SPECIFICATION AFTER YOU APPROVED OF IT.

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蘇州凱美電子有限公司
SUZHOU KAIMEI ELECTRONIC LTD.
江蘇省蘇州市相城區望亭鎮問渡路68號
NO.68 WENDU RD. WANGTING TOWNSHIP, XIANGCHENG DISTRICT, JIANGSU CHINA
TEL: 0512-65383705
FAX: 0512-65382688

產品符號 Parts Number System

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
T	Z	R	2	2	1	M	0	J	E	1	1	M	-	-	E
SERIES		TYPE	CAPACITANCE			CAP. TOL	VOLTANGE (WV)		CASE (ΦD mm)	SIZE L. mm-Length of AL.case					

Series		
PS	NS	HM
PT	SK	LT
PH	SM	LL
PC	TK	HT
PF	TM	HV
CS	NK	HL
CA	LK	HF
CN	MZ	HX
CR	TB	KP
CT	WL	MP
CE	WG	RP
CP	TL	XP
CH	TZ	
CL	TH	
CF	TX	
CK	TF	
CZ	WB	
CB	UK	
SV	NC	
ST	RV	
NT	LP	
SS	HP	
SH	LS	
SL	HS	

Code	Type	Description
R	Radial	Bulk
P		Taping (Ammo Pack)
C		Lead Cut
F		Lead Forming Cut
B		Lead Forming Only
Y		Lead Snap in
W	Lug	Snap in Terminal
G		G Type Terminal
V		V Type Terminal
S	Screw	Screw Terminal Type
M	Chip	Surface Mount Type

CAP (u F)	Code
0.1	0R1
0.22	R22
0.33	R33
0.47	R47
1	010
2.2	2R2
3.3	3R3
4.7	4R7
10	100
22	220
33	330
47	470
100	101
220	221
330	331
470	471
1000	102
2200	222
3300	332
4700	472
10000	103
22000	223
33000	333
47000	473

Tolerance (%)	Code
+10	K
-10	
+15	L
-15	
+20	M
-20	
+100	P
-0	
+30	Q
-10	
+20	R
-0	
+50	T
-10	
+75	U
-10	
+20	V
-10	
+20	H
-5	
+30	F
-0	
+100	W
-10	

Voltage (W.V)	Code
2.5	0E
4	0G
6.3	0J
10	1A
13	1P
16	1C
20	1D
25	1E
35	1V
40	1G
50	1H
63	1J
80	1K
100	2A
125	2B
160	2C
180	2M
200	2D
250	2E
315	2F
330	2U
350	2V
400	2G
450	2W
500	2H

Diameter (∮)	Code
3	A
3.8	S
4	C
5	D
6	W
6.3	E
7	Y
8	F
10	G
12	H
12.5	I
13	J
16	K
18	L
20	M
22	N
25	O
30	P
35	Q
40	R
51	V
64	1
77	2
90	3

Length (L)	Code
11	11
11.5	BB
12.5	BC
31.5	DB
35.5	DF
100	1H
110	1A
115	1K
120	1B
121	1M
130	1C
131	1P
140	1D
144	1Q
150	1E
155	1N
157	1R
160	1F
170	1G
180	1I
190	1J
196	1S
215	1L
236	1T

Code	Dascription
W	Without Sleeve
1~9	Customer Assign Brand
A~Z	
a~	

Code	Dascription
E	PET Sleeve

Series	TZ	Reference standard	JIS C 5101- 4

1 . Scope

This specifcation applies to aluminium electrolytic capacitor , used in electronic equipment.

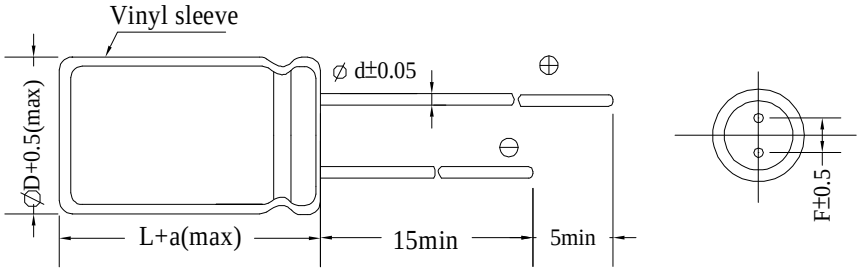
Type : Radial

2 . Electrical characteristics

A) Operation temperature range : -55 ~ +105℃
B) Capacitance tolerance : - 20% ~ + 20%(M) 20 ℃ 120 HZ
C) Capacitance : 4.7 ~ 15000 uF
D) Rated working voltage (WV) : DC 6.3 ~ 63 V
E) Surge voltage (SV) : Values in Table 1 P (8)
F) Leakage current : Values in Table 2 P (8) or less
G) Dissipation Factor (tan δ) : Values in Table 3 P (8) or less
H) Low temperature stability : Values in Table 4 P (8) or less

3. Dimensions and materials

D	5	6.3	8	10	12.5	16	18
F	2.0	2.5	3.5	5.0		7.5	7.5
d	0.5		0.6			0.8	0.8
a	1.5						



4. Marking

JAMICON ← Brand

 ← Polarity of the terminals

×××uF×××wv ← Capacitance and Rate voltage

TZ 105℃ ← Series and Maximan operating temperature

816C2 ← Date Code

SU ZHOU KAIMEI ELECTRONIC LTD.	Chart number	TZ--010413--A

5 . Case size and Max ripple current

Case size : D×L(mm)
Max impedance : Ω20℃ 100KHz
Max ripple current : A (rms)
(R . C .) : 105℃ 100K HZ

. TZR .

V (Code) / Item / Code / uF		6.3 (0J)				10 (1A)				16 (1C)			
		DxL	IMP		R.C	DxL	IMP		R.C	DxL	IMP		R.C
			20℃	-10℃			20℃	-10℃			20℃	-10℃	
47	470									5×11	0.568	1.421	0.17
68	680									5×11	0.500	1.250	0.21
100	101					5×11	0.500	1.250	0.24	6.3×11	0.367	0.918	0.29
220	221	6.3×11	0.308	0.769	0.39	6.3×11	0.249	0.623	0.41	8×11.5	0.190	0.474	0.52
330	331	6.3×11	0.246	0.615	0.48	8×11.5	0.169	0.423	0.61	10×12.5	0.114	0.285	0.75
470	471	8×11.5	0.178	0.446	0.70	8×11.5	0.139	0.346	0.73	10×12.5	0.093	0.233	0.90
680	681	10×12.5	0.081	0.203	1.00	10×12.5	0.077	0.194	1.03	10×16	0.074	0.184	1.20
1000	102	8×20	0.066	0.166	1.31	10×16	0.063	0.158	1.39	10×20	0.060	0.150	1.60
1200	122	10×16	0.058	0.144	1.47	10×20	0.055	0.137	1.68	10×25	0.052	0.130	1.94
1500	152	10×20	0.049	0.123	1.75	10×25	0.047	0.116	2.01	12.5×20	0.044	0.111	2.13
2200	222	10×25	0.038	0.094	2.27	12.5×20	0.036	0.090	2.41	12.5×25	0.034	0.086	2.75
3300	332	12.5×20	0.032	0.079	2.69	12.5×25	0.030	0.075	3.05	16×25	0.029	0.057	3.14
4700	472	12.5×30	0.027	0.067	3.56	16×25	0.025	0.051	3.35	16×31.5	0.024	0.048	3.24
6800	682	16×25	0.024	0.048	3.61	16×31.5	0.023	0.045	3.46	18×35.5	0.022	0.043	3.75
10000	103	16×31.5	0.022	0.043	3.64	18×35.5	0.021	0.041	3.92	18×40	0.019	0.039	4.20
15000	153	18×35.5	0.020	0.041	4.12	18×40	0.019	0.039	4.40				

V (Code) / Item / Code / uF		25 (1E)				35 (1V)			
		DxL	IMP		R.C	DxL	IMP		R.C
			20℃	-10℃			20℃	-10℃	
4.7	4R7					5×11	1.912	4.781	0.08
10	100					5×11	1.498	3.745	0.11
22	220					5×11	0.817	2.043	0.16
33	330					5×11	0.636	1.589	0.20
47	470	5×11	0.539	1.348	0.22	6.3×11	0.510	1.275	0.27
68	680	6.3×11	0.419	1.049	0.30	6.3×11	0.397	0.991	0.33
100	101	6.3×11	0.349	0.871	0.36	8×11.5	0.330	0.824	0.49
220	221	8×11.5	0.180	0.450	0.65	10×12.5	0.128	0.319	0.85
330	331	10×12.5	0.108	0.270	0.94	10×16	0.102	0.255	1.15
470	471	10×16	0.088	0.221	1.25	10×20	0.084	0.209	1.52
680	681	10×20	0.070	0.175	1.65	12.5×20	0.066	0.165	2.07
1000	102	12.5×20	0.057	0.143	2.27	12.5×25	0.054	0.135	2.77
1200	122	12.5×20	0.050	0.124	2.49	12.5×30	0.047	0.117	3.29
1500	152	12.5×25	0.042	0.105	2.94	16×25	0.040	0.079	3.32
2200	222	16×25	0.032	0.065	3.42	16×31.5	0.031	0.077	3.49
3300	332	16×31.5	0.027	0.054	3.66	18×35.5	0.026	0.064	4.17
4700	472	18×35.5	0.023	0.046	4.23				

5 . Case size and Max ripple current

Case size : D×L(mm)
Max impedance : Ω20℃ 100KHz
Max ripple current : A (rms)
(R . C .) : 105℃ 100KHZ

. TZR .

V (Code) / Item / uF / Code		50 (1H)				63 (1J)			
		DxL	IMP		R.C	DxL	IMP		R.C
			20℃	-10℃			20℃	-10℃	
4.7	4R7	5×11	1.699	5.096	0.09	5×11	1.699	5.096	0.09
10	100	5×11	1.331	3.992	0.13	5×11	1.331	3.992	0.13
22	220	5×11	0.726	2.177	0.19	6.3×11	0.726	1.814	0.22
33	330	6.3×11	0.564	1.411	0.26	6.3×15	0.564	1.411	0.30
47	470	6.3×11	0.453	1.132	0.31	6.3×11	0.453	1.132	0.38
68	680	8×11.5	0.352	0.880	0.46	10×12.5	0.264	0.660	0.54
100	101	8×20	0.220	0.549	0.71	10×16	0.220	0.549	0.73
220	221	10×16	0.113	0.283	1.09	10×25	0.113	0.283	1.33
330	331	10×20	0.091	0.227	1.47	12.5×20	0.091	0.227	1.66
470	471	12.5×20	0.074	0.186	1.99	12.5×25	0.074	0.186	2.19
680	681	12.5×25	0.059	0.147	2.63	16×25	0.059	0.117	2.63
1000	102	16×25	0.048	0.096	3.19	16×35.5	0.048	0.096	3.17
1200	122	16×31.5	0.042	0.083	3.29	18×35.5	0.042	0.083	3.48
1500	152	16×35.5	0.035	0.071	3.44	18×40	0.035	0.071	3.87
2200	222	18×35.5	0.027	0.055	4.20				
3300	332	18×40	0.023	0.046	4.97				

RIPPLE CURRENT COEFFICIENTS

Temperature(℃)	65	75	85	95	105
Multiplier	2.12	1.92	1.69	1.50	1.00

Frequency(Hz)	60	120	400	1K	10K	100K
W.V.	Multiplier					
6.3 ~ 16V	0.45	0.60	0.83	0.94	0.98	1.00
25 ~ 35V	0.38	0.50	0.75	0.90	0.97	1.00
50 ~ 63V	0.36	0.46	0.70	0.88	0.94	1.00

Series	TZ	Reference standard	JIS C5101- 4

6. Load life test

After hours (φ 5~6.3mm2000 hours、φ 8mm3000 hours 、φ D≧ 10mm 5000 hours) application of WV at 105℃ the capacitor shall meet the following limits. (DC+ripple peak voltage≦rate working voltage)

(A) Capacitance change :≦ ±20% of initial valu
(B) Dissipation factor :≦ 200% of initial specified value
(C) Leakage current :≦ initial specified value

7. Shelf life test

The capacitor without rated voltage at a temperature of 105℃ for 1000 hours after 16 hours in room temperature, should do final measurements, the value are as following:

(A) Capacitance change :≦ ±20% of initial value
(B) Dissipation factor :≦ 150% of initial specified value
(C) Leakage current :≦ 200% of initial specified value

8. Low temperature storage test

The capacitor without rated voltage at the lowest operation temperature 72 hours, after 16 hours in room temperature, should do final measurements, the values are as following:

(A) Capacitance change :≦ ±10% of initial value
(B) Dissipation factor :≦ initial specified value
(C) Leakage current :≦ initial specified value

9. Lead strength

(A) Tensile strength:

d (mm)	0.5	0.6	0.8	1.0
load (kg)	0.5	1.0		2.5

The capacitor shall withstand the constant tensile force specified between the body and each lead for 10 seconds without either mechanically or electrically.

(B) Bending strength:

d (mm)	0.5	0.6	0.8	1.0
load (kg)	0.25	0.5		1.2

With the capacitor in a vertical position apply the load specified axially to each lead . The capacitor shall be rotated slowly form the vertical to the horizontal position. Back to the vertical position. The 90 in the opposition direction and back the original position. performance of capacitor shall not have changed and leads shall be undamaged.

Series	TZ	Reference standard	JIS C5101- 4

10. Solderability

Capacitor lead wire is dipping into the oven, and then dip in 245±3℃, solder liquid for 3±0.5 seconds, the substance is above the liquid solder 2mm, the dipping lead must be adherent 95% fresh tin at least.

11. Resistance to soldering heat

Put capacitor lead wire to dip 260±5℃ in solder liquor away the body 2mm, after 10±1 seconds taken out , after 2 hours in room temperature, should do final measurments, the values are following :

(A) Capacitance change :≦ ±10% of initial value
(B) Dissipation factor :≦ initial specified value
(C) Leakage current :≦ initial specified value
(D) Visual : No damage

12. Surge test

The capacitor shall be applied the surge voltage connected with the 1kΩ resistor at temperature 25±5℃ , and shall be applied the surge voltage 1000 cycle, each for 30 seconds charge and 5 minutes 30 seconds discharge, the final test values should be as following:

(A) Capacitance change :≦ ±15% of initial value
(B) Dissipation factor :≦ 150% of initial specified value
(C) Leakage current :≦ initial specified value
(D) Visual : No damage

13. Safety vent

(A) Test condition (DC method)

Reverse voltage shall be applied, then current is as bellow:

Diameter ≦ 22.4mm 1 A DC (180 seconds)
Diameter > 22.4mm 10 A DC (300 seconds)

(B) Criteria

(a) Safety vent shall be operated.
(b) Emission of flame shall not be fount before and after venting.
(C) Terminal, lead wire, metal chip and so on shall not be flown apart and case shall not be separated before and after venting.
(D) Sealing part and case shall not be separated before and after venting.

Series	TZ	Reference standard	JIS C5101- 4

14.Characteristics at high and low temperature

Step	Temperature	Time(MIN)
1	The lowest using temperature -55(+0/-3)℃	30±3
2	20±2℃	≦ 3
3	The highest using temperature +105(+3/-0)℃	30±3
4	20±2℃	≦ 3

5 Cycle

(A) △ Cap/Cap : ≦ ±5%
(B) Dissipation factor : ≦ initial specified value
(C) Leakage current : ≦ initial specified value
(D) Visual : No damage

15. Humidity test

Put the capacitor in the equipment 500 hours, in which the humidity must be about 93(+2/-3)% and the temperature must be about 40±2℃.After 1~2 hours in room temperature, should do the final measurements, the values are as following:

(A) △ Cap/Cap : ≦ ±10%
(B) Dissipation factor : ≦ 120% of initial specified value
(C) Leakage current : ≦ initial specified value
(D) Visual : No damage

Series	TZ	Reference standard	JIS C5101- 4

Table 1

Surge voltage

w.v.	6.3	10	16	25	35	50	63
s.v.	8	13	20	32	44	63	79

Table 2

Leakage current

6.3 ~ 63 VDC
I ≦ 0.01cv or 3(uA)
Whichever is greater after 2 minutes.
(I:Leakage Current (uA) C: Rated Capacitance(uF) V:Working Voltage(v)).

Table 3

Dissipation Factor

Add 0.02 per 1000 uF for more than 1000uF

w.v.	6.3	10	16	25	35	50	63
tan δ	0.22	0.19	0.16	0.14	0.12	0.10	0.09

Table 4

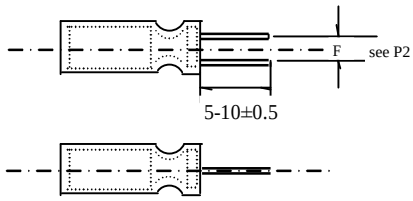
Low teperature stability

Impedance ratio at 120Hz

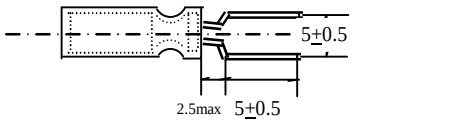
Rated voltage (v)	6.3	10	16	25	35 ~ 63
-25℃ /+20℃	2	2	2	2	2
-55℃ /+20℃	3	3	3	3	3

Series	TZ	Reference standard	JIS C5101- 4

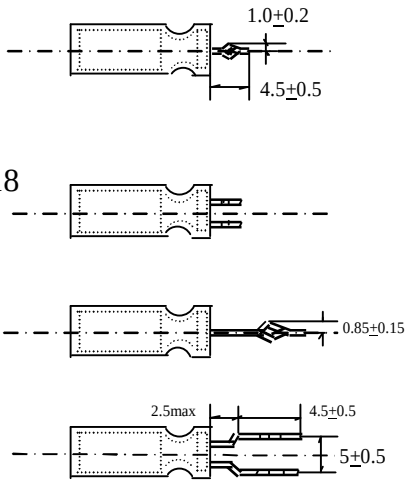
Lead Cut	產品記號(SYMBOL):C 適用(RANGE):Φ5~Φ18



Lead Forming Cut	產品記號(SYMBOL):F 適用(RANGE):Φ5~Φ8



Snap in Type	產品記號(SYMBOL):Y 適用(RANGE):Φ10~Φ18 適用(RANGE):Φ5~Φ8



SU ZHOU KAIMEI ELECTRONIC LTD.		Chart number	TZ--010413--A

Series	TZ	Reference standard	JIS C5101- 4

LEAD TAPING

Lead taping is designed for automatic insertion epuipment. Capacitor with case size of 18*35mm or smaller are available in taping type.

Fig 1.(Φ4-Φ8)

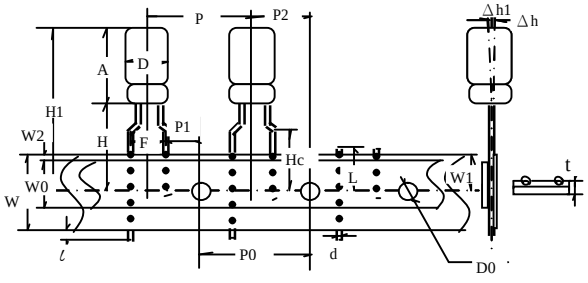


Fig 2.(Φ4-Φ5)

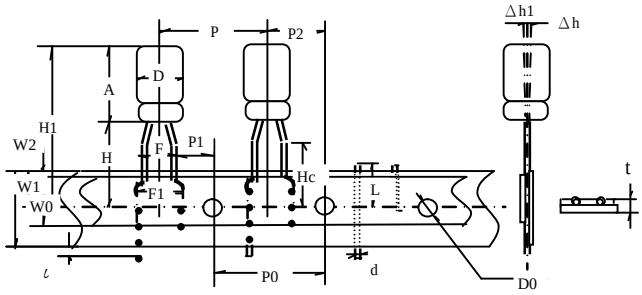


Fig 3.(Φ4-Φ8)

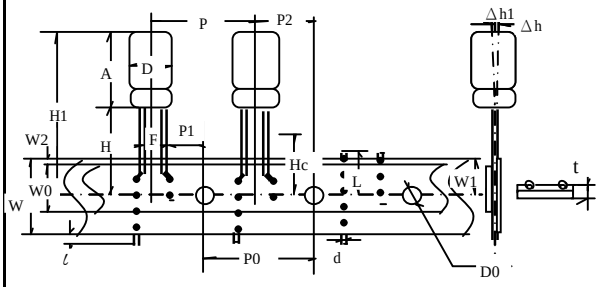


Fig 4.(Φ10)

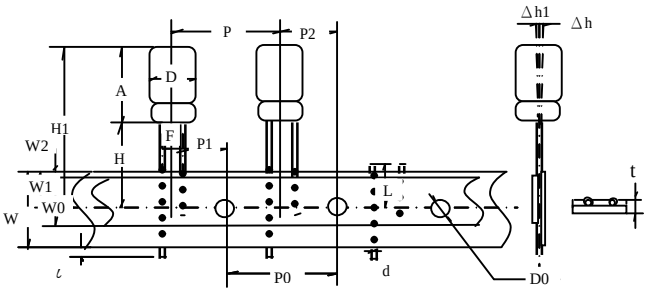


Fig 5.(Φ12.5)

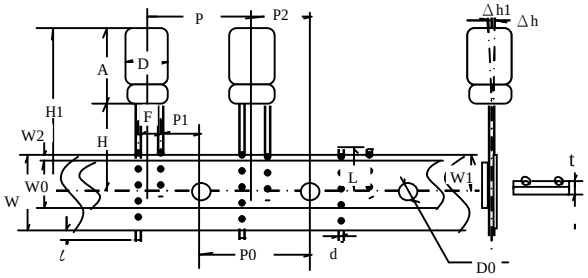
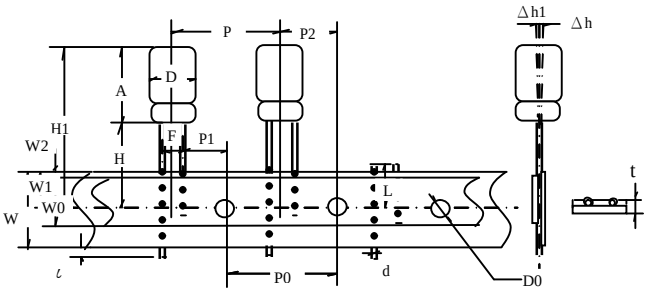


Fig 6.(Φ16-Φ18)



Item	Symbol	Case size									Tolerance	Remark
		4×7	5×7	6.3×7	5×11	6.3×11	8×11.5	10×12.5	10×16	10×18	10×20	
Lead wire diameter	d	0.45			0.5		0.6	0.6				±0.05	
Body height	A	8.0			12.5		13.0	14.0	17.5	19.5	21.5	max	
Intervals of bodies	P	12.7										±1	
Intervals of punched holes	P_0	12.7										±0.2	
Distance between holes and lead wire	P_1	3.85										±0.7	Fig1. Fig4.
		5.35	5.1		5.1								Fig2.
		5.6	5.35	5.1	5.35	5.1	4.6						Fig3.
Distance between holes and bodies	P_2	6.35										±1	
Distance between lead and lead	F	5.0										+0.8 -0.2	Fig1. Fig4.
		2.0	2.5		2.5								Fig2.$F_{1:5}$ $^{+0.5}_{-1.0}$
		1.5	2.0	2.5	2.0	2.5	3.5						Fig3.$F_{1:5}$ $^{+0.5}_{-1.0}$
Base tape width	W	18.0										±0.5	
Adhesive tape width	W_0	12.5										min	
Deviation between holes and base tape	W_1	9.0										±0.5	
Deviation between adhesive and base tape	W_2	1.5										max	
Distance between body bottom and tape center	H	17.5			18.5		20.0	18.5				±0.5	Fig1. Fig4.
		17.5			18.5		18.5						Fig2. Fig3.
Lead wire clinched hight	H_0	16.0										±0.5	
Distance between body top and tape center	H_1	27.5			32.5			33.0	36.0	38.0	41.0	max	
Puched hole diameter	D_0	4.0										±0.3	
Lead wire protrusion	ℓ	0										max	
Length of not good lead slit	L	11.0										max	
Base and adhesive tape thicknees	t	0.6										±0.3	
Deviation of body alignment	Δ h	0										±2	
Deviation of body alignment	Δ h_1	0										±1	

Item	Symbol	Case							Tolerance	Remark
		12.5×20	12.5×25	12.5×30	16×25	16×31.5	16×35.5	18×35.5		
Lead wire diameter	d	0.6			0.8				±0.05	
Body hight	A	21.5	26.5	31.5	26.5	33.0	37.0	37.0	max	
Intervals of bodies	P	15.0			30.0				±1	Fig5. Fig6.
Intervals of punched holes	P_0	15.0							±0.2	
Distance between holes and lead wire	P_1	5.0			3.75				±0.7	
Distance between holes and bodies	P_2	7.5							±1	
Distance between lead and lead	F	5.0			7.5				+0.8 -0.2	
Base tape width	W	18.0							±0.5	
Adhesive tape width	W_0	15.0							min	
Deviation between holes and base tape	W_1	9.0							±0.5	
Deviation between adhesive and base tape	W_2	1.5							min	
Distance between body bottom and tape center	H	16.5			18.5				±0.5	Fig5. Fig6.
Distance between body top and tape center	H_1	40.5	45.5	50.5	46.5	53.5	56.5	56.5	max	
Puched hole diameter	D_0	4.0							±0.3	
Lead wire protrusion	ℓ	0							max	
Length of not good lead slit	L	11.0							max	
Base and adhesive tape thicknees	t	0.6							±0.3	
Deviation of body alignment	Δh	0							±2	
Deviation of body alignment	Δh_1	0							±1	