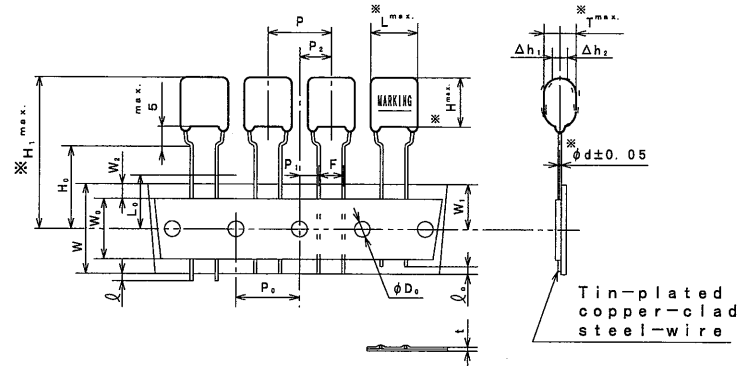


THIRD ANGLE PROJECTION

ITEM CODE	CAPACITANCE μF (*)	DIMENSIONS				
		※L	※T	※H	※H ₁	※d
ECWF4223R () L	0.022 (223)	12.5	5.8	8.6	30.6	0.6
" 4243R () L	0.024 (243)	"	6.0	8.8	30.8	"
" 4273R () L	0.027 (273)	"	6.2	9.0	31.0	"
" 4303R () L	0.03 (303)	"	6.4	9.3	31.3	"
" 4333R () L	0.033 (333)	"	6.7	9.5	31.5	"
" 4363R () L	0.036 (363)	"	5.7	8.4	30.4	"
" 4393R () L	0.039 (393)	"	5.8	8.6	30.6	"
" 4433R () L	0.043 (433)	"	6.0	8.8	30.8	"
" 4473R () L	0.047 (473)	"	6.2	9.0	31.0	"
" 4513R () L	0.051 (513)	"	6.4	9.2	31.2	"
" 4563R () L	0.056 (563)	"	6.6	9.4	31.4	"
" 4623R () L	0.062 (623)	13.0	6.8	9.6	31.6	0.8
" 4683R () L	0.068 (683)	"	7.0	9.9	31.9	"
" 4753R () L	0.075 (753)	"	7.3	10.1	32.1	"
" 4823R () L	0.082 (823)	"	7.5	10.4	32.4	"
" 4913R () L	0.091 (913)	"	7.8	10.7	32.7	"

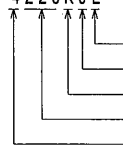


ALTERATION		
ISSUE	DESCRIPTION	DATE
△	Company name changed	Oct. 1 2004
△	Company name changed	Apr. 1 2005
△	Company name changed	Apr. 1 2006
△	Company name changed	Apr. 1 2008
△	Company name changed	Apr. 1 2012
△	Company name changed	Apr. 1 2013
△	Company name changed	Apr. 1 2015

SPECIFICATIONS No.

ITEM CODE NUMBER STRUCTURE

ECWF 4223RJL (400VDC, 0.022μF, ±5%)



- Radial leads
- Capacitance tolerance (H=±3%, J=±5%)
- Ammo packing Forming lead type
- Capacitance: See table (*)
- Rated voltage (4=400VDC)

SYMBOL	ITEM	VALUE	TOLERANCE	REMARKS
P	Pitch of component	15.0	±1.0	Tilt of component and curvature of leads shall be included.
P ₀	Feed hole pitch	15.0	±0.2	
P ₁	Feed hole center to lead	3.75	±0.5	
P ₂	Hole center to comp. center	7.5	±1.3	Tilt of component due to curvature of leads shall be included.
F	Lead-to-lead distance	7.5	+0.2 -0.2	
Δh _{1,2}	Component alignment	0~2.0		Tilt of component due to curvature of leads shall be included.
W	Paper backing width	18.0	±0.5	
W ₀	Adhesive tape width	12.5	min.	The hold down tape shall not protrude beyond the carrier tape.
W ₁	Hole position	9.0	±0.5	
W ₂	Hold-down tape position	0~3.0		
H ₀	Lead-wire clinch height	16.0	+1.0 0	
Q	Lead wire protrusion	0	max.	
Q ₀	Lead wire depression	7.0	max.	
φD ₀	Feed hole diameter	4.0	±0.2	
t	Total tape thickness	0.7	±0.2	Total thickness including the hold down tape.
L ₀	Length of snapped lead	11.0	max.	

CONSTRUCTION

The capacitor is of non-inductive construction, wound with metallized polypropylene film dielectric.
The capacitor is enclosed in non-combustible epoxy resin and has two leads.

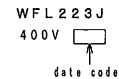
MARKING

Marking comprises capacitance, capacitance tolerance, rated voltage, manufacturer's trademark, type name "WFL" and manufacturer's date code.

PROPERTIES

- Capacitance : See table at 1kHz
- Capacitance tolerance : ±3% (H), ±5% (J)
- Rated voltage : 400VDC
- Withstand voltage : Rated voltage × 150% for 60s
- Insulation resistance : ≥9,000MΩ at 100VDC, 20°C for 60s
- Dissipation factor : ≤0.05% at 1kHz, 20°C
- Category temperature range : From -40°C to +105°C (including temperature rise on unit surface)

(example)



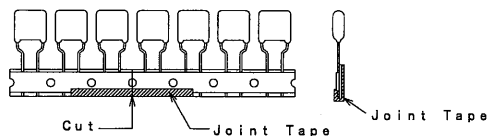
Reference

DESIGN	<i>M. Hanagiso</i>
CHECKED	<i>M. Hanagiso</i>
APPROVAL	<i>T. Taketa</i>
ESTABLISHMENT	Feb. 3, 2003
TYPE NAME	ECWF 4***R () L
NAME	METALLIZED POLYPROPYLENE CAPACITOR
DRAWING NAME	PRODUCT DRAWING
DRAWING No.	3013J-J-E (1/2)

Toyama-Matsue Plant
Device Solutions Business Division
Panasonic Corporation

THIRD ANGLE PROJECTION

- Note 1. No more than 3 consecutive missing is permitted.
 Note 2. A tape conjunction and a tape discrepancy specify as follows.

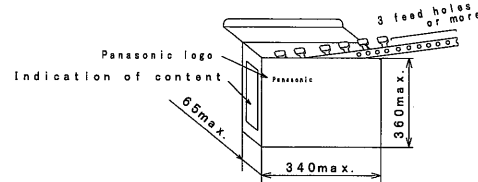


A tape sliding shall not exceed in an allowance of "P₀" dimension.
 A joint tape put on the back side of paper backing, and turn up the lower part to the front.

- Note 3. A tape trailer having at least 3 feed holes is required at the end of the tape.
 Note 4. Marking on components may not be the same side.
 Note 5. The tape adhesion is more than 3.92N (400gf) / 25mm.

Packing specification

1. Case size (Ammo pack)



2. Packing quantity

Capacitance range (#F)	Quantity (pcs.)
0.022, 0.024	1100
0.036~0.043	
0.027, 0.03	1000
0.047~0.056	
0.033	900
0.062~0.075	
0.082, 0.091	800

Handling notes

- 1) One package must be packed one product only.
- 2) The storage must be stacked 5 boxes or less.
 (Surface printed placing upward)
 (For prevention from displacement of capacitors and damage of lead crimping)
- 3) The packing box must be handled with care and never thrown out.

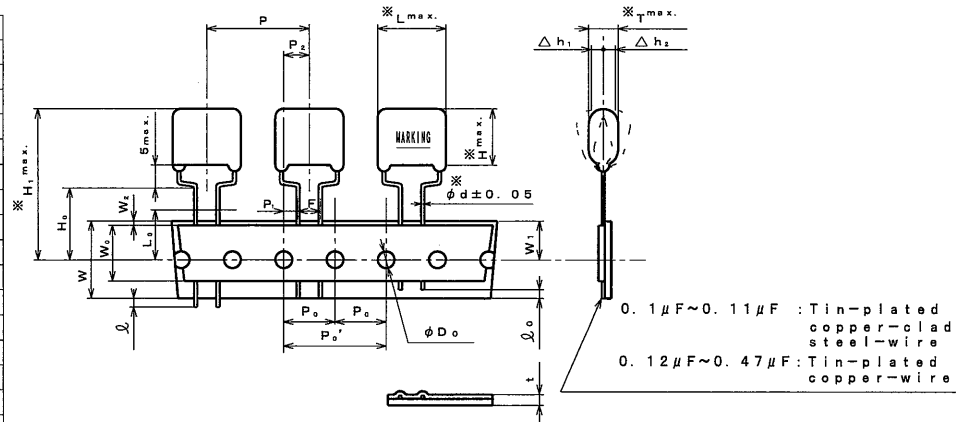
Reference

TYPE NAME
 ECWF 4***R () L
 DRAWING No.
 3013J-J-E (2/2)

Toyama-Matsue Plant
 Device Solutions Business Division
 Panasonic Corporation

THIRD ANGLE PROJECTION

ITEM CODE	CAPACITANCE μF (*)	DIMENSIONS				
		※L	※T	※H	※H ₁	※d
ECWF4104R()L	0.1 (104)	15.5	6.5	11.0	33.0	0.8
" 4114R()L	0.11 (114)	"	6.8	11.3	33.3	"
" 4124R()L	0.12 (124)	"	7.0	11.5	33.5	"
" 4134R()L	0.13 (134)	"	7.2	11.8	33.8	"
" 4154R()L	0.15 (154)	"	7.6	12.2	34.2	"
" 4164R()L	0.16 (164)	"	7.8	12.4	34.4	"
" 4184R()L	0.18 (184)	"	8.2	12.8	34.8	"
" 4204R()L	0.2 (204)	"	8.6	13.3	35.3	"
" 4224R()L	0.22 (224)	"	9.0	13.6	35.6	"
" 4244R()L	0.24 (244)	18.0	8.3	13.0	35.0	"
" 4274R()L	0.27 (274)	"	8.8	13.4	35.4	"
" 4304R()L	0.3 (304)	"	9.2	13.9	35.9	"
" 4334R()L	0.33 (334)	"	9.6	14.3	36.3	"
" 4364R()L	0.36 (364)	"	9.9	14.7	36.7	"
" 4394R()L	0.39 (394)	"	10.3	15.1	37.1	"
" 4434R()L	0.43 (434)	"	10.7	15.6	37.6	"
" 4474R()L	0.47 (474)	"	11.2	16.1	38.1	"



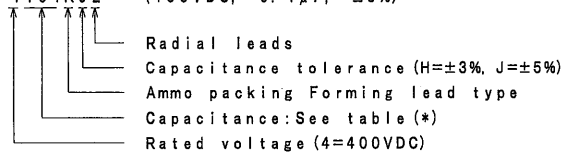
ALTERATION		
ISSUE	DESCRIPTION	DATE
△1	Company name changed	Oct. 1 2004
△2	Company name changed	Apr. 1 2005
△3	Company name changed	Apr. 1 2006
△4	Company name changed	Apr. 1 2008
△5	Company name changed	Apr. 1 2012
△6	Company name changed	Apr. 1 2013
△7	Company name changed	Apr. 1 2015

SPECIFICATIONS No.

SYMBOL	ITEM	VALUE	TOLERANCE	REMARKS
P	Pitch of component	30.0	±1.0	Tilt of component and curvature of leads shall be included.
P ₀ '	Feed hole pitch	30.0	±0.2	
P ₀	Feed hole pitch	15.0	±0.2	
P ₁	Feed hole center to lead	3.75	±0.5	
P ₂	Hole center to comp. center	7.5	±1.3	Tilt of component due to curvature of leads shall be included.
F	Lead-to-lead distance	7.5	+0.8 -0.2	
Δh _{1,2}	Component alignment	0~2.0		Tilt of component due to curvature of leads shall be included.
W	Paper backing width	18.0	±0.5	
W ₀	Adhesive tape width	12.5	min.	The hold down tape shall not protrude beyond the carrier tape.
W ₁	Hole position	9.0	±0.5	
W ₂	Hold-down tape position	0~3.0		
H ₀	Lead-wire clinch height	16.0	+1.0 0	
ℓ	Lead wire protrusion	0	max.	
ℓ ₀	Lead wire depression	7.0	max.	
φD ₀	Feed hole diameter	4.0	±0.2	
t	Total tape thickness	0.7	±0.2	Total thickness including the hold down tape.
L ₀	Length of snapped lead	11.0	max.	

ITEM CODE NUMBER STRUCTURE

ECWF 4104RJL (400VDC, 0.1 μF, ±5%)



CONSTRUCTION

The capacitor is of non-inductive construction, wound with metallized polypropylene film dielectric.
 The capacitor is enclosed in non-combustible epoxy resin and has two leads.

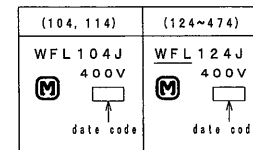
MARKING

Marking comprises capacitance, capacitance tolerance, rated voltage, manufacturer's trademark, type name "WFL" and manufacturer's date code.

PROPERTIES

Capacitance : See table at 1kHz
 Capacitance tolerance : ±3% (H), ±5% (J)
 Rated voltage : 400VDC
 Withstand voltage : Rated voltage x 150% for 60s
 Insulation resistance : C ≤ 0.33 μF : ≥ 9,000 MΩ
 : C > 0.33 μF : ≥ 3,000 MΩ · μF } at 100VDC, 20°C for 60s
 Dissipation factor : ≤ 0.05% at 1kHz, 20°C
 Category temperature range : From -40°C to +105°C
 (including temperature rise on unit surface)

(example)



※The marking of 'WFL' with the underline means that the copper wire is used for the lead wire, while the one without the underline means that tinned copper clad-steel wire is used.

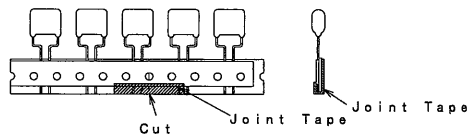
Reference

DESIGN	<i>Theodor</i>
CHECKED	<i>M. Yamamoto</i>
APPROVAL	<i>F. Takata</i>
ESTABLISHMENT	Feb. 3. 2003
TYPE NAME	ECWF 4***R()L
NAME	METALLIZED POLYPROPYLENE CAPACITOR
DRAWING NAME	PRODUCT DRAWING
DRAWING No.	3014J-J-E (1/2)

Toyama-Matsue Plant
 Device Solutions Business Division
 Panasonic Corporation

THIRD ANGLE PROJECTION

- Note 1. No more than 2 consecutive missing is permitted.
 Note 2. A tape conjunction and a tape discrepancy specify as follows.

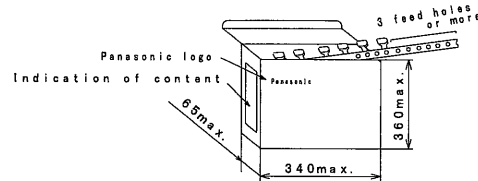


A tape sliding shall not exceed in an allowance of "P₀" dimension. A joint tape put on the back side of paper backing, and turn up the lower part to the front.

- Note 3. A tape trailer having at least 3 feed holes is required at the end of the tape.
 Note 4. Marking on components may not be the same side.
 Note 5. The tape adhesion is more than 3.92N(400gf)/25mm.

Packing specification

1. Case size (Ammo pack)



2. Packing quantity

Capacitance range (μF)	Quantity (pcs.)
0.1	500
0.11 ~ 0.18	400
0.2 ~ 0.43	300
0.47	200

Handling notes

- 1) One package must be packed one product only.
- 2) The storage must be stacked 5 boxes or less.
(Surface printed placing upward)
(For prevention from displacement of capacitors and damage of lead crimping)
- 3) The packing box must be handled with care and never thrown out.

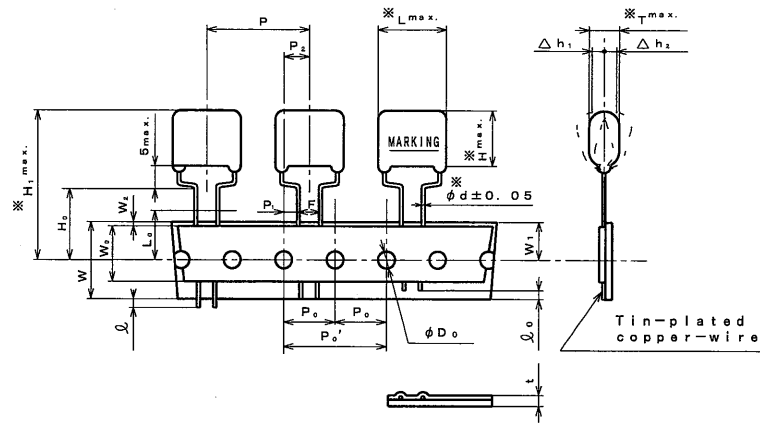
Reference

TYPE NAME
 ECWF 4***R () L
 DRAWING No.
 3014J-J-E (2/2)

Toyama-Matsue Plant
 Device Solutions Business Division
 Panasonic Corporation

THIRD ANGLE PROJECTION

ITEM CODE	CAPACITANCE μF (*)	DIMENSIONS				
		※L	※T	※H	※H ₁	※d
ECWF4514R () L	0.51 (514)	20.5	10.3	16.8	38.8	0.8
" 4564R () L	0.56 (564)	"	10.7	17.3	39.3	"
" 4624R () L	0.62 (624)	"	11.3	17.9	39.9	"
" 4684R () L	0.68 (684)	"	11.8	18.5	40.5	"
" 4754R () L	0.75 (754)	"	12.3	19.1	41.1	"
" 4824R () L	0.82 (824)	23.0	11.8	18.5	40.5	"
" 4914R () L	0.91 (914)	"	12.4	19.2	41.2	"
" 4105R () L	1.0 (105)	"	13.0	19.8	41.8	"

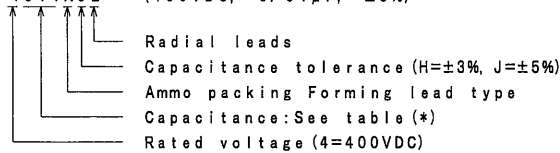


ALTERATION		
ISSUE	DESCRIPTION	DATE
△	Company name changed	Oct. 1 2004
△	Company name changed	Apr. 1 2005
△	Company name changed	Apr. 1 2006
△	Company name changed	Apr. 1 2008
△	Company name changed	Apr. 1 2012
△	Company name changed	Apr. 1 2013
△	Company name changed	Apr. 1 2015

SPECIFICATIONS No.

ITEM CODE NUMBER STRUCTURE

ECWF 4514RJL (400VDC, 0.51μF, ±5%)



SYMBOL	ITEM	VALUE	TOLERANCE	REMARKS
P	Pitch of component	30.0	±1.0	Tilt of component and curvature of leads shall be included.
P ₁	Feed hole pitch	30.0	±0.2	
P ₂	Feed hole pitch	15.0	±0.2	
P ₁	Feed hole center to lead	3.75	±0.5	
P ₂	Hole center to comp. center	7.5	±1.3	Tilt of component due to curvature of leads shall be included.
F	Lead-to-lead distance	7.5	±0.2	
Δh _{1,2}	Component alignment	0~2.0		Tilt of component due to curvature of leads shall be included.
W	Paper backing width	18.0	±0.5	
W ₀	Adhesive tape width	12.5	min.	The hold down tape shall not protrude beyond the carrier tape.
W ₁	Hole position	9.0	±0.5	
W ₂	Hold-down tape position	0~3.0		
H ₁	Lead-wire clinch height	16.0	+1.0	
ℓ	Lead wire protrusion	0	max.	
ℓ ₀	Lead wire depression	7.0	max.	
φD ₀	Feed hole diameter	4.0	±0.2	
t	Total tape thickness	0.7	±0.2	Total thickness including the hold down tape.
L ₀	Length of snapped lead	11.0	max.	

CONSTRUCTION

The capacitor is of non-inductive construction, wound with metallized polypropylene film dielectric.
The capacitor is enclosed in non-combustible epoxy resin and has two leads.

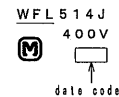
MARKING

Marking comprises capacitance, capacitance tolerance, rated voltage, manufacturer's trademark, type name "WFL" and manufacturer's date code.

PROPERTIES

Capacitance : See table at 1kHz
 Capacitance tolerance : ±3% (H), ±5% (J)
 Rated voltage : 400VDC
 Withstand voltage : Rated voltage × 150% for 60s
 Insulation resistance : ≥3,000Ω·μF at 100VDC, 20°C for 60s
 Dissipation factor : ≤0.05% at 1kHz, 20°C
 Category temperature range : From -40°C to +105°C (including temperature rise on unit surface)

(example)



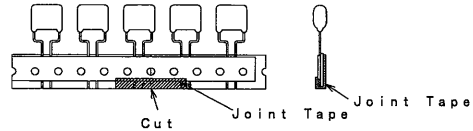
※The marking of 'WFL' with the underline means that the copper wire is used for the lead wire, while the one without the underline means that tinned copper clad-steel wire is used.

Reference

DESIGN	<i>M. Yamaguchi</i>
CHECKED	<i>M. Yamaguchi</i>
APPROVAL	<i>Y. Taketa</i>
ESTABLISHMENT	Feb. 3, 2003
TYPE NAME	
ECWF 4***R () L	
NAME METALLIZED POLYPROPYLENE CAPACITOR	
DRAWING NAME	
PRODUCT DRAWING	
DRAWING No.	
3015J-J-E (1/2)	

Toyama-Matsue Plant
Device Solutions Business Division
Panasonic Corporation

- Note 1. No more than 2 consecutive missing is permitted.
 Note 2. A tape conjunction and a tape discrepancy specify as follows.

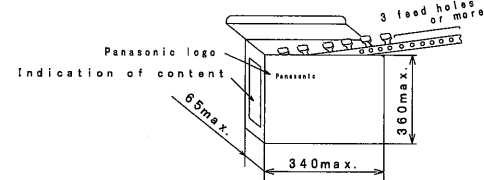


A tape sliding shall not exceed in an allowance of "P₀" dimension. A joint tape put on the back side of paper backing, and turn up the lower part to the front.

- Note 3. A tape trailer having at least 3 feed holes is required at the end of the tape.
 Note 4. Marking on components may not be the same side.
 Note 5. The tape adhesion is more than 3.92N (400gf) / 25mm.

Packing specification

1. Case size (Ammo pack)



2. Packing quantity

Capacitance range (μF)	Quantity (pcs.)
0.51, 0.56	300
0.62~ 1.0	200

Handling notes

- 1) One package must be packed one product only.
- 2) The storage must be stacked 5 boxes or less.
(Surface printed placing upward)
(For prevention from displacement of capacitors and damage of lead crimping)
- 3) The packing box must be handled with care and never thrown out.

Reference

TYPE NAME	ECWF 4***R () L
DRAWING No.	3015J-J-E (2/2)

Toyama-Matsue Plant
 Device Solutions Business Division
 Panasonic Corporation