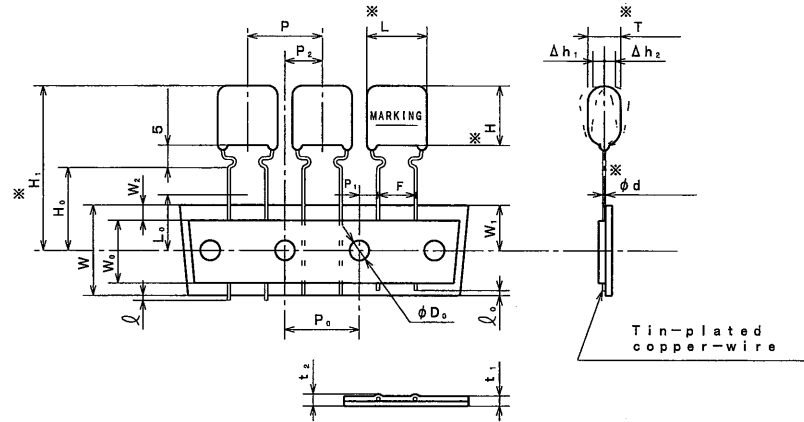


THIRD ANGLE PROJECTION

ITEM CODE	CAPACITANCE μF (*)	DIMENSIONS						VOLUME (mm ³)
		※ L	※ T	※ H	※ H ₁	※ d		
ECWF2104R() A	0.1 (104)	13.0	5.0	9.1	31.1	0.6	488	
" 2124R() A	0.12 (124)	"	5.3	9.4	31.4	"	524	
" 2154R() A	0.15 (154)	"	5.6	9.7	31.7	"	575	
" 2184R() A	0.18 (184)	"	5.9	10.1	32.1	"	626	
" 2224R() A	0.22 (224)	"	6.3	10.4	32.4	"	689	
" 2274R() A	0.27 (274)	"	6.8	10.9	32.9	"	771	
" 2334R() A	0.33 (334)	"	7.3	11.4	33.4	"	867	
" 2394R() A	0.39 (394)	"	7.8	11.9	33.9	"	962	
" 2474R() A	0.47 (474)	"	8.4	12.6	34.6	"	1087	

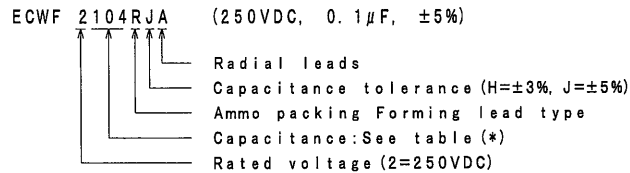


ALTERATION		
ISSUE	DESCRIPTION	DATE
①	Company name changed	Apr. 1 2012
②	Company name changed	Apr. 1 2013
③	Company name changed	Apr. 1 2015

SPECIFICATIONS No.

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	+0.8 -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	9.5	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	
l	Lead wire protrusion	0	max.	
l ₀	Lead wire depression	7.0	max.	
φD ₀	Feed hole diameter	4.0	±0.2	
t ₁	Total tape thickness	0.7	±0.2	Total thickness including the hold down tape.
t ₂	Total thickness	1.5	max.	
L ₂	Length of snapped lead	11.0	max.	

ITEM CODE NUMBER STRUCTURE



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

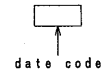
Marking comprises capacitance, capacitance tolerance, rated voltage, type name "WFA" and manufacturer's date code.

PROPERTIES

Capacitance : See table at 1kHz
 Capacitance tolerance : ±3% (H), ±5% (J)
 Rated voltage : 250VDC
 Withstand voltage : 250VDC×150% for 60s
 Insulation resistance : C≤0.33μF : ≥9000MΩ } at 100VDC, 20°C for 60s
 : C>0.33μF : ≥3000MΩ·μF }
 Dissipation factor : ≤0.1% at 1kHz, 20°C
 Category temperature range : From -40°C to +105°C
 (including temperature rise on unit surface)

MARKING EXAMPLE

WFA104J
250V:



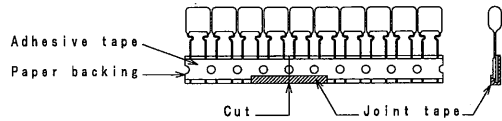
Reference

DESIGN	M. Yamamoto
CHECKED	M. Yamamoto
APPROVAL	T. Taka
ESTABLISHMENT	May. 28. 2009
TYPE NAME	
ECWF 2***R() A	
NAME METALLIZED	
POLYPROPYLENE CAPACITOR	
DRAWING NAME	
PRODUCT DRAWING	
DRAWING No.	
9024J-J-E (1/2)	

Toyama-Matsue Plant
Device Solutions Business Division
Panasonic Corporation

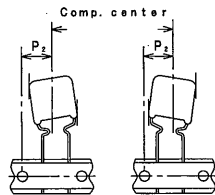
THIRD ANGLE PROJECTION

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

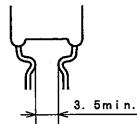


A tape sliding shall not exceed in an allowance of "P₂" dimension.
 A joint tape put on the back side of paper backing, and turn up the lower part to the front.

- Note 3. Marking on components may not be the same side.
 Note 4. The tape adhesion is more than 3.92N(400gf)/25mm.
 Note 5. A tape trailer having at least 3 feed holes is required at the end of the tape.
 Note 6. 1) The P₁ and P₂ dimension shall be measured as shown in the figure after the adhesive tape placing upward.
 (measuring from the center of sprocket hole to the right.)
 2) The P₂ dimension shall be measured between center of a vertical projection plane for tape plane and center of sprocket hole.

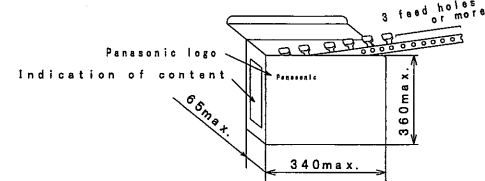


Note 7. The lead crimping shape shows as follows.



Packing specification

1. Case size (Ammo pack)



2. Packing quantity

Capacitance range (μF)	Quantity (pcs.)
0.1	1300
0.12	1200
0.15, 0.18	1100
0.22	1000
0.27, 0.33	900
0.39	800
0.47	700

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 2***R () A
DRAWING No.	9024J-J-E (2/2)

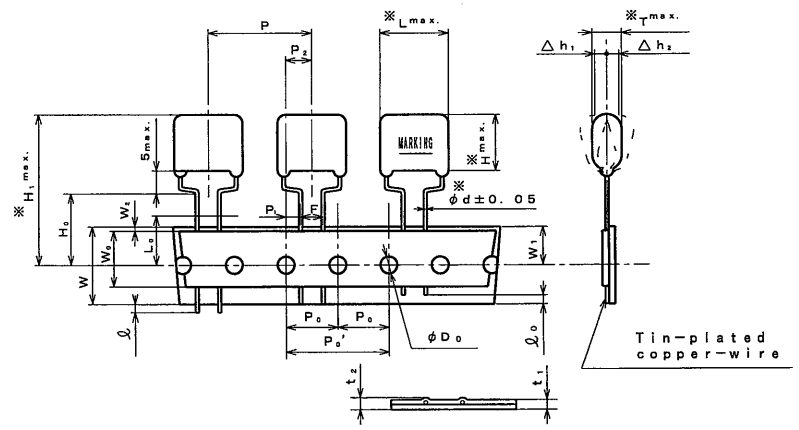
Toyama-Matsua Plant
 Device Solutions Business Division
 Panasonic Corporation

THIRD ANGLE PROJECTION

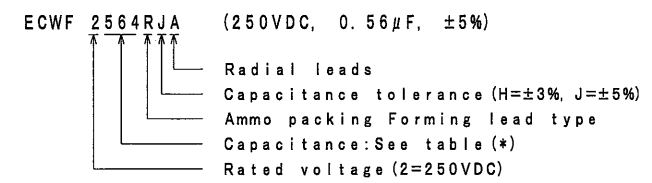
ITEM CODE	CAPACITANCE μF (*)	DIMENSIONS					VOLUME (mm ³)	MARKING STYLE	NOTE
		※L	※T	※H	※H ₁	※d			
ECWF2564R () A	0.56 (564)	18.1	6.9	11.4	33.4	0.8	1179	1	
" 2684R () A	0.68 (684)	"	7.4	12.0	34.0	"	1328	"	
" 2824R () A	0.82 (824)	"	8.0	12.6	34.6	"	1499	"	
" 2105R () A	1.0 (105)	"	8.5	13.3	35.3	"	1684	"	
" 2125R () A	1.2 (125)	18.8	9.5	14.6	36.6	"	2125	2	*
" 2155R () A	1.5 (155)	"	10.5	15.6	37.6	"	2497	"	*
" 2185R () A	1.8 (185)	"	11.4	16.5	38.5	"	2863	"	*
" 2225R () A	2.2 (225)	"	12.6	17.6	39.6	"	3344	"	*

Note

※The specimen (the volume is more than 1750mm³) shall be satisfied with IEC60384-1 Inflammability Category B based on IEC60065, 1998~



ITEM CODE NUMBER STRUCTURE



ALTERATION		
ISSUE	DESCRIPTION	DATE
△1	Company name changed	Apr. 1 2012
△2	Company name changed	Apr. 1 2013
△3	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 ₁	Feed hole pitch	15.0	±0.2	
P ₂	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 ₀	Lead-wire clinch height	16.0	+1.0	
Q	Lead wire protrusion	0	max.	
Q ₀	Lead wire depression	7.0	max.	
φD ₀	Feed hole diameter	4.0	±0.2	
t ₁	Total tape thickness	0.7	±0.2	Total thickness including the hold down tape.
t ₂	Total thickness	1.5	max.	
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.

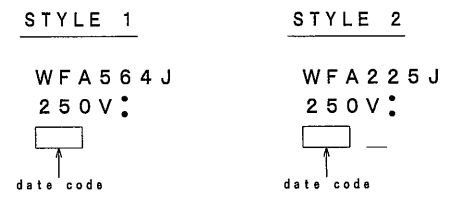
MARKING

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

PROPERTIES

- Capacitance : See table at 1kHz
- Capacitance tolerance : ±3% (H), ±5% (J)
- Rated voltage : 250VDC
- Withstand voltage : 250VDC×150% for 60s
- Insulation resistance : ≥3000MΩ·μF at 100VDC, 20°C for 60s
- Dissipation factor : ≤0.1% at 1kHz, 20°C
- Category temperature range : From -40°C to +105°C (including temperature rise on unit surface)

MARKING EXAMPLE



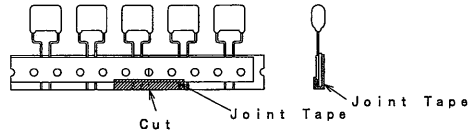
Reference

DESIGN	<i>M. Yanagita</i>
CHECKED	<i>M. Yanagita</i>
APPROVAL	<i>T. Takata</i>
ESTABLISHMENT	May. 28, 2009
TYPE NAME	ECWF 2***R () A
NAME	METALLIZED POLYPROPYLENE CAPACITOR
DRAWING NAME	PRODUCT DRAWING
DRAWING No.	9025J-J-E (1/2)

Toyama·Matsue Plant
Device Solutions Business Division
Panasonic Corporation

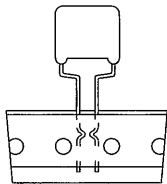
THIRD ANGLE PROJECTION

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



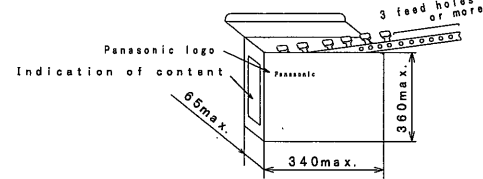
A tape sliding shall not exceed in an allowance of "P₀" dimension.
 A joint tape put on the back side of paper backing, and turn up the lower part to the front.

- 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.
 Note 6. The lead clinch at the tape, shows as follows.



Packing specification

1. Case size (Ammo pack)



2. Packing quantity

Capacitance range (μF)	Quantity (pcs.)
0.56 ~ 0.82	400
1.0 ~ 1.5	300
1.8 , 2.2	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 2***R () A
DRAWING No.	9025J-J-E (2/2)

Toyama-Matsue Plant
 Device Solutions Business Division
 Panasonic Corporation

THIRD ANGLE PROJECTION

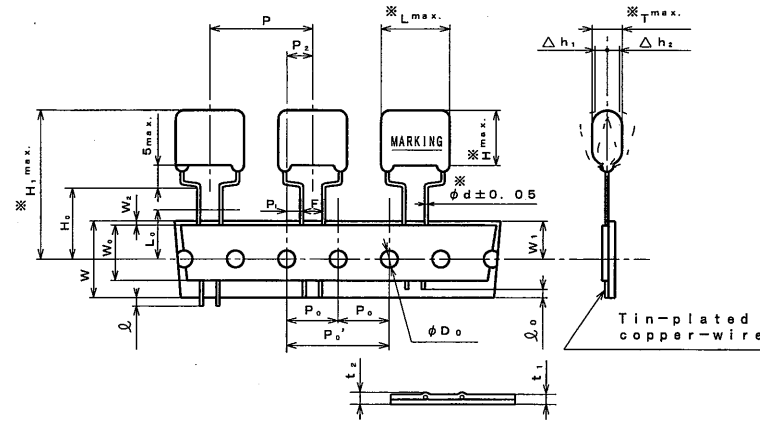
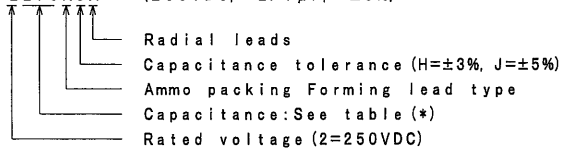
ITEM CODE	CAPACITANCE μF (*)	DIMENSIONS					VOLUME (mm ³)	NOTE
		※L	※T	※H	※H ₁	※d		
ECWF2275R()A	2.7 (275)	23.8	11.4	17.2	39.2	0.8	3824	*
" 2335R()A	3.3 (335)	"	12.5	18.3	40.3	"	4452	*
" 2395R()A	3.9 (395)	"	13.5	19.3	41.3	"	5070	*

Note

※The specimen (the volume is more than 1750mm³) shall be satisfied with IEC60384-1 Inflammability Category B based on IEC60065, 1998~

ITEM CODE NUMBER STRUCTURE

ECWF 2275RJA (250VDC, 2.7μF, ±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 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	+0.2 -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	
L ₁	Lead wire protrusion	0	max.	
L ₂	Lead wire depression	7.0	max.	
φD ₀	Feed hole diameter	4.0	±0.2	
t ₁	Total tape thickness	0.7	±0.2	Total thickness including the hold down tape.
t ₂	Total thickness	1.5	max.	
L ₀	Length of snapped lead	11.0	max.	

ALTERATION		
ISSUE	DESCRIPTION	DATE
△1	Company name changed	Apr. 1 2012
△2	Company name changed	Apr. 1 2013
△3	Company name changed	Apr. 1 2015

SPECIFICATIONS No.

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

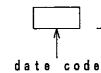
Marking comprises capacitance, capacitance tolerance, rated voltage, type name "WFA" and manufacturer's date code.

PROPERTIES

Capacitance	: See table	at 1kHz
Capacitance tolerance	: ±3% (H), ±5% (J)	
Rated voltage	: 250VDC	
Withstand voltage	: 250VDC×150% for 60s	
Insulation resistance	: ≥3000MΩ·μF	at 100VDC, 20°C for 60s
Dissipation factor	: ≤0.1%	at 1kHz, 20°C
Category temperature range	: From -40°C to +105°C	(including temperature rise on unit surface)

MARKING EXAMPLE

WFA225J
250V:



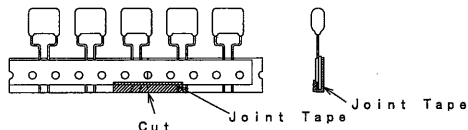
Reference

DESIGN	M. Yamamoto	
CHECKED	M. Yamamoto	
APPROVAL	Y. Takeda	
ESTABLISHMENT	May. 28, 2009	
TYPE NAME	ECWF 2***R()A	
NAME	METALLIZED POLYPROPYLENE CAPACITOR	
DRAWING NAME	PRODUCT DRAWING	
DRAWING No.	9026J-J-E (1/2)	

Toyama-Matsue Plant
Device Solutions Business Division
Panasonic Corporation

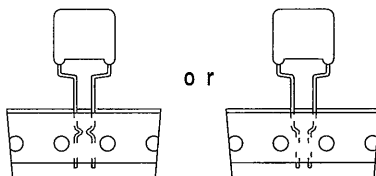
THIRD ANGLE PROJECTION

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



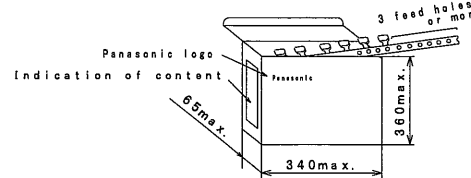
A tape sliding shall not exceed in an allowance of "P₀" dimension. A joint tape put on the back side of paper backing, and turn up the lower part to the front.

- 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.
 Note 6. The lead clinch at the tape, shows as follows.



Packing specification

1. Case size (Ammo pack)



2. Packing quantity

Capacitance range (μF)	Quantity (pcs.)
2.7	300
3.3, 3.9	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 2***R () A

DRAWING No.

9026J-J-E (2/2)

Toyama-Matsue Plant
 Device Solutions Business Division
 Panasonic Corporation