Panasonic INDUSTRY

UPDATE

Plastic Film Capacitors

Metallized Polypropylene Film Capacitor

EZPQ series

Features

- High safety (Self-protecting function built-in)
- Long product life, High reliability
- Low loss, Low ESR
- Flame retardant (Case and sealing resin)
- High moisture resistance (85 ℃, 85 %RH)
  - ･330 V : 280 V, 1000 h
  - ･380 V : 320 V, 1000 h
  - ･600 V : 540 V, 1000 h
- RoHS compliant

Recommended applications

For AC filter

- Solar inverters
- UPS
- Industrial power supplies
- Inverter circuit in appliances (Air conditioners etc.)

Construction

- Dielectric : Polypropylene film
- Electrodes : Metallized dielectric with segmented pattern
- Plastic case : UL94 V-0
- Sealing : UL94 V-0
- Terminals : Tinned wires, 2-pin and 4-pin versions

Explanation of part number

1	2	3	4	5	6	7	8	9	10	11	12
E	Z	P	Q							T	
Product code			Dielectric & construction	Rated voltage		Capacitance			Pin type	Case type	Suffix

Code	R.voltage [AC]
25	250 V
33	330 V
38	380 V
60	600 V

Code	Pin type
L	2 pin type
M	4 pin type

Specifications

Category temperature range*1	250 V		−40 ℃ to +85 ℃
	330 V, 380 V 600 V		−40 ℃ to +105 ℃
Rated voltage*2 [AC]	250 V 330 V, 380 V, 600 V (Derating of rated voltage by 1.0 %/℃ at more than 85 ℃)		
Rated capacitance	250 V		12, 22, 36 μF
	330 V		3 μF to 35 μF
	380 V		1 μF to 33 μF
	600 V		1 μF to 12 μF
Capacitance tolerance	±5%、±10 %		
Withstand voltage	250 V	Between terminals	: Rated voltage (V) × 175 % 10 s
		Terminal to case	: 2000 V [AC] (50 Hz or 60 Hz), 10 s
	330 V, 380 V 600 V	Between terminals	: Rated voltage (V) × 150 % 60 s
		Terminal to case	: 2000 V [AC] (50 Hz or 60 Hz), 10 s
Insulation resistance (IR)	CR ≧ 10,000 Ω･F (20 ℃, 100 V [DC], 60 s)		

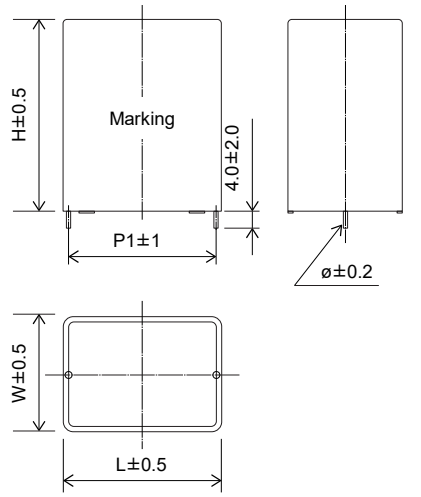
*1 : The temperature of capacitor surface (case).

*2 : Use for AC voltage only.

Note : Some part numbers of 600V products are not recommended for new design.

Dimensions

250 V

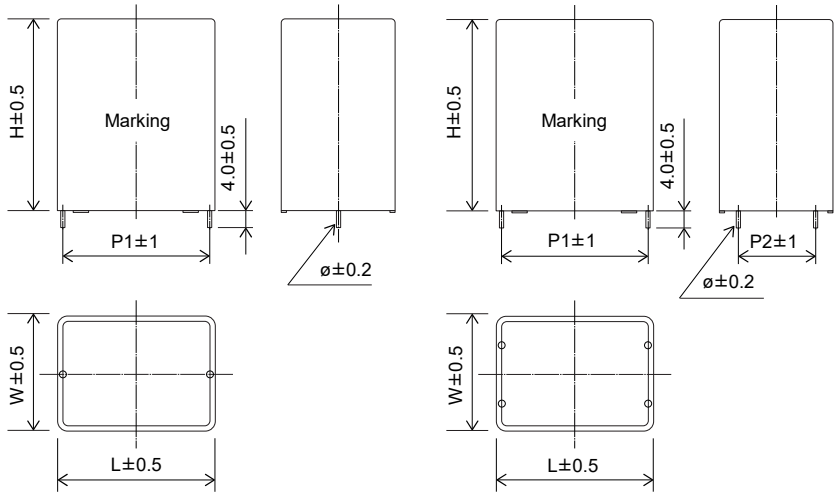


Panasonic
SH- (a)
AC (b) V (c) μF
(d)

(a) Type of model
(b) Rated voltage
(c) Capacitance
(d) Lot No.

Unit:mm

330 V, 380 V, 600 V



Marking example

Panasonic
SH- (a)
AC (b) V (c) μF
(d)

(a) Type of model
(b) Rated voltage
(c) Capacitance
(d) Lot No.

Unit:mm

Rating · Dimensions · Quantity

■ Rated voltage [AC] : 250 V

Part No.	Capacitance (μF)	Dimensions (mm)						Mass (g)	Min. order Q'ty*1 (PCS)
		W	H	L	P1	P2	ø		
EZPQ25126LTA	12	22	36	48.5	45.6	–	1.2	80	800
EZPQ25226LTA	22	30	45	57.5	52.5	–	1.2	107	200
EZPQ25366LTA	36	35	56	57.5	52.5	–	1.2	136	200

*1 : Minimum order quantity consists of 4 packing units.

Rating · Dimensions · Quantity

■ Rated voltage [AC] : 330 V

Part No.	Cap. Tol. (%)	Cap. (μF)	Dimensions (mm)						dv/dt (V/μs)	Permissible current		ESR*3 (mΩ)	Mass (g)	Min. order Q'ty*4 (PCS)
			W	H	L	P1	P2	ø		Peak current*1 (A_{0-P})	RMS current*2 (A rms)			
EZPQ33305LTA	±5	3.0	17.0	34.5	41.5	37.5	-	1.0	23	69	5.0	23.0	29	1200
EZPQ33335LTA	±5	3.3	17.0	34.5	41.5	37.5	-	1.0	23	76	5.3	21.2	29	1200
EZPQ33355LTA	±5	3.5	17.0	34.5	41.5	37.5	-	1.0	23	81	5.6	20.0	29	1200
EZPQ33405LTA	±5	4.0	17.0	34.5	41.5	37.5	-	1.0	23	92	6.2	17.5	29	1200
EZPQ33455LTA	±5	4.5	17.0	34.5	41.5	37.5	-	1.0	23	104	6.8	15.9	29	1200
EZPQ33475LTA	±5	4.7	22.0	36.0	41.5	37.5	-	1.0	23	108	6.8	16.2	39	600
EZPQ33505LTA	±5	5.0	22.0	36.0	41.5	37.5	-	1.0	23	115	7.1	15.2	38	600
EZPQ33605LTA	±5	6.0	22.0	36.0	41.5	37.5	-	1.0	23	138	8.0	13.5	40	600
EZPQ33685LTA	±5	6.8	26.0	40.5	41.5	37.5	-	1.0	23	156	8.6	12.6	53	600
EZPQ33705LTA	±5	7.0	26.0	40.5	41.5	37.5	-	1.0	23	161	8.8	12.2	53	600
EZPQ33805LTA	±5	8.0	26.0	40.5	41.5	37.5	-	1.0	23	184	9.5	11.3	53	600
EZPQ33905LTA	±5	9.0	26.5	41.5	41.5	37.5	-	1.0	23	207	10.3	10.6	54	400
EZPQ33106LTB	±5	10.0	30.0	50.5	41.5	37.5	-	1.0	23	230	10.4	10.9	74	400
EZPQ33106LTC	±5	10.0	35.5	50.5	42.5	37.5	-	1.2	23	230	12.1	8.1	89	400
EZPQ33126LTA	±5	12.0	30.0	50.5	41.5	37.5	-	1.0	23	276	11.5	10.0	73	400
EZPQ33146LTA	±5	14.0	35.5	50.5	42.5	37.5	-	1.2	23	322	14.4	7.1	89	400
EZPQ33156LTA	±5	15.0	35.5	50.5	42.5	37.5	-	1.2	23	345	14.9	7.0	93	400
EZPQ33206LTB	±5	20.0	43.0	58.0	41.5	37.5	-	1.2	23	460	17.9	5.9	126	400
EZPQ33106MTA	±5	10.0	30.0	50.5	41.5	37.5	10.2	1.0	23	230	10.4	10.9	75	400
EZPQ33126MTA	±5	12.0	30.0	50.5	41.5	37.5	10.2	1.0	23	276	11.5	10.0	74	400
EZPQ33146MTA	±5	14.0	35.5	50.5	42.5	37.5	10.2	1.2	23	322	14.4	7.1	90	400
EZPQ33156MTA	±5	15.0	35.5	50.5	42.5	37.5	10.2	1.2	23	345	14.9	7.0	94	400
EZPQ33206MTA	±5	20.0	43.0	58.0	41.5	37.5	10.2	1.2	23	460	17.9	5.9	127	400
EZPQ33156LTB	±5	15.0	30.0	51.0	57.5	52.5	-	1.2	14	210	9.0	9.3	117	200
EZPQ33186MTA	±5	18.0	30.0	51.0	57.5	52.5	10.2	1.2	14	252	10.0	8.4	114	200
EZPQ33206MTB	±5	20.0	30.0	51.0	57.5	52.5	20.3	1.2	14	280	10.8	7.6	116	200
EZPQ33226MTA	±5	22.0	35.0	50.0	57.5	52.5	20.3	1.2	14	308	11.6	7.0	135	200
EZPQ33256MTB	±5	25.0	40.0	51.5	57.5	52.5	20.3	1.2	14	350	12.2	7.0	159	200
EZPQ33286MTA	±5	28.0	35.0	64.5	57.5	52.5	20.3	1.2	14	392	12.6	6.9	165	200
EZPQ33306MTB	±5	30.0	45.0	62.0	57.5	52.5	20.3	1.2	14	420	13.3	6.6	214	200
EZPQ33356MTA	±5	35.0	45.0	62.0	57.5	52.5	20.3	1.2	14	490	14.4	6.2	210	200

*1 : When rising temperature of capacitor surface by continuous peak current(included pulse current), use within limit specified for temperature of capacitor surface and self heating temperature rise.
*2 : Maximum RMS current @ 85℃ , 10kHz Use within limit for self heating temperature rise at capacitor surface.
*3 : 20 ℃, 10 kHz
*4 : Minimum order quantity consists of 4 packing units.

Rating · Dimensions · Quantity

■ Rated voltage [AC] : 380 V

Part No.	Cap. Tol. (%)	Cap. (μF)	Dimensions (mm)						dv/dt (V/μs)	Permissible current		ESR*3 (mΩ)	Mass (g)	Min. order Q'ty*4 (PCS)
			W	H	L	P1	P2	ø		Peak current*1 (A_{0-P})	RMS current*2 (A rms)			
EZPQ38105LTA	±5	1.0	15.0	29.0	41.5	37.5	-	1.0	50	50	2.1	71.6	22	1200
EZPQ38155LTA	±5	1.5	15.0	29.0	41.5	37.5	-	1.0	50	75	2.8	48.8	22	1200
EZPQ38205LTA	±5	2.0	15.0	29.0	41.5	37.5	-	1.0	50	100	3.5	36.6	22	1200
EZPQ38225LTB	±5	2.2	15.0	29.0	41.5	37.5	-	1.0	50	110	3.8	33.2	22	1200
EZPQ38255LTB	±5	2.5	15.0	29.0	41.5	37.5	-	1.0	50	125	4.1	29.2	22	1200
EZPQ38305LTA	±5	3.0	17.0	34.5	41.5	37.5	-	1.0	50	150	4.8	24.4	29	1200
EZPQ38335LTA	±5	3.3	17.0	34.5	41.5	37.5	-	1.0	50	165	5.2	22.1	29	1200
EZPQ38355LTA	±5	3.5	17.0	34.5	41.5	37.5	-	1.0	50	175	5.4	20.9	29	1200
EZPQ38405LTA	±5	4.0	22.0	36.0	41.5	37.5	-	1.0	50	200	6.0	18.3	39	600
EZPQ38455LTA	±5	4.5	22.0	36.0	41.5	37.5	-	1.0	50	225	6.5	16.7	39	600
EZPQ38475LTA	±5	4.7	22.0	36.0	41.5	37.5	-	1.0	50	235	6.7	16.0	39	600
EZPQ38505LTA	±5	5.0	22.0	36.0	41.5	37.5	-	1.0	50	250	7.1	15.1	40	600
EZPQ38555LTA	±5	5.5	26.0	40.5	41.5	37.5	-	1.0	50	275	7.4	14.4	53	600
EZPQ38605LTA	±5	6.0	26.0	40.5	41.5	37.5	-	1.0	50	300	7.8	13.7	53	600
EZPQ38705LTA	±5	7.0	26.0	40.5	41.5	37.5	-	1.0	50	350	8.7	12.2	53	600
EZPQ38755LTA	±5	7.5	26.5	41.5	41.5	37.5	-	1.0	50	375	9.1	11.8	54	400
EZPQ38805LTC	±10	8.0	26.5	41.5	41.5	37.5	-	1.0	70	560	10.0	11.9	55	400
EZPQ38805LTD	±5	8.0	27.5	42.0	41.5	37.5	-	1.0	50	400	9.2	11.9	56	600
EZPQ38855LTA	±5	8.5	30.0	50.5	41.5	37.5	-	1.0	50	425	9.5	11.7	74	400
EZPQ38905LTA	±5	9.0	30.0	50.5	41.5	37.5	-	1.0	50	450	9.8	11.4	74	400
EZPQ38955LTA	±5	9.5	30.0	50.5	41.5	37.5	-	1.0	50	475	10.1	11.0	74	400
EZPQ38106LTA	±5	10.0	30.0	50.5	41.5	37.5	-	1.0	50	500	10.4	10.8	73	400
EZPQ38126LTA	±5	12.0	30.0	56.0	41.5	37.5	-	1.2	50	600	12.7	8.0	83	400
EZPQ38156LTA	±5	15.0	38.0	57.5	41.5	37.5	-	1.2	50	750	14.6	7.1	108	400
EZPQ38805MTA	±5	8.0	27.5	42.0	41.5	37.5	10.2	1.0	50	400	9.2	11.9	57	600
EZPQ38855MTA	±5	8.5	30.0	50.5	41.5	37.5	10.2	1.0	50	425	9.5	11.7	75	400
EZPQ38905MTA	±5	9.0	30.0	50.5	41.5	37.5	10.2	1.0	50	450	9.8	11.4	75	400
EZPQ38955MTA	±5	9.5	30.0	50.5	41.5	37.5	10.2	1.0	50	475	10.1	11.0	75	400
EZPQ38106MTA	±5	10.0	30.0	50.5	41.5	37.5	10.2	1.0	50	500	10.4	10.8	74	400
EZPQ38126MTA	±5	12.0	30.0	56.0	41.5	37.5	10.2	1.2	50	600	12.7	8.0	84	400
EZPQ38156MTB	±5	15.0	38.0	57.5	41.5	37.5	10.2	1.2	50	750	14.6	7.1	109	400
EZPQ38106LTB	±5	10.0	25.0	40.0	57.5	52.5	-	1.2	30	300	7.1	13.3	75	600
EZPQ38116LTA	±5	11.0	30.0	51.0	57.5	52.5	-	1.2	30	330	7.6	12.2	120	200
EZPQ38126LTB	±5	12.0	30.0	51.0	57.5	52.5	-	1.2	30	360	8.1	11.4	119	200
EZPQ38156LTB	±5	15.0	30.0	51.0	57.5	52.5	-	1.2	30	450	9.5	9.3	114	200
EZPQ38156MTC	±5	15.0	30.0	51.0	57.5	52.5	10.2	1.2	30	450	9.5	9.3	115	200
EZPQ38166MTA	±5	16.0	30.0	51.0	57.5	52.5	10.2	1.2	30	480	9.9	8.9	115	200
EZPQ38186MTA	±5	18.0	30.0	51.0	57.5	52.5	10.2	1.2	30	540	10.8	8.1	115	200
EZPQ38206MTA	±5	20.0	35.0	50.0	57.5	52.5	20.3	1.2	30	600	11.7	7.5	133	200
EZPQ38226MTA	±5	22.0	35.0	56.0	57.5	52.5	20.3	1.2	30	660	11.9	7.5	147	200
EZPQ38246MTC	±5	24.0	35.0	64.5	57.5	52.5	20.3	1.2	30	720	12.2	7.6	166	200
EZPQ38306MTA	±5	30.0	45.0	62.0	57.5	52.5	20.3	1.2	30	900	14.2	6.6	211	200
EZPQ38336MTA	±5	33.0	45.0	62.0	57.5	52.5	20.3	1.2	30	990	15.0	6.2	206	200

*1 : When rising temperature of capacitor surface by continuous peak current(included pulse current), use within limit specified for temperature of capacitor surface and self heating temperature rise.
*2 : Maximum RMS current @ 85℃ , 10kHz Use within limit for self heating temperature rise at capacitor surface.
*3 : 20 ℃, 10 kHz
*4 : Minimum order quantity consists of 4 packing units.

Rating · Dimensions · Quantity

■ Rated voltage [AC] : 600 V **NEW**

Part No.	Cap. Tol. (%)	Cap. (μF)	Dimensions (mm)						dv/dt (V/μs)	Permissible current		ESR*3 (mΩ)	Mass (g)	Min. order Q'ty*4 (PCS)
			W	H	L	P1	P2	ø		Peak current*1 (A_{0-P})	RMS current*2 (A rms)			
EZPQ60105LTD	±10	1.0	15.0	29.0	41.5	37.5	-	1.0	110	110	6.5	13.7	25	1200
EZPQ60155LTD	±10	1.5	17.0	34.5	41.5	37.5	-	1.0	110	165	7.9	11.2	34	1200
EZPQ60225LTD	±10	2.2	26.0	40.5	41.5	37.5	-	1.0	110	242	9.6	8.8	61	600
EZPQ60335MTD	±10	3.3	27.5	42.0	41.5	37.5	10.2	1.0	110	363	11.8	5.7	64	600
EZPQ60475MTD	±10	4.7	35.5	50.5	42.5	37.5	10.2	1.2	110	517	14.0	3.8	104	400
EZPQ60475MTE	±10	4.7	30.0	51.0	57.5	52.5	10.2	1.2	70	329	10.6	7.0	124	200
EZPQ60685MTD	±10	6.8	30.0	51.0	57.5	52.5	20.3	1.2	70	476	12.8	5.9	120	200
EZPQ60705MTD	±10	7.0	30.0	51.0	57.5	52.5	20.3	1.2	70	490	13.0	5.6	119	200
EZPQ60106MTD	±10	10.0	35.0	64.5	57.5	52.5	20.3	1.2	70	700	15.5	4.6	166	200
EZPQ60126MTD	±10	12.0	45.0	62.0	57.5	52.5	20.3	1.2	70	840	17.0	3.9	215	200

■ Rated voltage [AC] : 600 V **Not Recommended for New Design**

Part No.	Cap. Tol. (%)	Cap. (μF)	Dimensions (mm)						dv/dt (V/μs)	Permissible current		ESR*3 (mΩ)	Mass (g)	Min. order Q'ty*4 (PCS)
			W	H	L	P1	P2	ø		Peak current*1 (A_{0-P})	RMS current*2 (A rms)			
EZPQ60105LTA	±10	1.0	15.0	29.0	41.5	37.5	-	1.0	110	110	6.5	26.6	25	1200
EZPQ60155LTA	±10	1.5	17.0	34.5	41.5	37.5	-	1.0	110	165	7.9	18.7	34	1200
EZPQ60225LTA	±10	2.2	26.0	40.5	41.5	37.5	-	1.0	110	242	9.6	13.3	61	600
EZPQ60335MTB	±10	3.3	27.5	42.0	41.5	37.5	10.2	1.0	110	363	11.8	9.4	64	600
EZPQ60475MTA	±10	4.7	35.5	50.5	42.5	37.5	10.2	1.2	110	517	14.0	7.0	104	400
EZPQ60475MTB	±10	4.7	30.0	51.0	57.5	52.5	10.2	1.2	70	329	10.6	7.3	124	200
EZPQ60685MTA	±10	6.8	30.0	51.0	57.5	52.5	20.3	1.2	70	476	12.8	5.9	120	200
EZPQ60705MTA	±10	7.0	30.0	51.0	57.5	52.5	20.3	1.2	70	490	13.0	5.6	119	200
EZPQ60106MTA	±10	10.0	35.0	64.5	57.5	52.5	20.3	1.2	70	700	15.5	4.7	166	200
EZPQ60126MTA	±10	12.0	45.0	62.0	57.5	52.5	20.3	1.2	70	840	17.0	4.3	215	200

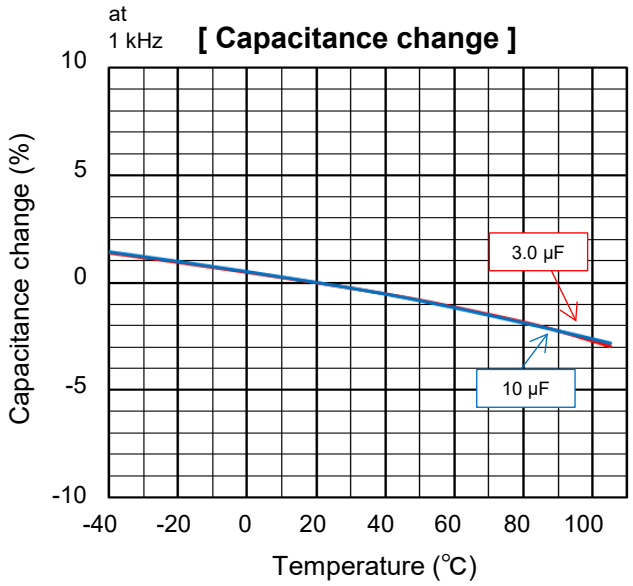
*1 : When rising temperature of capacitor surface by continuous peak current(included pulse current), use within limit specified for temperature of capacitor surface and self heating temperature rise.
*2 : Maximum RMS current @ 85℃ , 10kHz Use within limit for self heating temperature rise at capacitor surface.
*3 : 20 ℃, 10 kHz
*4 : Minimum order quantity consists of 4 packing units.

Characteristics data

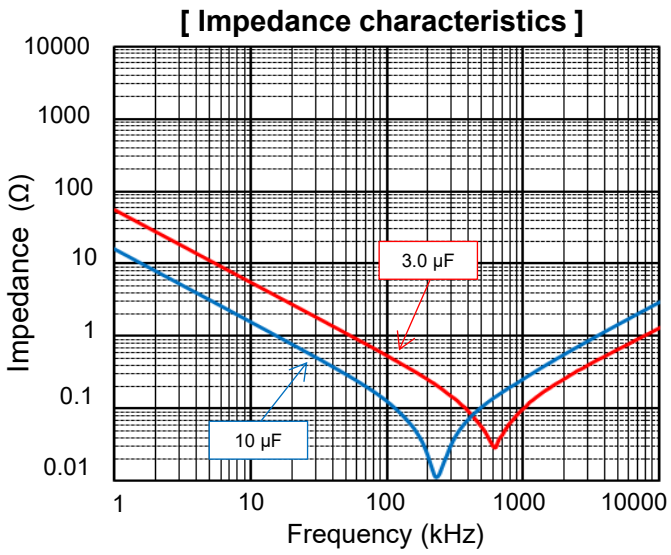
■ **Rated voltage [AC] : 330 V (Lead pitch 37.5 mm)**

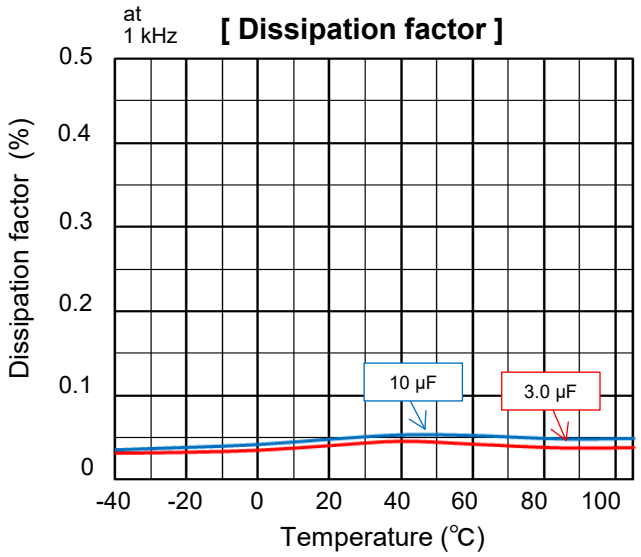
Electrical characteristics <Typical data >

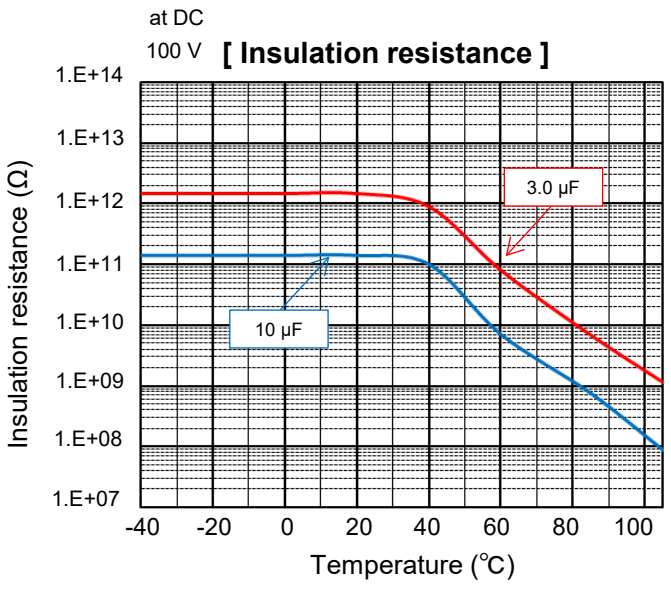
Temperature characteristics



Frequency characteristics





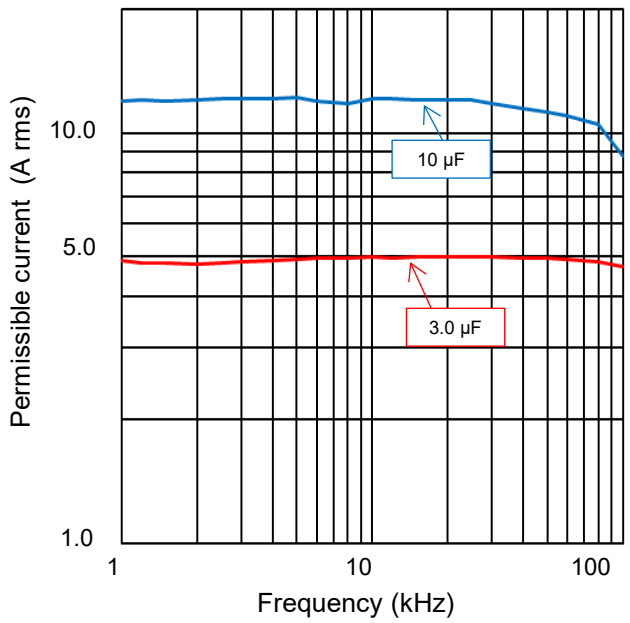


Characteristics data

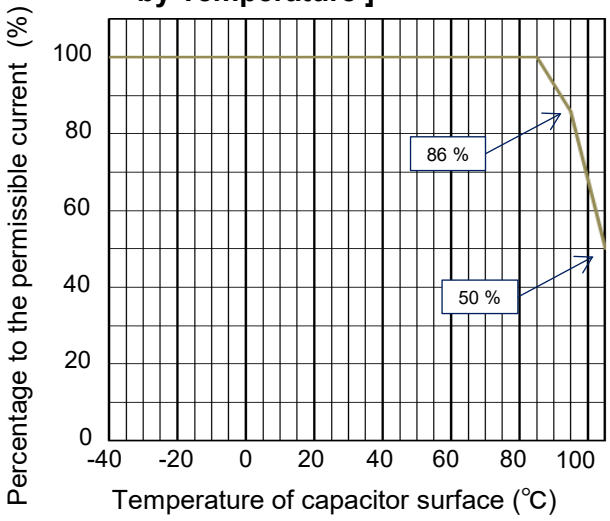
■ **Rated voltage [AC] : 330 V (Lead pitch 37.5 mm)**

Applicable specifications

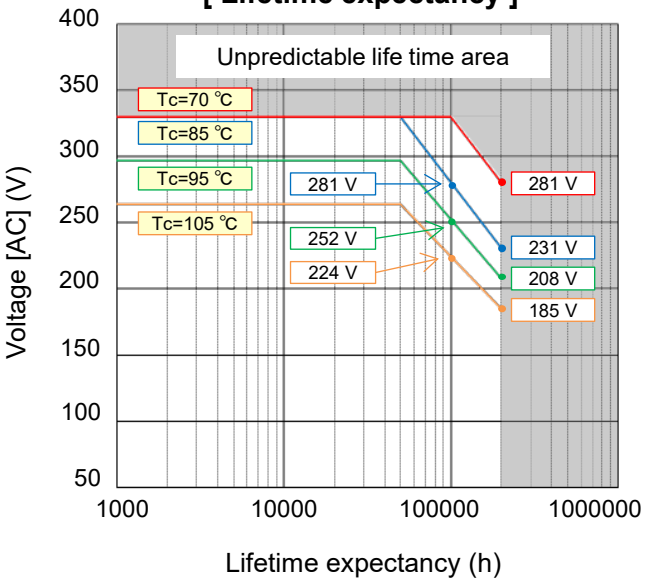
[Permissible Current]



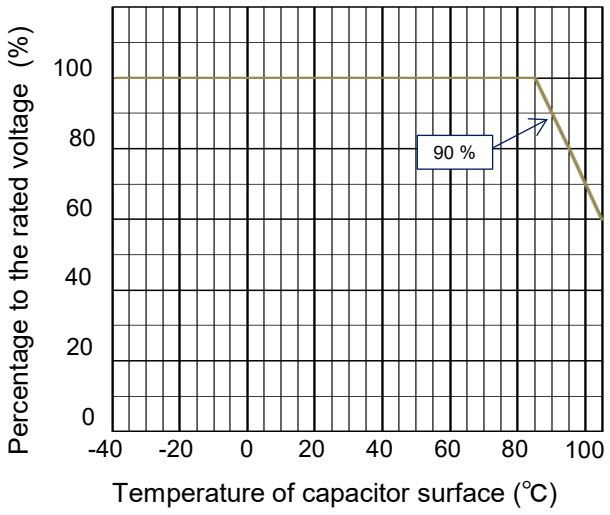
[Permissible Current Derating by Temperature]



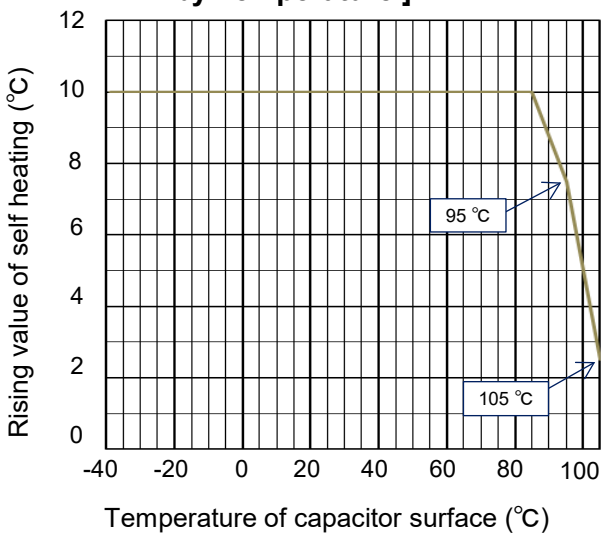
[Lifetime expectancy]



[Voltage Derating by Temperature]



[Self Heating Derating by Temperature]



Permissible pulse current (dV/dt)
(Max. 10000 cycles)

R. voltage [AC] (V)	Pitch (mm)	Capacitance (μF)	Code	dV/dt (V/μs)	Current (Ao-p)
330	37.5	3.0	305	23	69.0
		5.0	505		115.0
		6.0	605		138.0
		8.0	805		184.0
		10.0	106		230.0
		15.0	156		345.0
		20.0	206		460.0

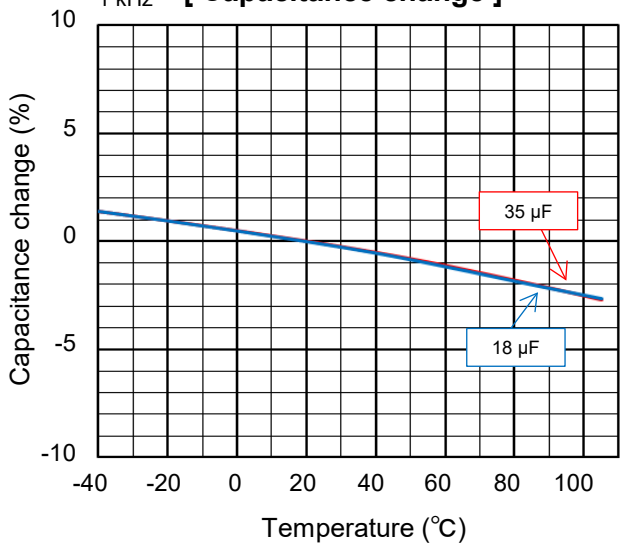
Characteristics data

■ **Rated voltage [AC] : 330 V (Lead pitch 52.5 mm)**

Electrical characteristics <Typical data >

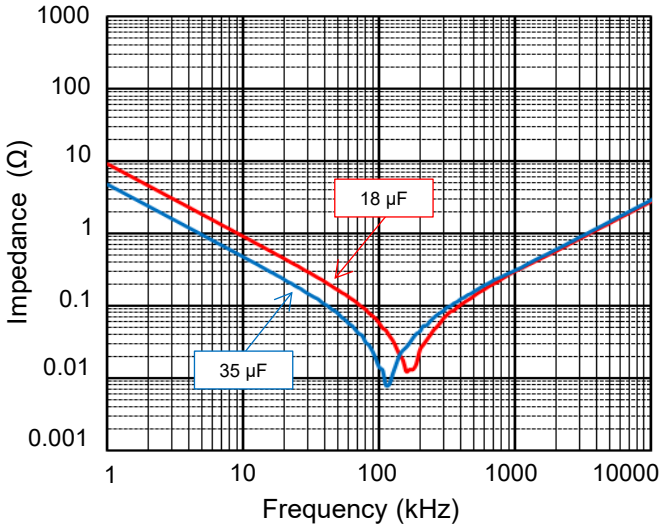
Temperature characteristics

at 1 kHz **[Capacitance change]**

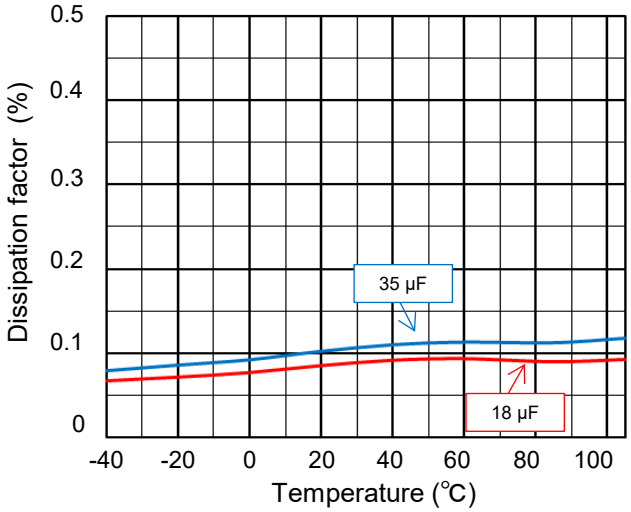


Frequency characteristics

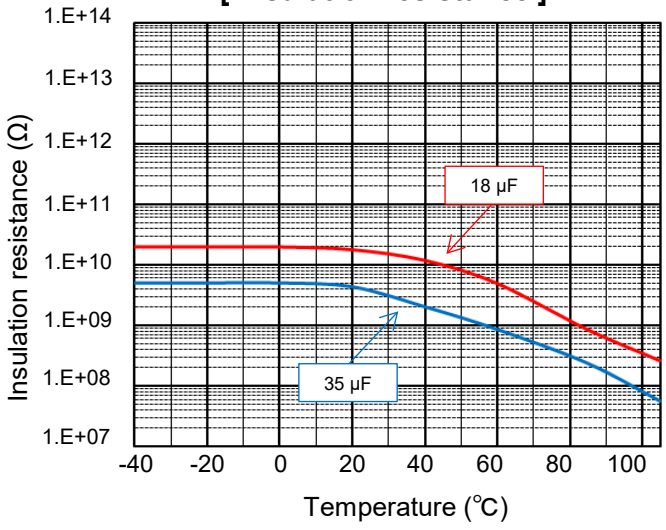
[Impedance characteristics]



at 1 kHz **[Dissipation factor]**



at DC 100 V **[Insulation resistance]**

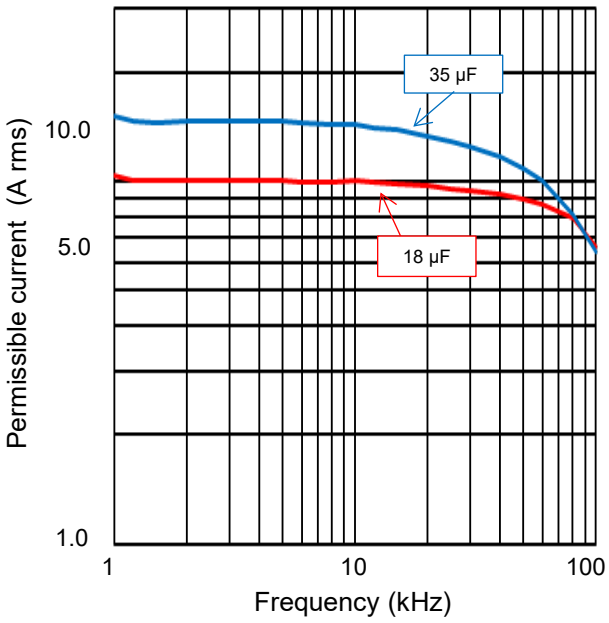


Characteristics data

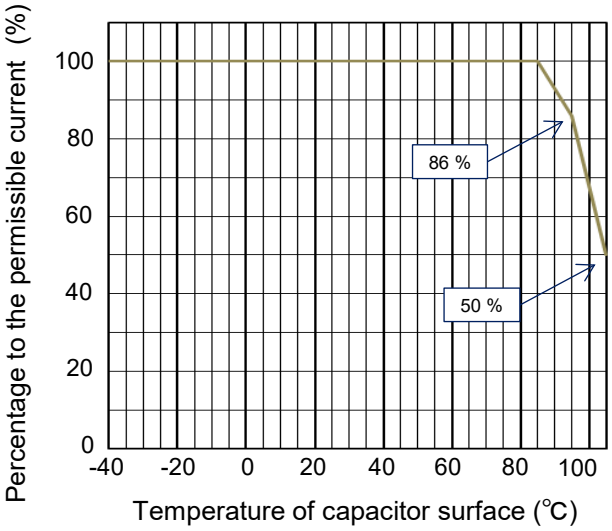
■ **Rated voltage [AC] : 330 V (Lead pitch 52.5 mm)**

Applicable specifications

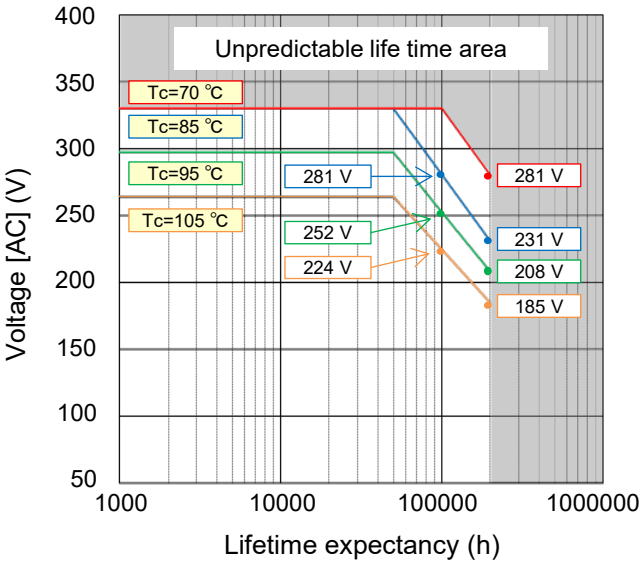
[Permissible Current]



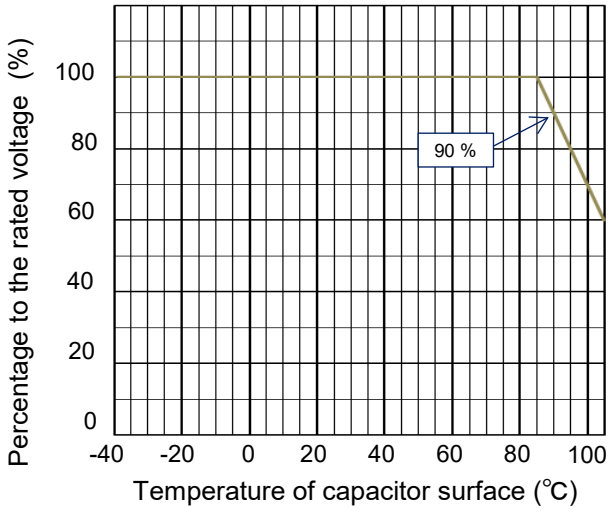
[Permissible Current Derating by Temperature]



[Lifetime expectancy]



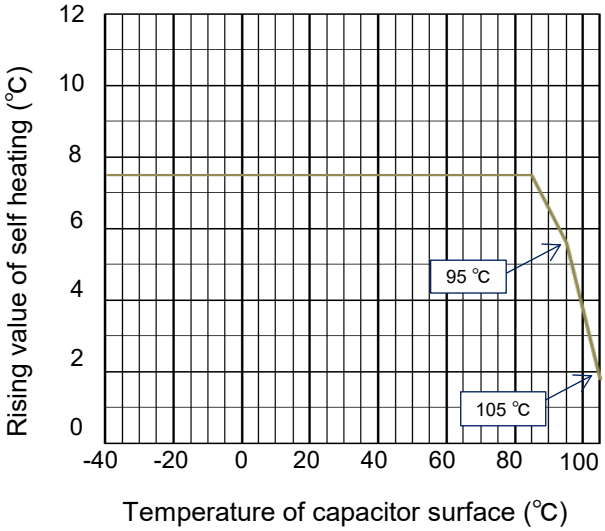
[Voltage Derating by Temperature]



Permissible pulse current (dV/dt)
(Max. 10000 cycles)

R. voltage [AC] (V)	Pitch (mm)	Capacitance (μF)	Code	dV/dt (V/μs)	Current (Ao-p)
330	52.5	15.0	156	14	210.0
		18.0	186		252.0
		20.0	206		280.0
		22.0	226		308.0
		25.0	256		350.0
		30.0	306		420.0
		35.0	356		490.0

[Self Heating Derating by Temperature]

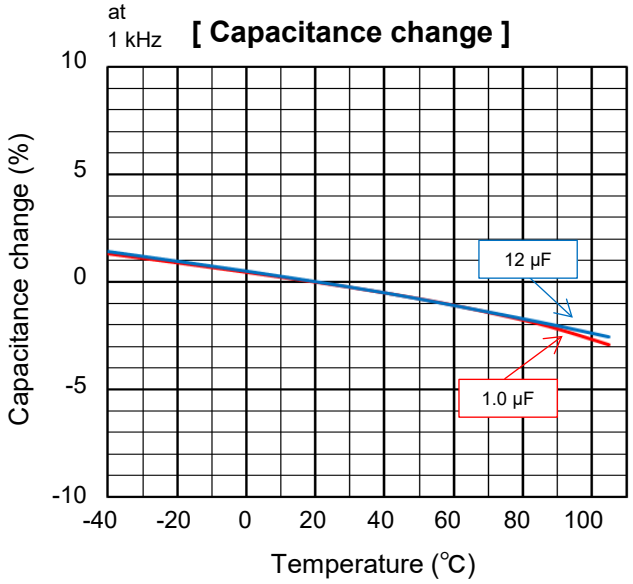


Characteristics data

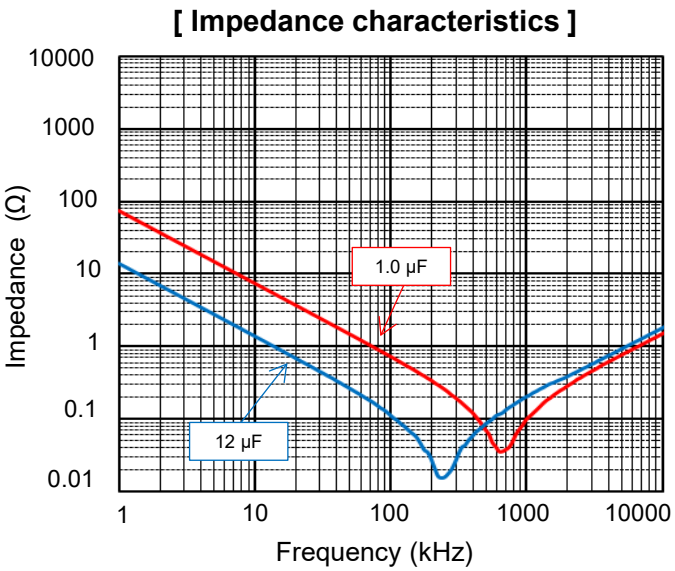
■ **Rated voltage [AC] : 380 V (Lead pitch 37.5 mm)**

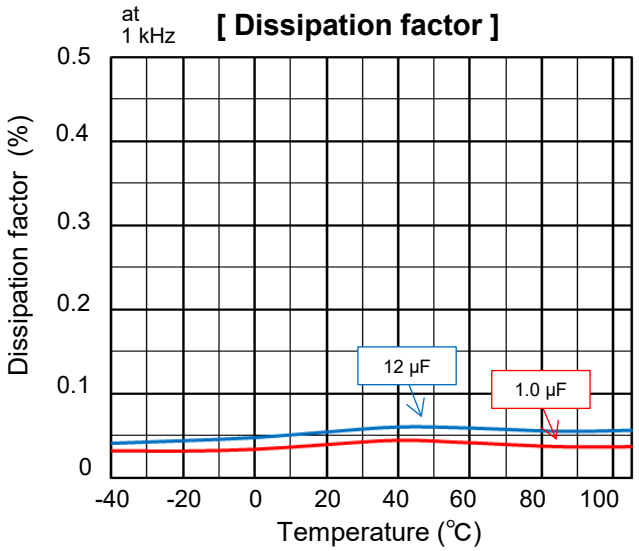
Electrical characteristics <Typical data >

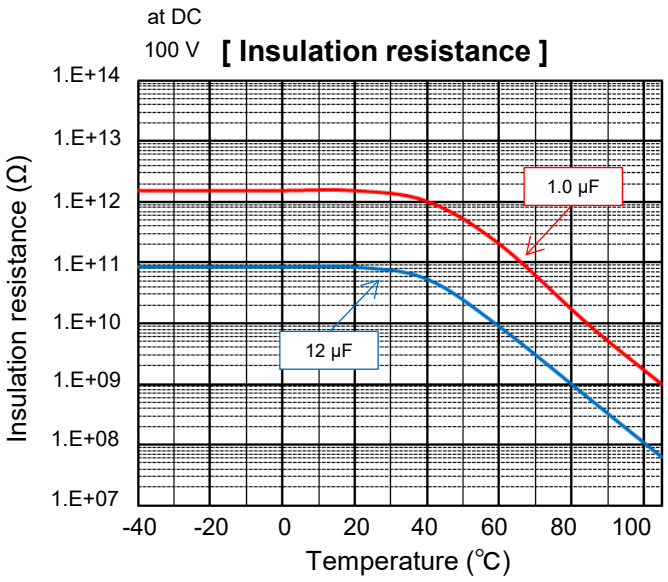
Temperature characteristics



Frequency characteristics





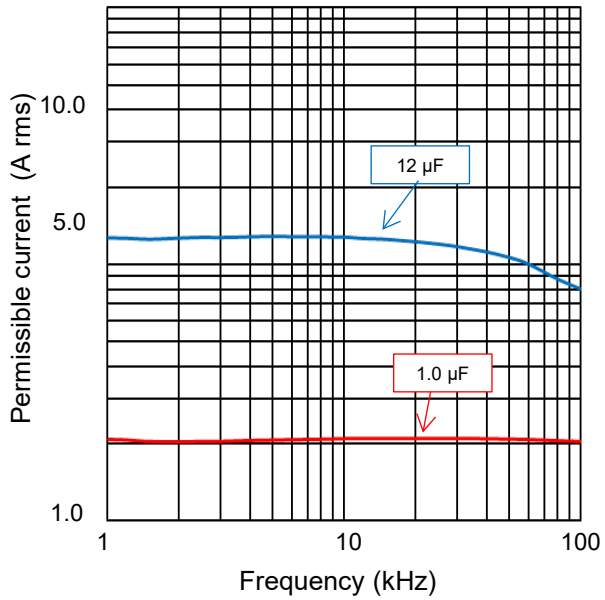


Characteristics data

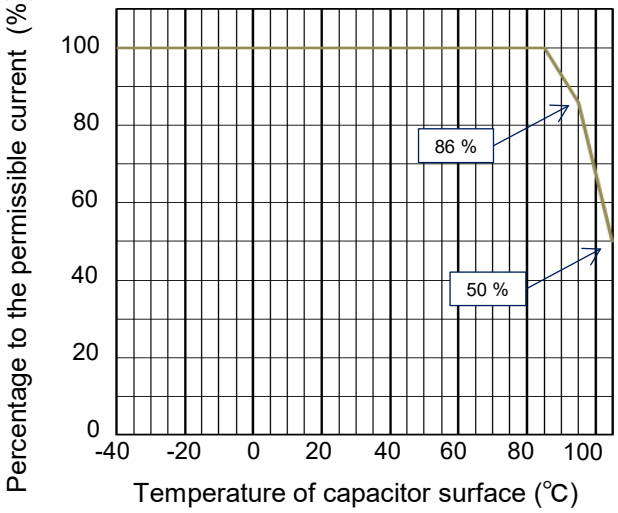
■ **Rated voltage [AC] : 380 V (Lead pitch 37.5 mm)**

Applicable specifications

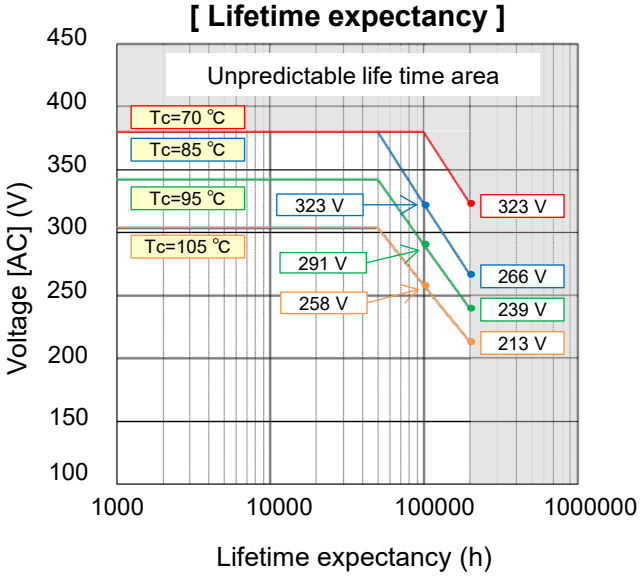
[Permissible Current]



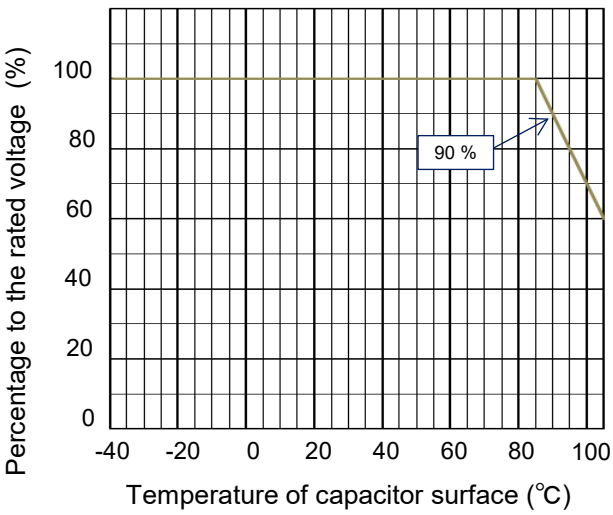
[Permissible Current Derating by Temperature]



[Lifetime expectancy]



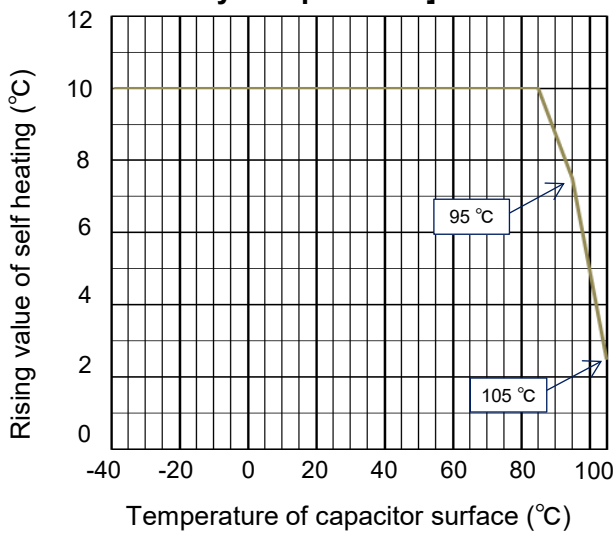
[Voltage Derating by Temperature]



Permissible pulse current (dV/dt)
(Max. 10000 cycles)

R. voltage [AC] (V)	Pitch (mm)	Capacitance (µF)	Code	dV/dt (V/µs)	Current (Ao-p)
380	37.5	1.0	105	50	50.0
		3.0	305		150.0
		5.0	505		250.0
		6.0	605		300.0
		8.0	805		400.0
		10.0	106		500.0
		15.0	156		750.0

[Self Heating Derating by Temperature]

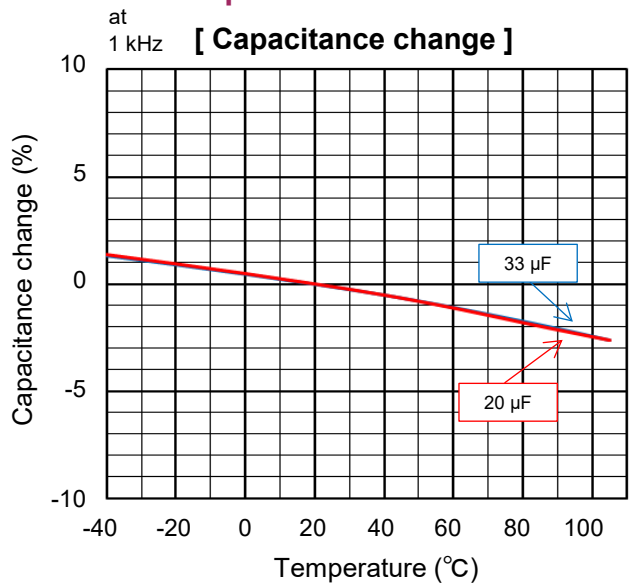


Characteristics data

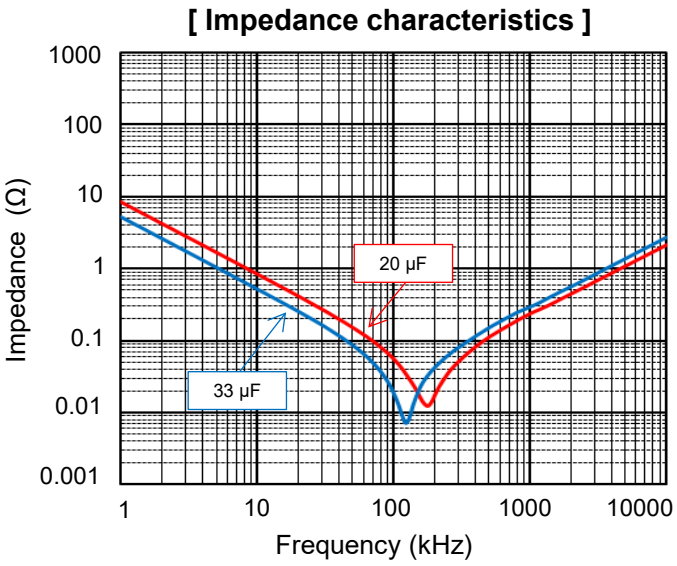
■ **Rated voltage [AC] : 380 V (Lead pitch 52.5 mm)**

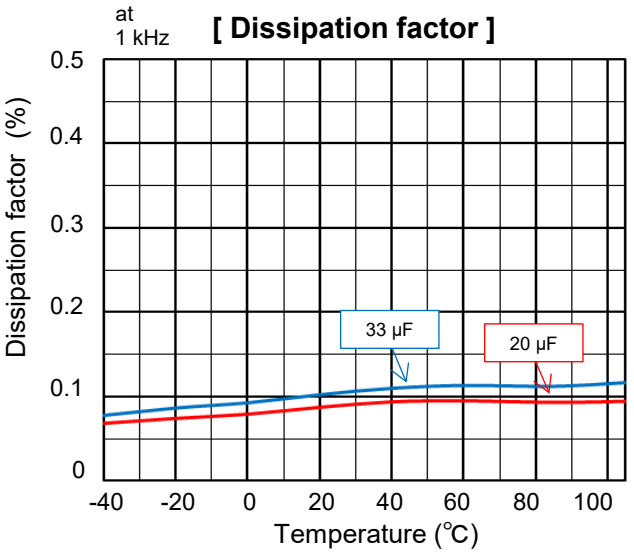
Electrical characteristics <Typical data >

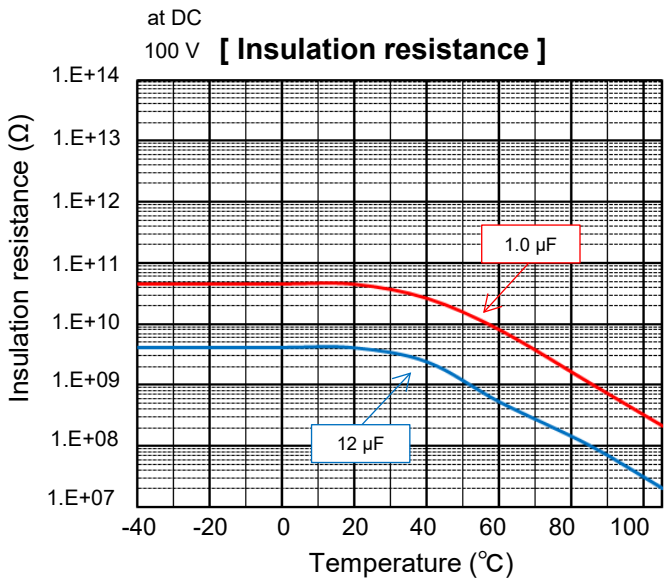
Temperature characteristics



Frequency characteristics





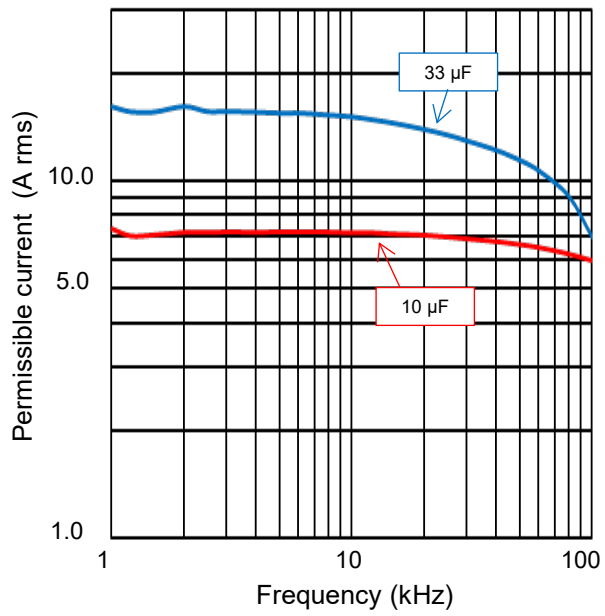


Characteristics data

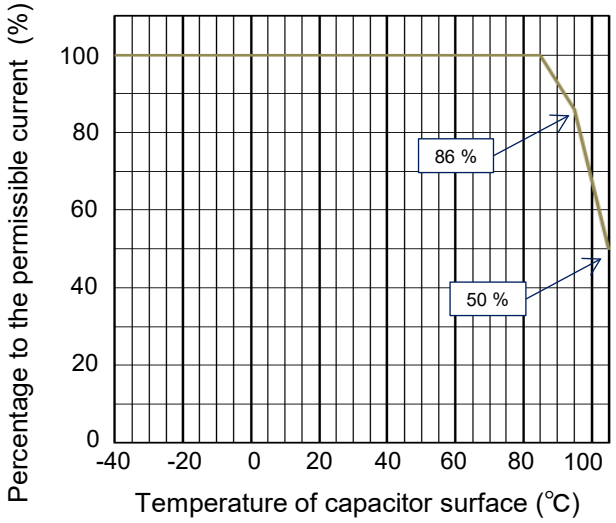
■ **Rated voltage [AC] : 380 V (Lead pitch 52.5 mm)**

Applicable specifications

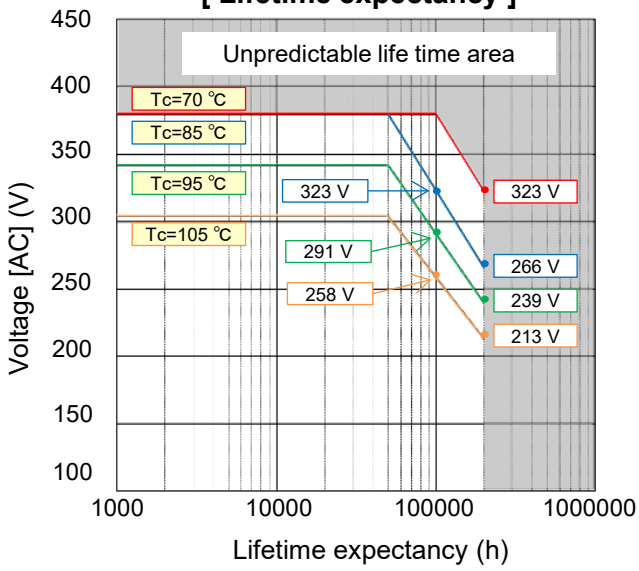
[Permissible Current]



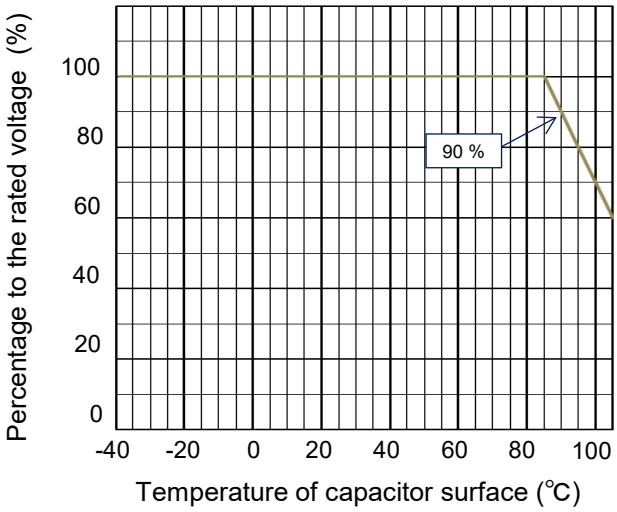
[Permissible Current Derating by Temperature]



[Lifetime expectancy]



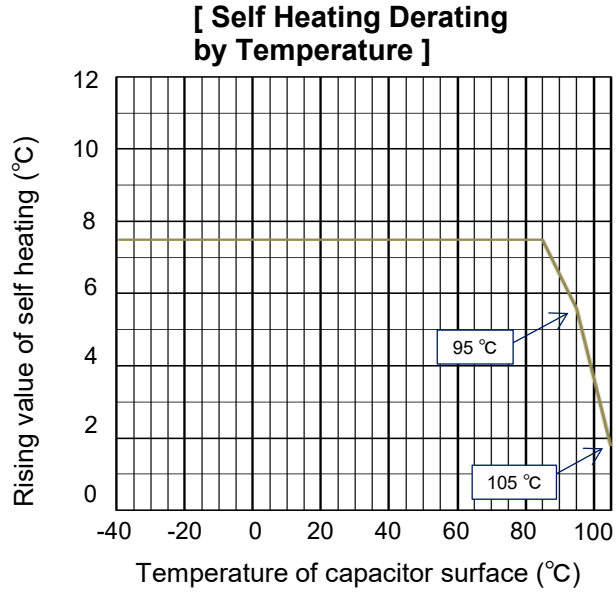
[Voltage Derating by Temperature]



Permissible pulse current (dV/dt)
(Max. 10000 cycles)

R. voltage [AC] (V)	Pitch (mm)	Capacitance (μF)	Code	dV/dt (V/μs)	Current (Ao-p)
380	52.5	10.0	106	30	300.0
		12.0	126		360.0
		15.0	156		450.0
		20.0	206		600.0
		24.0	246		720.0
		30.0	306		900.0
		33.0	336		990.0

[Self Heating Derating by Temperature]



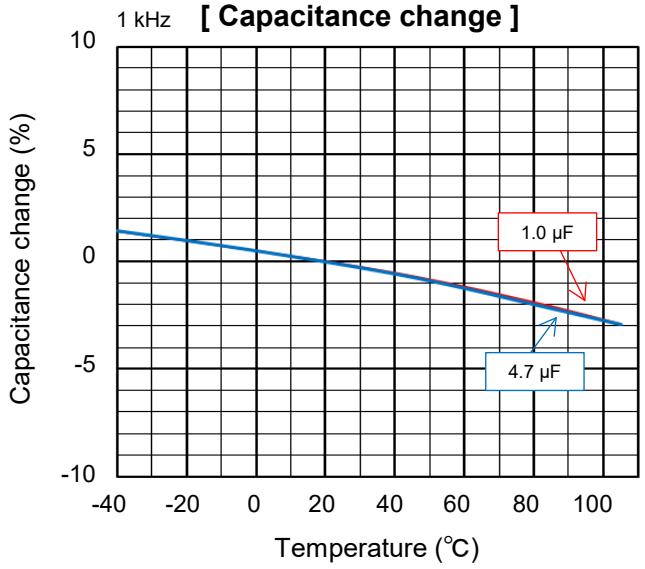
Characteristics data

■ **Rated voltage [AC] : 600 V (Lead pitch 37.5 mm)**

Electrical characteristics <Typical data >

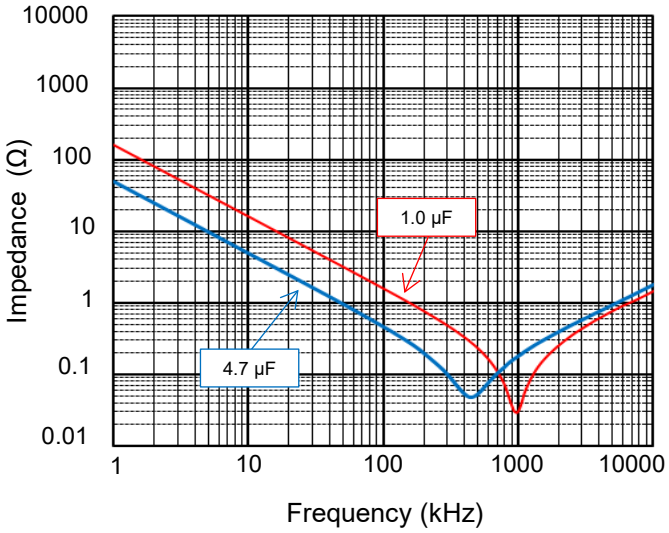
Temperature characteristics

at 1 kHz **[Capacitance change]**

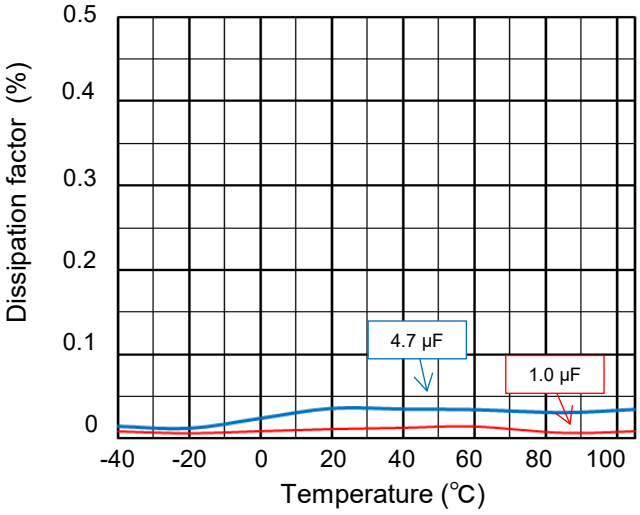


Frequency characteristics

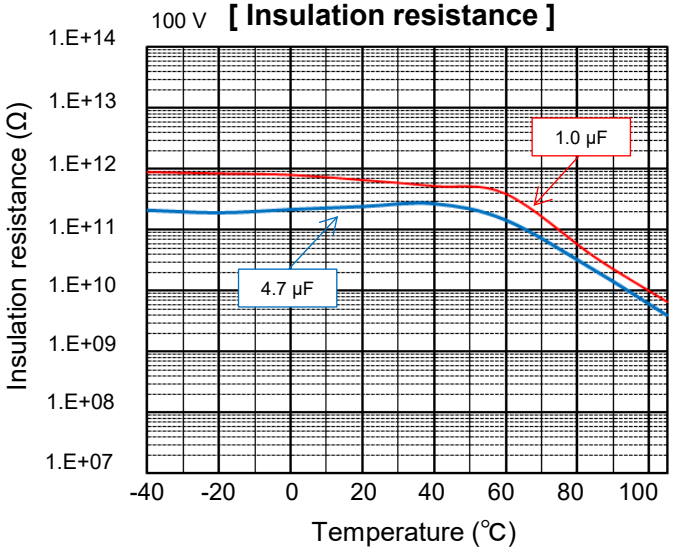
[Impedance characteristics]



at 1 kHz **[Dissipation factor]**



at DC 100 V **[Insulation resistance]**

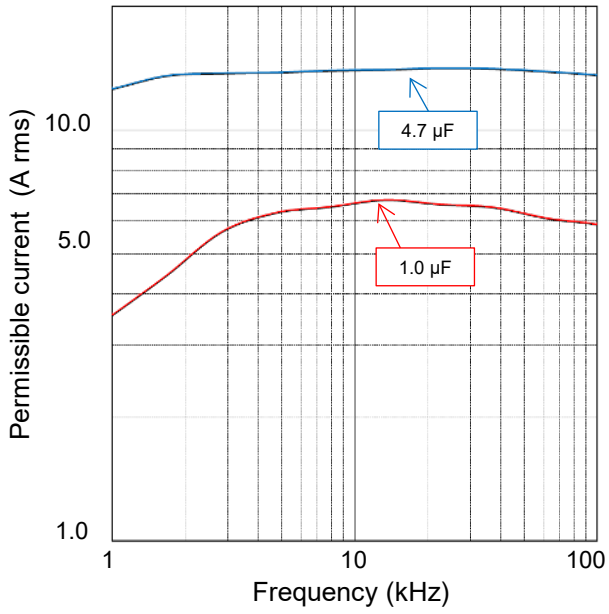


Characteristics data

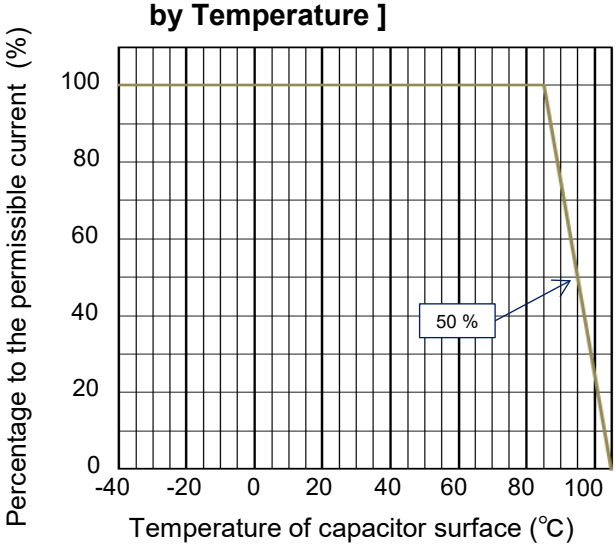
■ **Rated voltage [AC] : 600 V (Lead pitch 37.5 mm)**

Applicable specifications

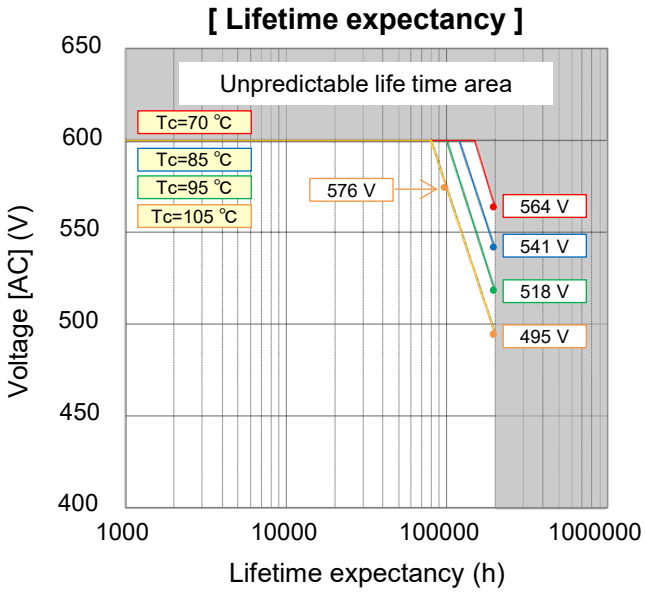
[Permissible Current]



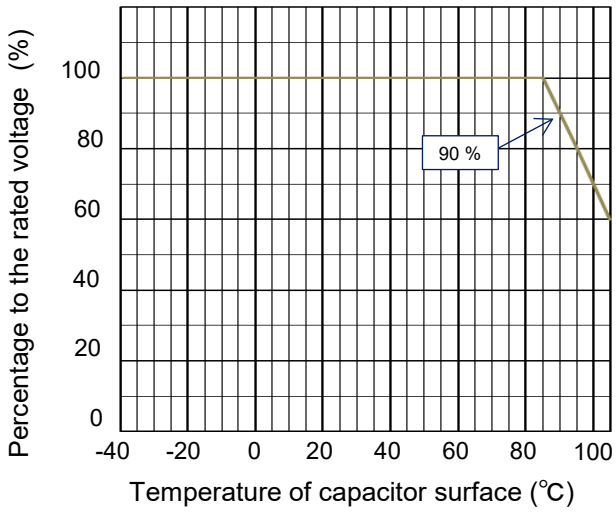
[Permissible Current Derating by Temperature]



[Lifetime expectancy]



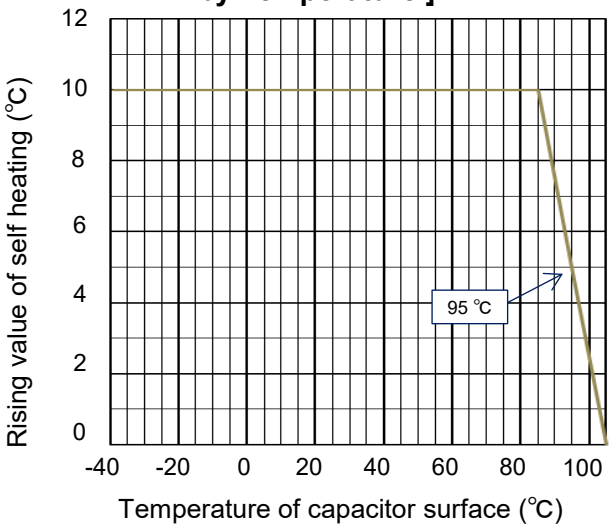
[Voltage Derating by Temperature]



Permissible pulse current (dV/dt)
(Max. 10000 cycles)

R. voltage [AC] (V)	Pitch (mm)	Capacitance (µF)	Code	dV/dt (V/µs)	Current (Ao-p)
600	37.5	1.0	105	110	110.0
		1.5	155		165.0
		2.2	225		242.0
		3.3	335		363.0
		4.7	475		517.0

[Self Heating Derating by Temperature]

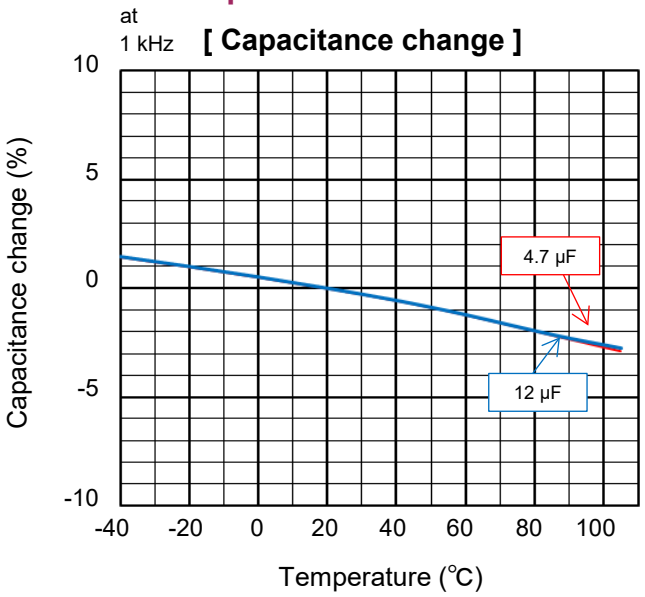


Characteristics data

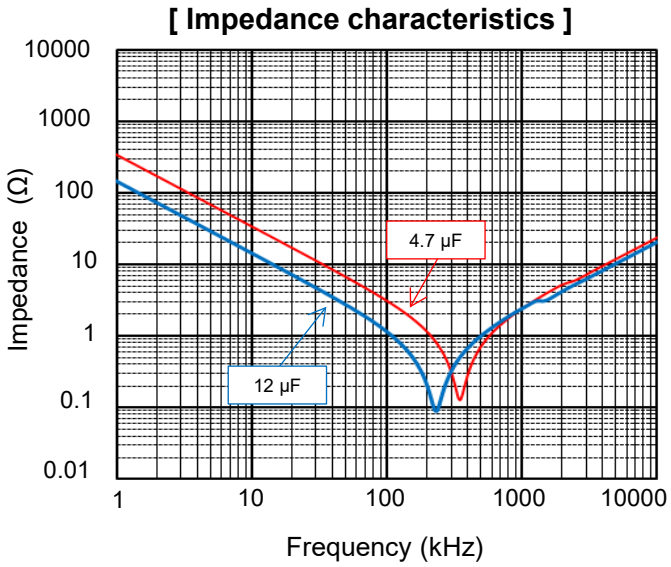
■ **Rated voltage [AC] : 600 V (Lead pitch 52.5 mm)**

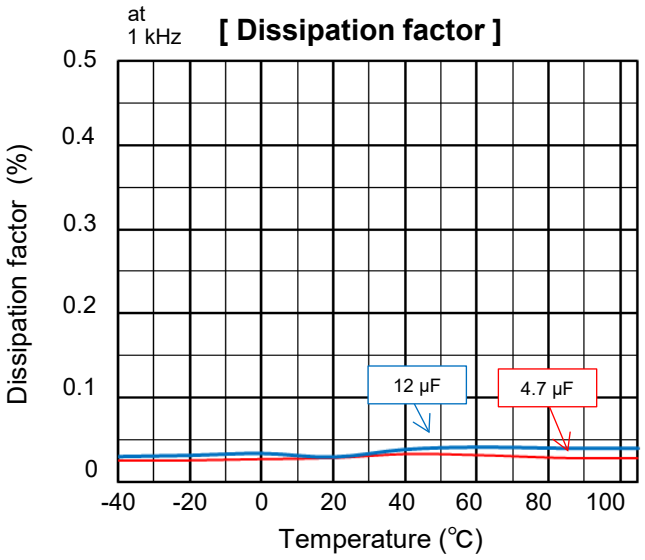
Electrical characteristics <Typical data >

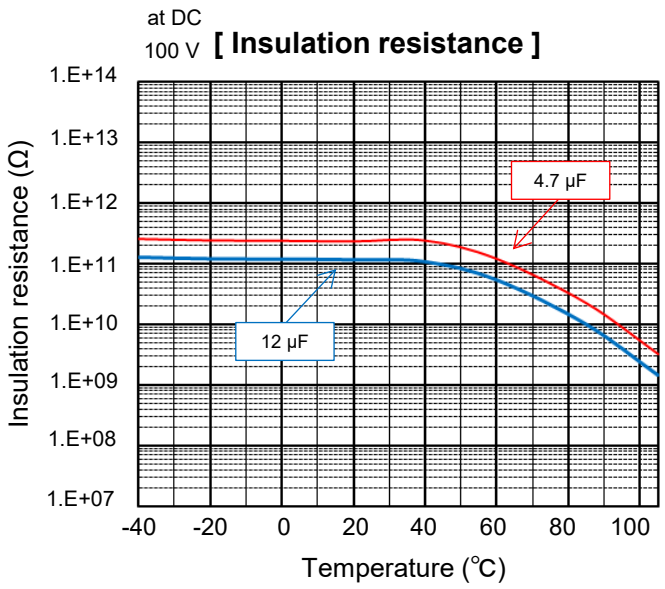
Temperature characteristics



Frequency characteristics





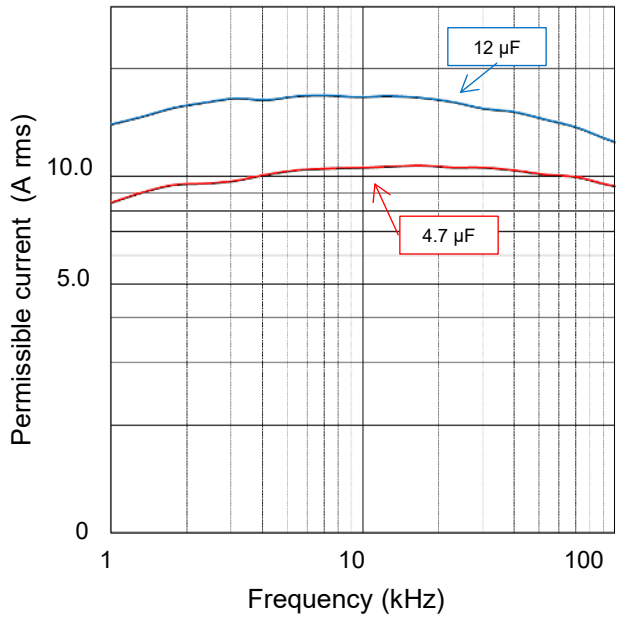


Characteristics data

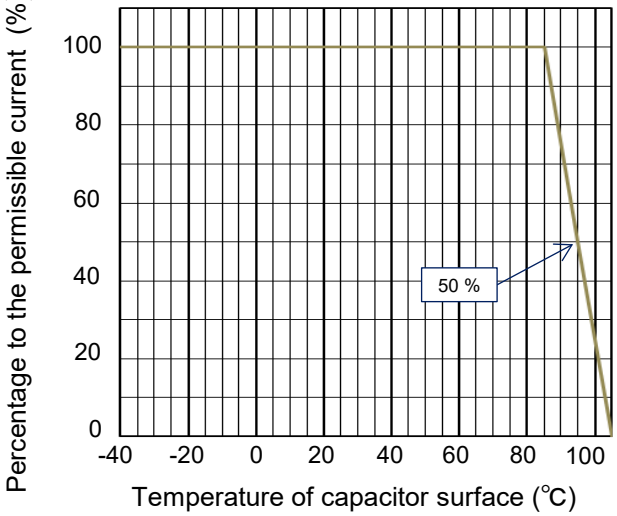
■ **Rated voltage [AC] : 600 V (Lead pitch 52.5 mm)**

Applicable specifications

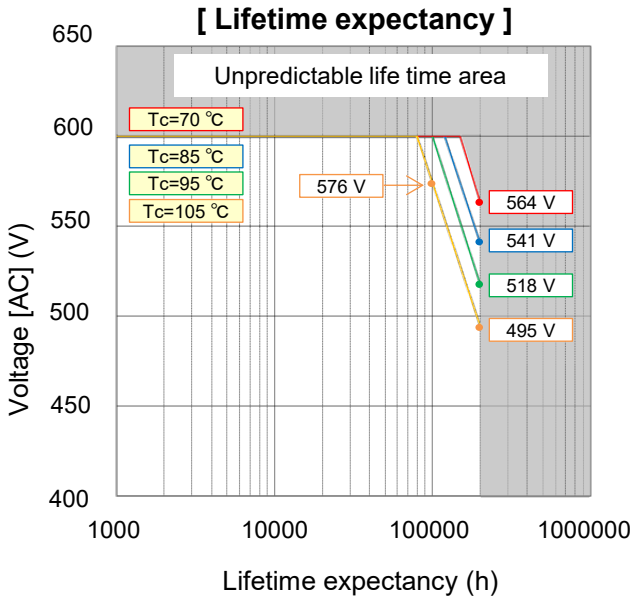
[Permissible Current]



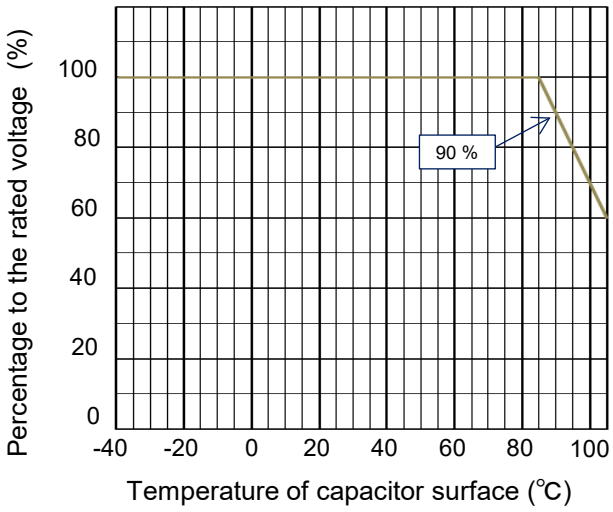
[Permissible Current Derating by Temperature]



[Lifetime expectancy]



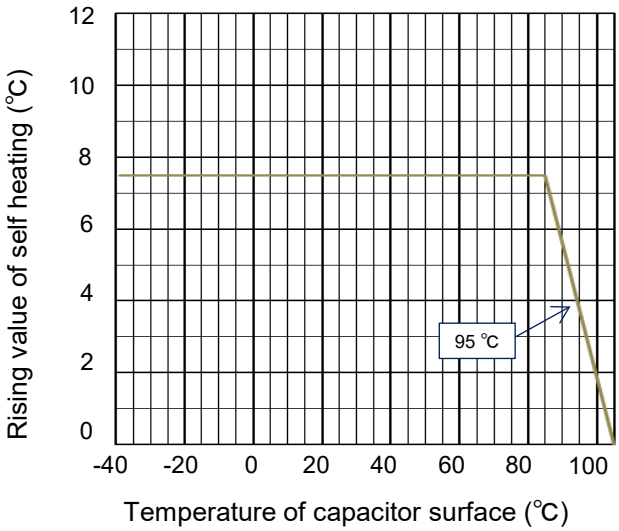
[Voltage Derating by Temperature]



Permissible pulse current (dV/dt)
(Max. 10000 cycles)

R. voltage [AC] (V)	Pitch (mm)	Capacitance (μF)	Code	dV/dt (V/μs)	Current (Ao-p)
600	52.5	4.7	475	70	329.0
		6.8	685		476.0
		7.0	705		490.0
		10.0	106		700.0
		12.0	126		840.0

[Self Heating Derating by Temperature]



Safety and Legal Matters to Be Observed

Product specifications and applications

■ Please be advised that this product and product specifications are subject to change without notice for improvement purposes. Therefore, please request and confirm the latest delivery specifications that explain the specifications in detail before the final design, or purchase or use of the product, regardless of the application. In addition, do not use this product in any way that deviates from the contents of the company's delivery specifications.

■ Unless otherwise specified in this catalog or the delivery specifications, this product is intended for use in general electronic equipment (AV products, home appliances, commercial equipment, office equipment, information and communication equipment, etc.).
When this product is used for the following special cases, please separately discuss the delivery specifications suited to each application with the company. These include applications requiring special quality and reliability, wherein their failures or malfunctions may directly threaten human life or cause harm to the human body (e.g.: space/aircraft equipment, transportation/traffic equipment, combustion equipment, medical equipment, disaster prevention/crime prevention equipment, safety equipment, etc.).

Safety design and product evaluation

■ Please ensure safety through protection circuits, redundant circuits, etc., in the customer's system design so that a defect in our company's product will not endanger human life or cause other serious damage.

■ This catalog shows the quality and performance of individual parts. The durability of parts varies depending on the usage environment and conditions. Therefore, please ensure to evaluate and confirm the state of each part after it has been mounted in your product in the actual operating environment before use.
If you have any doubts about the safety of this product, then please notify us immediately, and be sure to conduct a technical review including the above protection circuits and redundant circuits at your company.

Laws / Regulations / Intellectual property

■ The transportation of dangerous goods as designated by UN numbers, UN classifications, etc., does not apply to this product. In addition, when exporting products, product specifications, and technical information described in this catalog, please comply with the laws and regulations of the countries to which the products are exported, especially those concerning security export control.

■ Each model of this product complies with the RoHS Directive (Restriction of the use of hazardous substances in electrical and electronic equipment) (2011/65/EU and (EU) 2015/863). The date of compliance with the RoHS Directive and REACH Regulation varies depending on the product model.
Further, if you are using product models in stock and are not sure whether or not they comply with the RoHS Directive or REACH Regulation, please contact us by selecting "Sales Inquiry" from the inquiry form.

■ During the manufacturing process of this product and any of its components and materials to be used, Panasonic does not intentionally use ozone-depleting substances stipulated in the Montreal Protocol and specific bromine-based flame retardants such as PBBs (Poly-Brominated Biphenyls) / PBDEs (Poly-Brominated Diphenyl Ethers). In addition, the materials used in this product are all listed as existing chemical substances based on the Act on the Regulation of Manufacture and Evaluation of Chemical Substances.

■ With regard to the disposal of this product, please confirm the disposal method in each country and region where it is incorporated into your company's product and used.

■ The technical information contained in this catalog is intended to show only typical operation and application circuit examples of this product. This catalog does not guarantee that such information does not infringe upon the intellectual property rights of Panasonic or any third party, nor imply that the license of such rights has been granted.

Panasonic Industry will assume no liability whatsoever if the use of our company's products deviates from the contents of this catalog or does not comply with the precautions. Please be advised of these restrictions.

Matters to Be Observed When Using This Product
(Film capacitor : Automotive/Industrial)

Response to anomalies and handling conditions

■ Because the capacitor described herein is made of a combustible material, it may generate smoke or even ignite when exposed to excessive heat. We therefore recommend you cover the capacitor with a fire-resistant material or fire-resistant case.

■ When a different component in the same circuit has short-circuited or developed an open failure, see to it that a voltage or current higher than the rated voltage or current or excessive heat is not applied to the capacitor.

Reliability

A capacitor conforming to "AEC-Q200" refers to a capacitor having passed some or all of evaluation test items defined in AEC-Q200.
To know the detailed specifications of each capacitor or specific evaluation test scores, please contact us.
We issue a delivery specification sheet for each product ordered. Please confirm the delivery specification sheet when you place an order with us.

Reference information

Guidelines

Before using the capacitor, make sure to acquire our delivery specification sheet and confirm service conditions.
If you find measurement values exceeding specified values in the specification sheet or have any question, feel free to contact us. We also advise you to refer to RCR-1001B "Safety Application Guide on Components for Use in Electronic and Electrical Equipment" and JEITA RCR-2350D "Safety Application Guide for Fixed Plastic Film Capacitors for Use in Electronic Equipment."

Intellectual property

Panasonic Group provides customers with safe products and services. We are also making great efforts to protect our intellectual property rights for Panasonic Group products. Typical patents related to this product are as follows. (Hybrid type)

[U.S. patent]
USP Nos. 7027286, 8315031, 8861177, 9240279, 10475585

[Japanese patent]
Japanese Patent No. 4784464, 4930099, 4946618, 5391797