

Film Chip Capacitor

Type: **ECHU(C)**

Stacked metallized PPS film as dielectric with simple mold-less construction



■ Features

- Small in size
- Low loss and excellent frequency characteristics
- Applicable for both flow and reflow soldering (50VDC only)

■ Recommended Applications

- Time-constant
- Filtering
- Oscillation and resonance
- Resonance circuit for LCD backlighting inverter unit

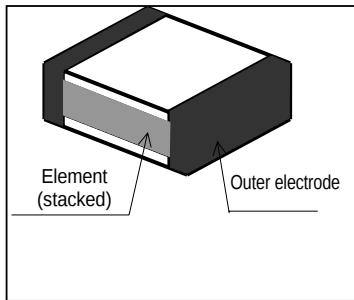
■ Explanation of Numbers

1	2	3	4	5	6	7	8	9	10	11	12
E	C	H	U	1	H					C	9
Product code		Dielectric & construction		Rated voltage		Capacitance			Cap. Tol.	Suffix	Suffix
				1H	50VDC				G	±2%	Tape width
				1	100VDC				J	±5%	9 12mm
										V	16mm

■ Specification

Category temp. range	50VDC: -55 to +125°C	
	100VDC: -55 to +105°C	
Rated voltage	50VDC (C ≥ 0.12 μF : Derating of rated voltage by 1.25%/°C at more than 105°C) 100VDC	
Capacitance range	50VDC	0.047 to 0.22 μF (E12)
	100VDC	0.01 to 0.22 μF (E12)
Capacitance tolerance	±2%(G), ±5%(J)	
Withstand voltage	50VDC: Between terminals : Rated volt. (VDC) × 175% 1 to 5s 100VDC: Between terminals : Rated volt. (VDC) × 150% 60s	
Dissipation factor	≤0.6% (20°C, 1kHz)	
Insulation resistance	50VDC: ≥3000M Ω (20°C, 50VDC, 60s)	
	100VDC: ≥3000M Ω (20°C, 100VDC, 60s)	
Soldering conditions	50VDC	Flow soldering: 260°C max., 5sec max. Reflow soldering: 260°C max. and 30 sec max. at more than 230°C (Temp. at cap. surface)
	100VDC	Reflow soldering: 260°C max. and 30 sec max. at more than 230°C (Temp. at cap. surface)

■Construction



■Dimensions in mm(not to scale)

Size code	L	Tol.	W	Tol.	H	Tol.
E1	4.8	±0.2	3.3	±0.3	1.4	±0.2
E2	4.8		3.3		2.0	
E3a	4.8		3.3		2.4	
E3	4.8		3.3		2.8	
D1	6.0		4.1		1.8	
D2	6.0	±0.2	4.1	±0.3	2.0	±0.2
D3	6.0		4.1		2.4	
D4	6.0		4.1		2.8	
D5	6.0		4.1		3.2	
Z	7.1	±0.4	5.0	±0.4	※	±0.3
Y	7.1		6.3		※	

※Refer to the column "Rating, Dimensions & Quantity"

■Taping Specification for Automatic Insertion(Mounting)

See page for automatic insertion

■Rating, Dimensions & quantity/Reel

●Capacitance tolerance: ±2%(G), ±5%(J)

Cap. (uF)	Rated volt. 50VDC						Rated volt. 100VDC					
	Part No.	Dimensions (mm)			Size code	Quantity	Part No.	Dimensions (mm)			Size code	Quantity
		L	W	H				L	W	H		
0.01							ECHU1103□C9	4.8	3.3	1.4	E1	3000
0.012							ECHU1123□C9	4.8	3.3	1.4	E1	
0.015							ECHU1153□C9	4.8	3.3	2.0	E2	
0.018							ECHU1183□C9	4.8	3.3	2.0	E2	
0.022							ECHU1223□C9	4.8	3.3	2.4	E3a	2000
0.027							ECHU1273□C9	4.8	3.3	2.8	E3	
0.033							ECHU1333□C9	6.0	4.1	1.8	D1	3000
0.039							ECHU1393□C9	6.0	4.1	2.0	D2	
0.047	ECHU1H473□C9	4.8	3.3	1.4	E1	3000	ECHU1473□C9	6.0	4.1	2.4	D3	2000
0.056	ECHU1H563□C9	4.8	3.3	2.0	E2		ECHU1563□C9	6.0	4.1	2.8	D4	
0.068	ECHU1H683□C9	4.8	3.3	2.0	E2		ECHU1683□C9	6.0	4.1	3.2	D5	
0.082	ECHU1H823□C9	4.8	3.3	2.4	E3a	2000	ECHU1823□C9	7.1	5.0	2.8	Z	1500
0.1	ECHU1H104□C9	4.8	3.3	2.8	E3		ECHU1104□C9	7.1	5.0	3.0	Z	
0.12	ECHU1H124□C9	6.0	4.1	1.8	D1	3000	ECHU1124□C9	7.1	5.0	3.4	Z	1000
0.15	ECHU1H154□C9	6.0	4.1	2.4	D3	2000	ECHU1154□CV	7.1	6.3	3.4	Y	
0.18	ECHU1H184□C9	6.0	4.1	2.8	D4		ECHU1184□CV	7.1	6.3	4.0	Y	
0.22	ECHU1H224□C9	6.0	4.1	3.2	D5		ECHU1224□CV	7.1	6.3	4.8	Y	

↑ Capacitance tolerance code

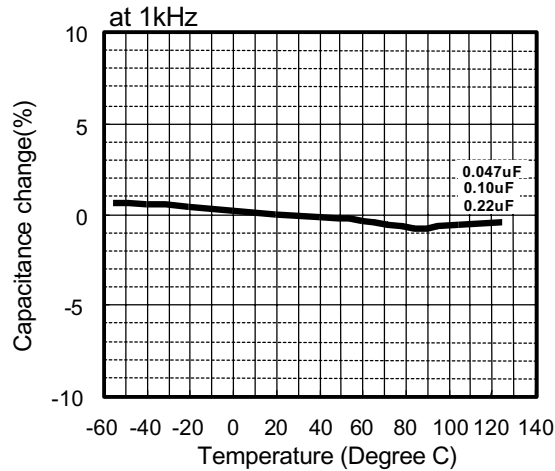
■Example for Land Dimensions(mm)

Size code	Land dimensions					
	Flow soldering			Reflow soldering		
	A	B	C	A	B	C
E1,E2,E3a,E3	2.6	6.6	3.0	2.6	6.6	3.0
D1,D2,D3,D4,D5	3.8	7.8	3.8	3.8	7.8	3.8
Z	-	-	-	4.5	9.0	4.6
Y	-	-	-	4.5	9.0	5.7

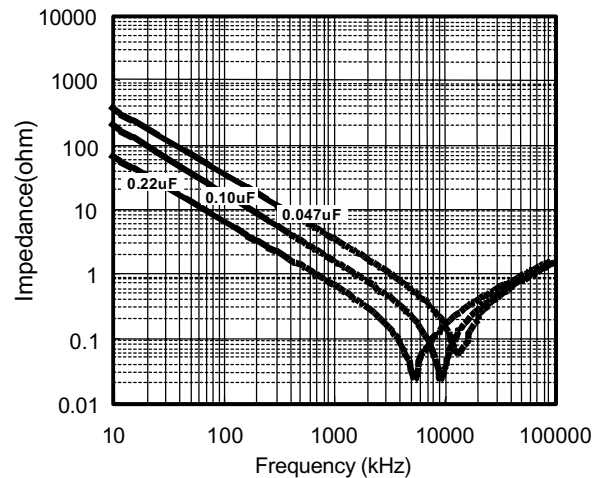
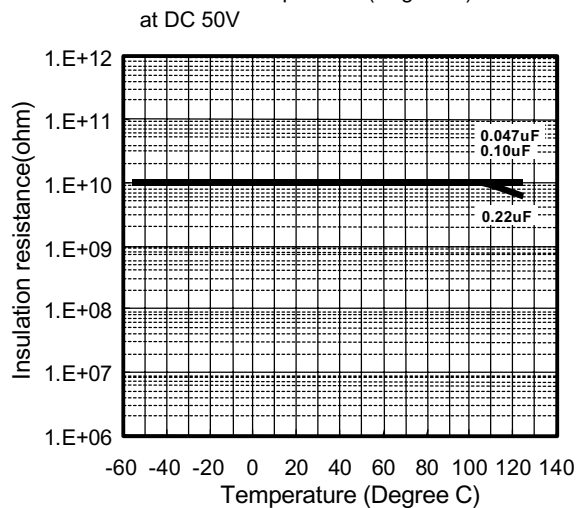
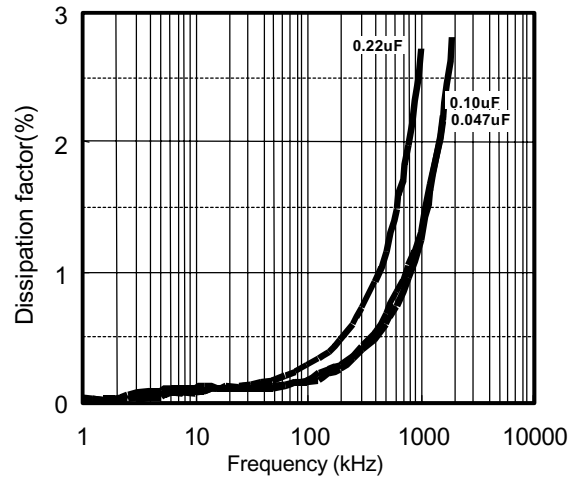
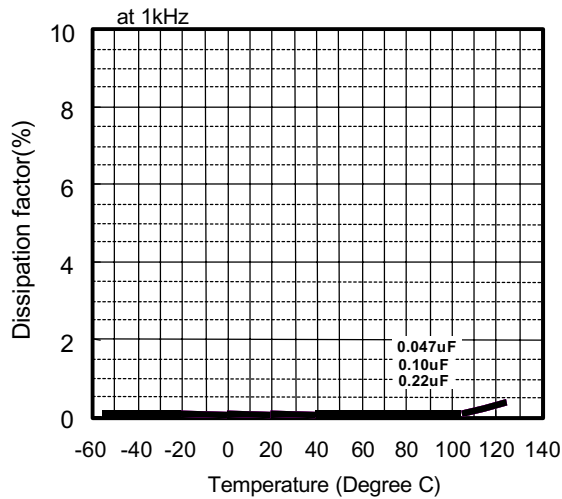
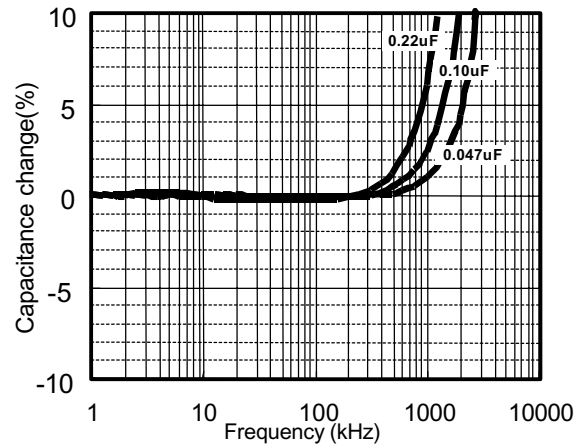
ECHU (C) Type DC50V series (Stacked Metallized Film)

Electrical Characteristics (Typical Data)

Temperature Characteristics

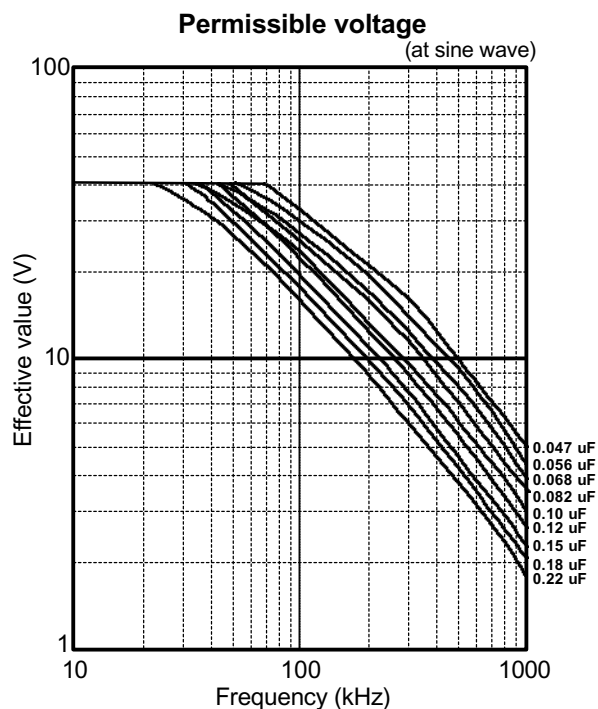
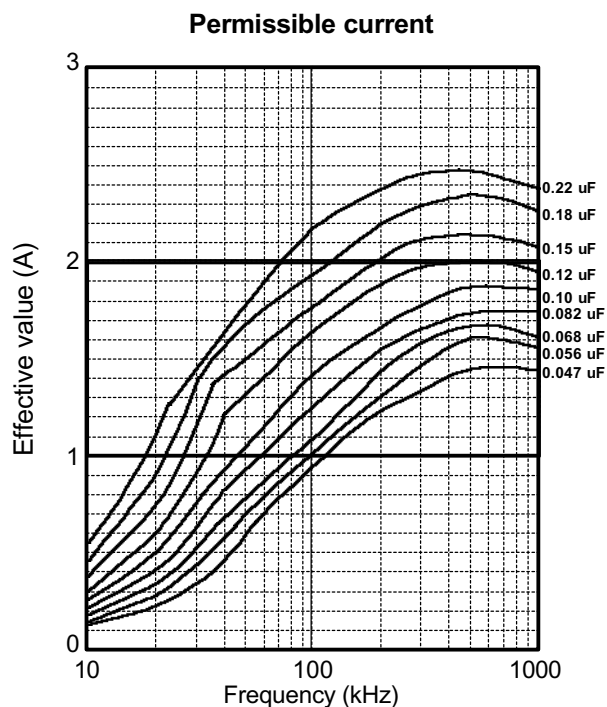


Frequency Characteristics



ECHU (C) Type DC50V series (Stacked Metallized Film)

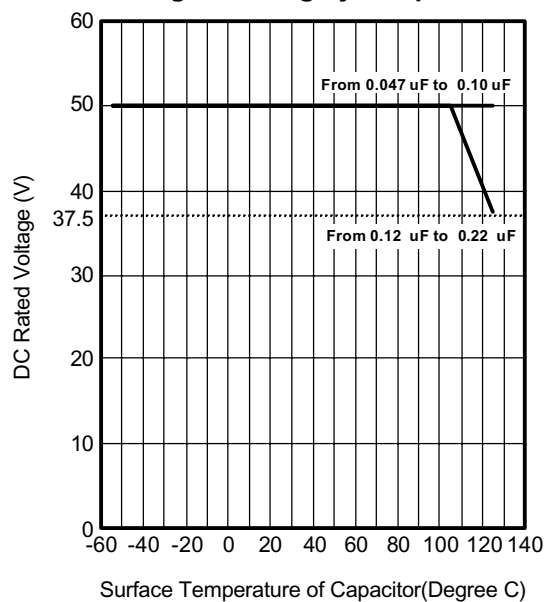
Applicable Specifications



Pulse Handling Capability (dv/dt)
(Max 10000 cycles)

Rating Voltage	Capacitance Value(μ F)	Code	dv/dt (V/ μ s)	Current(I_{0-P}) (A)
DC 50V	0.047	473	180	8.5
	0.056	563		10.1
	0.068	683		12.2
	0.082	823		14.8
	0.10	104	130	18.0
	0.12	124		15.6
	0.15	154		19.5
	0.18	184		23.4
	0.22	224		28.6

Voltage Derating by Temperature



* Please consult Panasonic if your condition exceeds the above spec.

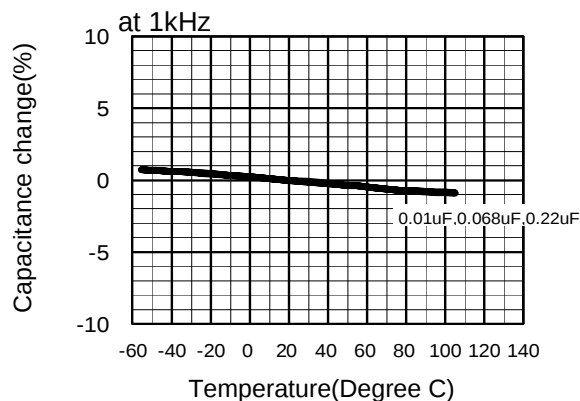
*Permissible voltage graph is the case of sine waveform. When you use this product, peak voltage must not exceed DC rated voltage.

*The current(I_{0-P}) value is calculated using nominal capacitance.

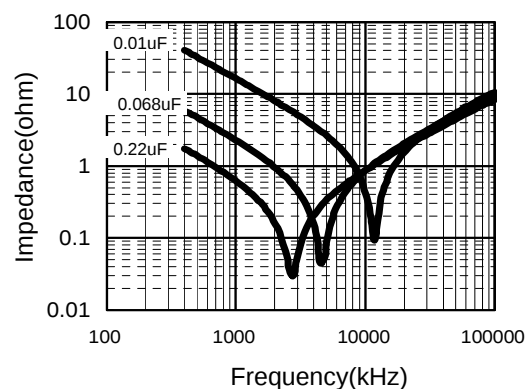
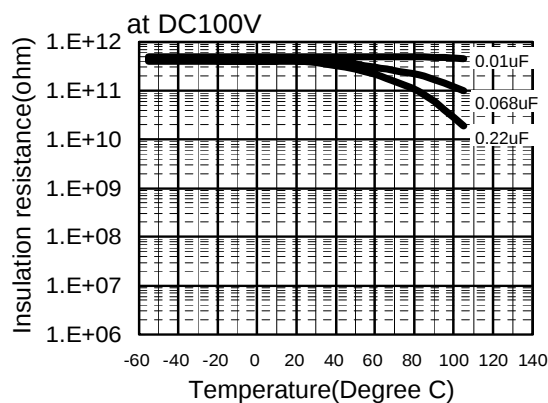
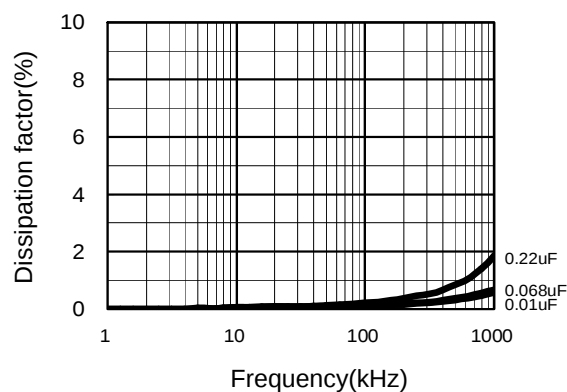
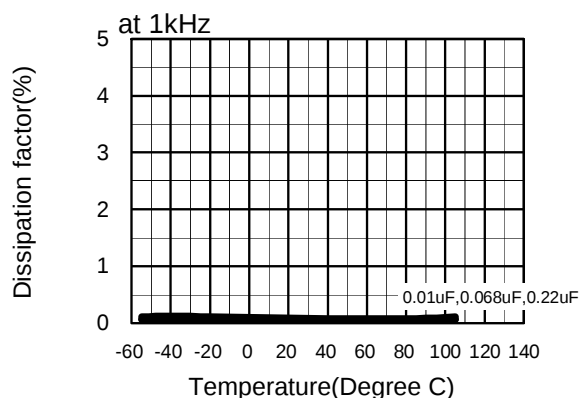
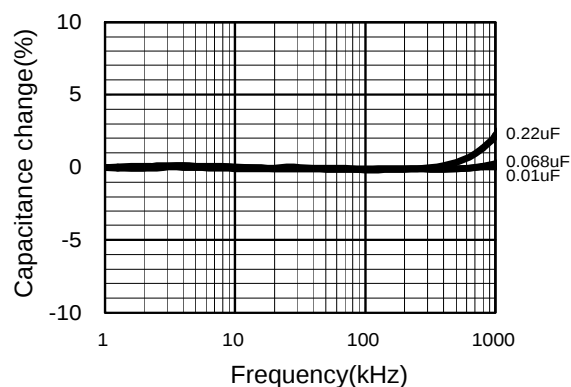
ECHU (C) Type DC100V series (Stacked Metallized Film)

Electrical Characteristics <Typical Data >

Temperature Characteristics



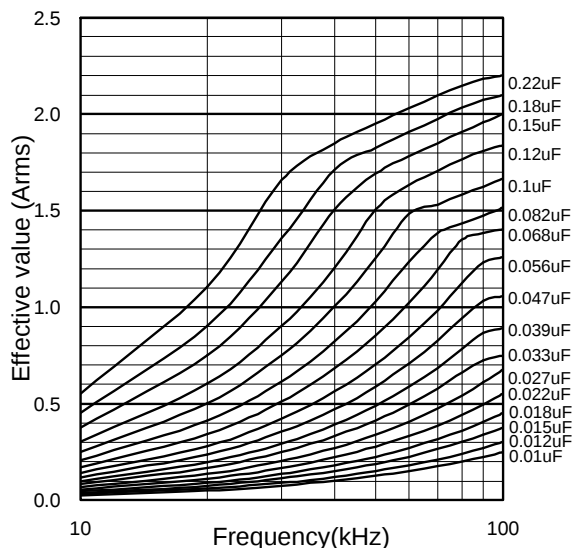
Frequency Characteristics



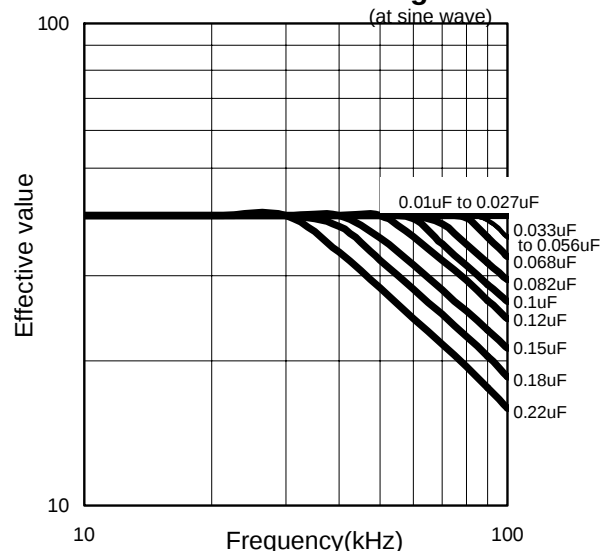
ECHU (C) Type DC100V series (Stacked Metallized Film)

Applicable Specifications

Permissible Current



Permissible Voltage

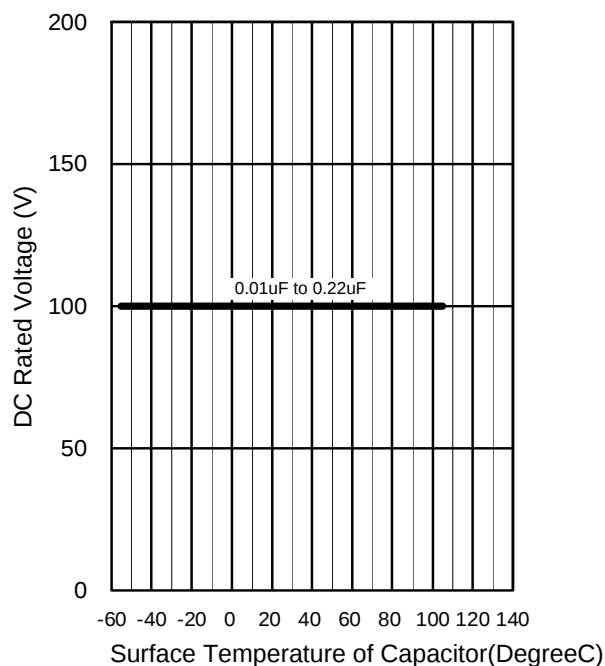


Pulse Handling Capability (dv/dt)

(Max 10000cycles)

Rating Voltage	Capacitance Value(uF)	code	dV/dt (V/us)	Current(0-P) (A)
DC 100V	0.010	103	180	1.80
	0.012	123		2.16
	0.015	153		2.70
	0.018	183		3.24
	0.022	223		3.96
	0.027	273		4.86
	0.033	333	130	4.29
	0.039	393		5.07
	0.047	473		6.11
	0.056	563		7.28
	0.068	683	100	8.84
	0.082	823		8.20
	0.10	104		10.00
	0.12	124		12.00
	0.15	154		15.00
	0.18	184		18.00
	0.22	224		22.00

Voltage Derating by Temperature



*Please consult Panasonic if your condition exceeds the above

*Permissible voltage graph is the case of sine waveform. When you use this product, peak voltage must not exceed DC rated voltage.

*The current(0-P) value is calculated using nominal capacitance.