

產品特點 Features

Highly reliable capacitors that withstand under high ripple current.

Aluminum case designed explosion-proof vent.

Best for switching power supplies.

Load life: 3,000 hours.

高紋波高可靠性長壽命3000H品，帶有防爆閥的鋁外殼設計，適用於開關電源



規格書 SPECIFICATIONS

項目 Item	特性參數 Characteristics								
使用溫度範圍 Operating Temperature Range	-40 to +105°C	-25 to +105°C							
額定電壓範圍 Rated Working Voltage Range	10 to 100V	160 to 450V							
容量範圍 Nominal Capacitance Range	47 to 56000 µ F								
容量允許偏差 Capacitance Tolerance	± 20% at 120Hz, +20°C								
漏電流 Leakage Current	$I \leq 3\sqrt{CV}$ (µ A) after 5 minutes application of rated working voltage at +20°C								
損耗角正切值(20°C, 120Hz) tan δ (120Hz, +20°C)	Working Voltage (V)	10 16 25 35 50 63 80 100							
	tan δ (max.)	0.55 0.50 0.45 0.40 0.35 0.30 0.25 0.20							
	Working Voltage (V)	160~220 250 315~450							
	tan δ (max.)	0.15 0.15 0.25							
For capacitance value >33000 µ F, add following calculated value: $\frac{(\text{rated capacitance}) - 33000 \mu F}{10000 \mu F} \times 0.1$									
低溫特性 Low Temperature Characteristics	Impedance ratio max. at 120Hz								
	Working Voltage (V)	10	16	25	35	50	63	80	100
	Z-25°C / Z+20°C	6	6	6	6	4	3	3	3
	Z-40°C / Z+20°C	15	15	15	15	15	15	15	15
Working Voltage (V)	160	200~220	250	315~385	400~420	450			
Z-25°C / Z+20°C	8	8	8	8	8	8			
高溫負荷特性 High Temperature Loading	在105°C的前提下施加額定電壓與額定紋波3000H,然後取出恢復常溫後測試 Test time:3,000 hours Test temperature:+105°C Test conditions:Rated DC working voltage with rated ripple current Post test requirements at +20°C								
	Leakage current	≤ Initial specified value							
	Cap. change	within ± 20% of the initial measured value							
	tan δ	≤ 200% of the initial specified value							
高溫貯存特性 Shelf Life	在105°C不加電壓存放1000H後取出，待產品恢復常溫後測試 At +105°C no voltage applied after 1,000 hours and then being stabilized at +20°C the capacitors shall meet the following limits								
	Leakage current	≤ Initial specified value							
	Cap. change	within ± 15% of the initial measured value							
	tan δ	≤ 150% of the initial specified value							
參考國際標準 Industrial Standard	JIS C - 5101-4 (IEC 60384-4)								

牛角電解電容

紋波電流修正係數 RIPPLE CURRENT MULTIPLIER

Frequency Coefficient

Coefficient \ Freq. (Hz)	60	120	1k	10k~50k
Rated Voltage				
10~100V	0.90	1.00	1.15	1.25
160~250V	0.80	1.00	1.25	1.47
315~450V	0.80	1.00	1.30	1.47

一覽表 Standard

Voltage (Code)		10V		16V		25V		35V	
Cap. (μF)	Code	Case Size	Ripple Current						
2700	278							20 × 25	1.62
3300	338							20 × 30	1.94
								22 × 25	1.90
3900	398					20 × 25	1.72	20 × 35	2.02
								22 × 30	2.00
4700	478					20 × 30	2.04	20 × 40	2.21
						22 × 25	2.00	22 × 35	2.20
								25 × 25	2.20
5600	568			20 × 25	1.89	20 × 35	2.23	22 × 35	2.40
						22 × 30	2.20	25 × 30	2.40
6800	688	20 × 25	1.41	20 × 30	2.25	20 × 40	2.72	22 × 40	2.60
				22 × 25	2.20	22 × 30	2.40	25 × 35	2.60
						25 × 25	2.40	30 × 25	2.78
8200	828	20 × 30	1.67	20 × 35	2.43	22 × 35	2.70	22 × 50	2.90
				22 × 30	2.40	25 × 30	2.70	25 × 40	2.90
10000	109	20 × 30	1.88	20 × 40	2.79	22 × 40	3.00	25 × 45	3.20
		22 × 25	1.80	22 × 30	2.60	25 × 35	3.00	30 × 35	3.20
				25 × 25	2.60	30 × 30	3.00		
12000	129	20 × 35	2.23	22 × 35	2.90	22 × 50	3.20	25 × 50	3.50
		22 × 30	2.20	25 × 30	2.90	25 × 40	3.20	30 × 40	3.50
		25 × 25	2.20			30 × 30	3.20	35 × 30	3.50
15000	159	20 × 40	2.31	22 × 40	3.20	25 × 45	3.60	30 × 45	3.90
		22 × 35	2.30	25 × 35	3.20	30 × 35	3.60	35 × 35	3.90
		25 × 25	2.30	30 × 25	3.11	35 × 30	3.60		
18000	189	22 × 40	2.52	22 × 45	3.50	30 × 40	3.90	35 × 40	4.51
		25 × 30	2.40	25 × 40	3.50	35 × 35	3.90		
		30 × 25	2.49	30 × 30	3.50				
22000	229	22 × 45	2.60	25 × 45	3.80	30 × 45	4.30	35 × 45	5.24
		25 × 35	2.60	30 × 30	3.80	35 × 35	4.30		
		30 × 25	2.60	35 × 30	3.80				
27000	279	22 × 45	3.19	25 × 50	4.20	35 × 45	4.80		
		25 × 40	3.10	30 × 35	4.20				
		30 × 30	3.10	35 × 30	4.20				
33000	339	25 × 45	3.40	30 × 40	4.70	35 × 50	5.55		
		30 × 35	3.40	35 × 35	4.70				
		35 × 30	3.40						
39000	399	30 × 40	3.79	30 × 45	4.90				
		35 × 30	3.70	35 × 40	5.10				
47000	479	30 × 45	4.26	30 × 50	5.27				
		35 × 35	4.20	35 × 45	5.50				
56000	569	35 × 40	5.00						

Maximum Allowable Ripple Current (Arms) at 105°C 120Hz
 在105°C 120Hz條件的最大紋波值

Case Size Φ D x L (mm)
 尺寸 Φ D x L (mm)

牛角電解電容

一覽表 Standard

Voltage (Code)		50V		63V		80V		100V	
Cap. (μ F)	Code	Case Size	Ripple Current						
560	567							20 × 25	0.95
680	687							20 × 30	1.15
								22 × 25	1.09
820	827					20 × 25	1.04	20 × 35	1.31
								22 × 30	1.40
1000	108			20 × 25	1.21	20 × 30	1.24	20 × 35	1.43
						22 × 25	1.19	22 × 30	1.47
								25 × 25	1.45
1200	128			20 × 30	1.43	20 × 35	1.43	20 × 40	1.61
				22 × 25	1.40	22 × 30	1.50	22 × 35	1.69
								25 × 30	1.68
1500	158	20 × 25	1.29	20 × 35	1.52	20 × 35	1.57	22 × 40	1.97
				22 × 30	1.50	22 × 30	1.59	25 × 35	1.98
						25 × 25	1.59	30 × 25	1.95
1800	188	20 × 30	1.53	20 × 35	1.72	20 × 40	1.77	22 × 45	2.23
		22 × 25	1.50	22 × 30	1.70	22 × 35	1.79	25 × 40	2.20
				25 × 25	1.70	25 × 30	1.71	30 × 30	2.20
2200	228	20 × 35	1.72	20 × 40	2.01	22 × 40	2.03	25 × 45	2.53
		22 × 30	1.70	22 × 35	2.00	25 × 35	2.10	30 × 35	2.55
				25 × 30	2.00	30 × 25	1.98	35 × 30	2.60
2700	278	20 × 35	1.82	22 × 40	2.20	22 × 45	2.39	25 × 50	2.82
		22 × 30	1.80	25 × 35	2.20	25 × 40	2.35	30 × 40	2.86
		25 × 25	1.80	30 × 25	2.20	30 × 30	2.35	35 × 35	2.90
3300	338	20 × 40	2.01	22 × 45	2.60	25 × 45	2.64	30 × 45	3.30
		22 × 35	2.00	25 × 35	2.39	30 × 35	2.61	35 × 35	3.25
		25 × 30	2.00	30 × 30	2.50	35 × 30	2.60		
3900	398	22 × 40	2.23	25 × 40	2.57	25 × 50	2.92	30 × 50	3.60
		25 × 30	2.20	30 × 35	2.70	30 × 40	2.82	35 × 40	3.67
		30 × 25	2.20			35 × 30	2.97		
4700	478	22 × 45	2.50	25 × 50	3.00	30 × 45	3.34	35 × 45	3.80
		25 × 35	2.43	30 × 40	3.00	35 × 35	3.38		
		30 × 30	2.50	35 × 30	3.00				
5600	568	22 × 50	2.80	30 × 40	3.22	30 × 50	3.80	35 × 50	4.05
		25 × 40	2.80	35 × 35	3.30	35 × 40	3.80		
		30 × 30	2.76						
6800	688	25 × 45	3.30	30 × 50	3.86	35 × 45	3.90		
		30 × 35	3.30	35 × 40	3.84				
		35 × 30	3.30						
8200	828	30 × 40	3.71	35 × 45	4.43	35 × 50	4.20		
		35 × 35	3.85						
10000	109	30 × 50	4.51	35 × 50	5.11				
		35 × 40	4.49						
12000	129	35 × 45	4.56						
15000	159	35 × 50	4.80						

牛角電解電容

Maximum Allowable Ripple Current (Arms) at 105°C 120Hz
在105°C 120Hz條件的最大紋波值

Case Size Φ D x L (mm)
尺寸 Φ D x L (mm)

一覽表 Standard

Voltage (Code)		160V		180V		200V		220V	
Cap. (μF)	Code	Case Size	Ripple Current						
180	187							20 × 25	0.90
220	227			20 × 25	1.00	20 × 25	1.00	20 × 30	1.00
								22 × 25	1.00
270	277	20 × 25	1.10	20 × 30	1.10	20 × 30	1.10	20 × 35	1.15
				22 × 25	1.00	22 × 25	1.10	22 × 30	1.15
330	337	20 × 30	1.20	20 × 35	1.20	20 × 35	1.20	20 × 40	1.25
		22 × 25	1.20	22 × 30	1.20	22 × 30	1.25	22 × 35	1.25
						25 × 25	1.25	25 × 25	1.25
390	397	20 × 35	1.42	20 × 35	1.30	20 × 40	1.31	20 × 45	1.40
		22 × 30	1.30	22 × 30	1.35	22 × 35	1.35	22 × 35	1.40
				25 × 25	1.35	25 × 30	1.35	25 × 25	1.40
470	477	20 × 40	1.34	20 × 40	1.40	22 × 40	1.50	22 × 40	1.51
		22 × 30	1.55	22 × 35	1.50	25 × 30	1.50	25 × 30	1.44
		25 × 25	1.55	25 × 30	1.50	30 × 25	1.50	30 × 25	1.50
560	567	22 × 35	1.67	22 × 40	1.67	22 × 45	1.67	25 × 35	1.64
		25 × 30	1.67	25 × 30	1.67	25 × 35	1.70	30 × 30	1.70
				30 × 25	1.67	30 × 25	1.67	35 × 25	1.71
680	687	22 × 40	1.82	22 × 45	1.78	22 × 50	1.78	25 × 40	1.84
		25 × 35	1.85	25 × 35	1.78	25 × 40	1.82	30 × 35	1.93
		30 × 25	1.82	30 × 30	1.78	30 × 30	1.78	35 × 30	1.89
820	827	22 × 45	2.04	22 × 50	2.04	25 × 45	2.10	25 × 45	2.08
		25 × 40	2.04	25 × 40	2.04	30 × 35	2.04	30 × 40	2.19
		30 × 30	2.04	30 × 30	2.04	35 × 30	2.04	35 × 30	2.16
1000	108	25 × 45	2.40	25 × 45	2.30	25 × 50	2.42	30 × 45	2.50
		30 × 35	2.25	30 × 35	2.30	30 × 40	2.30	35 × 35	2.44
				35 × 30	2.30	35 × 35	2.30		
1200	128	25 × 50	2.62	30 × 40	2.55	30 × 45	2.65	35 × 40	2.79
		30 × 40	2.49	35 × 35	2.55	35 × 35	2.65		
		35 × 30	2.49						
1500	158	30 × 45	2.84	30 × 45	2.90	35 × 40	3.08	35 × 45	3.22
		35 × 35	2.84	35 × 40	2.90				
1800	188	30 × 50	3.32	35 × 45	3.30	35 × 45	3.48		
		35 × 40	3.00						
2200	228	35 × 45	3.50	35 × 50	3.65				

Maximum Allowable Ripple Current (Arms) at 105°C 120Hz
 在105°C 120Hz條件的最大紋波值

Case Size Φ D x L (mm)
 尺寸 Φ D x L (mm)

牛角電解電容

一覽表 Standard

Voltage (Code)		250V		315V		350V		385V			
Cap. (μF)	Code	Case Size	Ripple Current								
56	566							20×25	0.37		
68	686					20×25	0.47	20×30	0.44		
								22×25	0.45		
82	826			20×25	0.64	20×30	0.54	20×30	0.50		
										22×30	0.52
100	107			20×30	0.69	20×30	0.60	20×35	0.56		
										22×30	0.58
										22×25	0.69
120	127			20×30	0.75	20×35	0.68	20×40	0.66		
				22×25	0.75	22×30	0.75	22×35	0.68		
								25×25	0.75	25×30	0.68
150	157	20×25	0.79	20×35	0.82	20×40	0.78	22×40	0.79		
				22×30	0.82	22×35	0.82	25×30	0.78		
				25×25	0.82	25×30	0.83	30×25	0.75		
180	187	20×30	0.90	20×40	0.90	22×40	0.92	22×45	0.89		
		22×25	0.88	22×35	0.92	25×30	0.92	25×35	0.86		
				25×30	0.93	30×25	0.90	30×30	0.88		
220	227	20×35	1.00	22×40	1.04	22×50	1.05	22×50	1.01		
		22×30	1.00	25×30	1.04	25×35	1.04	25×40	1.00		
		25×25	1.08	30×25	1.04	30×30	1.02	30×30	1.00		
270	277	20×40	1.10	22×45	1.16	22×50	1.16	25×45	1.13		
		22×35	1.18	25×35	1.16	25×40	1.18	30×40	1.14		
		25×30	1.27	30×25	1.16	30×30	1.17	35×30	1.10		
330	337	22×40	1.30	22×50	1.33	25×45	1.29	30×45	1.31		
		25×30	1.30	25×40	1.33	30×35	1.34	35×35	1.32		
		30×25	1.35	30×30	1.33	35×30	1.22				
390	397	22×45	1.49	25×45	1.47	25×50	1.51	30×50	1.48		
		25×35	1.49	30×35	1.47	30×40	1.51	35×40	1.48		
		30×30	1.49	35×30	1.47	35×35	1.47				
470	477	22×50	1.65	30×40	1.70	30×45	1.65	35×45	1.76		
		25×40	1.65	35×30	1.70	35×35	1.69				
		30×30	1.65								
560	567	25×45	1.80	30×45	2.05	30×50	1.85	35×50	1.95		
		30×35	1.80	35×35	2.05	35×40	1.90				
680	687	25×50	2.03	35×40	2.17	35×45	2.20				
		30×40	2.00								
		35×30	2.00								
820	827	30×45	2.30	35×45	2.20						
		35×35	2.30								
1000	108	30×50	2.70								
		35×40	2.69								
1200	128	35×45	3.09								

Maximum Allowable Ripple Current (Arms) at 105°C 120Hz
在105°C 120Hz條件的最大紋波值

Case Size Φ D x L (mm)
尺寸 Φ D x L (mm)

牛角電解電容

一覽表 Standard

Voltage (Code)		400V		420V		450V	
Cap. (μF)	Code	Case Size	Ripple Current	Case Size	Ripple Current	Case Size	Ripple Current
47	476					20 x 25	0.39
56	566	20 x 25	0.51	20 x 25	0.51	20 x 30	0.51
						22 x 25	0.50
68	686	20 x 30	0.56	20 x 30	0.56	20 x 35	0.56
		22 x 25	0.50	22 x 25	0.55	22 x 30	0.53
						25 x 25	0.53
82	826	20 x 30	0.64	20 x 35	0.64	20 x 35	0.64
		22 x 25	0.64	22 x 25	0.64	22 x 30	0.64
				25 x 25	0.58	25 x 25	0.64
100	107	20 x 35	0.70	20 x 35	0.70	22 x 35	0.69
		22 x 30	0.70	22 x 30	0.70	25 x 25	0.65
		25 x 25	0.70	25 x 25	0.70	30 x 25	0.72
120	127	20 x 40	0.75	20 x 40	0.75	22 x 40	0.80
		22 x 35	0.75	22 x 35	0.75	25 x 30	0.80
				25 x 30	0.75	30 x 25	0.80
		25 x 30	0.76	30 x 25	0.78		
150	157	22 x 40	0.88	22 x 40	0.88	22 x 45	0.88
		25 x 30	0.83	25 x 35	0.88	25 x 35	0.88
		30 x 25	0.88	30 x 25	0.88	30 x 30	0.88
180	187	22 x 45	0.98	22 x 45	0.95	25 x 40	1.00
		25 x 35	0.98	25 x 40	0.97		
		30 x 30	0.98	30 x 30	0.96	30 x 30	1.00
				35 x 25	0.94		
220	227	22 x 50	1.10	25 x 45	1.13	25 x 45	1.12
		25 x 40	1.10	30 x 35	1.10	30 x 35	1.12
		30 x 30	1.10	35 x 25	1.10	35 x 30	1.12
270	277	25 x 50	1.29	25 x 50	1.37	30 x 40	1.28
		30 x 35	1.22	30 x 40	1.25	35 x 35	1.28
				35 x 30	1.22		
330	337	30 x 45	1.55	30 x 45	1.49	30 x 50	1.45
		35 x 30	1.44	35 x 35	1.45	35 x 40	1.45
390	397	30 x 45	1.60	30 x 50	1.67	35 x 40	1.55
		35 x 35	1.60	35 x 40	1.66		
470	477	35 x 40	1.90	35 x 45	1.90	35 x 50	1.85
560	567	35 x 45	2.12				

Maximum Allowable Ripple Current (Arms) at 105°C 120Hz
 在105°C 120Hz條件的最大紋波值

Case Size Φ D x L (mm)
 尺寸 Φ D x L (mm)

牛角電解電容