

# KN series

- ◆ Load life 2000 Hrs at 105°C
- ◆ RoHS Compliant

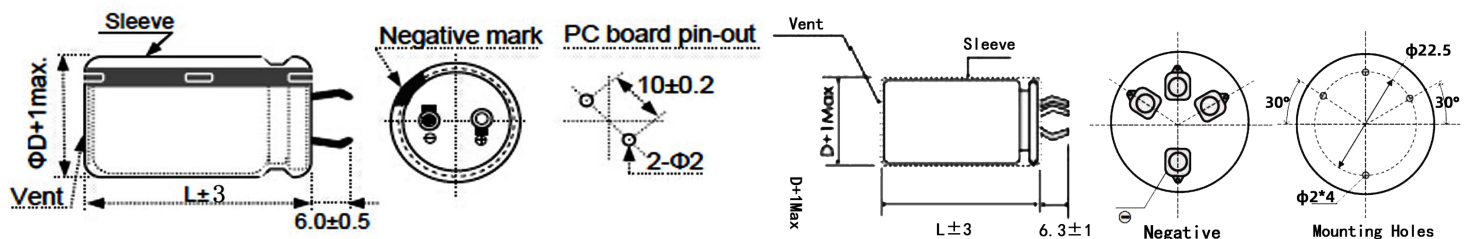


## Specifications 規格表

Ltem 項目	Performance Characteristics 特性參數																																											
Operating Temperature Range 工作溫度範圍	-40 to +105°C	-25 to +105°C																																										
Rated Voltage Range 額定電壓範圍	16 to 100 VDC	160 to 500 VDC																																										
Capacitance Range 容量範圍	68 to 56000 $\mu$ F																																											
Capacitance Tolerance 靜電容量偏差	$\pm 20\%$ (120Hz, +20°C)																																											
Leakage Current 漏電流	After 5 minutes at 20° C application of rated voltage, leakage current is not more than 0.01CV or 1.5mA, whichever is smaller C: Nominal Capacitance( $\mu$ F) V: Rated Voltage(V)																																											
Dissipation Factor 損耗角正切值 $\tan \delta$ (%)	<table border="1"> <thead> <tr> <th>rated voltage (V)</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> <th>100</th> <th>160-400</th> <th>450-500</th> </tr> </thead> <tbody> <tr> <td><math>\tan \delta</math> (Max)</td> <td>50</td> <td>40</td> <td>40</td> <td>30</td> <td>20</td> <td>20</td> <td>15</td> <td>20</td> </tr> </tbody> </table>								rated voltage (V)	16	25	35	50	63	100	160-400	450-500	$\tan \delta$ (Max)	50	40	40	30	20	20	15	20																		
	rated voltage (V)	16	25	35	50	63	100	160-400	450-500																																			
$\tan \delta$ (Max)	50	40	40	30	20	20	15	20																																				
Low Temperature Characteristics 低溫特性	<table border="1"> <thead> <tr> <th>impedance ratio max 電容器最大阻抗比值</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> <th>100</th> <th>160-400</th> <th>450-500</th> </tr> </thead> <tbody> <tr> <td>rated voltage (V)</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>100</td> <td>160-400</td> <td>450-500</td> </tr> <tr> <td><math>Z(-25^{\circ}\text{C})/Z(+20^{\circ}\text{C})</math></td> <td>4</td> <td>4</td> <td>4</td> <td>4</td> <td>4</td> <td>4</td> <td>4</td> <td>8</td> </tr> <tr> <td><math>Z(-40^{\circ}\text{C})/Z(+20^{\circ}\text{C})</math></td> <td>15</td> <td>15</td> <td>15</td> <td>15</td> <td>15</td> <td>15</td> <td>-</td> <td>-</td> </tr> </tbody> </table>								impedance ratio max 電容器最大阻抗比值	16	25	35	50	63	100	160-400	450-500	rated voltage (V)	16	25	35	50	63	100	160-400	450-500	$Z(-25^{\circ}\text{C})/Z(+20^{\circ}\text{C})$	4	4	4	4	4	4	4	8	$Z(-40^{\circ}\text{C})/Z(+20^{\circ}\text{C})$	15	15	15	15	15	15	-	-
impedance ratio max 電容器最大阻抗比值	16	25	35	50	63	100	160-400	450-500																																				
rated voltage (V)	16	25	35	50	63	100	160-400	450-500																																				
$Z(-25^{\circ}\text{C})/Z(+20^{\circ}\text{C})$	4	4	4	4	4	4	4	8																																				
$Z(-40^{\circ}\text{C})/Z(+20^{\circ}\text{C})$	15	15	15	15	15	15	-	-																																				
Load Life 使用壽命	105°C施加額定工作電壓2000小時，經恢復後，產品性能應滿足以下要求 The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 2000H at 105°C																																											
	Capacitance change	$\cong \pm 20\%$ of the initial value																																										
	D. F. ( $\tan \delta$ )	$\cong 200\%$ of the specified value																																										
Shelf Life 存儲特性	105°C放置1000小時，經恢復後20°C后，產品性能應滿足以下要求 The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1000 hours at 105°C without voltage applied.																																											
	Capacitance change	$\cong \pm 20\%$ of the initial value																																										
	D. F. ( $\tan \delta$ )	$\cong 150\%$ of the specified value																																										
	Leakage current	$\cong$ The specified value																																										

## Diagram of Dimensions 外形尺寸圖 (mm)

### ●Standard Terminal Type : S ( $\Phi 22 \sim \Phi 35$ )



## KN series

## Frequency Coefficient

Frequency Voltage (v)	50/60 Hz	120 Hz	300 Hz	1K Hz	10K Hz	≥50K Hz
≤100V	0.95	1.00	1.07	1.13	1.19	1.20
160-250V	0.87	1.00	1.17	1.32	1.45	1.50
≥350	0.80	1.00	1.16	1.30	1.41	1.43

## Standard Ratings

Rated Voltage V	Rated Capacity μF	Size φD*L mm	Rated ripple current A
16V	3300	22*26	1.17
	4700	22*26	1.53
		25*26	1.55
	6800	22*31	2.02
		25*26	2.02
	8200	30*26	2.02
		22*31	2.20
	10000	22*31	2.79
		25*26	2.79
		30*26	2.81
	12000	22*36	3.06
		30*26	3.06
	15000	22*41	3.24
		25*36	3.24
		30*26	3.24
		35*32	3.24
	18000	22*51	3.54
		25*46	3.51
		30*36	3.51
		35*32	3.54
	22000	25*51	4.25
		30*36	4.08
		35*32	4.08
	27000	25*51	4.30
		30*41	4.30
	33000	35*32	4.30
		30*46	4.83
39000	35*37	4.83	
	30*51	5.78	
47000	35*42	5.78	
	35*45	6.32	
56000	35*47	6.48	

Rated Voltage V	Rated Capacity μF	Size φD*L mm	Rated ripple current A
25V	3300	22*26	1.48
		25*26	1.48
	4700	22*26	1.88
		25*26	1.90
	6800	22*31	2.60
		25*26	2.60
		30*26	2.60
	8200	22*36	3.14
		25*31	3.14
		30*26	3.14
	10000	22*41	3.50
		25*36	3.50
		30*31	3.50
		35*27	3.50
	12000	22*46	4.02
		25*41	4.02
		30*31	4.02
		35*27	4.02
	15000	25*46	4.58
		30*36	4.58
		35*32	4.58
	18000	25*51	4.82
		30*41	4.82
		35*32	4.79
	22000	30*46	5.12
		35*37	5.12
	27000	35*42	5.30
33000	35*52	6.09	
39000	35*52	6.20	
47000	35*52	6.30	

Rated ripple current (A,rms) at 105°C, 120Hz

## KN series

## Standard Ratings

Rated Voltage	Rated Capacity	Size $\phi$ D*L	Rated ripple current
V	$\mu$ F	mm	A
35V	1500	22*26	1.26
	2200	22*26	1.35
		25*26	1.45
	2700	22*26	1.55
		25*26	1.65
	3300	22*26	1.80
		25*26	1.90
	4700	22*36	2.42
		25*26	2.30
		30*26	2.54
	6800	22*41	3.24
		25*36	3.24
		30*26	3.21
		35*27	3.24
	10000	25*46	3.96
		30*36	3.96
		35*27	3.75
	12000	25*51	4.21
		30*41	4.21
		35*32	4.21
15000	30*46	4.69	
	35*37	4.69	
22000	35*52	5.50	
27000	35*52	5.80	
	35*45	5.60	
33000	35*52	5.90	

Rated Voltage	Rated Capacity	Size $\phi$ D*L	Rated ripple current
V	$\mu$ F	mm	A
50V	1500	22*26	1.10
		25*26	1.02
	2200	22*31	1.65
		25*26	1.65
	2700	22*31	1.85
		25*26	1.85
		30*26	1.95
	3300	22*36	2.24
		25*31	2.24
		30*26	2.24
	4700	22*46	2.95
		25*36	2.80
		30*31	2.95
		35*27	2.95
	6800	25*46	3.23
		30*41	3.20
		35*32	3.26
	8200	30*46	3.58
		35*37	3.58
	10000	30*51	4.11
		30*45	4.01
		35*42	4.11
		30*40	4.00
		25*50	3.90
		35*30	3.86
	15000	35*52	5.05
	18000	35*52	5.30
22000	35*60	5.50	

Rated ripple current (A,rms) at 105°C, 120Hz

## KN series

## Standard Ratings

Rated Voltage	Rated Capacity	Size $\phi$ D*L	Rated ripple current
V	$\mu$ F	mm	A
63V	820	22*26	0.75
	1000	22*26	0.85
		25*26	0.85
	1500	22*26	1.10
		25*26	1.12
		30*26	1.14
	1800	22*31	1.40
		25*26	1.40
	2200	22*36	1.65
		25*31	1.65
		30*26	1.65
	2700	22*41	2.07
		25*36	2.07
		30*26	2.07
	3300	22*46	2.46
		25*36	2.40
		30*31	2.48
		35*27	2.48
	3900	25*41	2.92
		30*36	3.05
		35*27	3.05
	4700	25*51	3.43
		30*41	3.43
		35*32	3.43
	5600	30*46	3.86
		35*37	3.86
	6800	30*51	4.64
35*42		4.64	
8200	35*47	5.05	
10000	35*52	5.75	
	30*60	5.65	
	30*50	5.35	
15000	35*52	5.40	
	35*60	5.56	

Rated ripple current (A,rms) at 105°C, 120Hz

Rated Voltage	Rated Capacity	Size $\phi$ D*L	Rated ripple current
V	$\mu$ F	mm	A
100V	330	22*26	0.54
	470	22*26	0.79
		25*26	0.81
	560	22*26	0.90
		25*26	0.95
	680	22*31	1.02
		25*26	1.02
		30*26	1.14
	820	22*31	1.26
		25*26	1.26
		30*26	1.32
	1000	22*36	1.38
		25*31	1.38
		30*26	1.38
	1200	22*41	1.65
		25*36	1.65
		30*31	1.65
	1500	22*46	1.83
		25*41	1.83
		30*31	1.83
		35*27	1.83
	1800	25*41	2.52
		30*36	2.52
		35*32	2.52
	2200	25*51	3.03
		30*41	3.03
		35*32	3.03
	2700	30*46	4.10
		35*37	4.10
	3300	30*56	4.59
		35*47	4.59
	3900	35*47	4.98
	4700	35*52	5.03
35*40		4.80	
30*50		4.65	
5600	35*60	5.10	
5600	35*52	5.09	
6800	35*60	5.20	

## KN series

## Standard Ratings

Rated Voltage	Rated Capacity	Size φD*L	Rated ripple current
V	μF	mm	A
160V	220	22*26	0.42
		22*31	0.98
	330	25*26	0.98
		30*26	1.00
		30*26	1.00
	470	22*36	1.21
		25*31	1.21
		30*26	1.21
		22*31	1.15
	560	22*41	1.40
		25*36	1.40
		30*31	1.40
		35*27	1.40
	680	22*46	1.64
		25*36	1.58
		30*31	1.65
		35*27	1.71
	820	22*36	1.49
		25*41	1.76
		30*36	1.85
	1000	35*32	1.85
		25*51	2.15
		30*41	2.15
	1200	35*32	2.15
		25*56	2.46
		30*46	2.46
	1500	35*37	2.46
30*51		2.80	
1800	35*42	2.80	
	30*51	3.13	
2200	35*42	3.13	
	35*52	3.26	
3300	35*42	3.18	
	35*52	3.50	
200V	150	35*45	3.35
		22*26	0.54
	220	25*26	0.54
		22*31	0.92
	270	25*26	0.92
		30*26	0.92
		22*31	1.03
270	25*26	1.03	
	30*26	1.05	
	30*26	1.05	

Rated Voltage	Rated Capacity	Size φD*L	Rated ripple current
V	μF	mm	A
200V	330	22*36	1.21
		25*31	1.21
		30*26	1.21
	390	22*36	1.33
		25*31	1.34
		30*31	1.45
	470	22*41	1.57
		25*36	1.59
		30*31	1.65
		35*27	1.65
	560	22*30	1.55
		22*46	1.81
		25*41	1.85
		30*31	1.85
	680	35*27	1.85
		22*51	2.04
		25*46	2.07
	820	30*31	2.04
		35*32	2.17
		25*51	2.30
	1000	30*36	2.30
		35*37	2.31
		30*40	2.62
	1200	35*37	2.62
		25*45	2.55
		25*40	2.51
		35*30	2.50
		25*50	2.55
	1500	30*30	2.45
		30*50	3.00
		35*42	3.00
	1800	35*47	3.28
		35*52	4.01
2200	35*52	4.10	
	30*50	3.85	
2700	35*52	4.10	
	35*45	3.80	
250V	100	22*31	0.44
		25*26	0.44
	120	22*25	0.42
		22*31	0.50
	150	25*26	0.50
		22*31	0.60
		25*26	0.60
30*26	0.60		

Rated ripple current (A,rms) at 105°C, 120Hz

## KN series

## Standard Ratings

Rated Voltage	Rated Capacity	Size φD*L	Rated ripple current
V	μF	mm	A
250V	220	22*36	1.00
		25*31	1.00
		30*26	1.00
		22*30	0.95
	270	22*41	1.16
		25*36	1.16
		30*31	1.16
	330	22*46	1.28
		25*36	1.28
		30*31	1.28
	390	35*27	1.28
		22*46	1.48
		30*31	1.48
	470	35*27	1.48
		25*41	1.76
		30*36	1.76
		35*32	1.76
		25*30	1.56
		25*35	1.60
		22*36	1.56
	560	30*30	1.68
		22*40	1.68
		25*51	1.93
	680	30*41	1.93
		35*32	1.93
		25*40	2.15
	820	30*46	2.22
		35*37	2.22
		30*51	2.48
		22*45	2.15
	1000	25*45	2.46
		30*35	2.43
		30*51	2.48
		35*42	2.48
	1200	30*50	2.74
		30*40	2.65
		35*47	2.80
	1500	30*45	2.70
		35*50	3.00
	2200	35*55	3.00
		35*50	3.50
	400V	100	35*55
35*55			3.50
35*55			5.00
400V	120	35*60	5.10
		35*70	5.10
		22*36	0.82
		25*31	0.82
	150	22*25	0.70
		25*25	0.80
		22*36	0.90
		25*31	0.90
	180	22*25	0.80
		25*25	0.85
		22*41	0.98
		25*36	0.98
30*31		0.95	
35*27		0.95	
220	22*30	0.90	
	25*25	0.90	
	25*36	1.05	
	30*30	1.21	
	30*41	1.21	
	25*40	1.21	
	25*35	1.21	
	35*32	1.21	
	22*40	1.10	
	25*30	1.10	
270	30*25	1.10	
	30*40	1.40	
330	25*40	1.30	
	30*35	1.30	
	30*40	1.57	
	35*30	1.57	
390	22*45	1.50	
	25*40	1.50	
	30*35	1.50	
470	35*35	1.60	
	30*40	1.68	
	35*42	1.71	
	35*45	1.94	
	25*50	1.80	
	30*40	1.80	
	35*35	1.80	
	30*50	1.85	
30*45	1.85		
400V	35*40	1.85	
	35*50	1.98	

Rated Voltage	Rated Capacity	Size φD*L	Rated ripple current
V	μF	mm	A
250V	220	22*36	1.00
		25*31	1.00
		30*26	1.00
		22*30	0.95
	270	22*41	1.16
		25*36	1.16
		30*31	1.16
	330	22*46	1.28
		25*36	1.28
		30*31	1.28
	390	35*27	1.28
		22*46	1.48
		30*31	1.48
	470	35*27	1.48
		25*41	1.76
		30*36	1.76
		35*32	1.76
		25*30	1.56
		25*35	1.60
		22*36	1.56
	560	30*30	1.68
		22*40	1.68
		25*51	1.93
	680	30*41	1.93
		35*32	1.93
		25*40	2.15
	820	30*46	2.22
		35*37	2.22
		30*51	2.48
		22*45	2.15
	1000	25*45	2.46
		30*35	2.43
		30*51	2.48
		35*42	2.48
	1200	30*50	2.74
		30*40	2.65
		35*47	2.80
	1500	30*45	2.70
		35*50	3.00
	2200	35*55	3.00
		35*50	3.50
	400V	100	35*55
35*55			3.50
35*55			5.00
400V	120	35*60	5.10
		35*70	5.10
		22*36	0.82
		25*31	0.82
	150	22*25	0.70
		25*25	0.80
		22*36	0.90
		25*31	0.90
	180	22*25	0.80
		25*25	0.85
		22*41	0.98
		25*36	0.98
30*31		0.95	
35*27		0.95	
220	22*30	0.90	
	25*25	0.90	
	25*36	1.05	
	30*30	1.21	
	30*41	1.21	
	25*40	1.21	
	25*35	1.21	
	35*32	1.21	
	22*40	1.10	
	25*30	1.10	
270	30*25	1.10	
	30*40	1.40	
330	25*40	1.30	
	30*35	1.30	
	30*40	1.57	
	35*30	1.57	
390	22*45	1.50	
	25*40	1.50	
	30*35	1.50	
470	35*35	1.60	
	30*40	1.68	
	35*42	1.71	
	35*45	1.94	
	25*50	1.80	
	30*40	1.80	
	35*35	1.80	
	30*50	1.85	
30*45	1.85		
400V	35*40	1.85	
	35*50	1.98	

Rated ripple current (A,rms) at 105°C, 120Hz

## KN series

## Standard Ratings

Rated Voltage	Rated Capacity	Size $\phi$ D*L	Rated ripple current	
V	$\mu$ F	mm	A	
400V	560	35*50	2.23	
		30*45	2.23	
		35*45	2.40	
		35*40	2.40	
	680	35*62	35*50	2.85
			35*45	2.80
			30*50	2.70
			35*40	2.65
	820	35*62	35*62	2.90
			35*45	2.83
			35*50	2.85
	1000	35*70	35*70	3.20
			35*65	3.15
			35*60	3.15
	1200	35*50	35*50	3.10
			35*70	3.30
			35*65	3.30
	450V	82	22*36	0.64
			25*31	0.64
			30*26	0.64
100		22*41	22*41	0.74
			25*31	0.74
			30*31	0.74
			22*25	0.70
			22*35	0.72
120		25*25	25*25	0.72
			22*46	0.82
			25*36	0.82
			30*31	0.82
			22*30	0.80
			25*25	0.80
			25*30	0.80
150		30*25	30*25	0.80
			22*51	0.96
			25*41	0.96
			30*36	0.96
			35*27	0.96
22*30	0.90			

Rated ripple current (A,rms) at 105°C, 120Hz

Rated Voltage	Rated Capacity	Size $\phi$ D*L	Rated ripple current	
V	$\mu$ F	mm	A	
450V	150	22*35	0.90	
		25*30	0.90	
		25*35	0.95	
		30*25	0.95	
		30*30	0.95	
		25*46	1.14	
	180	30*36	30*36	1.10
			35*32	1.14
			30*41	1.24
	220	35*37	35*37	1.24
			22*40	1.20
			25*40	1.20
			25*50	1.20
			30*30	1.20
	270	30*51	30*51	1.48
			35*42	1.48
	330	30*40	30*40	1.60
			30*50	1.64
			25*50	1.60
			30*35	1.60
			35*30	1.60
	390	35*40	35*40	1.80
			35*52	1.86
			35*35	1.65
	470	35*50	35*50	1.90
			35*45	1.90
			30*50	1.90
			30*60	1.90
	560	35*50	35*50	2.40
			35*45	2.40
			35*40	2.40
			30*50	2.40
	680	35*60	35*60	2.90
			35*50	2.85
			35*45	2.80
			30*55	2.80
	820	35*70	35*70	3.20
			35*65	3.20
			35*60	3.20
	1000	35*70	35*70	3.30
35*65			3.30	
1200	35*80	3.60		

## KN series

## Standard Ratings

Rated Voltage	Rated Capacity	Size $\phi$ D*L	Rated ripple current
V	$\mu$ F	mm	A
500V	100	22*40	0.90
		22*45	0.94
		25*40	0.94
		30*30	0.94
	120	25*40	0.94
		30*30	0.94
		35*25	0.94
	150	25*40	1.10
		30*35	1.13
		35*30	1.13
	180	25*50	1.39
		30*40	1.40
	220	30*40	1.50
		30*45	1.60
		35*35	1.60
		35*40	1.60
	270	30*50	1.70
		35*40	1.70
	330	30*55	2.10
		30*60	2.10
		35*50	2.10
	390	35*55	2.50
		35*50	2.47
	470	35*55	2.60
		35*60	2.65
	680	35*70	3.10
	820	35*80	3.80
		40*70	3.80
1000	40*80	4.70	

Rated ripple current (A,rms) at 105°C, 120Hz