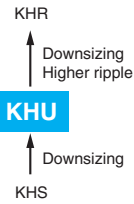


KHU Series

- Lineup of high withstand voltage products for server power supplies and solar power generation applications
- Endurance with ripple current : 3,000 hours at 105°C
- Rated voltage range:400 to 500V, Capacitance range:120 to 2,410μF
- Non solvent resistant type
- RoHS2 Compliant

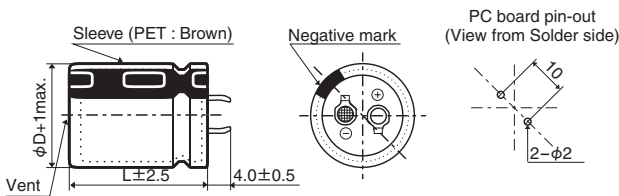


SPECIFICATIONS

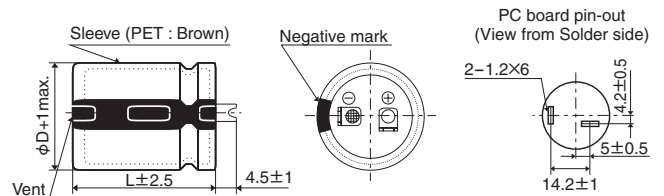
Items	Characteristics	
Category	-40 to +105°C	
Temperature Range		
Rated Voltage Range	400 to 500V _{dc}	
Capacitance Tolerance	±20% (M) (at 20°C, 120Hz)	
Leakage Current	I ≤ 3/CV Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20°C after 5 minutes)	
Dissipation Factor (tan δ)	Rated voltage (V _{dc})	400 to 500V
	tan δ (Max.)	0.20 (at 20°C, 120Hz)
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (V _{dc})	400 to 500V
	Z(-25°C)/Z(+20°C)	8 (at 120Hz)
Endurance	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 (the peak voltage shall not exceed the rated voltage) for 3,000 hours at 105°C.	
	Capacitance change	≤ ±20% of the initial value
	D.F. (tan δ)	≤ 200% of the initial specified value
	Leakage current	≤ The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4.	
	Capacitance change	≤ ±15% of the initial value
	D.F. (tan δ)	≤ 150% of the initial specified value
	Leakage current	≤ The initial specified value

DIMENSIONS [mm]

● Terminal Code : VS (φ25.4 to φ35) : Standard

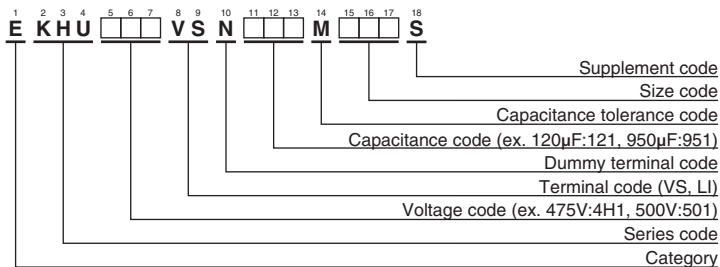


● Terminal Code : LI (φ30, φ35)



The standard design has no plastic disc.

PART NUMBERING SYSTEM



Please refer to "Product code guide (snap-in type)"



◆STANDARD RATINGS

WV (V _{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/105°C, 120Hz)	Part No.	WV (V _{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/105°C, 120Hz)	Part No.
400	240	25.4 × 25	0.20	1.17	EKHU401VSN241MQ25S	420	1,040	30 × 60	0.20	2.90	EKHU421VSN1A2MR60S
	310	25.4 × 30	0.20	1.37	EKHU401VSN311MQ30S		1,100	30 × 65	0.20	3.04	EKHU421VSN112MR65S
	360	30 × 25	0.20	1.48	EKHU401VSN361MR25S		1,120	35 × 50	0.20	2.68	EKHU421VSN112MA50S
	380	25.4 × 35	0.20	1.58	EKHU401VSN381MQ35S		1,180	30 × 70	0.20	3.20	EKHU421VSN122MR70S
	450	25.4 × 40	0.20	1.75	EKHU401VSN451MQ40S		1,250	30 × 75	0.20	3.35	EKHU421VSN1C2MR75S
	460	35 × 25	0.20	1.53	EKHU401VSN461MA25S		1,260	35 × 55	0.20	2.86	EKHU421VSN1C2MA55S
	470	30 × 30	0.20	1.71	EKHU401VSN471MR30S		1,340	30 × 80	0.20	3.52	EKHU421VSN1D2MR80S
	520	25.4 × 45	0.20	1.92	EKHU401VSN521MQ45S		1,400	35 × 60	0.20	3.04	EKHU421VSN142MA60S
	580	30 × 35	0.20	1.94	EKHU401VSN581MR35S		1,420	35 × 65	0.20	3.12	EKHU421VSN142MA65S
	590	25.4 × 50	0.20	2.08	EKHU401VSN591MQ50S		1,440	30 × 85	0.20	3.71	EKHU421VSN1E2MR85S
	600	35 × 30	0.20	1.78	EKHU401VSN601MA30S		1,540	30 × 90	0.20	3.90	EKHU421VSN1F2MR90S
	660	25.4 × 55	0.20	2.24	EKHU401VSN661MQ55S		1,550	35 × 70	0.20	3.32	EKHU421VSN1F2MA70S
	680	30 × 40	0.20	2.16	EKHU401VSN681MR40S		1,610	30 × 95	0.20	4.04	EKHU421VSN162MR95S
	720	25.4 × 60	0.20	2.38	EKHU401VSN721MQ60S		1,680	35 × 75	0.20	3.51	EKHU421VSN172MA75S
	750	35 × 35	0.20	2.02	EKHU401VSN751MA35S		1,700	30 × 100	0.20	4.21	EKHU421VSN172MRA0S
	790	30 × 45	0.20	2.39	EKHU401VSN791MR45S		1,810	35 × 80	0.20	3.71	EKHU421VSN182MA80S
	890	35 × 40	0.20	2.28	EKHU401VSN891MA40S		1,940	35 × 85	0.20	3.90	EKHU421VSN1K2MA85S
	900	30 × 50	0.20	2.60	EKHU401VSN901MR50S		2,070	35 × 90	0.20	4.09	EKHU421VSN2A2MA90S
	1,010	30 × 55	0.20	2.80	EKHU401VSN102MR55S		2,160	35 × 95	0.20	4.25	EKHU421VSN2B2MA95S
	1,040	35 × 45	0.20	2.53	EKHU401VSN1A2MA45S		2,290	35 × 100	0.20	4.44	EKHU421VSN232MAA0S
	1,090	30 × 60	0.20	2.97	EKHU401VSN112MR60S		200	25.4 × 25	0.20	1.07	EKHU451VSN201MQ25S
	1,160	30 × 65	0.20	3.12	EKHU401VSN1B2MR65S		260	25.4 × 30	0.20	1.25	EKHU451VSN261MQ30S
	1,180	35 × 50	0.20	2.75	EKHU401VSN122MA50S		310	30 × 25	0.20	1.37	EKHU451VSN311MR25S
	1,240	30 × 70	0.20	3.28	EKHU401VSN1C2MR70S		320	25.4 × 35	0.20	1.45	EKHU451VSN321MQ35S
	1,310	30 × 75	0.20	3.43	EKHU401VSN132MR75S		390	25.4 × 40	0.20	1.63	EKHU451VSN391MQ40S
	1,320	35 × 55	0.20	2.93	EKHU401VSN132MA55S		390	35 × 25	0.20	1.41	EKHU451VSN391MA25S
	1,410	30 × 80	0.20	3.61	EKHU401VSN142MR80S		400	30 × 30	0.20	1.57	EKHU451VSN401MR30S
	1,470	35 × 60	0.20	3.11	EKHU401VSN1E2MA60S		450	25.4 × 45	0.20	1.79	EKHU451VSN451MQ45S
1,500	35 × 65	0.20	3.21	EKHU401VSN152MA65S	490	30 × 35	0.20	1.78	EKHU451VSN491MR35S		
1,510	30 × 85	0.20	3.80	EKHU401VSN152MR85S	510	25.4 × 50	0.20	1.94	EKHU451VSN511MQ50S		
1,610	30 × 90	0.20	3.98	EKHU401VSN162MR90S	520	35 × 30	0.20	1.66	EKHU451VSN521MA30S		
1,630	35 × 70	0.20	3.40	EKHU401VSN1G2MA70S	570	25.4 × 55	0.20	2.08	EKHU451VSN571MQ55S		
1,690	30 × 95	0.20	4.14	EKHU401VSN172MR95S	590	30 × 40	0.20	2.02	EKHU451VSN591MR40S		
1,770	35 × 75	0.20	3.61	EKHU401VSN1H2MA75S	620	25.4 × 60	0.20	2.21	EKHU451VSN621MQ60S		
1,790	30 × 100	0.20	4.32	EKHU401VSN182MRA0S	640	35 × 35	0.20	1.87	EKHU451VSN641MA35S		
1,910	35 × 80	0.20	3.81	EKHU401VSN192MA80S	680	30 × 45	0.20	2.22	EKHU451VSN681MR45S		
2,040	35 × 85	0.20	4.00	EKHU401VSN2A2MA85S	770	30 × 50	0.20	2.40	EKHU451VSN771MR50S		
2,180	35 × 90	0.20	4.20	EKHU401VSN222MA90S	770	35 × 40	0.20	2.12	EKHU451VSN771MA40S		
2,280	35 × 95	0.20	4.36	EKHU401VSN232MA95S	860	30 × 55	0.20	2.59	EKHU451VSN861MR55S		
2,410	35 × 100	0.20	4.55	EKHU401VSN242MAA0S	890	35 × 45	0.20	2.34	EKHU451VSN891MA45S		
420	220	25.4 × 25	0.20	1.12	EKHU421VSN221MQ25S	940	30 × 60	0.20	2.76	EKHU451VSN941MR60S	
	290	25.4 × 30	0.20	1.32	EKHU421VSN291MQ30S	1,010	30 × 65	0.20	2.91	EKHU451VSN102MR65S	
	340	30 × 25	0.20	1.44	EKHU421VSN341MR25S	1,020	35 × 50	0.20	2.56	EKHU451VSN102MA50S	
	360	25.4 × 35	0.20	1.54	EKHU421VSN361MQ35S	1,080	30 × 70	0.20	3.06	EKHU451VSN112MR70S	
	430	25.4 × 40	0.20	1.72	EKHU421VSN431MQ40S	1,140	30 × 75	0.20	3.20	EKHU451VSN1B2MR75S	
	430	35 × 25	0.20	1.48	EKHU421VSN431MA25S	1,140	35 × 55	0.20	2.72	EKHU451VSN1B2MA55S	
	440	30 × 30	0.20	1.65	EKHU421VSN441MR30S	1,230	30 × 80	0.20	3.38	EKHU451VSN1C2MR80S	
	490	25.4 × 45	0.20	1.87	EKHU421VSN491MQ45S	1,260	35 × 60	0.20	2.88	EKHU451VSN1C2MA60S	
	550	30 × 35	0.20	1.89	EKHU421VSN551MR35S	1,300	35 × 65	0.20	2.98	EKHU451VSN132MA65S	
	560	25.4 × 50	0.20	2.03	EKHU421VSN561MQ50S	1,310	30 × 85	0.20	3.54	EKHU451VSN132MR85S	
	570	35 × 30	0.20	1.74	EKHU421VSN571MA30S	1,400	30 × 90	0.20	3.71	EKHU451VSN142MR90S	
	630	25.4 × 55	0.20	2.19	EKHU421VSN631MQ55S	1,410	35 × 70	0.20	3.16	EKHU451VSN142MA70S	
	650	30 × 40	0.20	2.12	EKHU421VSN651MR40S	1,450	30 × 95	0.20	3.84	EKHU451VSN1E2MR95S	
	680	25.4 × 60	0.20	2.31	EKHU421VSN681MQ60S	1,530	35 × 75	0.20	3.35	EKHU451VSN1F2MA75S	
	710	35 × 35	0.20	1.97	EKHU421VSN711MA35S	1,540	30 × 100	0.20	4.01	EKHU451VSN1F2MRA0S	
	750	30 × 45	0.20	2.33	EKHU421VSN751MR45S	1,650	35 × 80	0.20	3.54	EKHU451VSN1G2MA80S	
	850	30 × 50	0.20	2.52	EKHU421VSN851MR50S	1,770	35 × 85	0.20	3.73	EKHU451VSN1H2MA85S	
	850	35 × 40	0.20	2.23	EKHU421VSN851MA40S	1,890	35 × 90	0.20	3.91	EKHU451VSN192MA90S	
	960	30 × 55	0.20	2.73	EKHU421VSN961MR55S	2,000	35 × 95	0.20	4.04	EKHU451VSN202MA95S	
	980	35 × 45	0.20	2.45	EKHU421VSN981MA45S	2,100	35 × 100	0.20	4.22	EKHU451VSN212MAA0S	

Product specifications in this catalog are subject to change without notice. Request our product specifications before purchase and/or use. Please use our products based on the information contained in this catalog and product specifications.



◆STANDARD RATINGS

WV (V _{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/105°C, 120Hz)	Part No.	WV (V _{dc})	Cap (μF)	Case size φD×L(mm)	tan δ	Rated ripple current (Arms/105°C, 120Hz)	Part No.
475	160	25.4 × 25	0.20	1.07	EKHU4H1VSN161MQ25S	500	120	25.4 × 25	0.20	0.93	EKHU501VSN121MQ25S
	200	25.4 × 30	0.20	1.23	EKHU4H1VSN201MQ30S		170	25.4 × 30	0.20	1.13	EKHU501VSN171MQ30S
	240	30 × 25	0.20	1.38	EKHU4H1VSN241MR25S		190	30 × 25	0.20	1.23	EKHU501VSN191MR25S
	250	25.4 × 35	0.20	1.43	EKHU4H1VSN251MQ35S		210	25.4 × 35	0.20	1.31	EKHU501VSN211MQ35S
	280	35 × 25	0.20	1.48	EKHU4H1VSN281MA25S		250	25.4 × 40	0.20	1.46	EKHU501VSN251MQ40S
	300	25.4 × 40	0.20	1.60	EKHU4H1VSN301MQ40S		250	30 × 30	0.20	1.43	EKHU501VSN251MR30S
	310	30 × 30	0.20	1.59	EKHU4H1VSN311MR30S		260	35 × 25	0.20	1.43	EKHU501VSN261MA25S
	350	25.4 × 45	0.20	1.76	EKHU4H1VSN351MQ45S		300	25.4 × 45	0.20	1.63	EKHU501VSN301MQ45S
	380	30 × 35	0.20	1.80	EKHU4H1VSN381MR35S		320	30 × 35	0.20	1.65	EKHU501VSN321MR35S
	380	35 × 30	0.20	1.75	EKHU4H1VSN381MA30S		340	25.4 × 50	0.20	1.76	EKHU501VSN341MQ50S
	390	25.4 × 50	0.20	1.89	EKHU4H1VSN391MQ50S		340	35 × 30	0.20	1.66	EKHU501VSN341MA30S
	440	25.4 × 55	0.20	2.04	EKHU4H1VSN441MQ55S		380	25.4 × 55	0.20	1.89	EKHU501VSN381MQ55S
	450	30 × 40	0.20	2.01	EKHU4H1VSN451MR40S		380	30 × 40	0.20	1.85	EKHU501VSN381MR40S
	480	35 × 35	0.20	2.00	EKHU4H1VSN481MA35S		430	25.4 × 60	0.20	2.05	EKHU501VSN431MQ60S
	490	25.4 × 60	0.20	2.19	EKHU4H1VSN491MQ60S		430	35 × 35	0.20	1.89	EKHU501VSN431MA35S
	520	30 × 45	0.20	2.22	EKHU4H1VSN521MR45S		450	30 × 45	0.20	2.07	EKHU501VSN451MR45S
	570	35 × 40	0.20	2.26	EKHU4H1VSN571MA40S		510	30 × 50	0.20	2.24	EKHU501VSN511MR50S
	590	30 × 50	0.20	2.41	EKHU4H1VSN591MR50S		520	35 × 40	0.20	2.16	EKHU501VSN521MA40S
	660	30 × 55	0.20	2.59	EKHU4H1VSN661MR55S		580	30 × 55	0.20	2.43	EKHU501VSN581MR55S
	660	35 × 45	0.20	2.49	EKHU4H1VSN661MA45S		600	35 × 45	0.20	2.37	EKHU501VSN601MA45S
	730	30 × 60	0.20	2.78	EKHU4H1VSN731MR60S		640	30 × 60	0.20	2.60	EKHU501VSN641MR60S
	750	30 × 65	0.20	2.87	EKHU4H1VSN751MR65S		680	30 × 65	0.20	2.73	EKHU501VSN681MR65S
	760	35 × 50	0.20	2.72	EKHU4H1VSN761MA50S		690	35 × 50	0.20	2.59	EKHU501VSN691MA50S
	820	30 × 70	0.20	3.05	EKHU4H1VSN821MR70S		750	30 × 70	0.20	2.92	EKHU501VSN751MR70S
	860	35 × 55	0.20	2.96	EKHU4H1VSN861MA55S		780	35 × 55	0.20	2.82	EKHU501VSN781MA55S
	890	30 × 75	0.20	3.23	EKHU4H1VSN891MR75S		810	30 × 75	0.20	3.08	EKHU501VSN811MR75S
	950	35 × 60	0.20	3.16	EKHU4H1VSN951MA60S		860	35 × 60	0.20	3.01	EKHU501VSN861MA60S
	960	30 × 80	0.20	3.42	EKHU4H1VSN961MR80S		870	30 × 80	0.20	3.25	EKHU501VSN871MR80S
	970	30 × 85	0.20	3.49	EKHU4H1VSN971MR85S		890	30 × 85	0.20	3.34	EKHU501VSN891MR85S
	1,010	35 × 65	0.20	3.32	EKHU4H1VSN102MA65S		920	35 × 65	0.20	3.17	EKHU501VSN921MA65S
1,030	30 × 90	0.20	3.65	EKHU4H1VSN1A2MR90S	950	30 × 90	0.20	3.50	EKHU501VSN951MR90S		
1,100	30 × 95	0.20	3.83	EKHU4H1VSN112MR95S	1,010	30 × 95	0.20	3.67	EKHU501VSN102MR95S		
1,110	35 × 70	0.20	3.54	EKHU4H1VSN112MA70S	1,010	35 × 70	0.20	3.38	EKHU501VSN102MA70S		
1,160	30 × 100	0.20	3.99	EKHU4H1VSN1B2MRA0S	1,070	30 × 100	0.20	3.83	EKHU501VSN1A2MRA0S		
1,200	35 × 75	0.20	3.75	EKHU4H1VSN122MA75S	1,090	35 × 75	0.20	3.58	EKHU501VSN112MA75S		
1,290	35 × 80	0.20	3.96	EKHU4H1VSN132MA80S	1,170	35 × 80	0.20	3.77	EKHU501VSN1B2MA80S		
1,300	35 × 85	0.20	4.04	EKHU4H1VSN132MA85S	1,190	35 × 85	0.20	3.87	EKHU501VSN122MA85S		
1,390	35 × 90	0.20	4.24	EKHU4H1VSN142MA90S	1,260	35 × 90	0.20	4.04	EKHU501VSN1C2MA90S		
1,480	35 × 95	0.20	4.45	EKHU4H1VSN152MA95S	1,350	35 × 95	0.20	4.25	EKHU501VSN1D2MA95S		
1,570	35 × 100	0.20	4.65	EKHU4H1VSN1F2MAA0S	1,420	35 × 100	0.20	4.42	EKHU501VSN142MAA0S		

◆RATED RIPPLE CURRENT MULTIPLIERS

◎ Frequency Multipliers

Frequency(Hz)	50	120	300	1k	10k	50k
400 to 450V _{dc}	0.77	1.00	1.10	1.21	1.32	1.33
475, 500V _{dc}	0.77	1.00	1.11	1.20	1.25	1.33

The deterioration of aluminum electrolytic capacitors accelerates their life due to the internal heating produced by ripple current. For details, refer to Section "5-3 Ripple Current Effect on Lifetime" in the catalog, Technical Note.



- Always read "Notes on Use" before using the product in order to enable you to use the product correctly and prevent any faults and accidents from occurring.
- Request the Product Specification on the product of NIPPON CHEMI-CON CORPORATION to refer to it as well as this brochure prior to the order of the products. Some specific notes on use of the ordered product may be described in the specifications.
- The products listed in this catalog are designed and manufactured for general electronics equipment use and are not intended for use in applications that can adversely affect human life; where the malfunction of equipment may cause damage to life or property. In addition, our products are not intended to be used in specific applications that may cause a major social impact. Please consult with us in advance of usage of our products in the following listed applications. ① Aerospace equipment ② Power generation equipment such as thermal power, nuclear power etc. ③ Medical equipment ④ Transport equipment (automobiles, trains, ships, etc.) ⑤ Transportation control equipment ⑥ Disaster prevention / crime prevention equipment ⑦ Highly publicized information processing equipment ⑧ Submarine equipment ⑨ Other applications that are not considered general-purpose applications.
- The circuits described as examples in this catalog and the "delivery specifications" are featured in order to show the operations and usage of our products, however, this fact does not guarantee that the circuits are available to function in your equipment systems. We are not in any case responsible for any failures or damage caused by the use of information contained herein. You should examine our products, of which the characteristics are described in the "delivery specifications" and other documents, and determine whether or not our products suit your requirements according to the specifications of your equipment systems. Therefore, you bear final responsibility regarding the use of our products.
Please make sure that you take appropriate safety measures such as use of redundant design and malfunction prevention measures in order to prevent fatal accidents and/or fires in the event any of our products malfunction.
- We strongly recommend our customers to purchase Nippon Chemi-Con products only through our official sales channels. We assume no responsibility for any defects or damages caused by using products purchased from outside our official sales channel or of counterfeit goods. In addition, we will ask the customer to pay the investigation cost for products purchased outside our official sales channel.
- We reserve the right to discontinue production and delivery of products. We do not guarantee that all the products included in this catalog will be available in the future.
The aforementioned does not apply in the case of individual agreements deviating from the foregoing for customer-specific products
- We continually strive to improve the quality and reliability of our products, but in any case that our product does not meet our published specifications, please stop using it promptly and contact us immediately. As for compensation for non-conforming goods delivered by Chemi-Con, we will limit it only to goods found in non-compliance of our published specifications. This may be accomplished by a no cost replacement of non-conforming individual products, a credit of the piece price paid per each individual non-conforming product, or in other ways deemed necessary.
In addition, we have an established system with enhanced traceability, therefore we will limit the applicable lot items for any potential compensation.

[Part Numbering System](#)

[Part Numbering System \(Appendix\)](#)

[Standardization](#)

[Available Items by Manufacturing Locations](#)

[Environmental Measures](#)

[Technical Note](#)

[Precautions and Guidelines](#)

[Recommended Soldering Conditions](#)

[Taping, Lead-preforming and Packaging](#)

[Available Terminals for Snap-in and Screw Mount Type](#)