# CHEMI-CON MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS



Oldeal for low profile power supply applications

Oversize, high ripple design

• Rated voltage range : 400 to 450Vdc, Capacitance range : 18 to 270µF

• Endurance with ripple current : 3,000 hours at 105°C

• Non solvent resistant type

RoHS2 Compliant

## **\$**SPECIFICATIONS

Items			eristics							
Category Temperature Range	-40 to +105℃									
Rated Voltage Range	400 to 450V <sub>dc</sub>									
Capacitance Tolerance	±20% (M) (at 20°C, 120Hz)									
Leakage Current		After 1 minute	After 5 minutes I=0.03CV+15							
	CV≦1,000	I=0.1CV+40								
	CV>1,000	I=0.04CV+100	I=0.02CV+2	5						
	Where, I : Max. leakage current( $\mu$ A), C : Nominal capacitance ( $\mu$ F), V : Rated voltage (V) (at 20°C									
Dissipation Factor	Rated voltage (V <sub>dc</sub> )	400 to 450V								
$(\tan \delta)$	tanδ (Max.)	0.20	]		(at 20°C, 120Hz)					
Low Temperature	Rated voltage (V <sub>dc</sub> )	400 to 450V								
Characteristics	Z(-25°C)/Z(+20°C)	6	]							
(Max. Impedance Ratio)	Z(-40°C)/Z(+20°C)	10	(at							
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	$\leq \pm 20\%$ of the initial value	he							
	D.F. (tan δ )	$\leq$ 200% of the initial spec	ified value							
	Leakage current	≦The initial specified val	ue							
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	$\leq$ ±20% of the initial value	he							
	D.F. (tan δ )	≦200% of the initial specified val								
	Leakage current	$\leq$ 500% of the initial spec	ified value							

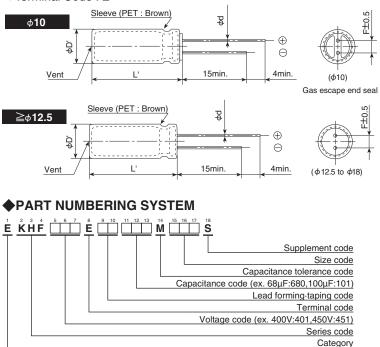
KHF

KHF

Downsized

## DIMENSIONS [mm]

#### •Terminal Code : E



Please refer to "Product code guide (radial lead type)"

φD	10	12.5	14.5	16	18			
φd	0.6	0.6	0.8	0.8	0.8			
F	5.0	5.0	7.5	7.5	7.5			
φD'	φD+0.5 max.							
Ľ	L+2.0 max.							

#### KHF<sup>(Upgrade!)</sup> Series

### **♦**STANDARD RATINGS

Vis.     UPF     OD-LCHUM     Indiana     Current Indiana     Part No.       2     10 2 20     223     254-201     22000     223     254-201     22000     220	wv	Сар	Case size		Rated ripple		wv	Сар	Case size		Rated ripple	<b>_</b>
400     27     10 × 28     EXH-40 EC     227 MUA285       38     12 × 20     0.20     285     EXH-40 EC     338MUA205       38     12 × 20     0.20     345     EXH-40 EC     338MUA205       38     12 × 20     0.20     345     EXH-40 EC     338MUA205       38     12 × 20     0.20     345     EXH-40 EC     338MUA205       38     12 × 20     0.20     355     EXH-40 EC     338MUA205       47     10 × 20     0.20     575     EXH-40 EC     100 MUA205       58     10 × 20     0.20     575     EXH-40 EC     100 MUA255       58     10 × 20     0.20     575     EXH-40 EC     100 MUA255       58     10 × 20     0.20     12 × 40     0.20     12 × 40     0.20     12 × 40     0.20     12 × 40     0.20     12 × 40     0.20     12 × 40     0.20     12 × 40     0.20     12 × 40     0.20     12 × 40     0.20     100     14 × 40     0.20     100     100 × 10				tan∂	1	Part No.				tan δ	current (mArms/105°C, 120Hz)	Part No.
40     10 × 30     2.02     365     Ext+4*01E     3004/305       39     12 × 52     0.20     365     Ext+4*01E     4704/305       56     12 × 52     0.20     355     Ext+4*51E     3304/305       68     12 × 52     0.20     355     Ext+4*51E     3304/305       68     12 × 52     0.20     355     Ext+4*51E     3304/305       68     12 × 52     0.20     555     Ext+4*51E     3304/305       68     12 × 52     0.20     100     Ext+4*51E     3304/305       100     12 × 52     0.20     100     Ext+4*51E     3004/305       100     12 × 52     0.20     100     Ext+4*51E     3004/305       100     12 × 54     0.20     0.20     Ext+4*51E     3004/305       100     12 × 54     0.20     0.20     Ext+4*51E     3004/305       120     12 × 54     0.20     0.20     Ext+4*51E     3004/305       120     12 × 54     0.20     0.20     Ext+4				1								
38     12.5 × 20     0.20     34-5     EKH-#01E     390MK205       47     10 × 30     0.20     445     EKH-#01E     560MA05       56     12.5 × 25     0.20     455     EKH-#01E     560MA05       56     12.5 × 25     0.20     555     EKH-#01E     560MA05       56     12.5 × 20     0.20     115     EKH-#01E     560MA05       58     16.5 × 20     0.20     505     EKH-#01E     560MA05     58     10.4 × 10     0.20     400     EKH-#01E     56     12.5 × 20     0.20     400     EKH-#01E     56     15.8 × 20     0.20     400     EKH-#01E     56     15.8 × 20     20     400     EKH-#01E     56     15.8 × 20     20     65     15.8 × 20     20     65     12.8 × 40     20     400     EKH-#01E     101MA055       100     15.2 × 50     0.20     65     14.8 × 30     20     65     15.8 × 40     20     400     EKH-#01E     101MA055     56     15.8 × 40     20<												
47     10 × 35     0.20     428     EKHF401E     2470M388       56     12.5 × 25     0.20     455     EKHF401E     556MM285       68     10 × 40     0.20     555     EKHF401E     556MM285       68     10 × 50     0.20     575     EKHF401E     686M305       100     12.5 × 50     0.20     576     EKHF401E     1820M455       100     12.5 × 40     0.20     570     EKHF401E     1820M455       100     12.5 × 40     0.20     570     EKHF401E     1101M125       100     18.2 × 40     0.20     520     EKHF401E     1200M455       100     18.2 × 40     0.20     520     EKHF401E     1201M255       120     12.8 × 40     0.20     520     EKHF401E     121M455       120     12.8 × 40     0.20     520     EKHF401E     121M455       120     14.8 × 40     0.20     520     EKHF401E     121M455       120     14.8 × 45     0.20     520     EK								-				
400     56     12.5 × 28     0.20     445     EKHF401E     56     12.5 × 28     0.20     445     EKHF45E												
400     56     12.5 × 25     0.20     450     EXH 40 + 20     555     EXH 401E     680.00x05       58     10 × 60     0.20     575     EXH 401E     680.00x05     56     10.5 × 25     0.20     415     EXH 451E     560.00x455       58     12.5 × 30     0.20     510     EXH 401E     680.00x05     56     10.5 × 25     0.20     440     EXH 451E     560.00x455       100     12.5 × 40     0.20     575     EXH 401E     101.00x455     56     10.5 × 20     0.20     460     EXH 451E     1060.00x055       120     12.5 × 40     0.20     576     EXH 401E     101.00x055     58     12.5 × 30     0.20     EXH 451E     1020.00x055       120     12.5 × 40     0.20     776     EXH 401E     121.00x055     58     12.5 × 40     0.20     12.5 × 45     0.20     12.5 × 45     0.20     12.5 × 45     0.20     12.5 × 45     0.20     12.5 × 45     0.20     12.5 × 45     0.20     12.5 × 45     0.20     12.5 × 45 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>												
400     68     10 × 45     0.20     555     EKHF401E     Des0MJASS       68     12.5 × 30     0.20     550     EKHF401E     Des0MJASS       68     12.5 × 30     0.20     550     EKHF401E     Des0MJASS       68     12.5 × 30     0.20     500     EKHF401E     Des0MJASS       100     12.5 × 30     0.20     500     EKHF401E     Des0MJASS       100     12.5 × 40     0.20     500     EKHF401E     Des0MJASS       100     12.5 × 40     0.20     640     EKHF401E     Des0MJASS       120     12.5 × 40     0.20     650     EKHF401E     Des0MJASS       120     12.5 × 40     0.20     700     EKHF401E     Des0MJASS       120     14.5 × 40     0.20     700     EKHF401E     Des0MJASS       120     14.5 × 40     0.20     700     EKHF401E     Des0MJASS       120     14.5 × 40     0.20     700     EKHF401E     Des0MJASS       120     15.8 × 10     0.20												
400     88     10 × 50     0.20     575     EVHF401E     680/04/053       68     15 × 20     0.20     5100     EVHF401E     680/04/053       68     15 × 20     0.20     5100     EVHF401E     680/04/053       68     15 × 20     0.20     520     EVHF401E     100/04/04/04     EM0/04/04/04/04/04/04/04/04/04/04/04/04/04											-	
400     68     12.5 x 30     0.20     530     EKHF401E     680MR30S       400     68     16.2 x 40     0.20     610     EKHF401E     680MR30S       100     12.5 x 30     0.20     610     EKHF401E     100MR402S       100     14.5 x 31.5     0.20     660     EKHF401E     101MR45S       120     12.5 x 35     0.20     660     EKHF401E     101MR45S       120     12.5 x 45     0.20     660     EKHF401E     121MR45S       120     12.5 x 45     0.20     660     EKHF401E     121MR45S       120     12.5 x 45     0.20     610     EKHF401E     121MR45S       120     14.5 x 45     0.20     610     EKHF401E     121MR45S       120     14.5 x 45     0.20     905     EKHF401E     121MR45S       120     14.5 x 45     0.20     905     EKHF401E     110MR45S       120     14.5 x 45     0.20     905     EKHF401E     110MR45S       120     14.5 x 45											-	
400     68     16 × 20     0.20     510     EK+F401E     0.800     25 × 35     0.20     FK+F401E     0.800     EK+F401E     0.800     EK+F4							450					
400     12     5.4     0.20     705     EKHF401E     101     14.5     0.40     EKHF451E     2020     16.2       400     16.2     2.0     0.70     EKHF451E     1020     16.2     15.2     12.2     12.5     14.5     22.0     15.5     10.2     16.2     15.2     12.2     12.5     15.2     12.2     12.5     15.2     12.2     12.5     15.2     12.2     12.5     15.2     12.2     12.5     15.2     10.2     15.5     0.2     25.5     10.0     12.5     45.0     0.2     15.0     0.2     15.0     10.0     14.5     25.0     0.2     0.5     EKHF451E     101     14.5     10.0     14.5     10.0     14.5     10.0     14.5     10.0     14.5     10.0     14.5     10.0     14.5     10.0     14.5     10.0     14.5     10.0     14.5     10.0     14.5     10.0     14.5     10.0     14.5     10.0     10.0     10.5     10.0     10.0												
400     10     14.5 × 31.5     0.20     60.0     EKHF401E     101     18.226     0.20     61.5     EKHF431E     B200MU20S       120     15.2 × 45     0.20     60.0     EKHF401E     121     15.2 × 45     0.20     65.0     EKHF401E     121     14.5 × 45     0.20     56.5     EKHF451E     120     14.5 × 45     0.20     70.5     EKHF401E     121     14.5 × 45     0.20     70.5     EKHF401E     110     100     14.5 × 45     0.20     70.5     EKHF401E     110     100     14.5 × 45     0.20     110     1		82	12.5×35	0.20	610	EKHF401E B20MK35S		68	12.5×35	0.20	560	EKHF451E
400     100     10     100     12     12     12     12     12     12     12     12     12     12     12     12     12     12     12     12     12     14     5     0     0     12     10     12     10     12     10     12     10     12     10     12     10     12     10     12     10     14     5     0     0     14     5     0     0     14     5     0     0     14     5     0     0     14     10     14     10     14		100		0.20	705	EKHF401E 101MK40S		82	12.5×40	0.20	640	EKHF451E
400     100     18 × 20     0.20     850     EKHF401E     1211K455       120     12.5 × 45     0.20     800     EKHF401E     1211K455       120     14.5 × 35     0.20     755     EKHF401E     1211K435       120     14.5 × 35     0.20     755     EKHF401E     1211M435       120     14.5 × 45     0.20     755     EKHF401E     1211M435       120     14.5 × 45     0.20     755     EKHF401E     1211M435       150     16 × 45     0.20     755     EKHF401E     1211M435       150     16 × 45     0.20     955     EKHF401E     151M435       150     16 × 45     0.20     955     EKHF401E     151M435       180     16 × 45     0.20     190     EKHF401E     121M4455       180     16 × 45     0.20     110     EKHF401E     121M4455       180     16 × 45     0.20     110     EKHF401E     121M4455       220     16 × 45     0.20     110 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>-</td> <td></td>											-	
400   120   122   123   123   123   123   123   123   123   123   123   123   124   123   124   1											-	
400   120   122   122×3   123×3   122×3   123×3   123×3   123×3   123×3   123×3   123×3   123×3   123×3   123×3												
120     14.5 × 35     0.20     705     EKHF401E     121MU43S       120     14.5 × 40     0.20     810     EKHF401E     121MU43S       120     14.5 × 45     0.20     700     EKHF401E     121MU43S       120     14.5 × 45     0.20     755     EKHF401E     121MU43S       150     14.5 × 45     0.20     905     EKHF401E     151MU4SS       150     18 × 35     0.20     905     EKHF401E     151MU4SS       160     18 × 35     0.20     905     EKHF401E     151MU4SS       160     18 × 35     0.20     100     EKHF401E     1151MU4SS       180     18 × 35     0.20     100     EKHF401E     1151MU4SS       180     18 × 35     0.20     1100     EKHF401E     121MU4SS       180     18 × 35     0.20     1100     EKHF401E     121MU4SS       180     18 × 35     0.20     1100     EKHF401E     121MU4SS       220     18 × 40     0.20     1100 <t< td=""><td>400</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	400											
420     14     5X     10     EKHF401E     121MLUAS       120     18×315     0.20     790     EKHF401E     121MLUAS       150     18×315     0.20     905     EKHF401E     121MML9S       150     18×345     0.20     905     EKHF401E     151ML45S       160     18×36     0.20     905     EKHF401E     151ML45S       180     18×40     0.20     915     EKHF401E     151ML45S       180     18×40     0.20     100     EKHF401E     151ML45S       180     18×31.5     0.20     1000     EKHF41E     151ML45S       220     18×40     0.20     1170     EKHF401E     121ML40S       220     18×40     0.20     1170     EKHF401E     121ML40S       220     18×40     0.20     1301     EKHF401E     121ML40S       220     18×40     0.20     1301     EKHF401E     121ML40S       220     18×40     0.20     1300     EKHF412E     130MM3S <td></td>												
120     16 × 31.5     0.20     790     EKHF401E     121MLXSS       120     18 × 25     0.20     755     EKHF401E     121MLXSS       150     14.5 × 46     0.20     905     EKHF401E     151MLXSS       150     18 × 31.5     0.20     905     EKHF401E     151MLXSS       160     18 × 31.5     0.20     905     EKHF401E     151MLXSS       180     16 × 40     0.20     905     EKHF401E     151MLXSS       180     16 × 40     0.20     100     EKHF401E     151MLXSS       180     16 × 40     0.20     100     EKHF401E     151MLXSS       220     10 × 45     0.20     100     EKHF401E     151MLXSS       220     10 × 46     0.20     1100     EKHF401E     151MLXSS       220     10 × 46     0.20     1100     EKHF401E     151MLXSS       220     10 × 46     0.20     1100     EKHF401E     151MLXSS       220     10 × 45     0.20     1310     E												
120     18 × 28     0.20     755     EKHF401E     121ML42S       150     16 × 34 6     0.20     905     EKHF401E     151ML45S       160     16 × 34 5     0.20     905     EKHF401E     151ML43S       160     16 × 40     0.20     1020     EKHF401E     151ML3S       180     16 × 40     0.20     1020     EKHF401E     181ML40S       180     16 × 40     0.20     1020     EKHF401E     181ML40S       180     16 × 40     0.20     1020     EKHF401E     181ML40S       180     18 × 31.5     0.20     1020     EKHF401E     181ML40S       220     18 × 40     0.20     1100     EKHF401E     181ML40S       270     18 × 40     0.20     1310     EKHF401E     221ML40S       271     18 × 50     0.20     1310     EKHF421E     220ML40S       271     18 × 50     0.20     305     EKHF421E     220ML40S       271     18 × 50     0.20     302												
420     150     14.5 × 46     0.20     905     EKHF401E     151ML4SS       150     16 × 35     0.20     905     EKHF401E     151ML4SS       150     16 × 46     0.20     102     EKHF401E     151ML4SS       180     16 × 46     0.20     1020     EKHF401E     151ML4SS       180     16 × 46     0.20     1020     EKHF401E     151ML4SS       180     18 × 36     0.20     1020     EKHF401E     151ML4SS       180     18 × 36     0.20     1020     EKHF401E     151ML4SS       220     18 × 50     0.20     1100     EKHF401E     151ML4SS       220     18 × 40     0.20     1100     EKHF401E     121ML4SS       270     18 × 40     0.20     1101     EKHF401E     121ML4SS       270     18 × 40     0.20     1310     EKHF401E     121ML4SS       270     18 × 40     0.20     130     EKHF401E     131ML4SS       270     18 × 40     0.20     130<												
190     16 × 35     0.20     905     EKHF401E:     151111355       190     18 × 315     0.20     192     EKHF401E:     151111435       190     16 × 40     0.20     192     EKHF401E:     151111435       190     16 × 45     0.20     1900     EKHF401E:     151111435       190     18 × 31.5     0.20     1900     EKHF401E:     151111435       190     18 × 31.5     0.20     1900     EKHF401E:     121111435       220     18 × 40     0.20     1100     EKHF401E:     121111435       220     18 × 40     0.20     1100     EKHF401E:     121111435       100     18 × 40     0.20     1100     EKHF401E:     121111435       270     18 × 40     0.20     1310     EKHF401E:     121111435       101 × 35     0.20     202     1310     EKHF401E:     2211111111111111111111111111111111111									1		î	
180     16 × 40     0.20     1020     EKHF401E     1181ML40S       180     16 × 45     0.20     1000     EKHF401E     181MMN3S       180     18 × 31.5     0.20     1000     EKHF401E     181MMN3S       220     16 × 50     0.20     1170     EKHF401E     221MM40S       220     18 × 40     0.20     1160     EKHF401E     221MM40S       270     18 × 50     0.20     1310     EKHF401E     221MM40S       271     18 × 50     0.20     1310     EKHF421E     220MM2S       39     10 × 30     0.20     285     EKHF421E     220MM2S       271     18 × 50     0.20     285     EKHF421E     220MJ2S       39     10 × 30     0.20     285     EKHF421E     29MJ30S       39     10 × 30     0.20     365     EKHF421E     39MJ30S       39     10 × 40     0.20     575     EKHF421E     59MV42S       68     10 × 40     0.20     555     EKHF421E												
180     16 × 45     0.20     1040     EKHF401E     1111ML45S       180     18 × 31.5     0.20     1020     EKHF401E     1811MM3SS       220     16 × 50     0.20     1170     EKHF401E     1811MM3SS       220     16 × 50     0.20     1170     EKHF401E     2211ML50S       220     18 × 40     0.20     1160     EKHF401E     2211ML50S       270     18 × 45     0.20     1310     EKHF401E     2211MM40S       270     18 × 50     0.20     1310     EKHF421E     220M120S       271     18 × 50     0.20     1310     EKHF421E     230M120S       39     10 × 30     0.20     285     EKHF421E     390M130S       39     12.5 × 20     0.20     345     EKHF421E     390M130S       68     10 × 40     0.20     555     EKHF421E     590M140S       68     12.5 × 20     0.20     575     EKHF421E     590M140S       82     12.5 × 30     0.20     575     <		150			915			150	1		935	
180     18 × 31.5     0.20     1000     EKHF401E     1111MMN3S       180     18 × 35     0.20     1020     EKHF401E     121MM3SS       220     16 × 50     0.20     1170     EKHF401E     221MM4SS       220     18 × 40     0.20     1100     EKHF401E     221MM4SS       270     18 × 45     0.20     1100     EKHF401E     221MM4SS       270     18 × 45     0.20     1310     EKHF401E     271MM4SS       271     10 × 25     0.20     285     EKHF421E     220MM4SS       39     10 × 30     0.20     285     EKHF421E     230MM2SS       39     10 × 35     0.20     425     EKHF421E     390MM2SS       56     10 × 45     0.20     425     EKHF421E     560MJ4SS       56     10 × 45     0.20     455     EKHF421E     560MJ4SS       68     10 × 25     0.20     55     EKHF421E     800MJSOS       82     16 × 25     0.20     55     EKHF421E		180	16×40	0.20	1020	EKHF401E 181ML40S		150	16×45	0.20	950	EKHF451E
180     182.35     0.20     1020     EKHF40TE     181MM3SS       220     16 × 50     0.20     1170     EKHF40TE     221ML50S       220     18 × 40     0.20     1110     EKHF40TE     221ML50S       270     18 × 46     0.20     1110     EKHF40TE     221ML50S       270     18 × 46     0.20     1310     EKHF40TE     221MM4SS       270     18 × 50     0.20     1310     EKHF40TE     221MM4SS       270     18 × 50     0.20     1180     EKHF42TE     220MJ2S       37     10 × 20     0.20     235     EKHF42TE     220MJ2S       39     12 × 20     0.20     345     EKHF42TE     390MJ2S       66     10 × 40     0.20     425     EKHF42TE     560MJ3S       68     10 × 50     0.20     575     EKHF42TE     580MK3S       68     10 × 50     0.20     575     EKHF42TE     580MK3S       82     14 × 20     0.20     575     EKHF42TE												
220     18 × 40     0.20     1170     EKHF401E     221ML50S       220     18 × 40     0.20     1160     EKHF401E     221MM40S       270     18 × 50     0.20     1310     EKHF401E     271MM45S       270     18 × 50     0.20     235     EKHF421E     270MU2SS       39     10 × 30     0.20     235     EKHF421E     270MU2SS       39     10 × 30     0.20     386     EKHF421E     270MU2SS       47     10 × 35     0.20     425     EKHF421E     390MX30S       56     10 × 40     0.20     425     EKHF421E     390MX30S       56     10 × 45     0.20     505     EKHF421E     690MX30S       68     10 × 50     0.20     530     EKHF421E     690MX30S       82     14 × 531.5     0.20     610     EKHF421E     820ML20S       82     18 × 20     0.20     635     EKHF421E     820ML20S       82     18 × 20     0.20     635     EKHF421E											-	
220     18 × 40     0.20     1160     EKHF401E     2211MM40S       270     18 × 45     0.20     1310     EKHF401E     2211MM40S       270     18 × 50     0.20     1310     EKHF401E     2211MM40S       270     18 × 50     0.20     1310     EKHF401E     2211MM50S       22     10 × 20     0.20     235     EKHF421E     2200M/20S       39     10 × 30     0.20     365     EKHF421E     230M/30S       39     10 × 30     0.20     365     EKHF421E     390M/30S       39     10 × 40     0.20     445     EKHF421E     390M/30S       56     10 × 40     0.20     455     EKHF421E     390M/30S       68     10 × 50     0.20     505     EKHF421E     680M/42S       68     10 × 50     0.20     505     EKHF421E     820M/30S       82     18 × 20     0.20     505     EKHF421E     820M/40S       82     16 × 235     0.20     605     EKHF421E									-		-	
270   18 × 45   0.20   1310   EKHF401E   2711M45S     270   18 × 50   0.20   1310   EKHF401E   2211M450S     271   18 × 50   0.20   1310   EKHF401E   2211M450S     271   10 × 25   0.20   285   EKHF421E   220MJ20S     381   10 × 30   0.20   385   EKHF421E   390MX20S     391   10 × 30   0.20   345   EKHF421E   390MX20S     391   12.5 × 20   0.20   345   EKHF421E   390MX20S     56   10 × 40   0.20   485   EKHF421E   660MJ40S     56   10 × 40   0.20   575   EKHF421E   660MJ40S     68   10 × 50   0.20   510   EKHF421E   680MJ50S     68   10 × 50   0.20   630   EKHF421E   820MJ20S     82   16 × 25   0.20   605   EKHF421E   820MJ20S     82   16 × 25   0.20   605   EKHF421E   101MK40S     120   120 × 54   0.20   730   EKHF421E												
270     18×50     0.20     1310     EKHF401E     271MM50S       22     10×20     0.20     235     EKHF421E     2270MJ20S       39     10×30     0.20     365     EKHF421E     2270MJ25S       39     10×30     0.20     365     EKHF421E     270MJ30S       39     12.5×20     0.20     425     EKHF421E     390MJ30S       47     10×35     0.20     425     EKHF421E     390MJ30S       56     10×40     0.20     485     EKHF421E     560MJ40S       56     10×40     0.20     530     EKHF421E     560MJ40S       68     10×50     0.20     530     EKHF421E     680ML30S       82     14.5×31.5     0.20     635     EKHF421E     680ML30S       82     16×25     0.20     730     EKHF421E     101MK40S       100     12.5×40     0.20     730     EKHF421E     121ML40S       120     16×31.5     0.20     730     EKHF421E     121ML40S </td <td></td>												
420     10×20     0.20     235     EKHF421E     220MJ20S       39     10×30     0.20     365     EKHF421E     390MJ30S       39     12.5×20     0.20     345     EKHF421E     390MJ30S       39     12.5×20     0.20     345     EKHF421E     390MJ30S       56     10×40     0.20     425     EKHF421E     560MJ40S       56     10×40     0.20     505     EKHF421E     560MJ4SS       56     10×45     0.20     575     EKHF421E     660MJ50S       68     10×50     0.20     570     EKHF421E     660MJ30S       68     10×50     0.20     570     EKHF421E     680MJ30S       68     10×50     0.20     510     EKHF421E     680MJ30S       82     16×20     0.20     510     EKHF421E     680MJ30S       82     16×20     0.20     585     EKHF421E     101MJ3S       120     12.5×40     0.20     700     EKHF421E     101MJ3SS </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>220</td> <td>10/100</td> <td>0.20</td> <td>1100</td> <td></td>								220	10/100	0.20	1100	
39     10 × 30     0.20     365     EKHF421E     390MK20S       38     12.5 × 20     0.20     345     EKHF421E     390MK20S       47     10 × 35     0.20     445     EKHF421E     470MJ35S       56     10 × 40     0.20     485     EKHF421E     560MJ45S       56     10 × 45     0.20     505     EKHF421E     560MJ45S       56     10 × 45     0.20     575     EKHF421E     560MJ45S       68     10 × 50     0.20     575     EKHF421E     680MK30S       68     16 × 20     0.20     510     EKHF421E     680ML20S       82     14 5 × 31.5     0.20     615     EKHF421E     820ML2SS       82     16 × 25     0.20     605     EKHF421E     820ML2SS       82     16 × 25     0.20     605     EKHF421E     101MK4SS       100     12.5 × 40     0.20     730     EKHF421E     101MK4SS       120     14.5 × 35     0.20     730     EKHF421E			10×20									
39     12.5 × 20     0.20     345     EKHF421E     390MK20S       47     10×35     0.20     425     EKHF421E     470MJ3S5       56     10×40     0.20     485     EKHF421E     560MJ40S       56     10×45     0.20     505     EKHF421E     560MJ40S       56     12.5×25     0.20     575     EKHF421E     560MJ40S       68     10×50     0.20     570     EKHF421E     680MJ50S       68     12.5×35     0.20     510     EKHF421E     680MJ50S       68     12.5×35     0.20     610     EKHF421E     820MK3SS       82     14.5×31.5     0.20     615     EKHF421E     820MU3S       82     16×25     0.20     705     EKHF421E     820MU3S       82     18×20     0.20     705     EKHF421E     101MK45S       100     12.5×45     0.20     700     EKHF421E     121MLN3S       120     14.5×40     0.20     810     EKHF421E     121MM3S </td <td></td> <td>27</td> <td></td> <td>0.20</td> <td>285</td> <td>EKHF421E 270MJ25S</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		27		0.20	285	EKHF421E 270MJ25S						
47     10×35     0.20     425     EKHF421E     470MJ355       56     10×44     0.20     485     EKHF421E     560MJ405       56     10×45     0.20     505     EKHF421E     560MK255       56     12.5×25     0.20     450     EKHF421E     680MK305       68     10×50     0.20     575     EKHF421E     680MK305       68     16×20     0.20     510     EKHF421E     680ML305       68     16×20     0.20     510     EKHF421E     820ML355       82     14.5×31.5     0.20     615     EKHF421E     820ML355       82     16×25     0.20     605     EKHF421E     820ML355       82     16×25     0.20     635     EKHF421E     101MK405       100     12.5×40     0.20     730     EKHF421E     101MK455       120     14.5×34     0.20     730     EKHF421E     121MM305       120     14.5×40     0.20     730     EKHF421E     121MM355 <td></td>												
56     10×40     0.20     485     EKHF421E     560MJ40S       56     10×45     0.20     505     EKHF421E     560MJ4SS       56     12.5×25     0.20     450     EKHF421E     560MJ4SS       68     10×50     0.20     575     EKHF421E     680MJS0S       68     16×20     0.20     510     EKHF421E     880MK30S       68     16×25     0.20     610     EKHF421E     880MK30S       82     14.5×31.5     0.20     615     EKHF421E     820MU20S       82     16×25     0.20     605     EKHF421E     820MU20S       82     18×20     0.20     585     EKHF421E     820MU20S       82     18×20     0.20     705     EKHF421E     101MK40S       100     12.5×45     0.20     700     EKHF421E     101MK40S       120     12.5×50     0.20     810     EKHF421E     121MK0S       120     18.5×40     0.20     755     EKHF421E     121MM2SS												
56     10×45     0.20     505     EKHF421E     560MK25S       56     12.5×25     0.20     450     EKHF421E     560MK25S       68     10×50     0.20     575     EKHF421E     560MK30S       68     12.5×30     0.20     530     EKHF421E     680ML20S       82     12.5×35     0.20     610     EKHF421E     820MK35S       82     14.5×31.5     0.20     615     EKHF421E     820ML25S       82     16×25     0.20     605     EKHF421E     820ML25S       82     18×20     0.20     585     EKHF421E     820MM20S       82     18×20     0.20     705     EKHF421E     101MK40S       100     12.5×45     0.20     700     EKHF421E     101MW40S       120     14.5×35     0.20     700     EKHF421E     121MM20S       120     14.5×40     0.20     790     EKHF421E     121MM20S       150     16×31.5     0.20     7905     EKHF421E     151M												
420     56     12.5 × 25     0.20     450     EKHF421E     560MK25S       68     10 × 50     0.20     575     EKHF421E     680MJ50S       68     16 × 20     0.20     510     EKHF421E     680ML20S       82     12.5 × 35     0.20     611     EKHF421E     820ML3SS       82     14.5 × 31.5     0.20     6015     EKHF421E     820ML2SS       82     16 × 25     0.20     605     EKHF421E     820ML2SS       82     18 × 20     0.20     585     EKHF421E     820ML2SS       82     18 × 20     0.20     585     EKHF421E     101MK4SS       100     12.5 × 440     0.20     705     EKHF421E     101MW45S       120     12.5 × 45     0.20     700     EKHF421E     121MK45S       120     16 × 31.5     0.20     790     EKHF421E     121MU40S       120     16 × 31.5     0.20     905     EKHF421E     151ML45S       150     14.5 × 45     0.20     90												
68     10×50     0.20     575     EKHF421E     680MJ50S       68     16×20     0.20     530     EKHF421E     680MK30S       68     16×20     0.20     610     EKHF421E     680ML20S       82     16×25     0.20     610     EKHF421E     820MUN3S       82     14.5×31.5     0.20     605     EKHF421E     820MUN3S       82     18×20     0.20     585     EKHF421E     820MUN3S       82     18×20     0.20     585     EKHF421E     101MK40S       100     12.5×40     0.20     705     EKHF421E     101MK40S       100     12.5×45     0.20     700     EKHF421E     121MU40S       120     14.5×40     0.20     810     EKHF421E     121MU40S       120     14.5×45     0.20     705     EKHF421E     121MU40S       120     18×31.5     0.20     905     EKHF421E     151ML35S       150     16×35     0.20     905     EKHF421E     151ML40												
68     12.5 × 30     0.20     530     EKHF421E     680MK30S       68     16 × 20     0.20     510     EKHF421E     680ML20S       82     12.5 × 35     0.20     610     EKHF421E     820MU3SS       82     14.5 × 31.5     0.20     615     EKHF421E     820MU3SS       82     16 × 25     0.20     605     EKHF421E     820MU3SS       82     18 × 20     0.20     585     EKHF421E     820MU3SS       82     18 × 20     0.20     585     EKHF421E     101MK40S       100     12.5 × 45     0.20     705     EKHF421E     101MK40S       120     12.5 × 45     0.20     700     EKHF421E     121MK50S       120     14.5 × 45     0.20     755     EKHF421E     121MLN3S       120     18 × 25     0.20     755     EKHF421E     151ML3SS       150     14.5 × 45     0.20     905     EKHF421E     151ML3SS       150     16 × 40     0.20     935     EKHF4												
68     16×20     0.20     510     EKHF421E     680ML20S       82     12.5×35     0.20     610     EKHF421E     820MK3SS       82     14.5×31.5     0.20     605     EKHF421E     820ML2SS       82     18×20     0.20     605     EKHF421E     820ML2SS       82     18×20     0.20     585     EKHF421E     101MK40S       100     12.5×40     0.20     705     EKHF421E     101MK40S       100     12.5×45     0.20     700     EKHF421E     101MK40S       120     14.5×35     0.20     700     EKHF421E     101MK4SS       120     14.5×40     0.20     820     EKHF421E     121ML40S       120     16×31.5     0.20     755     EKHF421E     121ML40S       150     16×35     0.20     905     EKHF421E     151ML40S       150     16×35     0.20     905     EKHF421E     151ML40S       150     16×45     0.20     100     EKHF421E     151												
82     14.5×31.5     0.20     615     EKHF421E     820MUN3S       82     16×25     0.20     605     EKHF421E     820ML25S       82     18×20     0.20     585     EKHF421E     820ML25S       82     18×20     0.20     585     EKHF421E     101MK40S       100     12.5×40     0.20     705     EKHF421E     101MK40S       100     14.5×35     0.20     700     EKHF421E     101MK40S       120     12.5×50     0.20     820     EKHF421E     121MK50S       120     14.5×40     0.20     810     EKHF421E     121ML40S       120     16×31.5     0.20     755     EKHF421E     121ML40S       120     18×25     0.20     905     EKHF421E     151ML40S       150     16×45     0.20     915     EKHF421E     181MM3S       180     18×31.5     0.20     1020     EKHF421E     181MM3S       180     18×45     0.20     1170     EKHF421E     22												
82     16×25     0.20     605     EKHF421E     820ML25S       82     18×20     0.20     585     EKHF421E     820MM20S       100     12.5×40     0.20     705     EKHF421E     101MK40S       100     12.5×45     0.20     700     EKHF421E     101MK40S       120     12.5×50     0.20     820     EKHF421E     101MK50S       120     12.5×50     0.20     820     EKHF421E     121MU35S       120     14.5×40     0.20     810     EKHF421E     121MU40S       120     16×31.5     0.20     790     EKHF421E     121MU40S       120     16×35.0.20     790     EKHF421E     121MU40S       150     16×35     0.20     905     EKHF421E     151MU45S       150     16×35     0.20     905     EKHF421E     151ML45S       150     16×45     0.20     915     EKHF421E     151ML45S       180     16×45     0.20     1040     EKHF421E     181ML45S </td <td></td> <td>82</td> <td>12.5×35</td> <td>0.20</td> <td>610</td> <td>EKHF421E B20MK35S</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		82	12.5×35	0.20	610	EKHF421E B20MK35S						
82   18×20   0.20   585   EKHF421E   820MM20S     100   12.5×40   0.20   705   EKHF421E   101MK40S     100   12.5×45   0.20   730   EKHF421E   101MK45S     100   14.5×35   0.20   700   EKHF421E   101MU35S     120   12.5×50   0.20   820   EKHF421E   121MK30S     120   14.5×40   0.20   810   EKHF421E   121ML33S     120   16×31.5   0.20   755   EKHF421E   121ML33S     120   18×25   0.20   755   EKHF421E   151ML35S     150   16×35   0.20   905   EKHF421E   151ML35S     150   16×40   0.20   935   EKHF421E   151ML35S     150   16×40   0.20   915   EKHF421E   151ML35S     180   16×45   0.20   1040   EKHF421E   181MM35S     220   16×50   0.20   1170   EKHF421E   181MM35S     220   18×40   0.20   1160   EKHF421E												
420   100   12.5×40   0.20   705   EKHF421E   101MK40S     100   12.5×45   0.20   730   EKHF421E   101MK45S     100   14.5×35   0.20   700   EKHF421E   101MU3SS     120   12.5×50   0.20   820   EKHF421E   121MK50S     120   14.5×40   0.20   810   EKHF421E   121ML40S     120   16×31.5   0.20   755   EKHF421E   121ML40S     120   18×25   0.20   755   EKHF421E   151ML40S     150   16×35   0.20   905   EKHF421E   151ML40S     150   16×40   0.20   935   EKHF421E   151ML40S     150   16×40   0.20   935   EKHF421E   181MM3SS     180   16×45   0.20   1040   EKHF421E   181MM35S     220   16×50   0.20   1170   EKHF421E   221ML40S     220   18×40   0.20   1160   EKHF421E   221MM40S     220   18×45   0.20   1190   EKH												
420   100   12.5×45   0.20   730   EKHF421E   101MK45S     100   14.5×35   0.20   700   EKHF421E   101MU35S     120   12.5×50   0.20   820   EKHF421E   121MK50S     120   14.5×40   0.20   810   EKHF421E   121MU40S     120   16×31.5   0.20   790   EKHF421E   121MLN3S     120   18×25   0.20   795   EKHF421E   121MLN3S     120   18×25   0.20   795   EKHF421E   121MLN3S     150   14.5×45   0.20   905   EKHF421E   151ML45S     150   16×45   0.20   915   EKHF421E   151ML40S     150   16×45   0.20   915   EKHF421E   181ML45S     180   16×45   0.20   1040   EKHF421E   181MM35S     220   16×50   0.20   1170   EKHF421E   221MM40S     220   18×40   0.20   1160   EKHF421E   221MM40S     220   18×45   0.20   1190   EKH												
100   14.5×35   0.20   700   EKHF421E   101MU35S     120   12.5×50   0.20   820   EKHF421E   121MK50S     120   14.5×40   0.20   810   EKHF421E   121MU40S     120   16×31.5   0.20   790   EKHF421E   121MLN3S     120   18×25   0.20   790   EKHF421E   121MLN3S     120   18×25   0.20   795   EKHF421E   121MLN3S     150   14.5×45   0.20   905   EKHF421E   151MU45S     150   16×35   0.20   905   EKHF421E   151ML35S     150   16×40   0.20   935   EKHF421E   151ML40S     150   18×31.5   0.20   1040   EKHF421E   151ML40S     180   18×35   0.20   1040   EKHF421E   181MM35S     220   16×50   0.20   1170   EKHF421E   221ML50S     220   16×50   0.20   1170   EKHF421E   221ML50S     220   18×40   0.20   1160   EKHF421E   <	420			1	1							
120   12.5×50   0.20   820   EKHF421E   121MK50S     120   14.5×40   0.20   810   EKHF421E   121MU40S     120   16×31.5   0.20   790   EKHF421E   121MLN3S     120   18×25   0.20   755   EKHF421E   121MM25S     150   14.5×45   0.20   905   EKHF421E   151MU45S     150   16×35   0.20   905   EKHF421E   151ML35S     150   16×35   0.20   905   EKHF421E   151ML35S     150   16×40   0.20   935   EKHF421E   151ML35S     150   16×40   0.20   935   EKHF421E   151ML40S     150   18×31.5   0.20   1040   EKHF421E   151ML40S     180   18×35   0.20   1040   EKHF421E   181MM35S     220   16×50   0.20   1170   EKHF421E   221MM40S     220   18×40   0.20   1160   EKHF421E   221MM40S     220   18×45   0.20   1190   EKHF421E <td< td=""><td></td><td></td><td></td><td>1</td><td>1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>				1	1							
120   14.5×40   0.20   810   EKHF421E   121MU40S     120   16×31.5   0.20   790   EKHF421E   121MLN3S     120   18×25   0.20   755   EKHF421E   121MM25S     150   14.5×45   0.20   905   EKHF421E   151MU45S     150   16×35   0.20   905   EKHF421E   151ML35S     150   16×35   0.20   905   EKHF421E   151ML35S     150   16×40   0.20   935   EKHF421E   151ML40S     150   18×31.5   0.20   915   EKHF421E   151ML40S     180   16×45   0.20   1040   EKHF421E   181ML45S     180   18×35   0.20   1020   EKHF421E   181ML45S     220   16×50   0.20   1170   EKHF421E   221ML50S     220   18×40   0.20   1160   EKHF421E   221MM40S     220   18×45   0.20   1190   EKHF421E   221MM45S				1								
120   16×31.5   0.20   790   EKHF421E   121MLN3S     120   18×25   0.20   755   EKHF421E   121MM25S     150   14.5×45   0.20   905   EKHF421E   151MU45S     150   16×35   0.20   905   EKHF421E   151MU35S     150   16×35   0.20   905   EKHF421E   151ML35S     150   16×40   0.20   935   EKHF421E   151ML35S     150   16×40   0.20   935   EKHF421E   151ML35S     150   18×40   0.20   915   EKHF421E   151MMN3S     180   18×35   0.20   1040   EKHF421E   181ML45S     180   18×35   0.20   1170   EKHF421E   221MM35S     220   16×50   0.20   1170   EKHF421E   221MM40S     220   18×45   0.20   1190   EKHF421E   221MM45S				1	1							
150   14.5×45   0.20   905   EKHF421E151MU45S     150   16×35   0.20   905   EKHF421E151ML35S     150   16×40   0.20   935   EKHF421E151ML40S     150   18×31.5   0.20   915   EKHF421E151ML40S     150   18×35.5   0.20   915   EKHF421E151MMN3S     180   16×45   0.20   1040   EKHF421E181MM35S     180   18×35   0.20   1020   EKHF421E181MM35S     220   16×50   0.20   1170   EKHF421E221ML50S     220   18×40   0.20   1160   EKHF421E221MM40S     220   18×45   0.20   1190   EKHF421E221MM45S		120										
150     16×35     0.20     905     EKHF421E     151ML35S       150     16×40     0.20     935     EKHF421E     151ML40S       150     18×31.5     0.20     915     EKHF421E     151ML40S       180     16×45     0.20     915     EKHF421E     1151ML40S       180     16×45     0.20     1040     EKHF421E     1151ML45S       180     18×35     0.20     1040     EKHF421E     1181ML45S       220     16×50     0.20     1170     EKHF421E     221ML50S       220     18×40     0.20     1160     EKHF421E     221MM40S       220     18×45     0.20     1190     EKHF421E     221MM45S		120	18×25	0.20	755	EKHF421E 121MM25S						
150   16×40   0.20   935   EKHF421E151ML40S     150   18×31.5   0.20   915   EKHF421E151MMN3S     180   16×45   0.20   1040   EKHF421E181ML45S     180   18×35   0.20   1020   EKHF421E181MM35S     220   16×50   0.20   1170   EKHF421E221ML50S     220   18×40   0.20   1160   EKHF421E221MM40S     220   18×45   0.20   1190   EKHF421E221MM45S												
150   18×31.5   0.20   915   EKHF421E _ 151MMN3S     180   16×45   0.20   1040   EKHF421E _ 181ML45S     180   18×35   0.20   1020   EKHF421E _ 181MM35S     220   16×50   0.20   1170   EKHF421E _ 221ML50S     220   18×40   0.20   1160   EKHF421E _ 221MM40S     220   18×45   0.20   1190   EKHF421E _ 221MM45S												
180     16×45     0.20     1040     EKHF421E     181ML45S       180     18×35     0.20     1020     EKHF421E     181MM35S       220     16×50     0.20     1170     EKHF421E     221ML50S       220     18×40     0.20     1160     EKHF421E     221MM40S       220     18×45     0.20     1190     EKHF421E     221MM45S												
180     18×35     0.20     1020     EKHF421E     181MM35S       220     16×50     0.20     1170     EKHF421E     221ML50S       220     18×40     0.20     1160     EKHF421E     221MM40S       220     18×45     0.20     1190     EKHF421E     221MM45S				1								
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220 18×45 0.20 1190 EKHF421E□□221MM45S												
		i		1	1							
		270		1	1							

 $\Box$  : Enter the appropriate lead forming or taping code.

### **♦**RATED RIPPLE CURRENT MULTIPLIERS

• Frequency Multipliers

Capacitance(µF) Frequency(Hz)	120	1k	10k	100k
18 to 82	1.00	1.50	1.75	1.80
100 to 270	1.00	1.30	1.40	1.50

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.

# CHEMI-CON ALUMINUM ELECTROLYTIC CAPACITORS

- 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.

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In addition, we have an established system with enhanced traceability, therefore we will limit the applicable lot items for any potential compensation.

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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