



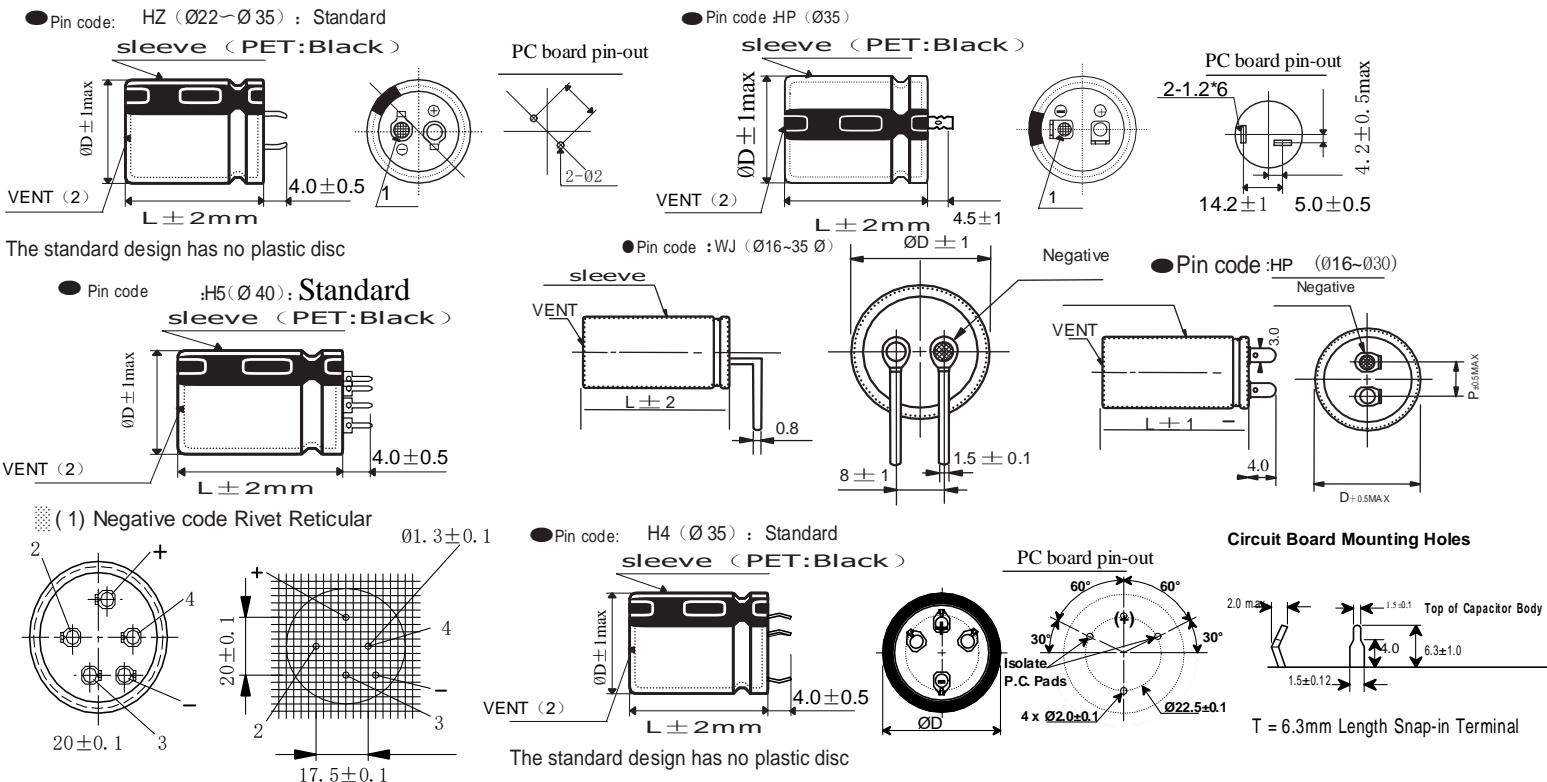
- Endurance with ripple current:3000 hours at 85°C.
- Apply to Perfuming machine, Air purification equipment
Large charger device, Electric vehicle speed controller
Microcomputer governor, Oil pressure Device of test equipment, Battery testing equipment



◆ SPECIFIC ATIONS

items	characteristics				
Category temperature Range	-40~+85°C				
Rated voltage Range	16~450 _{VDC}				
Capacitance Tolerance	± 20% (M) 20°C、120HZ				
Leakage Current	I=0.02CV or 5mA, whichever is smaller I: Where, I : Max. leakage current (µA), C: Nominal capacitance (µF)、Rated voltage (V)at 20°C after 5 minutes)				
Dissipation Factor (MAX)	Rated voltage (Vdc)	160v~250V	315v~400V	420V~450V	At20°C, 120HZ
	tanδ Max	0.15	0.15	0.20	
Low Temperature characteristics	Rated voltage (Vdc)	200v	250v	400v	450v
	Z(-25°C)/Z(+20°C)	≤4			
Equivalent Series Inductance	≤50nH				
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 85°C				
	Capacitance change	≤±20% of the initial value			
	D. F. (tanδ)	≤300% 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 1000 hours at 85°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	≤±20% of the initial value			
	D. F. (tanδ)	≤300% of the initial specified value			
	Leakage current	≤The initial specified value			

◆ size Fig (snap-in Fig)[mm]





SRANDRAD RATINGS

WV [Vdc]	cap [μ F]	Case size ØD x L [mm]	ESR 120Hz, 20 °C [mΩ]	Ripple current (Ams/105 °C, 120Hz)	Par t NO.	WV [Vdc]	cap [μ F]	Case size ØD x L [mm]	ESR 120Hz, 20 °C [mΩ]	Ripple current (Ams/105 °C, 120Hz)	Par t NO.
16v	10000	25.4×30	48	2.4	CES160HZN103MQ30	25v	39000	40×50	12	7.5	CES250HZN393MU50
	12000	25.4×35	40	2.8	CES160HZN123MQ35		47000	35×80	10	9.3	CES250HZN473MA80
	15000	25.4×40	32	3.3	CES160HZN153MQ40		47000	40×50	10	8.8	CES250HZN473MU50
	15000	30×30	32	3.3	CES160HZN153MR30		56000	35×105	8	11.2	CES250HZN563MAA0
	18000	25.4×45	27	3.8	CES160HZN183MQ45		56000	40×75	8	9.6	CES250HZN563MU75
	18000	25.4×50	27	4.0	CES160HZN183MQ50		68000	40×80	7	11.8	CES250HZN683MU80
	18000	30×35	27	3.8	CES160HZN183MR35		68000	40×105	7	12.9	CES250HZN683MUA0
	18000	35×30	27	4.0	CES160HZN183MA30		82000	40×105	6	12.9	CES250HZN823MUA0
	22000	30×40	22	4.4	CES160HZN223MR40		100000	40×105	5	15.6	CES250HZN104MUA0
	22000	35×35	22	4.6	CES160HZN223MA35		40v	2700	25.4×30	142	1.4
	27000	30×45	18	5.1	CES160HZN273MR45	3300		25.4×35	116	1.7	CES400HZN332MQ35
	27000	30×50	18	5.3	CES160HZN273MR50	3900		25.4×40	98	1.9	CES400HZN392MQ40
	27000	35×40	18	5.3	CES160HZN273MA40	3900		30×30	98	1.9	CES400HZN392MR30
	33000	35×45	14	6.2	CES160HZN333MA45	4700		25.4×45	81	2.2	CES400HZN472MQ45
	39000	30×70	12	7.2	CES160HZN393MR70	4700		30×35	81	2.2	CES400HZN472MR35
	39000	35×50	12	7.0	CES160HZN393MA50	5600		25.4×50	68	2.5	CES400HZN562MQ50
	47000	40×50	10	8.1	CES160HZN473MU50	5600		30×40	68	2.5	CES400HZN562MR40
	56000	35×80	9	10.0	CES160HZN563MA80	5600		35×30	68	2.5	CES400HZN562MA30
	56000	40×50	9	8.8	CES160HZN563MU50	6800		30×45	56	2.8	CES400HZN682MR45
	68000	40×60	7	10.4	CES160HZN683MU60	6800		35×35	56	2.9	CES400HZN682MA35
	82000	35×105	6	13.3	CES160HZN823MAA0	8200		30×50	47	3.2	CES400HZN822MR50
	82000	40×80	6	12.7	CES160HZN823MU80	8200		35×40	47	3.3	CES400HZN822MA40
	82000	40×90	6	11.4	CES160HZN823MU90	8200		35×45	47	3.4	CES400HZN822MA45
	100000	40×105	5	14.0	CES160HZN104MUA0	10000	35×50	38	3.9	CES400HZN103MA50	
120000	40×105	4	16.9	CES160HZN124MUA0	12000	30×70	32	4.5	CES400HZN123MR70		
150000	40×130	4	18.8	CES160HZN154MUD0	12000	35×60	32	4.6	CES400HZN123MA60		
25v	6800	25.4×30	66	2.1	CES250HZN682MQ30	15000	40×50	25	5.1	CES400HZN153MU50	
	8200	25.4×35	54	2.4	CES250HZN822MQ35	18000	35×80	21	6.4	CES400HZN183MA80	
	10000	25.4×40	45	2.8	CES250HZN103MQ40	18000	40×60	21	6.0	CES400HZN183MU60	
	10000	30×30	45	2.8	CES250HZN103MR30	22000	35×105	17	7.7	CES400HZN223MAA0	
	12000	25.4×45	37	3.2	CES250HZN123MQ45	22000	40×80	17	7.4	CES400HZN223MU80	
	12000	30×35	37	3.2	CES250HZN123MR35	22000	40×90	17	6.6	CES400HZN223MU90	
	15000	25.4×50	30	3.7	CES250HZN123MQ50	27000	40×105	14	8.9	CES400HZN273MUA0	
	15000	30×40	30	3.7	CES250HZN153MR40	33000	35×120	14	8.2	CES400HZN333MAC0	
	15000	35×30	30	3.7	CES250HZN153MA30	39000	40×120	10	10.7	CES400HZN393MUC0	
	18000	30×45	26	4.2	CES250HZN183MR45	50v	1800	25.4×25	165	1.4	CES500HZN182MQ25
	18000	30×50	26	4.4	CES250HZN183MR50		2200	25.4×30	138	1.7	CES500HZN222MQ30
	18000	35×35	26	4.2	CES250HZN183MA35		2700	25.4×35	120	1.9	CES500HZN272MQ35
	22000	35×40	21	4.9	CES250HZN223MA40		2700	30×25	120	1.9	CES500HZN272MR25
	22000	35×45	21	5.1	CES250HZN223MA45		3300	25.4×40	92	2.2	CES500HZN332MQ40
	27000	30×70	17	6.1	CES250HZN273MR70		3300	30×30	92	2.2	CES500HZN332MR30
	27000	35×50	17	5.9	CES250HZN273MA50		3900	25.4×45	85	2.5	CES500HZN392MQ45
	33000	35×60	14	7.0	CES250HZN333MA60		3900	30×35	85	2.5	CES500HZN392MR35



SRANDRAD RATINGS

WV [Vdc]	cap [μ F]	Case size ØD x L [mm]	ESR 120Hz, 20 °C [mΩ]	Ripple current (Ams/105 °C, 120Hz)	Par t NO.	WV [Vdc]	cap [μ F]	Case size ØD x L [mm]	ESR 120Hz, 20 °C [mΩ]	Ripple current (Ams/105 °C, 120Hz)	Par t NO.
50v	4700	30×35	61	2.2	CES500HZN472MR35	80v	2700	30×40	118	1.9	CES800HZN272MR40
	4700	30×40	63	2.7	CES500HZN472MR40		2700	30×45	118	2.0	CES800HZN272MR45
	5600	30×45	55	3.5	CES500HZN562MR45		2700	35×35	118	2.0	CES800HZN272MA35
	6800	35×40	46	4.1	CES500HZN682MA40		3300	30×50	97	2.3	CES800HZN332MR50
	8200	30×65	41	4.5	CES500HZN82M3065		3300	35×40	97	2.3	CES800HZN332MA40
	10000	35×50	33	5.6	CES500HZN103MA50		3900	35×45	82	2.6	CES800HZN392MA45
	12000	40×55	26	6.0	CES500HZN123MU55		4700	35×50	68	3.0	CES800HZN472MA50
	15000	40×70	22	6.6	CES500HZN153MU70		5600	30×70	57	3.4	CES800HZN562MR70
	18000	35×105	18	8.1	CES500HZN183MAA0		5600	35×60	57	3.5	CES800HZN562MA60
	22000	40×105	15	10.1	CES500HZN223MUA0		5600	40×50	57	3.4	CES800HZN562MU50
	27000	40×105	13	12.1	CES500HZN273MUA0		6800	35×80	47	4.3	CES800HZN682MA80
	33000	40×130	10	13.8	CES500HZN333MUD0		6800	40×60	47	4.0	CES800HZN682MU60
	47000	35×160	8	15.2	CES500HZN473MAF5		10000	35×105	32	5.7	CES800HZN103MAA0
	63v	1800	25.4×30	159	1.3		CES630HZN182MQ30	10000	40×70	32	4.9
2200		25.4×35	130	1.6	CES630HZN222MQ35	12000	40×80	27	6.0	CES800HZN123MU80	
2700		25.4×40	106	1.8	CES630HZN272MQ40	12000	35×105	27	6.0	CES800HZN123MAA0	
2700		30×30	106	1.8	CES630HZN272MR30	15000	40×105	21	7.3	CES800HZN153MUA0	
3300		25.4×45	87	2.1	CES630HZN332MQ45	18000	40×120	18	8.0	CES800HZN183MUC0	
3300		30×35	87	2.1	CES630HZN332MR35	1000	25.4×30	159	1.3	CES101HZN102MQ30	
3900		25.4×50	73	2.4	CES630HZN392MQ50	1200	25.4×35	133	1.5	CES101HZN122MQ35	
3900		30×40	73	2.4	CES630HZN392MR40	1500	25.4×40	106	1.8	CES101HZN152MQ40	
3900		35×30	73	2.4	CES630HZN392MA30	1500	30×30	106	1.8	CES101HZN152MR30	
4700		30×45	61	2.7	CES630HZN472MR45	1800	25.4×45	88	2.1	CES101HZN182MQ45	
4700		35×35	65	2.8	CES630HZN472MA35	1800	25.4×50	88	2.2	CES101HZN182MQ50	
5600		30×50	51	3.1	CES630HZN562MR50	1800	35×30	88	2.2	CES101HZN182MA30	
6800		35×45	42	3.6	CES630HZN682MA45	2200	30×40	72	2.4	CES101HZN222MR40	
8200		30×70	35	4.3	CES630HZN822MR70	2200	30×45	72	2.5	CES101HZN222MR45	
10000		35×60	29	4.9	CES630HZN103MA60	2200	35×35	72	2.5	CES101HZN222MA35	
10000		40×50	29	4.8	CES630HZN103MU50	2700	30×50	59	2.9	CES101HZN272MR50	
12000		35×80	24	6.0	CES630HZN123MA80	2700	35×40	59	2.9	CES101HZN272MA40	
12000		40×60	24	5.6	CES630HZN123MU70	3300	35×45	48	3.4	CES101HZN332MA45	
15000		40×70	19	6.3	CES630HZN153MU70	3900	30×70	41	4.0	CES101HZN392MR70	
18000		35×105	16	8.1	CES630HZN183MAA0	3900	35×50	41	3.8	CES101HZN392MA50	
18000		40×80	16	7.7	CES630HZN183MU80	4700	35×60	34	4.5	CES101HZN472MA60	
22000		40×105	13	9.3	CES630HZN223MUA0	4700	40×50	34	4.4	CES101HZN472MU50	
22000	35×130	13	8.5	CES630HZN223MAD0	5600	35×80	28	5.5	CES101HZN562MA80		
27000	40×130	11	10.3	CES630HZN273MUD0	5600	40×60	28	5.1	CES101HZN562MU60		
80v	1200	25.4×30	265	1.0	CES800HZN122MQ30	8200	35×105	19	7.3	CES101HZN822MAA0	
	1500	25.4×35	212	1.2	CES800HZN152MQ35	8200	40×80	19	7.0	CES101HZN822MU80	
	1800	25.4×40	177	1.4	CES800HZN152MQ40	10000	40×90	16	7.7	CES101HZN103MU90	
	1800	30×30	177	1.6	CES800HZN152MR30	12000	40×105	13	9.2	CES101HZN123MUA0	
	2200	25.4×45	145	1.7	CES800HZN222MQ45	15000	40×120	11	10.3	CES101HZN153MUC0	
	2200	25.4×50	145	1.6	CES800HZN222MQ50	470	25.4×30	237	1.1	CES161HZN471MQ30	
	2200	30×35	145	1.7	CES800HZN222MR35	560	25.4×35	199	1.3	CES161HZN561MQ35	
	2200	35×30	145	1.6	CES800HZN222MA30	680	25.4×40	164	1.5	CES161HZN681MQ40	

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

SRANDRAD RATINGS

WV [Vdc]	cap [μ F]	Case size ØD x L [mm]	ESR 120Hz, 20 °C [mΩ]	Ripple current (Ams/105 °C, 120Hz)	Par t NO.	WV [Vdc]	cap [μ F]	Case size ØD x L [mm]	ESR 120Hz, 20 °C [mΩ]	Ripple current (Ams/105 °C, 120Hz)	Par t NO.
160v	680	30×30	164	1.4	CES161HZN681MR30	200v	2700	40×50	35	4.3	CES201HZN272MU50
	820	25.4×45	136	1.6	CES161HZN821MQ45		3300	40×60	29	5.1	CES201HZN332MU60
	820	30×35	136	1.7	CES161HZN821MR35		3900	35×105	24	6.5	CES201HZN392MAA0
	1000	25.4×50	111	1.9	CES161HZN102MQ50		3900	40×80	20	6.8	CES201HZN392MU80
	1000	30×40	111	1.9	CES161HZN102MR40		4700	40×80	24	5.6	CES201HZN472MU80
	1200	30×50	111	1.9	CES161HZN122MR50		5600	40×105	17	8.1	CES201HZN562MUA0
	1200	30×45	93	2.2	CES161HZN122MR45		5600	35×130	17	7.4	CES201HZN562MAD0
	1200	35×35	93	2.2	CES161HZN122MA35		6800	40×120	14	9.0	CES201HZN682MUC0
	1500	30×50	74	2.6	CES161HZN152MR50		330	25.4×30	290	1.0	CES251HZN331MQ30
	1500	35×40	74	2.6	CES161HZN152MA40		390	25.4×35	245	1.1	CES251HZN391MQ35
	1800	35×45	62	3.0	CES161HZN182MA45	470	25.4×40	203	1.3	CES251HZN471MQ40	
	1800	35×50	62	3.1	CES161HZN182MA50	470	30×30	203	1.3	CES251HZN471MR30	
	2200	30×70	51	3.6	CES161HZN222MR70	560	25.4×45	171	1.5	CES251HZN561MQ45	
	2200	35×60	51	3.7	CES161HZN222MA60	560	30×35	171	1.5	CES251HZN561MR35	
	2700	40×50	41	4.0	CES161HZN272MU50	560	35×30	171	1.6	CES251HZN561MA30	
	3300	35×80	34	5.0	CES161HZN332MA80	680	25.4×50	141	1.7	CES251HZN681MQ50	
	3300	40×60	34	4.7	CES161HZN332MU60	680	30×40	141	1.7	CES251HZN681MR40	
	3900	35×105	29	6.2	CES161HZN392MAA0	820	30×45	117	2.0	CES251HZN821MR45	
	3900	40×70	29	5.2	CES161HZN392MU70	820	30×50	117	2.1	CES251HZN821MR50	
	200v	4700	40×80	24	6.3	CES161HZN472MU80	820	35×35	117	2.0	CES251HZN821MA35
5600		40×90	20	7.5	CES161HZN562MU90	1000	35×40	96	2.3	CES251HZN102MA40	
5600		40×105	20	6.9	CES161HZN562MUA0	1200	35×45	89	2.6	CES251HZN122MA45	
6800		40×120	16	8.3	CES161HZN562MUC0	1200	35×50	80	2.7	CES251HZN122MA50	
270		22×25	354	0.8	CES201HZN271MP25	1500	30×70	64	3.2	CES251HZN152MR70	
390		22×30	245	1.0	CES201HZN391MP30	1500	35×60	64	3.3	CES251HZN152MA60	
470		22×35	203	1.2	CES201HZN471MP35	1800	35×80	53	4.0	CES251HZN182MA80	
470		25.4×50	203	1.2	CES201HZN471MQ50	1800	40×50	53	3.5	CES251HZN182MU50	
560		22×40	171	1.3	CES201HZN561MP40	1800	40×60	53	3.8	CES251HZN182MU60	
560		25.4×35	171	1.4	CES201HZN561MQ35	2700	35×105	35	5.4	CES251HZN272MAA0	
680		25.4×40	141	1.6	CES201HZN681MQ40	2700	40×80	35	5.2	CES251HZN272MU80	
680		30×30	141	1.6	CES201HZN681MR30	2700	35×120	35	4.6	CES251HZN272MAC0	
820		25.4×45	117	1.8	CES201HZN821MQ45	3300	40×105	29	6.3	CES251HZN332MUA0	
820		30×35	117	1.8	CES201HZN821MR35	3900	40×105	26	6.5	CES251HZN392MUA0	
1000		35×30	96	2.1	CES201HZN102MA30	4700	40×120	20	7.4	CES251HZN472MUC0	
1000		25.4×50	96	2.1	CES201HZN102MQ50	180	25.4×30	531	0.7	CES351HZN181MQ30	
1000		30×40	96	2.1	CES201HZN102MR40	220	25.4×35	434	0.9	CES351HZN221MQ35	
1200		30×45	80	2.4	CES201HZN122MR45	270	25.4×40	354	1.0	CES351HZN271MQ40	
1200		35×35	80	2.8	CES201HZN122MA35	270	30×30	354	1.0	CES351HZN271MR30	
1500		30×50	64	2.4	CES201HZN152MR50	330	25.4×45	290	1.2	CES351HZN331MQ45	
1500	35×40	64	2.8	CES201HZN152MA40	330	30×35	290	1.1	CES351HZN331MR35		
1800	35×45	53	3.2	CES201HZN182MA45	330	35×30	290	1.2	CES351HZN331MA30		
1800	35×50	53	3.3	CES201HZN182MA50	390	25.4×50	245	1.3	CES351HZN391MQ50		
2200	30×70	43	3.8	CES201HZN222MR70	390	30×40	245	1.3	CES351HZN391MR40		
2200	35×60	43	4.0	CES201HZN222MA60	470	30×45	203	1.5	CES351HZN471MR45		
3300	35×80	29	5.4	CES201HZN332MA80	470	35×35	203	1.5	CES351HZN471MA35		



SRANDRAD RATINGS

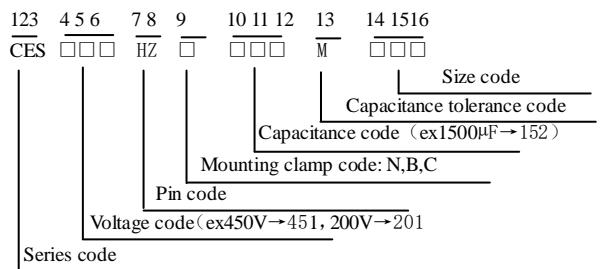
WV [Vdc]	cap [μ F]	Case size ØD x L [mm]	ESR 120Hz, 20 °C [mΩ]	Ripple current (Ams/105 °C, 120Hz)	Par t NO.	WV [Vdc]	cap [μ F]	Case size ØD x L [mm]	ESR 120Hz, 20 °C [mΩ]	Ripple current (Ams/105 °C, 120Hz)	Par t NO.
350v	560	30×50	171	1.7	CES351HZN561MR50	400v	820	40×60	155	2.2	CES401HZN821MU60
	560	35×40	171	1.7	CES351HZN561MA40		1000	35×105	106	3.1	CES401HZN102MAA0
	560	35×45	171	1.8	CES351HZN561MA45		1200	40×80	106	3.0	CES401HZN122MU80
	680	35×50	141	2.1	CES351HZN681MA50		1200	35×105	106	2.7	CES401HZN122MAA0
	820	30×70	117	2.3	CES351HZN821MR70		1500	40×105	85	3.6	CES401HZN152MUA0
	820	35×60	117	2.4	CES351HZN821MA60		1800	40×105	85	3.3	CES401HZN182MUA0
	820	40×50	117	2.4	CES351HZN821MU50		2200	40×120	58	4.4	CES401HZN222MUC0
	1000	35×80	80	3.3	CES351HZN102MA80		450v	120	25.4×30	929	0.6
	1200	40×60	80	3.1	CES351HZN122MU60	150		25.4×35	743	0.7	CES451HZN151MQ35
	1500	35×105	64	4.0	CES351HZN152MAA0	150		25.4×40	743	0.7	CES451HZN151MQ40
	1500	40×80	64	3.4	CES351HZN152MU80	180		25.4×45	619	0.8	CES451HZN181MQ45
	1800	40×80	53	4.2	CES351HZN182MU80	180		30×30	619	0.7	CES451HZN181MR30
	1800	40×105	53	4.6	CES351HZN182MUA0	180		30×35	619	0.8	CES451HZN181MR35
	2200	40×105	53	4.2	CES351HZN222MUA0	220		25.4×50	507	0.9	CES451HZN221MQ50
2700	40×120	35	5.6	CES351HZN272MUC0	220	30×40		507	0.9	CES451HZN221MR40	
400v	150	25.4×30	849	0.6	CES401HZN151MQ30	220		30×30	507	0.9	CES451HZN221MR30
	180	25.4×35	708	0.7	CES401HZN181MQ35	270		30×30	413	1.0	CES451HZN271MR45
	220	25.4×40	579	0.8	CES401HZN221MQ40	270		35×20	413	1.1	CES451HZN271MA20
	220	30×30	579	0.8	CES401HZN221MR30	330		30×30	338	1.2	CES451HZN331MR30
	270	25.4×45	472	0.9	CES401HZN271MQ45	330		35×25	338	1.2	CES451HZN331MA25
	270	25.4×50	472	0.9	CES401HZN271MQ50	390		30×30	286	1.8	CES451HZN391MR30
	270	30×45	472	0.9	CES401HZN271MR45	470		30×45	237	1.4	CES451HZN471MR45
	270	35×30	472	0.9	CES401HZN271MA30	470		35×35	237	1.6	CES451HZN471MA35
	330	30×40	386	1.0	CES401HZN331MR40	560	35×45	199	1.9	CES451HZN561MA45	
	330	35×35	386	1.1	CES401HZN331MA35	560	35×50	199	1.8	CES451HZN561MA50	
	390	30×45	327	1.2	CES401HZN391MR45	680	35×70	164	2.3	CES451HZN681MA70	
	390	30×50	327	1.2	CES401HZN391MR50	680	40×60	164	2.1	CES451HZN681MU60	
	470	35×45	271	1.4	CES401HZN471MA45	820	35×80	136	2.8	CES451HZN821MA80	
	560	30×70	227	1.7	CES401HZN561MR70	820	40×70	136	2.4	CES451HZN821MU70	
	560	35×50	227	1.6	CES401HZN561MA50	1000	40×80	111	2.9	CES451HZN102MU80	
	680	35×60	187	1.9	CES401HZN681MA60	1200	40×80	93	3.5	CES451HZN122MU80	
	680	40×50	187	1.9	CES401HZN681MU50	1200	40×90	93	3.2	CES451HZN122MU90	
	820	35×80	155	2.3	CES401HZN821MA80	1500	40×120	74	3.9	CES451HZN122MUC0	

◆ RATED RIPPLE CURRENT MULTIPLIERS

● Frequency Multipliers

Frequency (Hz)	50	120	300	1K	10K	50K
16~250vdc	0.81	1.00	1.17	1.32	1.45	1.50
350~450vdc	0.77	1.00	1.16	1.30	1.41	1.43

◆ PART NUMBERING SYSTEM



×The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. when long life performance is required in actual use, the rms ripple current has to be reduced