

SP-Cap / Conductive Polymer Aluminum Electrolytic Capacitors (Specialty Polymer Aluminum Electrolytic Capacitors) (Surface Mount Type)



Series	Part No.	Features	Category Temp. Range	Rated W.V. (V)	Capacitance (μF)	Body color Marking color	** : Environmental Management ○ : available x : not available			Page	Series
							RoHS directive Pb, Cr <sup>6+</sup> , Hg, Cd, PBB, PBDE	ELV directive Pb, Cr <sup>6+</sup> , Hg, Cd	PVC-free		
<b>NEW</b>	CS	EEFCS-----R Low Profile (1.1±0.1 mm Height) ESR : 15 mΩ to 40 mΩ	-40 to 105 °C	4 to 25	10 to 120	BLACK GOLD	○	○	○	EEF-2, 4	CS
<b>NEW</b>	CT	EEFCT-----R Low Profile (1.4±0.1 mm Height) ESR : 15 mΩ to 40 mΩ	-40 to 105 °C	4 to 25	22 to 180	BLACK GOLD	○	○	○	EEF-2, 4	CT
<b>NEW</b>	SS	EEFSS-----R Low Profile, Low ESR (1.1±0.1 mm Height) ESR : 6 mΩ	-40 to 105 °C	2 to 2.5	180 to 220	BLACK GOLD	○	○	○	EEF-4	SS
<b>NEW</b>	ST	EEFST-----R Low Profile, Low ESR (1.4±0.1 mm Height) ESR : 6 mΩ	-40 to 105 °C	2 to 2.5	270 to 330	BLACK GOLD	○	○	○	EEF-4	ST
<b>NEW</b>	LS	EEFLS-----R Low Profile, Low ESR, Low ESL (1.1±0.1 mm Height) ESR : 6 mΩ	-40 to 105 °C	2 to 2.5	180 to 220	BLACK GOLD	○	○	○	EEF-4	LS
<b>NEW</b>	LT	EEFLT-----R Low Profile, Low ESR, Low ESL (1.4±0.1 mm Height) ESR : 6 mΩ	-40 to 105 °C	2 to 2.5	270 to 330	BLACK GOLD	○	○	○	EEF-4	LT
	FD	EEFFD-----R Low Profile (1.1±0.1 mm Height) ESR : 28 mΩ to 40 mΩ	-40 to 105 °C	2 to 12.5	15 to 68	BLACK GOLD	○	○	○	EEF-6	FD
	CD	EEFCD-----R, ER EEFCD-----XR, XE Standard (1.8±0.1 mm Height) ESR : 15 mΩ to 110 mΩ	-40 to 105 °C	2 to 16	2.2 to 220	BLACK GOLD	○	○	○	EEF-6	CD
<b>NEW</b>	CX	EEFCX-----R, XR Standard (1.9±0.2 mm Height) ESR : 12 mΩ to 40 mΩ	-40 to 105 °C	2 to 25	15 to 560	BLACK GOLD	○	○	○	EEF-2, 6	CX
	UD	EEFUD-----R, ER EEFUD-----XR, XE EEFUD-----LR, LE Standard (2.8±0.2 mm Height) ESR : 9 mΩ to 18 mΩ	-40 to 105 °C	2 to 8	68 to 470	BLACK GOLD	○	○	○	EEF-6	UD
	UE	EEFUE-----R, ER EEFUE-----XR, XE EEFUE-----LR, LE Standard (4.2±0.1 mm Height) ESR : 7 mΩ to 15 mΩ	-40 to 105 °C	2 to 8	100 to 560	BLACK GOLD	○	○	○	EEF-6	UE
	SL	EEFSL-----R, ER Low ESR (1.8±0.1 mm Height) ESR : 9 mΩ	-40 to 105 °C	2 to 6.3	56 to 220	BLACK GOLD	○	○	○	EEF-9	SL
Upgrade	SX	EEFSX-----R, ER EEFSX-----XR, XE EEFSX-----E7, E4 Low ESR (1.9±0.2 mm Height) ESR : 4.5 mΩ to 9 mΩ	-40 to 105 °C	2 to 6.3	82 to 560	BLACK GOLD	○	○	○	EEF-9	SX
Upgrade	GX	EEFGX-----R Ultra Low ESR (1.9±0.2 mm Height) ESR : 3 mΩ	-40 to 105 °C	2 to 2.5	330 to 560	BLACK GOLD	○	○	○	EEF-9	GX
Upgrade	LX	EEFLX-----R, R4 Low ESR, Low ESL (1.9±0.2 mm Height) ESR : 6 mΩ / 4.5 mΩ	-40 to 105 °C	2 to 2.5	330 to 560	BLACK GOLD	○	○	○	EEF-13	LX
	MC	EEFMC-----R Miniaturization (1.9±0.2 mm Height) ESR : 12 mΩ to 18 mΩ	-40 to 105 °C	2 to 6.3	47 to 120	BLACK GOLD	○	○	○	EEF-14	MC
	SE*	EEFSE-----R Low ESR (4.2±0.1 mm Height) ESR : 5 mΩ	-40 to 105 °C	2 to 6.3	180 to 560	BLACK GOLD	○	○	○	-	SE*
	LL*	EEFLL-----R Low ESL (1.9±0.1 mm Height) ESR : 18 mΩ	-40 to 105 °C	2 to 6.3	47 to 180	BLACK GOLD	○	○	○	-	LL*
	HL*	EEFHL-----R High Reliability (1.8±0.1 mm Height) ESR : 18 mΩ	-40 to 125 °C	2 to 8	33 to 100	BLACK GOLD	○	○	○	-	HL*
	HD*	EEFHD-----R High Reliability (2.8±0.2 mm Height) ESR : 15 mΩ	-40 to 125 °C	2 to 8	68 to 220	BLACK GOLD	○	○	○	-	HD*
	HE*	EEFHE-----R High Reliability (4.2±0.1 mm Height) ESR : 12 mΩ	-40 to 125 °C	2 to 8	100 to 330	BLACK GOLD	○	○	○	-	HE*

\* Please contact us when the confirmation of details is necessary.

Conductive Polymer Hybrid Aluminum Electrolytic Capacitors (Surface Mount Type)




Series	Part No.	Features	Endurance	Standard	Miniaturization	Low profile	Low Imp.	Long Life	Rated W.V. (V)	Capacitance (μF)	Body color Marking color	** : Environmental Management ○ : available x : not available			Page	Series
												RoHS directive Pb, Cr <sup>6+</sup> , Hg, Cd, PBB, PBDE	ELV directive Pb, Cr <sup>6+</sup> , Hg, Cd	PVC-free		
<b>NEW</b>	ZA	EEHZA---	+105 °C 10000 h				●	●	25 to 80	10 to 330	BLACK	○	○	○	EEE-2	ZA
<b>NEW</b>	ZC	EEHZC---	+125 °C 4000 h				●	●	25 to 63	10 to 330	BLACK	○	○	○	EEE-4	ZC


\*\* Prohibited Pb: Lead, Cr<sup>6+</sup>: Hexavalent chromium, Hg: Mercury, Cd: Cadmium, PBB: Polybrominated biphenyls, PBDE: Polybrominated diphenylethers, PVC: Polyvinyl chloride

Check Panasonic website for the newest products search. If you have any detailed product information. (W.V., Capacitance, Case size, Ripple current) you can see the specified part number.

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Aluminum Electrolytic Capacitors (Surface Mount Type) 

Series	Part No.	Features	Endurance	Standard	Miniaturization	Low profile	Low Imp.	Long Life	Rated W.V. (V)	Capacitance (μF)	Body color Marking color	** : Environmental Management ○ : available x : not available			Page	Series	
												RoHS directive Pb, Cr <sup>6+</sup> , Hg, Cd, PBB, PBDE	ELV directive Pb, Cr <sup>6+</sup> , Hg, Cd	PVC-free			
S	EEE---A----A	+85 °C Standard, High temperature reflow	+85 °C 1000 h to 2000 h	●					6.3 to 50	1 to 1500	BLACK	○	○	○	EEE-6	S	
	EEE---A-----	+85 °C Standard							4 to 100								
	EEE---A---N	+85 °C Standard, Bi-polar							6.3 to 50								1 to 47
HA	EEEHA-----A	+105 °C Standard, High temperature reflow	+105 °C 1000 h	●					6.3 to 50	1 to 1500	BLACK	○	○	○	EEE-14	HA	
	EEEHA-----	+105 °C Standard							6.3 to 100								
HB	EEEHB-----A	+105 °C Standard, High temperature reflow	+105 °C 2000 h					●	6.3 to 50	1 to 1500	BLACK	○	○	○	EEE-21	HB	
	EEEHB-----	+105 °C Standard							4 to 50								1 to 470
	EEEHB-----S	+105 °C Standard, 5.4 mm height							6.3 to 50								1 to 100
	EEEHP-----	+105 °C Standard, Bi-polar															1 to 47
HC	EEEHC-----	Longlife	+105 °C 3000 h (φ8, 10 : 5000 h)					●	6.3 to 50	1 to 1000	BLACK	○	○	○	EEE-27	HC	
HD	EEEHD-----A	Longlife, High temperature reflow	+105 °C 5000 h					●	6.3 to 100	1 to 7500	BLACK	○	○	○	EEE-29	HD	
	EEEHD-----	Longlife															
FC	EEEFCA-----A	Low impedance, High temperature reflow	+105 °C 1000 h	●				●	6.3 to 35	1 to 1500	BLACK	○	○	○	EEE-33	FC	
	EEEFCA-----	Low impedance (50% less than HA Series)							6.3 to 50								
FK	EEEFKA-----A	Low impedance, High temperature reflow	+105 °C 2000 to 5000 h					●	6.3 to 100	4.7 to 6800	BLACK	○	○	○	EEE-37	FK	
	EEEFKA-----	Low impedance (40 to 60% less than FC Series)								3.3 to 1500							
<b>NEW</b>	EEEFKA-----A	Low impedance, High temperature reflow	+105 °C 2000 h	●				●	6.3 to 50	10 to 2200	BLACK	○	○	○	EEE-45	FT	
FP	EEEFPA-----A	Low ESR (30 to 60% less than FK Series), High temperature reflow	+105 °C 2000 h	●				●	6.3 to 50	10 to 1800	BLACK	○	○	○	EEE-47	FP	
TG	EEETGA----- EEETGA-----	Miniaturization (40% less than TA Series)	+125 °C 1000 h to 2000 h	●				●	10 to 100	10 to 4700	BLACK	○	○	○	EEE-50	TG	
TK	EEETKA-----A	Low ESR, High temperature reflow	+125 °C 2000 h					●	10 to 100	47 to 4700	BLACK	○	○	○	EEE-53	TK	
	EEETKA-----	Low ESR (50% less than TG Series)	+125 °C 3000 h						10 to 35	47 to 470							
TP	EEETPA-----A	Low ESR (Low temp. / after Endurance), High temperature reflow	+125 °C 3000 h (D8 : 2000 h)	●				●	10 to 35	47 to 470	BLACK	○	○	○	EEE-57	TP	
<b>NEW</b>	EEETQA-----	Low ESR (85% less than TP Series), High temperature reflow	+125 °C 2000 h	●				●	35	47 to 100	BLACK	○	○	○	EEE-59	TQ	
EB	EEVEB-----	Large Can Size (φ10 to φ18), High Voltage	+105 °C 3000 to 5000 h					●	160 to 450	2.2 to 100	BLACK	○	○	○	EEE-61	EB	

Aluminum Electrolytic Capacitors (Radial Lead Type) 

Series	Part No.	Features	Endurance	Standard	Miniaturization	Low profile	Low Imp.	Long Life	Rated W.V. (V)	Capacitance (μF)	Body color Marking color	** : Environmental Management ○ : available x : not available			Page	Series
												RoHS directive Pb, Cr <sup>6+</sup> , Hg, Cd, PBB, PBDE	ELV directive Pb, Cr <sup>6+</sup> , Hg, Cd	PVC-free		
FC	EEAFCA----- EEUFCA-----	Low impedance	+105 °C 1000 to 5000 h					●	6.3 to 100	2.2 to 15000	BLACK BLUE GOLD	○	○	○	EEE-63	FC
FK	EEUFKA-----	Low impedance (10 to 30% less than FC Series)	+105 °C 3000 to 5000 h					●	6.3 to 35	180 to 12000	BLACK BLUE GOLD	○	○	○	EEE-73	FK
FM	EEUFMA-----	Low impedance (40 to 70% less than FC Series)	+105 °C 2000 to 7000 h					●	6.3 to 50	22 to 6800	BLACK GOLD	○	○	○	EEE-78	FM
<b>NEW</b>	EEUFRA-----	Low impedance (Same as FM Series)	+105 °C 5000 to 10000 h					●	6.3 to 63	4.7 to 8200	BLACK WHITE	○	○	○	EEE-82	FR
EB	EEUEB-----	High ripple, Long life	+105 °C 5000 to 10000 h					●	10 to 450	2.2 to 3300	BLACK SILVER	○	○	○	EEE-87	EB
EE	EEUEE-----	High ripple (more than ED Series)	+105 °C 8000 to 10000 h					●	160 to 450	10 to 330	BLACK SILVER	○	○	○	EEE-90	EE
TA	EEUTA-----	+125 °C Standard	+125 °C 2000 h					●	10 to 63	2.2 to 4700	BLACK SILVER	○	○	○	EEE-94	TA
<b>NEW</b>	EEUTPA-----	High ripple (20 to 40% higher than TA Series)	+135 °C 1000 to 2000 h +125 °C 2000 to 5000 h					●	25 to 35	100 to 5100	BLACK WHITE	○	○	○	EEE-97	TP

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Aluminum Electrolytic Capacitors (Radial Lead Type) 

Series	Part No.	Features	Endurance	Standard	Miniaturization	Low profile	Low Imp.	Long Life	Rated W.V. (V)	Capacitance (μF)	Body color Marking color	** : Environmental Management ○ : available x : not available			Page	Series
												RoHS directive Pb, Cr <sup>6+</sup> , Hg, Cd, PBB, PBDE	ELV directive Pb, Cr <sup>6+</sup> , Hg, Cd	PVC-free		
NHG	ECA--HG----	+105 °C Standard	+105 °C 1000 to 2000 h	●					6.3 to 450	1 to 22000	BLACK SILVER	○	○	○	EEE-99	NHG
HD	EEUHD-----	+105 °C Miniaturization	+105 °C 1000 to 2000 h		●				10 to 50	2.2 to 22000	BLACK WHITE	○	○	○	EEE-104	HD
GA	EEAGA-----	+105 °C Standard, 7 mm height	+105 °C 1000 h	●					10 to 50	2.2 to 220	BLACK SILVER	○	○	○	EEE-107	GA
GA Bi-polar	ECA--EN----	+105 °C Standard, Bi-polar	+105 °C 1000 to 2000 h	●					6.3 to 50	1.5 to 330	BLACK SILVER	○	○	○	EEE-109	GA Bi-polar
M	ECA--M-----	+85 °C Standard	+85 °C 2000 h	●					6.3 to 450	1 to 22000	DARKBLUE WHITE	○	○	○	EEE-111	M
SU Bi-polar	ECEA--N---U ECEA--N---X	+85 °C Standard, Bi-polar	+85 °C 2000 h	●					6.3 to 50	2.2 to 6800	DARKBLUE WHITE	○	○	○	EEE-116	SU Bi-polar
KA	ECEA--KA----	+85 °C Standard, 7 mm height	+85 °C 1000 h	●					4 to 50	2.2 to 470	BLACK WHITE	○	○	○	EEE-119	KA
KA Bi-polar	ECEA--KN----	+85 °C Standard, 7 mm height Bi-polar	+85 °C 1000 h	●					4 to 50	2.2 to 100	BLACK WHITE	○	○	○	EEE-121	KA Bi-polar
KS	ECEA--KS----	+85 °C Standard, 5 mm height	+85 °C 1000 h		●	●			4 to 50	2.2 to 330	BLACK WHITE	○	○	○	EEE-123	KS
KS Bi-polar	ECEA--SN----	+85 °C Standard, 5 mm height Bi-polar, Miniaturization	+85 °C 1000 h		●	●			6.3 to 50	2.2 to 47	BLACK WHITE	○	○	○	EEE-125	KS Bi-polar

Aluminum Electrolytic Capacitors (Snap-In Type) 

Series	Part No.	Features	Endurance	Standard	Miniaturization	Long Life	Rated W.V. (V)	Capacitance (μF)	Body color Marking color	** : Environmental Management ○ : available x : not available			Page	Series
										RoHS directive Pb, Cr <sup>6+</sup> , Hg, Cd, PBB, PBDE	ELV directive Pb, Cr <sup>6+</sup> , Hg, Cd	PVC-free		
EE	EETEE -----	High ripple	+105 °C 3000 h			●	200 to 450	75 to 1800	BLACK WHITE	○	○	○	EEE-128	EE
ED	EETED-----	High ripple	+105 °C 3000 h			●	200 to 450	56 to 2200	BLACK WHITE	○	○	○	EEE-131	ED
HC	EETHC-----	+105 °C Standard	+105 °C 2000 h	●	●		10 to 450	39 to 100000	BLACK WHITE	○	○	○	EEE-135	HC
HD	EETHD-----	Miniaturization, High ripple	+105 °C 3000 h		●	●	400 to 450	120 to 680	BLACK WHITE	○	○	○	EEE-148	HD
XB	EETXB-----	Longlife	+105 °C 7000 h			●	160 to 450	39 to 2200	BLACK WHITE	○	○	○	EEE-150	XB

Electric Double Layer Capacitors 

Series	Part No.	Features	Endurance	Operating current			Rated W.V. (V)	Capacitance (F)	Body color Marking color	** : Environmental Management ○ : available x : not available			Page	Series
				μA	mA	A				RoHS directive Pb, Cr <sup>6+</sup> , Hg, Cd, PBB, PBDE	ELV directive Pb, Cr <sup>6+</sup> , Hg, Cd	PVC-free		
RG	EECRG0V----	Tabbed lead terminals, Highest reliability +85 °C 2000h	+85 °C 2000 h	●	●		3.6	0.22 / 1.0	BLACK GOLD	○	○	○	EEC-2	RG
RF	EECRF-----	Highest reliability +85 °C 2000h	+85 °C 2000 h	●	●		5.5	0.1 / 0.68	BLACK GOLD	○	○	○	EEC-3	RF
SD	EECS0HD----	φ10 Tabbed lead terminals	+70 °C 1000 h	●			5.5	0.22 to 0.33	BLACK WHITE	○	○	○	EEC-4	SD
SG	EECS5R5( )---	φ19 Tabbed lead terminals	+70 °C 1000 h	●			5.5	0.47 to 1.5	BLACK WHITE	○	○	○	EEC-5	SG
SE	EECSE0H---	5 mm pitch lead taping	+70 °C 1000 h	●			5.5	0.22	BLACK WHITE	○	○	○	EEC-6	SE
NF	EECF5R5U---	Standard +70 °C 1000h	+70 °C 1000 h	●			5.5	0.22 to 1.5	BLACK WHITE	○	○	○	EEC-7	NF
F	EECF5R5H---	Highest reliability +85 °C 1000h	+85 °C 1000 h	●			5.5	0.1 to 1.0	BLACK WHITE	○	○	○	EEC-8	F
HZ	EECHZ0E---	Radial lead Type, Miniaturization	+70 °C 1000 h		●	●	2.5	3.3 to 10	BLACK GOLD	○	○	○	EEC-9	HZ
HW	EECHW0D---	Radial lead Type, large Cap.	+70 °C 1000 h (+60 °C)		●	●	2.1, 2.3	22 to 70	BLACK WHITE	○	○	○	EEC-10	HW

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