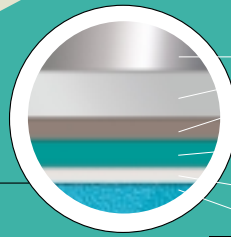


Lead-free/RoHS compliant tantalum chip capacitors E/SV series



Cathode terminal ⊖
Silver paste
Graphite
Cathode
(manganese dioxide)
Dielectric
(tantalum oxide film)
Anode (tantalum)

Structure of tantalum capacitor



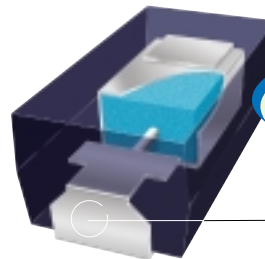
Excellent electrical specifications and reliability help you produce RoHS compliant environment-friendly products.

An extensive lineup is available.

The E/SV series tantalum chip capacitors boast excellent electrical characteristics, stable performance, and high reliability. Conventional manganese dioxide is used for the cathode and these tantalum chip capacitors are used in a wide variety of application fields from audio/visual and information systems to communications equipment. In addition, new lead-free models are also available to realize RoHS compliant environment-friendly products. Because the case size and characteristics of these new models are identical to those of the existing models, they can easily replace models in the existing series.

Features

- Ideal for producing environment-friendly products because no lead is used
- Extensive lineup for easy replacement of the existing R and SV/S series



Lead-free plating employed for terminal plating

E/SV series product lineup

P Letter: Case code
Bold letter: Recommended case code

DC rated Voltage(V DC) Capacitance(μF)	2.5	4	6.3	10	16	20	25	35
0.47					P		A2	A
0.68					P		A2	A
1				P	J P	A2 (J)	P A2 A	A2 A (P)
1.5			P	J P	J A	A2		A
2.2			J	J P	P A2 A (J)	P A2 A	P A	A B2
3.3		P	J	J P A2	P A2 A	A2 A B3	A	B3 B2
4.7			J P A	J P A2 A	A2 A	A2 A B3 B2	B3 B2 (A2)	C
6.8		J	J P A2	A2 A	A B3	B3 B2	(B3)	C
10	J	J P	J P A2 A	P A2 A B2	A B3 B2	B2	C2 C B2	C D
15	J	P	P A2 A	A2 B3	A B2	C	C	D
22	P A2	P A2 A	P A2 A B3 B2	A2 A B3 B2 (A2)	B3 B2 C (A)	C2 C D	D	
33	P A2	P A2 A	A2 A B3	B3 B2	B2 C2 C	D	D	
47	P A2 A	P A2 A B3	A B3 B2 C	B2 C2 C (B3)	C D	D	(D)	
68	A	A B3	A B3 B2 C2	B2 C2 C (A)	C D			
100	A B3 B2	A B3 B2 C2	B3 B2 C2 C (A)	C2 C V D	D			
150	A B3 C2	B2 C2 (A)	C	V D				
220	B3 B2 C2	B2 C (A) (B3)	C V D	D				
330	B2 C	C V (C2)	V D					
470	B2 C D	D	D					
680		D						

(): Under development.

□ For the case size, refer to page 8. For the part number, refer to page 10.



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- Please request for a specification sheet for detailed product data prior to the purchase.
- Before using the product in this catalog, please read "Precautions" and other safety precautions listed in the printed version catalog.

NEC TOKIN Tantalum capacitor Compliance to RoHS Directive

Tantalum Capacitor

Y: Under the limit =COMPLIANT E: Exemptions =COMPLIANT N: Greater or equal to the Limit =NOT COMPLIANT --: Contact NEC TOKIN for details

Product Family/ Product Type	Series Name	Compliance with RoHS Substance Restriction						RoHS Status Compliant: Y, Not compliant: N	Compliant Product Status Under mass production, Expected date or Not planned	Remarks
		Cd <100ppm	Cr+6 <1000ppm	Pb <1000ppm	Hg <1000ppm	PBB <1000ppm	PBDE <1000ppm			
Chip type/SMD										
Face down terminal	F/SV	Y	Y	Y	Y	Y	Y	Y	Under mass production	
Standard	E/SV	Y	Y	Y	Y	Y	Y	Y	Under mass production	
Low ESR	SV/Z	Y	Y	Y	Y	Y	Y	Y	Under mass production	
NeoCapacitor/ polymer	PS/G	Y	Y	Y	Y	Y	Y	Y	Under mass production	
	PS/L	Y	Y	Y	Y	Y	Y	Y	Under mass production	
NeoCapacitor/ polymer/ face down terminal	F/PS	Y	Y	Y	Y	Y	Y	Y	Under mass production	
With fuse	SV/F	Y	Y	N	Y	Y	Y	N	Not planned	
High-performance product	SV/H	Y	Y	N	Y	Y	Y	N	Not planned	
Conventional	SV/S	Y	Y	N	Y	Y	Y	N	--	Compatible with E/SV series
	R (extended)	Y	Y	N	Y	Y	Y	N	--	
	R	Y	Y	N	Y	Y	Y	N	--	
Resin coated exterior type/insert										
	DN	Y	Y	N	Y	Y	Y	N	Not planned	
	DH/R	Y	Y	N	Y	Y	Y	N	Not planned	

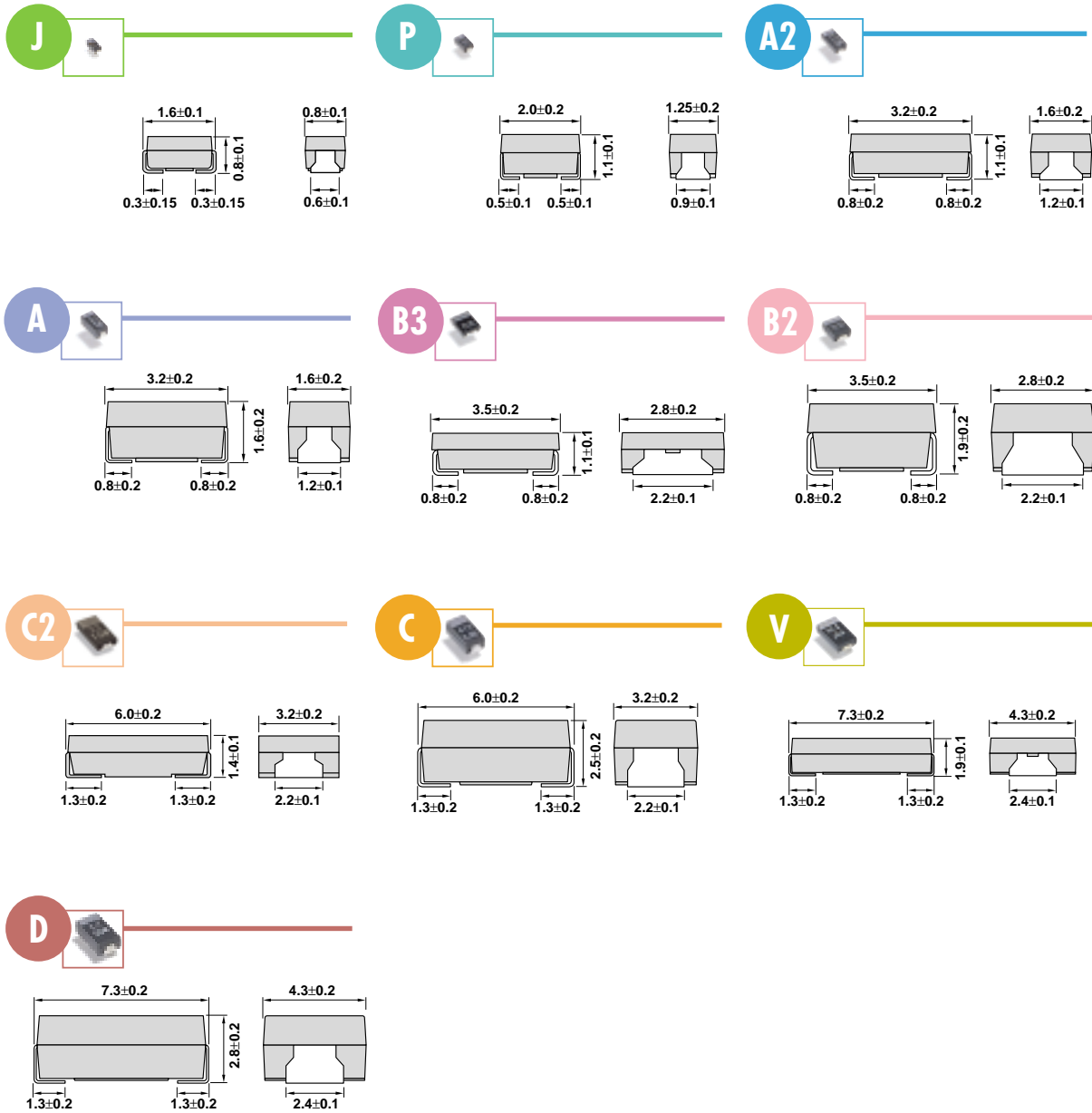
- The RoHS compliance means that we judge from EU Directive 2002/95/EC the products do not contain lead, cadmium, mercury, hexavalent chromium, PBB and PBDE, except impurities existing in natural world.
- This statement does not insure the compliance of any of the listed parts with any laws or legal imperatives developed by any EU members individually with regards to the RoHS Directive.
- The descriptions given in this catalogue are based on product information as of January 2006. Please contact us for information about our current products.
- This catalogue uses only representative series names for products. In order to ensure correct and safe product usage, please request a delivery specification sheet so you can confirm detailed product characteristics.
- Please note that these descriptions are subject to change without notification due to improvements or other reasons.
- Please contact NEC TOKIN regarding custom-made products that are not listed here.



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- Please request for a specification sheet for detailed product data prior to the purchase.
- Before using the product in this catalog, please read "Precautions" and other safety precautions listed in the printed version catalog.

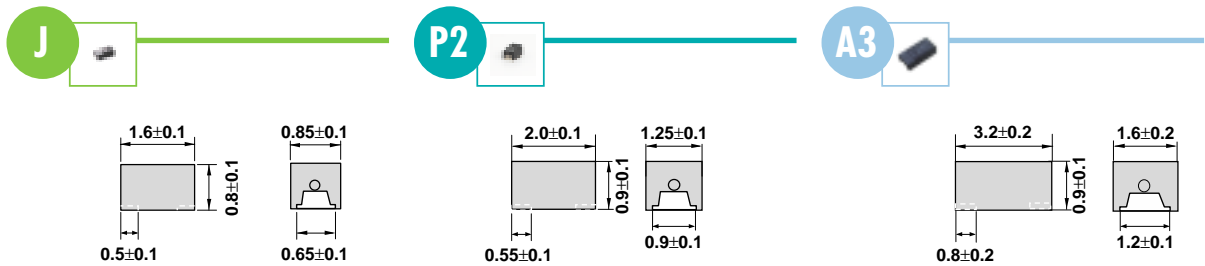
Dimensions

Unit: mm



Dimensions (F/SV series and F/PS series)

Unit: mm



08



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Lead-free Tantalum chip capacitors

E/SV series (J•P•A2•A•B3•B2•C2•C•V•D)

Test conditions: Conform to IEC 60384-1.

DC rated voltage (V DC)	Capacitance (μF) 120 Hz	Dissipation factor (%) 120 Hz	DC leakage current ^{*1} (μA)	ESR (Ω) 100 kHz	Case code	Part number (tape model ^{*2})	DC rated voltage (V DC)	Capacitance (μF) 120 Hz	Dissipation factor (%) 120 Hz	DC leakage current ^{*1} (μA)	ESR (Ω) 100 kHz	Case code	Part number (tape model ^{*2})
2.5	10	20	0.5	6.5	J	TEESVJ0E106M8R	6.3	100	12	6.3	0.9	B2	TEESVB20J107M8R
	15	20	0.5	8	J	TEESVJ0E156M8R		100	10	6.3	0.8	C2	TEESVC20J107M12R
	22	20	0.5	4	P	TEESVPOE226M8R		100	10	6.3	0.6	C	TEESVC0J107M12R
	22	12	0.5	3	A2	TEESVA20E226M8R		150	10	9.4	0.6	C	TEESVC0J157M12R
	33	12	0.8	4	A2	TEESVA20E336M8R		220	14	13.8	1.2	C	TEESVC0J227M12R
	33	20	0.8	4	P	TEESVPOE336M8R		220	12	13.8	0.5	V	TEESVVOJ227M12R
	47	30	1.1	6	P	TEESVPOE476M8R		220	12	13.8	0.5	D	TEESVD0J227M12R
	47	12	1.1	4.5	A2	TEESVA20E476M8R		330	14	20.7	0.5	V	TEESVVOJ337M12R
	47	12	1.1	4.5	A	TEESVA0E476M8R		330	14	20.7	0.5	D	TEESVD0J337M12R
	68	18	1.7	4.5	A	TEESVA0E686M8R		470	20	29.6	0.3	D	TEESVD0J477M12R
	100	18	2.5	1.3	B3	TEESVB30E107M8R		1	10	0.5	25	P	TEESVP1A105M8R
	100	8	2.5	1	B2	TEESVB20E107M8R		1.5	20	0.5	25.5	J	TEESVJ1A155M8R
	150	30	3.7	2	A	TEESVA0E157M8R		1.5	20	0.5	25	P	TEESVP1A155M8R
	150	20	3.7	1	B3	TEESVB30E157M8R		2.2	20	0.5	17.5	J	TEESVJ1A225M8R
	150	12	3.7	0.8	C2	TEESVC20E157M12R		2.2	20	0.5	19	P	TEESVP1A225M8R
	220	30	5.5	1	B3	TEESVB30E227M8R		3.3	20	0.5	25	J	TEESVJ1A335M8R
	220	18	5.5	0.6	B2	TEESVB20E227M8R		3.3	20	0.5	13	P	TEESVP1A335M8R
	220	12	5.5	0.8	C2	TEESVC20E227M12R		3.3	8	0.5	8	A2	TEESVA21A335M8R
	330	25	8.2	0.6	B2	TEESVB20E337M8R		4.7	20	0.5	10	J	TEESVJ1A475M8R
	330	16	8.2	0.3	C	TEESVC0E337M12R		4.7	20	0.5	6	P	TEESVP1A475M8R
470	35	11.7	0.6	B2	TEESVB20E477M8R	4.7	8	0.5	8	A2	TEESVA21A475M8R		
470	18	11.7	1.5	C	TEESVC0E477M12R	4.7	8	0.5	4.5	A	TEESVA1A475M8R		
470	14	11.7	0.5	D	TEESVD0E477M12R	6.8	8	0.6	8	A2	TEESVA21A685M8R		
4	3.3	20	0.5	20	P	TEESVPOG335M8R	6.8	8	0.6	4.5	A	TEESVA1A685M8R	
	6.8	20	0.5	7.5	J	TEESVJ0G685M8R	10	20	1	6	P	TEESVP1A106M8R	
	10	20	0.5	6.5	J	TEESVJ0G106M8R	10	8	1	8	A2	TEESVA21A106M8R	
	10	20	0.5	6	P	TEESVPOG106M8R	10	8	1	3.2	A	TEESVA1A106M8R	
	15	20	0.6	5	P	TEESVPOG156M8R	10	8	1	2.4	B2	TEESVB21A106M8R	
	22	20	0.8	4	P	TEESVPOG226M8R	15	12	1.5	3	A2	TEESVA21A156M8R	
	22	12	0.8	2.8	A2	TEESVA20G226M8R	15	8	1.5	2.7	B3	TEESVB31A156M8R	
	22	8	0.8	2.5	A	TEESVA0G226M8R	22	12	2.2	2.5	A	TEESVA1A226M8R	
	33	20	1.3	4	P	TEESVPOG336M8R	22	8	2.2	1.9	B3	TEESVB31A226M8R	
	33	8	1.3	4.5	A2	TEESVA20G336M8R	22	8	2.2	1.4	B2	TEESVB21A226M8R	
	33	10	1.3	3	A	TEESVA0G336M8R	33	12	3.3	1.7	B3	TEESVB31A336M8R	
	47	30	1.8	3	P	TEESVPOG476M8R	33	8	3.3	1.4	B2	TEESVB21A336M8R	
	47	15	1.8	4.5	A2	TEESVA20G476M8R	47	8	4.7	1	B2	TEESVB21A476M8R	
	47	12	1.8	2.5	A	TEESVA0G476M8R	47	8	4.7	1	C2	TEESVC21A476M12R	
	47	12	1.8	1.7	B3	TEESVB30G476M8R	47	8	4.7	0.9	C	TEESVC1A476M12R	
	68	12	2.7	2.5	A	TEESVA0G686M8R	68	12	6.8	0.9	B2	TEESVB21A686M8R	
	68	15	2.7	1.5	B3	TEESVB30G686M8R	68	10	6.8	1	C2	TEESVC21A686M12R	
	100	30	4	2	A	TEESVA0G107M8R	68	8	6.8	0.7	C	TEESVC1A686M12R	
	100	20	4	1.3	B3	TEESVB30G107M8R	100	10	10	0.8	C2	TEESVC21A107M12R	
	100	12	4	0.8	B2	TEESVB20G107M8R	100	10	10	0.5	C	TEESVC1A107M12R	
100	10	4	0.8	C2	TEESVC20G107M12R	100	8	10	0.5	V	TEESVVA107M12R		
150	18	6	0.7	B2	TEESVB20G157M8R	100	8	10	0.6	D	TEESVD1A107M12R		
150	10	6	0.8	C2	TEESVC20G157M12R	150	8	15	0.5	V	TEESVVA157M12R		
220	18	8.8	0.5	B2	TEESVB20G227M8R	150	10	15	0.6	D	TEESVD1A157M12R		
220	12	8.8	0.6	C	TEESVC0G227M12R	220	12	22	0.6	D	TEESVD1A227M12R		
330	14	13.2	0.2	C	TEESVC0G337M12R	0.47	10	0.5	35	P	TEESVP1C474M8R		
330	12	13.2	0.5	V	TEESVVOG337M12R	0.68	10	0.5	25	P	TEESVP1C684M8R		
470	16	18.8	0.3	D	TEESVD0G477M12R	1	10	0.5	25.5	J	TEESVJ1C105M8R		
680	24	27.2	0.3	D	TEESVD0G687M12R	1	10	0.5	20	P	TEESVP1C105M8R		
6.3	1.5	10	0.5	25	P	TEESVPOJ155M8R	1.5	10	0.5	25	J	TEESVJ1C155M8R	
	2.2	20	0.5	17.5	J	TEESVJ0J225M8R	1.5	4	0.5	6	A	TEESVA1C155M8R	
	3.3	20	0.5	13.5	J	TEESVJ0J335M8R	2.2	10	0.5	19	P	TEESVP1C225M8R	
	4.7	20	0.5	8.5	J	TEESVJ0J475M8R	2.2	6	0.5	10	A2	TEESVA21C225M8R	
	4.7	20	0.5	10	P	TEESVPOJ475M8R	2.2	6	0.5	6	A	TEESVA1C225M8R	
	4.7	8	0.5	5.5	A	TEESVA0J475M8R	3.3	10	0.5	8	P	TEESVP1C335M8R	
	6.8	20	0.5	7	J	TEESVJ0J685M8R	3.3	8	0.5	7	A2	TEESVA21C335M8R	
	6.8	20	0.5	7	P	TEESVPOJ685M8R	3.3	6	0.5	4.5	A	TEESVA1C335M8R	
	6.8	8	0.5	6.5	A2	TEESVA20J685M8R	4.7	8	0.7	4.5	A2	TEESVA21C475M8R	
	10	20	0.6	8	J	TEESVJ0J106M8R	4.7	6	0.7	4	A	TEESVA1C475M8R	
	10	20	0.6	6	P	TEESVPOJ106M8R	6.8	6	1	4	A	TEESVA1C685M8R	
	10	8	0.6	4.5	A2	TEESVA20J106M8R	6.8	6	1	4.1	B3	TEESVB31C685M8R	
	10	8	0.6	3.2	A	TEESVA0J106M8R	10	8	1.6	3.2	A	TEESVA1C106M8R	
	15	20	0.9	5	P	TEESVPOJ156M8R	10	8	1.6	3.5	B3	TEESVB31C106M8R	
	15	12	0.9	4	A2	TEESVA20J156M8R	10	6	1.6	2	B2	TEESVB21C106M8R	
	15	8	0.9	3	A	TEESVA0J156M8R	15	12	2.4	5	A	TEESVA1C156M8R	
	22	20	1.3	4	P	TEESVPOJ226M8R	15	6	2.4	2	B2	TEESVB21C156M8R	
	22	12	1.3	2.8	A2	TEESVA20J226M8R	22	10	3.5	2.2	B3	TEESVB31C226M8R	
	22	10	1.3	3	A	TEESVA0J226M8R	22	6	3.5	2.2	B2	TEESVB21C226M8R	
	22	8	1.3	2	B3	TEESVB30J226M8R	22	6	3.5	1.5	C	TEESVC1C226M12R	
22	8	1.3	1.6	B2	TEESVB20J226M8R	33	8	5.2	1.4	B2	TEESVB21C336M8R		
33	18	2	3	A2	TEESVA20J336M8R	33	6	5.2	1.4	C2	TEESVC21C336M12R		
33	12	2	2.5	A	TEESVA0J336M8R	33	6	5.2	1.1	C	TEESVC1C336M12R		
33	12	2	1.7	B3	TEESVB30J336M8R	47	6	7.5	0.8	C	TEESVC1C476M12R		
47	12	2.9	2	A	TEESVA0J476M8R	47	6	7.5	0.7	D	TEESVD1C476M12R		
47	12	2.9	1.7	B3	TEESVB30J476M8R	68	6	10.8	0.7	C	TEESVC1C686M12R		
47	8	2.9	1.3	B2	TEESVB20J476M8R	68	6	10.8	0.7	D	TEESVD1C686M12R		
47	8	2.9	0.9	C	TEESVC0J476M12R	100	8	16	0.5	D	TEESVD1C107M12R		
68	30	4.2	2	A	TEESVA0J686M8R	0.47	6	0.5	25	A2	TEESVA21D474M8R		
68	20	4.2	2	B3	TEESVB30J686M8R	0.68	6	0.5	15	A2	TEESVA21D684M8R		
68	10	4.2	1	B2	TEESVB20J686M8R	1	6	0.5	12	A2	TEESVA21D105M8R		
68	10	4.2	0.8	C2	TEESVC20J686M12R	1.5	6	0.5	7.4	A2	TEESVA21D155M8R		
100	20	6.3	1.3	B3	TEESVB30J107M8R	2.2	10	0.5	8	P	TEESVP1D225M8R		

*1 : 5 minutes after application of rated voltage

*2 : The part number of the bulk model is without the prefix TE and suffix 8R or 12R.

Example: Tape model TEESVJ1A155M8R → Bulk model ESVJ1A155M
Tape model TEESVD0J477M12R → Bulk model ESVD0J477M



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Lead-free Tantalum chip capacitors

E/SV series (J•P•A2•A•B3•B2•C2•C•V•D)

Test conditions: Conform to IEC 60384-1.

DC rated voltage (V DC)	Capacitance (μF) 120 Hz	Dissipation factor (%) 120 Hz	DC leakage current*1 (μA)	ESR (Ω) 100 kHz	Case code	Part number (tape model*2)
20	2.2	6	0.5	7	A2	TEESVA21D225M8R
	2.2	6	0.5	6	A	TEESVA1D225M8R
	3.3	8	0.6	5	A2	TEESVA21D335M8R
	3.3	6	0.6	5	A	TEESVA1D335M8R
	3.3	6	0.6	3.9	B3	TEESVB31D335M8R
	4.7	15	0.9	5	A2	TEESVA21D475M8R
	4.7	6	0.9	5	A	TEESVA1D475M8R
	4.7	6	0.9	3	B3	TEESVB31D475M8R
	4.7	6	0.9	3	B2	TEESVB21D475M8R
	6.8	6	1.3	3	B3	TEESVB31D685M8R
	6.8	6	1.3	2.8	B2	TEESVB21D685M8R
	10	6	2	2.5	B2	TEESVB21D106M8R
	15	6	3	1.7	C	TEESVC1D156M12R
	22	6	4.4	1.4	C2	TEESVC21D226M12R
	22	6	4.4	1.4	C	TEESVC1D226M12R
	22	6	4.4	0.8	D	TEESVD1D226M12R
	33	6	6.6	0.8	D	TEESVD1D336M12R
47	6	9.4	0.7	D	TEESVD1D476M12R	
25	0.47	4	0.5	13	A	TEESVA1E474M8R
	0.68	6	0.5	9	A	TEESVA1E684M8R
	1	6	0.5	8	P	TEESVP1E105M8R
	1	6	0.5	13	A2	TEESVA21E105M8R
	1	6	0.5	8	A	TEESVA1E105M8R
	2.2	6	0.5	7	A	TEESVA1E225M8R
	3.3	6	0.8	7	A	TEESVA1E335M8R
	4.7	6	1.1	3	B3	TEESVB31E475M8R
	4.7	6	1.1	3	B2	TEESVB21E475M8R
	10	6	2.5	2	C2	TEESVC21E106M12R
	10	6	2.5	1.5	C	TEESVC1E106M12R
	15	6	3.7	1.5	C	TEESVC1E156M12R
	22	6	5.5	0.8	D	TEESVD1E226M12R
	33	6	8.2	0.7	D	TEESVD1E336M12R
	0.47	6	0.5	12	A	TEESVA1V474M8R
	0.68	6	0.5	8	A	TEESVA1V684M8R
	1	6	0.5	13	A2	TEESVA21V105M8R
1	6	0.5	7	A	TEESVA1V105M8R	
1.5	6	0.5	7	A	TEESVA1V155M8R	
2.2	6	0.7	7	A	TEESVA1V225M8R	
2.2	6	0.7	4	B2	TEESVB21V225M8R	
3.3	6	1.1	3	B3	TEESVB31V335M8R	
3.3	6	1.1	3.5	B2	TEESVB21V335M8R	
4.7	6	1.6	2.2	C	TEESVC1V475M12R	
6.8	6	2.3	1.9	C	TEESVC1V685M12R	
10	6	3.5	1.5	C	TEESVC1V106M12R	
10	6	3.5	1	D	TEESVD1V106M12R	
15	6	5.2	0.9	D	TEESVD1V156M12R	

*1 : 5 minutes after application of rated voltage

*2 : The part number of the bulk model is without the prefix TE and suffix 8R or 12R.

Example: Tape model TEESVJ1A155M8R → Bulk model ESVJ1A155M
Tape model TEESVD0J477M12R → Bulk model ESVD0J477M

Face down terminal

F/SV series (J, P2 case)

Test conditions: IEC 60384-1.

DC rated voltage (V DC)	Capacitance (μF) 120 Hz	Dissipation factor (%) 120 Hz	DC leakage current*1 (μA)	ESR (Ω) 100 kHz	Case code	Part number (tape model*2)
2.5	47	30	1.1	4	J	TEFSVJ0E476M8R
	100	35	2.5	3	P2	TEFSVP20E107M8R
4	33	30	1.3	4	J	TEFSVJ0G336M8R
	68	18	2.7	2.5	P2	TEFSVP20G686M8R
6.3	22	20	1.3	4	J	TEFSVJ0J226M8R

*1 : 5 minutes after application of rated voltage

*2 : The part number of the bulk model is without the prefix TE and suffix 8R.

Example: Tape model: TEFSVP20E107M8R → Bulk model: FSPV20E107M
Tape model: TEESVD0J477M12R → Bulk model: ESVD0J477M

Face down terminal

F/PS series (A3 case)

Test conditions: Conform to IEC 60384-1.

DC rated voltage (V DC)	Capacitance (μF) 120 Hz	Dissipation factor (%) 120 Hz	DC leakage current*1 (μA)	ESR (mΩ) 100 kHz	Permissible ripple current (mA rms) 100kHz	Case code	Part number (tape model*2)
10	33	6	33	200	548	A3	TEPSA31A336M8R



- All specifications in this catalog and production status of products are subject to change without notice. Prior to the purchase, please contact NEC Tokin for updated product data.
- Please request for a specification sheet for detailed product data prior to the purchase.
- Before using the product in this catalog, please read "Precautions" and other safety precautions listed in the printed version catalog.