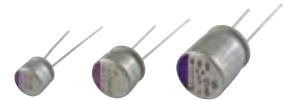


SEP series is a radial lead version of SVP series using conductive polymer. Lead free-flow is supported.\*2



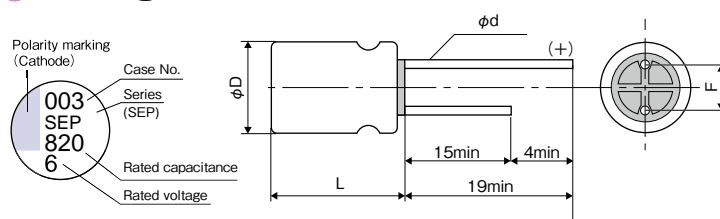
## Specifications

Items		Condition		Specifications						
Rated voltage	(V)	-		2.5	4.0	6.3	10	16	20	25
Surge voltage	(V)	Room temperature		3.3	5.2	8.2	12	18	23	25
Category temperature range	(°C)	-		-55 to +105						
Capacitance tolerance	(%)	120Hz/20°C		M : ±20						
Dissipation Factor (DF)		120Hz/20°C		Please see the attached characteristics list						
Leakage current*1		Rated voltage applied, after 2 minutes		Please see the attached characteristics list						
Equivalent series resistance (ESR)		100kHz to 300kHz/20°C		Please see the attached characteristics list						
Characteristics of impedance ratio at high temp. and low temp.	Based the value at 100kHz, +20°C	-55°C	Z/Z <sub>20°C</sub>	0.75 to 1.25						
		+105°C	Z/Z <sub>20°C</sub>	0.75 to 1.25						
Endurance	105°C, 3,000h, Rated voltage applied (2.5V → 2,000h) (25V → 20V applied)	ΔC/C		Within ±20% of the initial value						
		DF		Within 1.5 times of the initial limit						
		ESR		Within 1.5 times of the initial limit						
		LC		Within the initial limit						
Damp heat(Steady state)	60°C, 90 to 95%RH, 1,000h, No-applied voltage	ΔC/C		Within ±20% of the initial value						
		DF		Within 1.5 times of the initial limit						
		ESR		Within 1.5 times of the initial limit						
		LC		Within the initial limit (after voltage processing)						
Resistance to soldering heat*2	Flow method (260±5°C X 10s)	ΔC/C		Within ±5% of the initial value						
		DF		Within the initial limit						
		ESR		Within the initial limit						
		LC		Within the initial limit (after voltage processing)						

\*1 In case of some problems for measured values, measure after applying rated voltage for 2.5 to 20V products or temperature derating voltage for 25V products for 120 minutes at 105°C.

\*2 Please refer to page 26 for flow soldering conditions.

## Marking and dimensions



(unit : mm)

Size code	φD ±0.5	L max	F	φd ±0.05
C6	6.3	6.0	2.5 ±0.5	0.45
E7	8.0	7.0	3.5 ±0.5	0.45
F8	10.0	8.0	5.0 ±0.5	0.50
E12	8.0	12.0	3.5 ±0.5	0.60
F13	10.0	13.0	5.0 ±0.5	0.60

## Size list

RV : Rated voltage

μF	RV	2.5	4.0	6.3	10	16	20	25
6.8								C6
10								E7
22							C6	F8
33							E7	E12
39						C6		
47							E7	
56					C6		F8	F13
68							F8	
82				C6		E7		
100			C6				F8,E12	
120					E7			
150			C6	E7		F8	F13	
180						E12		
220			E7					
270					F8			
330			E7	F8	E12	F13		
470			F8	E12				
560			E12		F13			
680	E12		F8					
820				F13				
1,200			F13					
1,500	F13							

## SEP series characteristics list

Size code	Part number	Rated voltage (V)	Rated capacitance (μF)	ESR(mΩ) (max) 100kHz to 300kHz/20°C	Rated ripple current 100kHz (mA <sub>rms</sub> ) at 105°C	DF (% max)	Leakage current (μA)(max) After 2 minutes
C6	25SEP6R8M*1	25	6.8	80	1200	10	170
	20SEP22M	20	22	60	1450	10	220
	16SEP39M	16	39	50	1620	10	312
	10SEP56M	10	56	45	1700	12	280
	6SEP82M	6.3	82	45	1700	12	258
	4SEP100M	4.0	100	40	1810	12	200
	4SEP150M	4.0	150	40	1810	12	300
E7	25SEP10M*1	25	10	60	1500	10	250
	20SEP33M	20	33	45	1890	12	330
	20SEP47M	20	47	45	1890	12	470
	16SEP82M	16	82	40	2120	12	656
	10SEP120M	10	120	35	2560	12	600
	6SEP150M	6.3	150	35	2560	12	472
	4SEP220M	4.0	220	35	2560	12	440
	4SEP330M	4.0	330	35	2560	12	660
	F8	25SEP22M*1	25	22	50	2000	10
20SEP56M		20	56	40	2400	12	224
20SEP68M		20	68	40	2400	12	272
20SEP100MX		20	100	35	2570	12	400
16SEP150M		16	150	30	3020	12	480
10SEP270M		10	270	25	3700	12	540
6SEP330M		6.3	330	25	3700	12	416
4SEP470M		4.0	470	25	3700	12	376
4SEP680M		4.0	680	25	3700	12	544
E12	25SEP33M*1	25	33	30	2980	12	413
	20SEP100M	20	100	24	3320	15	400
	16SEP180M	16	180	20	3640	15	576
	10SEP330M	10	330	17	3950	15	660
	6SEP470M	6.3	470	15	4210	15	592
	4SEP560M	4.0	560	13	4520	15	448
	2R5SEP680M	2.5	680	13	4520	15	340
F13	25SEP56M*1	25	56	28	3800	12	700
	20SEP150M	20	150	20	4320	15	600
	16SEP330M	16	330	16	4720	15	792
	10SEP560M	10	560	13	5230	15	840
	6SEP820M	6.3	820	12	5440	15	775
	4SEP1200M	4.0	1200	12	5440	18	960
	2R5SEP1500M	2.5	1500	12	5440	18	750

\*1 The surge voltage of 25V products is 25V. Please consider SEPF series 25V products (whose surge voltage is 29V) in placing a new order.

## Frequency coefficient for ripple current

Frequency	120Hz ≤ f < 1kHz	1kHz ≤ f < 10kHz	10kHz ≤ f < 100kHz	100kHz ≤ f ≤ 500kHz
Coefficient	0.05	0.3	0.7	1

Selection guide

Series system diagram  
Image of case size  
Products list  
Packing specifications (SMD type)  
Packing specifications (Radial lead type)

Technical data

Recommended soldering condition  
Fundamental structure  
Characteristics  
Reliability

Surface mount type

SVPF  
SVPE  
SVPS  
SVPD  
SVPC  
SVPB  
SVPA  
SVQP  
SVP

Radial lead type

SEPF  
SEPC  
SEQP  
**SEP**

Catalog Deletion and EOL series

POSCAP

POSCAP  
Line-upGuidelines and  
precautions for use

Selection guide

Series system diagram  
Image of case size  
Products list  
Explanation of part numbers  
Packing specifications

Technical data

Marking  
Recommended land pattern dimension  
Recommended soldering condition  
Fundamental structure  
Characteristics  
Reliability

Surface mount type

TPU  
TPH  
TPG  
TPSF  
TPE  
TPB/TPC  
TPL·TPLF  
TPF  
TA  
TV  
TH  
TQC

Catalog Deletion and EOL models