

SXE Series

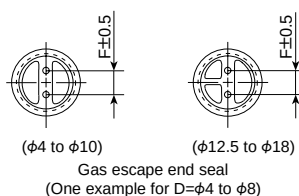
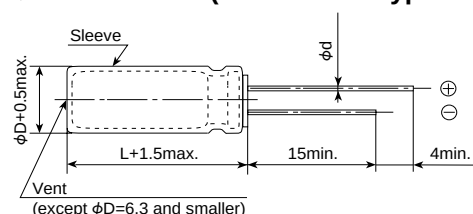
- Low impedance capacitors, operating temperature range from -55 to 105°C
- Solvent-proof type (see PRECAUTIONS AND GUIDELINES)



SPECIFICATIONS

Items	Characteristics										
Category Temperature Range	-55 to +105°C										
Rated Voltage Range	6.3 to 100V _{dc}										
Capacitance Tolerance	±20%(M) (at 20°C, 120Hz)										
Leakage Current	I=0.03CV (after 1 minute at 20°C) Where: I:Max. leakage current (μA), C:Nominal capacitance (μF), V:Rated voltage (V) I=0.01CV (after 2 minutes at 20°C)										
Dissipation factor (tanδ)	Rated voltage(V _{dc})	6.3	10	16	25	35	50	63	80	100	
	tanδ (Max.)	0.22	0.19	0.16	0.14	0.12	0.10	0.08	0.08	0.07	
	When nominal capacitance exceeds 1000μF, add 0.02 to the value above for each 1000μF increase. (at 20°C, 120Hz)										
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for the specified period of lifetime at 105°C.										
	Lifetime	1,000 hours (φ4 to 8)					2,000 hours (φ10 to 18)				
	Capacitance change	≤±20% of the initial value					≤±20% of the initial value				
	D.F. (tanδ)	≤200% of the initial specified value					≤200% of the initial specified value				
	Leakage current	≤the initial specified value					≤the initial specified value				
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.										
	Capacitance change	≤±20% of the initial value									
	D.F. (tanδ)	≤150% of the initial specified value									
	Leakage current	≤the initial specified value									

DIMENSIONS (Radial Lead Type=VB) [mm]



φD	4	5	6.3	8	10 & 12.5	16 & 18
φd	0.45	0.5*	0.5*	0.6	0.6	0.8
F	1.5	2.0	2.5	3.5	5.0	7.5

*For L=7mm, φd is 0.45

PART NUMBERING SYSTEM

SXE	10	VB	1000	M	K15
					Case code
					Cap tolerance (±20%)
					Nominal cap code
					Radial lead type
					Rated voltage in volts
					Series name

Capacitance	Code
3.3µF	3R3
10µF	10
100µF	100
470µF	470
1000µF	1000

CASE CODE

L(mm) \ φD(mm)	7	11.5	12	12.5	15	20	25	30	35	40
4	D07	D11								
5	E07	E11			E15					
6.3	F07	F11			F15					
8			H12		H15	H20				
10				J12	J15	J20	J25	J30		
12.5					K15	K20	K25	K30	K35	K40
16					L15	L20	L25	L30	L35	L40
18					M15	M20	M25	M30	M35	M40

◆STANDARD RATINGS

Case size φDXL (mm)	Items	6.3					10					16				
		Capacitance (μF)	Impedance (Ωmax)		Rated ripple current (mA)		Capacitance (μF)	Impedance (Ωmax)		Rated ripple current (mA)		Capacitance (μF)	Impedance (Ωmax)		Rated ripple current (mA)	
			(20°C/100kHz)	(-10°C/100kHz)	(105°C/100kHz)	(105°C/120Hz)		(20°C/100kHz)	(-10°C/100kHz)	(105°C/100kHz)	(105°C/120Hz)		(20°C/100kHz)	(-10°C/100kHz)	(105°C/100kHz)	(105°C/120Hz)
4X7		27	5.5	14.3	50	25	22	5.4	14.0	50	25	15	5.3	13.8	50	25
4X11.5		68	2.2	5.7	102	74	47	2.2	5.6	102	74	33	2.1	5.5	102	51
5X7		56	3.4	8.8	75	68	39	3.3	8.6	75	68	27	3.3	8.6	75	49
5X11.5		120	1.3	3.4	154	108	82	1.3	3.4	154	108	56	1.3	3.4	154	108
5X15		150	0.92	2.4	210	147	120	0.91	2.4	210	147	82	0.89	2.3	210	147
6.3X7		120	1.4	3.6	140	98	82	1.4	3.6	140	98	56	1.4	3.6	140	98
6.3X11.5		220	0.61	1.6	260	182	180	0.59	1.5	260	182	120	0.58	1.5	260	182
6.3X15		330	0.40	1.0	350	245	270	0.39	1.0	350	245	180	0.38	0.99	350	245
8X12		390	0.34	0.88	400	320	330	0.33	0.86	400	280	220	0.33	0.86	400	280
8X15		560	0.24	0.62	500	400	470	0.24	0.62	500	400	330	0.23	0.60	500	350
8X20		820	0.19	0.49	650	520	560	0.18	0.47	650	520	470	0.18	0.47	650	520
10X12.5		470	0.28	0.73	510	410	390	0.27	0.70	510	410	270	0.27	0.70	510	360
10X15		680	0.22	0.57	635	510	560	0.22	0.57	635	510	390	0.21	0.55	635	510
10X20		1,200	0.14	0.36	860	775	820	0.14	0.36	860	690	680	0.14	0.36	860	690
10X25		1,500	0.12	0.31	1,030	930	1,200	0.12	0.31	1,030	930	820	0.12	0.31	1,030	825
10X30		2,200	0.095	0.25	1,150	1,035	1,500	0.093	0.24	1,150	1,035	1,000	0.091	0.24	1,150	920
12.5X15		1,200	0.12	0.31	970	875	1,000	0.12	0.31	970	780	680	0.12	0.31	970	780
12.5X20		2,200	0.089	0.23	1,120	1,010	1,800	0.087	0.23	1,120	1,010	1,200	0.086	0.22	1,120	1,010
12.5X25		2,700	0.075	0.20	1,320	1,190	2,200	0.073	0.19	1,320	1,190	1,500	0.072	0.19	1,320	1,190
12.5X30		3,900	0.065	0.17	1,540	1,390	2,700	0.064	0.17	1,540	1,390	2,200	0.063	0.16	1,540	1,390
12.5X35		4,700	0.053	0.14	1,770	1,595	3,300	0.052	0.14	1,770	1,595	2,700	0.051	0.13	1,770	1,595
12.5X40		5,600	0.046	0.12	1,980	1,785	3,900	0.045	0.12	1,980	1,785	3,300	0.045	0.12	1,980	1,785
16X15		2,200	0.10	0.26	1,100	990	1,500	0.10	0.26	1,100	990	1,200	0.099	0.26	1,100	990
16X20		3,900	0.076	0.20	1,370	1,235	3,300	0.075	0.20	1,370	1,235	2,200	0.073	0.19	1,370	1,235
16X25		5,600	0.066	0.17	1,570	1,415	3,900	0.065	0.17	1,570	1,415	2,700	0.064	0.17	1,570	1,415
16X30		6,800	0.055	0.14	1,810	1,630	4,700	0.054	0.14	1,810	1,630	3,900	0.053	0.14	1,810	1,630
16X35		8,200	0.047	0.12	2,030	1,830	6,800	0.046	0.12	2,030	1,830	4,700	0.046	0.12	2,030	1,830
16X40		10,000	0.039	0.10	2,320	2,090	8,200	0.038	0.099	2,320	2,090	5,600	0.037	0.096	2,320	2,090
18X15		3,300	0.081	0.21	1,280	1,155	2,200	0.080	0.21	1,280	1,150	1,500	0.078	0.20	1,280	1,155
18X20		5,600	0.063	0.16	1,580	1,425	3,900	0.062	0.16	1,580	1,425	3,300	0.060	0.16	1,580	1,425
18X25		6,800	0.054	0.14	1,830	1,650	4,700	0.053	0.14	1,830	1,650	3,900	0.052	0.14	1,830	1,650
18X30		10,000	0.047	0.12	2,030	1,830	6,800	0.046	0.12	2,030	1,830	4,700	0.046	0.12	2,030	1,830
18X35		12,000	0.042	0.11	2,240	2,020	8,200	0.041	0.11	2,240	2,020	6,800	0.040	0.10	2,240	2,020
18X40		15,000	0.037	0.096	2,460	2,215	10,000	0.037	0.096	2,460	2,215	8,200	0.036	0.094	2,460	2,215

Case size φDXL (mm)	Items	25					35					50				
		Capacitance (μF)	Impedance (Ωmax)		Rated ripple current (mA)		Capacitance (μF)	Impedance (Ωmax)		Rated ripple current (mA)		Capacitance (μF)	Impedance (Ωmax)		Rated ripple current (mA)	
			(20°C/100kHz)	(-10°C/100kHz)	(105°C/100kHz)	(105°C/120Hz)		(20°C/100kHz)	(-10°C/100kHz)	(105°C/100kHz)	(105°C/120Hz)		(20°C/100kHz)	(-10°C/100kHz)	(105°C/100kHz)	(105°C/120Hz)
4X7		10	5.3	13.7	50	25	6.8	5.2	13.4	50	25	4.7	5.0	13.0	50	20
4X11.5		22	2.1	5.5	102	51	15	2.1	5.4	102	51	10	2.0	5.2	102	51
5X7		22	3.3	8.6	75	45	12	3.2	8.3	75	38	8.2	3.1	8.1	75	38
5X11.5		39	1.3	3.3	154	108	27	1.2	3.1	154	77	18	1.2	3.1	154	77
5X15		56	0.88	2.3	210	147	39	0.87	2.3	210	147	27	0.84	2.2	210	105
6.3X7		39	1.4	3.6	140	98	27	1.3	3.4	140	70	18	1.3	3.4	140	70
6.3X11.5		82	0.58	1.5	260	182	56	0.57	1.5	260	182	39	0.55	1.4	260	182
6.3X15		120	0.38	0.99	350	245	82	0.37	0.96	350	245	56	0.36	0.94	350	245
8X12		150	0.33	0.86	400	280	100	0.32	0.83	400	280	68	0.31	0.81	400	280
8X15		220	0.23	0.60	500	350	150	0.23	0.60	500	350	82	0.22	0.57	500	350
8X20		270	0.18	0.47	650	455	220	0.18	0.47	650	455	120	0.17	0.44	650	455
10X12.5		180	0.26	0.68	510	360	120	0.26	0.68	510	360	82	0.25	0.65	510	360
10X15		270	0.21	0.55	635	445	180	0.21	0.55	635	445	100	0.20	0.52	635	445
10X20		470	0.14	0.36	860	690	330	0.13	0.34	860	605	180	0.13	0.34	860	605
10X25		560	0.12	0.31	1,030	825	390	0.11	0.29	1,030	825	220	0.11	0.29	1,030	725
10X30		680	0.090	0.23	1,150	920	470	0.089	0.23	1,150	920	330	0.086	0.22	1,150	805
12.5X15		470	0.12	0.31	970	780	330	0.11	0.29	970	680	180	0.11	0.29	970	680
12.5X20		820	0.085	0.22	1,120	900	560	0.083	0.22	1,120	900	330	0.081	0.22	1,120	785
12.5X25		1,000	0.071	0.18	1,320	1,060	680	0.070	0.18	1,320	1,060	470	0.068	0.19	1,320	1,060
12.5X30		1,500	0.062	0.16	1,540	1,390	1,000	0.061	0.16	1,540	1,390	560	0.059	0.16	1,540	1,235
12.5X35		1,800	0.050	0.13	1,770	1,595	1,200	0.049	0.13	1,770	1,595	680	0.048	0.14	1,770	1,420
12.5X40		2,200	0.044	0.11	1,980	1,785	1,500	0.043	0.11	1,980	1,785	820	0.042	0.12	1,980	1,585
16X15		820	0.098	0.25	1,100	880	560	0.096	0.25	1,100	880	330	0.093	0.20	1,100	770
16X20		1,500	0.072	0.19	1,370	1,235	1,000	0.071	0.18	1,370	1,100	680	0.069	0.15	1,370	1,100
16X25		1,800	0.063	0.16	1,570	1,415	1,200	0.062	0.16	1,570	1,415	820	0.060	0.13	1,570	1,260
16X30		2,700	0.053	0.14	1,810	1,630	1,800	0.052	0.14	1,810	1,630	1,000	0.050	0.13	1,810	1,450
16X35		3,300	0.045	0.12	2,030	1,830	2,200	0.044	0.11	2,030	1,830	1,200	0.043	0.11	2,030	1,830
16X40		3,900	0.037	0.096	2,320	2,090	2,700	0.036	0.094	2,320	2,090	1,500	0.035	0.091	2,320	2,090
18X15		1,200	0.078	0.20	1,280	1,155	820	0.076	0.20	1,280	1,155	470	0.074	0.19	1,280	1,025
18X20		2,200	0.060	0.16	1,580	1,425	1,500	0.059	0.15	1,580	1,425	820	0.057	0.15	1,580	1,265
18X25		2,700	0.051	0.13	1,830	1,650	1,800	0.050	0.13	1,830	1,650	1,000	0.049	0.13	1,830	1,465
18X30		3,300	0.045	0.12	2,030	1,830	2,200	0.044	0.11	2,030	1,830	1,500	0.043	0.11	2,030	1,830
18X35		3,900	0.040	0.10	2,240	2,020	2,700	0.039	0.10	2,240	2,020	1,800	0.038	0.099	2,240	2,020
18X40		4,700	0.036	0.094	2,460	2,215	3,300	0.035	0.091	2,460	2,215	2,200	0.034	0.088	2,460	2,215

◆STANDARD RATINGS

Case size φD×L (mm)	Items	63					80					100				
		Capacitance (μF)	Impedance (Ωmax)		Rated ripple current (mA rms)		Capacitance (μF)	Impedance (Ωmax)		Rated ripple current (mA rms)		Capacitance (μF)	Impedance (Ωmax)		Rated ripple current (mA rms)	
			20°C/100kHz	105°C/100kHz	105°C/120Hz	105°C/120Hz		20°C/100kHz	105°C/100kHz	105°C/120Hz	105°C/120Hz		20°C/100kHz	105°C/100kHz	105°C/120Hz	105°C/120Hz
4×7		3.3	11.2	30.2	38	15	2.2	11.0	29.7	38	15	1.5	10.8	29.2	38	15
4×11.5		6.8	4.3	11.6	73	37	4.7	4.2	11.3	73	29	3.3	4.1	11.1	73	29
5×7		5.6	5.1	13.8	61	31	3.9	5.0	13.5	61	24	2.7	4.9	13.2	61	24
5×11.5		12	2.0	5.4	124	62	8.2	1.9	5.2	124	62	5.6	1.9	5.1	124	62
5×15		18	1.4	3.8	170	85	12	1.4	3.7	170	85	8.2	1.3	3.6	170	85
6.3×7		12	3.0	8.1	95	48	8.2	2.9	7.8	95	48	5.6	2.8	7.6	95	48
6.3×11.5		27	1.2	3.2	180	90	18	1.1	3.0	180	90	12	1.1	3.0	180	90
6.3×15		39	0.66	1.8	270	190	27	0.64	1.7	270	135	18	0.62	1.7	270	135
8×12		47	0.56	1.5	305	215	37	0.54	1.5	305	155	22	0.53	1.4	305	155
8×15		68	0.36	0.97	410	290	47	0.36	0.97	410	290	33	0.35	0.95	410	205
8×20		82	0.22	0.57	605	425	56	0.28	0.74	605	425	39	0.27	0.73	605	425
10×12.5		56	0.50	1.4	380	270	39	0.49	1.3	380	270	27	0.48	1.3	380	190
10×15		68	0.35	0.95	500	350	56	0.34	0.90	500	350	33	0.33	0.89	500	250
10×20		120	0.27	0.74	620	435	82	0.26	0.71	620	435	56	0.26	0.70	620	435
10×25		150	0.20	0.53	795	560	100	0.19	0.51	795	560	68	0.19	0.50	795	560
10×30		180	0.16	0.42	955	670	150	0.15	0.41	955	670	100	0.15	0.40	955	670
12.5×15		150	0.25	0.67	640	450	100	0.24	0.64	640	450	68	0.23	0.63	640	450
12.5×20		220	0.16	0.42	890	625	150	0.15	0.41	890	625	100	0.15	0.40	890	625
12.5×25		270	0.14	0.38	1,040	730	180	0.14	0.37	1,040	730	120	0.13	0.36	1,040	730
12.5×30		390	0.11	0.29	1,270	1,020	270	0.10	0.28	1,270	890	180	0.10	0.27	1,270	890
12.5×35		470	0.091	0.25	1,450	1,160	330	0.088	0.24	1,450	1,015	220	0.087	0.23	1,450	1,015
12.5×40		560	0.080	0.22	1,610	1,290	390	0.076	0.21	1,610	1,290	270	0.074	0.20	1,610	1,130
16×15		220	0.15	0.41	960	675	180	0.14	0.38	960	675	120	0.14	0.38	960	675
16×20		390	0.12	0.32	1,240	995	270	0.11	0.31	1,240	870	180	0.11	0.30	1,240	870
16×25		470	0.091	0.25	1,440	1,155	330	0.088	0.24	1,440	1,010	220	0.086	0.23	1,440	1,010
16×30		680	0.065	0.18	1,790	1,435	470	0.063	0.17	1,790	1,435	330	0.062	0.17	1,790	1,255
16×35		820	0.056	0.15	2,000	1,600	560	0.054	0.15	2,000	1,600	390	0.059	0.16	1,990	1,595
16×40		1,000	0.049	0.13	2,200	1,780	680	0.048	0.13	2,200	1,780	470	0.047	0.13	2,200	1,780
18×15		330	0.13	0.35	1,130	795	220	0.13	0.34	1,130	795	150	0.12	0.33	1,130	795
18×20		560	0.091	0.25	1,450	1,160	390	0.088	0.24	1,450	1,160	270	0.086	0.23	1,450	1,015
18×25		680	0.078	0.21	1,650	1,320	470	0.075	0.20	1,650	1,320	330	0.074	0.20	1,650	1,155
18×30		820	0.065	0.18	1,850	1,480	680	0.063	0.17	1,850	1,480	390	0.062	0.17	1,850	1,480
18×35		1,000	0.061	0.16	1,990	1,595	820	0.060	0.16	1,990	1,595	560	0.053	0.14	2,000	1,600
18×40		1,200	0.046	0.12	2,370	2,135	1,000	0.044	0.12	2,370	1,900	680	0.043	0.12	2,370	1,900

◆RATED RIPPLE CURRENT MULTIPLIERS

●Frequency Multipliers

Capacitance (μF)	Frequency (Hz)					
	50	120	300	1k	10k	100k
1.5 to 4.7	0.30	0.40	0.50	0.70	0.80	1.00
5.6 to 33	0.40	0.50	0.60	0.80	0.90	1.00
39 to 330	0.60	0.70	0.80	0.90	0.95	1.00
390 to 1,000	0.65	0.80	0.90	0.98	1.00	1.00
1,200	0.80	0.90	0.95	0.98	1.00	1.00