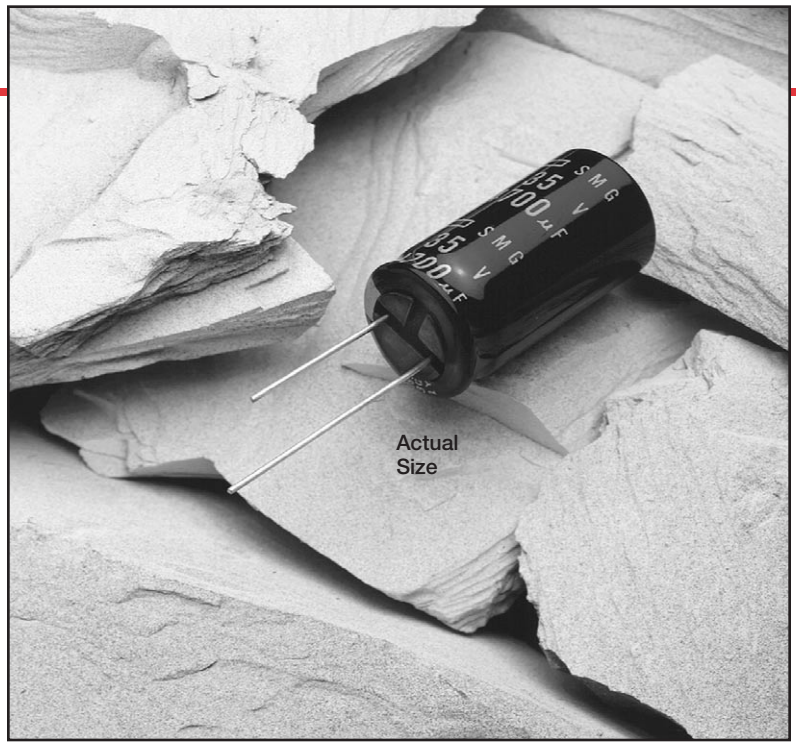
SMG Series

UNITED CHEMI-CON

- Miniature
- General Purpose
- Solvent Proof
- Large and Small Capacitance
- +85°C Maximum Temperature



The SMG series capacitors are a miniaturized version of the SME series. These capacitors are designed for a load life of 2,000 hours at 85°C with an operating temperature range of −40°C to +85°C except for the 450 volt and 20mm or larger diameter products which have an operating temperature range of −25°C to +85°C.

The SMG series capacitors below 315 volts were developed to withstand HCFC cleaning agents for five minutes by ultrasonic, vapor or immersion. This solvent proof design allows all circuit board components to be cleaned together, at the same time, without resorting to more expensive epoxy end-sealed capacitors. Refer to the Mini-Glossary for recommended cleaning conditions.

Summary of Specifications

- **Radial lead terminals.**
- **Capacitance range: 0.1 to 39,000µF.**
- **Voltage range: 6.3 to 450VDC.**
- **Operating temperature range: −40°C to +85°C for 6.3 to 400V; −25°C to +85°C for 450V and ≥20mm diameter.**
- **Leakage current: See specifications table for leakage current values at +20°C.**
- **Standard capacitance tolerance: ±20%**
- **Nominal case size (D×L): 5×11mm to 25.4×40mm.**
- **Rated lifetime: 2,000 hours at +85°C.**

SMG Specifications

Item	Characteristics
Operating Temperature Range	−40 to +85°C for 6.3 to 400VDC; −25 to +85°C for 450VDC and ≥ 20mm diameter case size.
Rated Voltage Range	6.3 to 450VDC
Capacitance Range	0.1 to 39,000μF
Capacitance Tolerance	±20% (M) at +20°C, 120Hz
Leakage Current	At +20°C

ØD	DC Voltage	Test Time	Leakage Current (μA)	
≤ Ø18	6.3-100V	After 1 minute	I = 0.03CV or 4μA, whichever is greater.	
	160-450V	After 1 minute	CV≤1,000: I = 0.1CV + 40	CV>1,000: I = 0.04CV + 100
		After 5 minutes	CV≤1,000: I = 0.03CV + 15	CV>1,000: I = 0.02CV + 25
≥ Ø20	6.3-450V	After 3 minutes	I = 0.03CV	

Where I = Leakage current (μA), C = Nominal capacitance (μF) and V = Rated voltage (V)

Dissipation Factor (Tan δ)

At +20°C, 120Hz

Rated Voltage (V)		6.3	10	16	25	35	50	63	100	160-250	350-400	450
Tan δ (DF)	≤ Ø18	0.34	0.24	0.20	0.16	0.14	0.12	0.09	0.08	0.20	0.24	0.24
	≥ Ø20	0.28	0.24	0.20	0.16	0.14	0.12	0.10	0.10	0.15	0.15	0.20

When nominal capacitance exceeds 1,000μF, add 0.02 to the values above for each 1,000μF increase.

Low Temperature Characteristics

At 120Hz, impedance (Z) ratio between the −25°C or −40°C value and +20°C value shall not exceed the values given below.

Rated Voltage (V)		6.3	10	16	25	35	50-100	160-250	350-400	450
Z(−25°C)/Z(+20°C)	≤ Ø18	5	4	3	2	2	2	3	6	6
Z(−40°C)/Z(+20°C)		12	10	8	5	4	3	4	6	–
Z(−25°C)/Z(+20°C)	≥ Ø20	5	4	3	2	2	2	4	6	6

Ripple Current Multipliers

Refer to Section 4 of the Mini-Glossary for explanation of Ripple Current Multipliers.

Ambient Temperature (°C)

	+70°C	+85°C
≤ Ø18	1.30	1.00

Ambient Temperature (°C)

	+65°C	+85°C
≥ Ø20	1.23	1.00

Frequency (Hz) ≤ Ø18

Capacitance (μF)	Frequency (Hz)					
	50	120	300	1k	10k	100k
0.1-4.7μF	0.65	1.00	1.35	1.75	2.30	2.50
10-47μF	0.75	1.00	1.25	1.50	1.75	1.80
100-1000μF	0.80	1.00	1.15	1.30	1.40	1.50
≥ 2200μF	0.85	1.00	1.03	1.05	1.08	1.08

Frequency (Hz) ≥ Ø20

DC Rated Voltage	Frequency (Hz)					
	50	120	300	1k	10k	100k
10-50V	0.95	1.00	1.03	1.05	1.08	1.08
63-100V	0.92	1.00	1.07	1.13	1.19	1.20
160-250V	0.81	1.00	1.17	1.32	1.45	1.50
315-450V	0.77	1.00	1.16	1.30	1.41	1.43

Load Life

The following specifications shall be satisfied when the capacitors are restored to +20°C after subjecting them to the DC rated voltage for 2,000 hours at +85°C. The sum of DC voltage and peak AC voltage must not exceed the full rated voltage of the capacitors.

Capacitance change: ≤ ±20% of initial measured value
Tan δ (DF) : ≤ 200% of initial specified value
Leakage current : ≤ 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 +85°C without voltage applied. The rated voltage shall be applied to the capacitors for a minimum of 30 minutes, at least 24 hours and not more than 48 hours before the measurements.

Capacitance change: ≤ ±20% of initial measured value
Tan δ (DF) : ≤ 200% of initial specified value
Leakage current : ≤ initial specified value for 6.3-100V
: ≤ 500% of initial specified value for 160-450V

Others

Satisfies characteristic W of JIS C5141

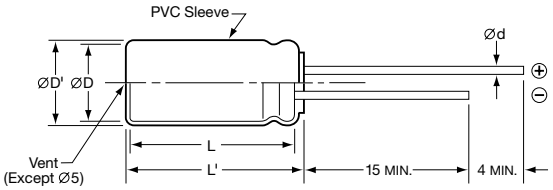
SMG Series

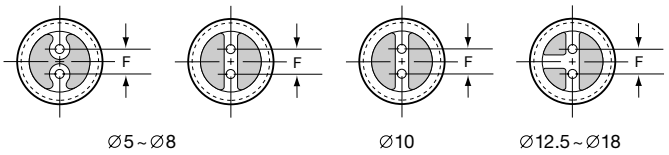
Diagram of Dimensions

VB/Radial Lead

Unit: mm

≤ Ø18



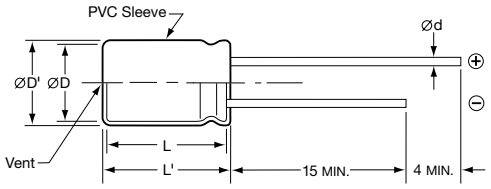


Gas escape end seal for all case diameters.

For optional lead configurations and tape and ammo packaging, refer to the beginning of the Miniature section.

ØD	ØD' max	L' max	Ød	F ± 0.5
5	ØD + 0.5	L + 1.5	0.5	2.0
6.3	ØD + 0.5	L + 1.5	0.5	2.5
8	ØD + 0.5	L + 1.5	0.6	3.5
10, 12.5	ØD + 0.5	L + 1.5	0.6	5.0
16, 18	ØD + 0.5	L + 1.5	0.8	7.5

≥ Ø20



ØD	ØD' max	L' max	Ød	F ± 0.5
20	ØD + 0.5	L + 2.0	1.0	10.0
22	ØD + 0.5	L + 2.0	1.0	10.0
25.4	ØD + 0.5	L + 2.0	1.0	12.5

Part Numbering System for SMG Series

When ordering, always specify complete catalog number for SMG Series.

SMG 35 VB 472 M 18X35 LL

- LL — Lead Length: LL is Standard.
- 18X35 — Case Code: See Case Sizes in Tables.
- M — Capacitance Tolerance: M = ±20%
- 472 — Capacitance Value: Expressed in Microfarads. The first two digits are significant figures, and the third digit indicates the number of zeros for capacitance of 100µF or more. R indicates the decimal point for capacitance less than 100µF (e.g. R47 = .47µF; 4R7 = 4.7µF; 47R = 47µF; 471 = 470µF; 472 = 4,700µF; 473 = 47,000µF).
- VB — Lead Configuration: VB = Radial Lead Terminals.
- 35 — DC Rated Voltage: Expressed in Volts (e.g. 35 = 35WVDC).
- SMG — Series Name: Indicates Basic Capacitor Design.

SMG Series

Standard Voltage Ratings - VB/Radial Lead

Rated Voltage (WVDC)	Capacitance (µF)	Catalog Part Number	Nominal Case Size* D × L (mm)	Maximum ESR (Ω) at +20°C, 120Hz	Maximum Ripple Current (mA rms) at +85°C, 120Hz
6.3 Volts 8 Volts Surge	220	SMG6.3VB221M5X11LL	5 × 11	2.562	200
	330	SMG6.3VB331M6X11LL	6.3 × 11	1.708	270
	470	SMG6.3VB471M6X11LL	6.3 × 11	1.199	320
	680	SMG6.3VB681M8X11LL	8 × 11.5	0.829	445
	1,000	SMG6.3VB102M8X11LL	8 × 11.5	0.564	540
	1,500	SMG6.3VB152M10X16LL	10 × 16	0.376	760
	2,200	SMG6.3VB222M10X20LL	10 × 20	0.271	1,000
	3,300	SMG6.3VB332M10X20LL	10 × 20	0.191	1,185
	4,700	SMG6.3VB472M12X20LL	12.5 × 20	0.141	1,545
	6,800	SMG6.3VB682M12X25LL	12.5 × 25	0.107	1,915
	10,000	SMG6.3VB103M16X25LL	16 × 25	0.086	2,330
	10,000	SMG6.3VB103M20X25LL	20 × 25	0.076	2,310
	15,000	SMG6.3VB153M16X35LL	16 × 35.5	0.069	2,845
	15,000	SMG6.3VB153M20X30LL	20 × 30	0.062	2,660
	18,000	SMG6.3VB183M20X35LL	20 × 35	0.057	2,890
	18,000	SMG6.3VB183M22X30LL	22 × 30	0.057	2,860
	22,000	SMG6.3VB223M18X40LL	18 × 40	0.057	3,320
	22,000	SMG6.3VB223M20X40LL	20 × 40	0.053	3,130
	22,000	SMG6.3VB223M22X35LL	22 × 35	0.053	3,130
	27,000	SMG6.3VB273M22X40LL	22 × 40	0.049	3,280
	39,000	SMG6.3VB393M25X40LL	25.4 × 40	0.040	3,560
10 Volts 13 Volts Surge	220	SMG10VB221M5X11LL	5 × 11	1.808	240
	330	SMG10VB331M6X11LL	6.3 × 11	1.205	290
	470	SMG10VB471M6X11LL	6.3 × 11	0.846	350
	680	SMG10VB681M10X12LL	10 × 12.5	0.585	535
	1,000	SMG10VB102M10X12LL	10 × 12.5	0.398	650
	1,500	SMG10VB152M10X20LL	10 × 20	0.265	880
	2,200	SMG10VB222M10X20LL	10 × 20	0.196	1,070
	3,300	SMG10VB332M12X20LL	12.5 × 20	0.141	1,420
	4,700	SMG10VB472M12X25LL	12.5 × 25	0.106	1,780
	6,800	SMG10VB682M16X25LL	16 × 25	0.083	2,220
	6,800	SMG10VB682M20X20LL	20 × 20	0.083	2,080
	10,000	SMG10VB103M16X35LL	16 × 35.5	0.070	2,670
	10,000	SMG10VB103M20X25LL	20 × 25	0.070	2,410
	12,000	SMG10VB123M20X30LL	20 × 30	0.064	2,620
	15,000	SMG10VB153M18X35LL	18 × 35.5	0.057	3,080
	15,000	SMG10VB153M20X35LL	20 × 35	0.057	2,870
	15,000	SMG10VB153M22X30LL	22 × 30	0.057	2,660
	18,000	SMG10VB183M22X35LL	22 × 35	0.053	3,050
	22,000	SMG10VB223M22X40LL	22 × 40	0.05	3,480
	33,000	SMG10VB333M25X40LL	25.4 × 40	0.044	3,560
16 Volts 20 Volts Surge	100	SMG16VB101M5X11LL	5 × 11	3.315	160
	150	SMG16VB151M6X11LL	6.3 × 11	2.210	210
	220	SMG16VB221M6X11LL	6.3 × 11	1.507	260
	330	SMG16VB331M8X11LL	8 × 11.5	1.005	370
	470	SMG16VB471M8X11LL	8 × 11.5	0.705	440
	680	SMG16VB681M10X16LL	10 × 16	0.488	645
	1,000	SMG16VB102M10X16LL	10 × 16	0.332	785
	1,500	SMG16VB152M12X20LL	12.5 × 20	0.221	1,065
	2,200	SMG16VB222M12X20LL	12.5 × 20	0.166	1,295
	3,300	SMG16VB332M12X25LL	12.5 × 25	0.121	1,655
	4,700	SMG16VB472M16X25LL	16 × 25	0.092	2,090
	4,700	SMG16VB472M20X20LL	20 × 20	0.092	1,960
	6,800	SMG16VB682M16X31LL	16 × 31.5	0.073	2,520
	6,800	SMG16VB682M20X25LL	20 × 25	0.073	2,330
	8,200	SMG16VB822M20X30LL	20 × 30	0.069	2,500
	10,000	SMG16VB103M18X35LL	18 × 35.5	0.063	2,920
	10,000	SMG16VB103M20X35LL	20 × 35	0.063	2,720

***The case sizes in table are with no sleeve, refer to diagram for case sizes with sleeve.**

SMG Series

Standard Voltage Ratings - VB/Radial Lead

Rated Voltage (WVDC)	Capacitance (µF)	Catalog Part Number	Nominal Case Size* D×L (mm)	Maximum ESR (Ω) at +20°C, 120Hz	Maximum Ripple Current (mA rms) at +85°C, 120Hz
16 Volts 20 Volts Surge	10,000	SMG16VB103M22X30LL	22 × 30	0.063	2,660
	12,000	SMG16VB123M20X40LL	20 × 40	0.058	2,900
	12,000	SMG16VB123M22X35LL	22 × 35	0.058	2,900
	15,000	SMG16VB153M22X40LL	22 × 40	0.053	3,380
	22,000	SMG16VB223M25X40LL	25.4 × 40	0.047	3,720
25 Volts 32 Volts Surge	47	SMG25VB47RM5X11LL	5 × 11	5.643	115
	68	SMG25VB68RM5X11LL	5 × 11	3.900	135
	100	SMG25VB101M6X11LL	6.3 × 11	2.652	190
	150	SMG25VB151M6X11LL	6.3 × 11	1.768	230
	220	SMG25VB221M8X11LL	8 × 11.5	1.205	330
	330	SMG25VB331M8X11LL	8 × 11.5	0.804	440
	470	SMG25VB471M10X12LL	10 × 12.5	0.564	545
	680	SMG25VB681M10X20LL	10 × 20	0.390	785
	1,000	SMG25VB102M10X20LL	10 × 20	0.265	955
	1,500	SMG25VB152M12X25LL	12.5 × 25	0.177	1,270
	2,200	SMG25VB222M12X25LL	12.5 × 25	0.136	1,540
	3,300	SMG25VB332M16X25LL	16 × 25	0.100	1,975
	3,300	SMG25VB332M20X20LL	20 × 20	0.100	1,850
	4,700	SMG25VB472M16X31LL	16 × 31.5	0.078	2,420
	4,700	SMG25VB472M20X25LL	20 × 25	0.078	2,240
	5,600	SMG25VB562M20X30LL	20 × 30	0.071	2,430
	6,800	SMG25VB682M18X35LL	18 × 35.5	0.063	2,880
	6,800	SMG25VB682M20X35LL	20 × 35	0.063	2,680
	6,800	SMG25VB682M22X30LL	22 × 30	0.063	2,510
	8,200	SMG25VB822M20X40LL	20 × 40	0.061	2,810
	8,200	SMG25VB822M22X35LL	22 × 35	0.061	2,810
	10,000	SMG25VB103M22X40LL	22 × 40	0.056	3,240
	12,000	SMG25VB123M22X40LL	22 × 40	0.052	3,240
	15,000	SMG25VB153M25X40LL	25.4 × 40	0.049	3,610
35 Volts 44 Volts Surge	47	SMG35VB47RM5X11LL	5 × 11	4.937	130
	68	SMG35VB68RM6X11LL	6.3 × 11	3.410	170
	100	SMG35VB101M6X11LL	6.3 × 11	2.321	210
	150	SMG35VB151M8X11LL	8 × 11.5	1.547	315
	220	SMG35VB221M8X11LL	8 × 11.5	1.055	385
	330	SMG35VB331M10X12LL	10 × 12.5	0.703	490
	470	SMG35VB471M10X16LL	10 × 16	0.494	645
	680	SMG35VB681M12X20LL	12.5 × 20	0.341	940
	1,000	SMG35VB102M12X20LL	12.5 × 20	0.232	1,145
	1,500	SMG35VB152M16X25LL	16 × 25	0.155	1,470
	2,200	SMG35VB222M16X25LL	16 × 25	0.121	1,785
	2,200	SMG35VB222M20X20LL	20 × 20	0.121	1,670
	3,300	SMG35VB332M16X35LL	16 × 35.5	0.090	2,275
	3,300	SMG35VB332M20X25LL	20 × 25	0.090	2,050
	3,900	SMG35VB392M20X30LL	20 × 30	0.077	2,310
	4,700	SMG35VB472M18X35LL	18 × 35.5	0.071	2,700
	4,700	SMG35VB472M20X35LL	20 × 35	0.071	2,510
	4,700	SMG35VB472M22X30LL	22 × 30	0.071	2,380
	5,600	SMG35VB562M20X40LL	20 × 40	0.065	2,690
	5,600	SMG35VB562M22X35LL	22 × 35	0.065	2,690
	6,800	SMG35VB682M22X40LL	22 × 40	0.059	3,090
	10,000	SMG35VB103M25X40LL	25.4 × 40	0.053	3,480
50 Volts 63 Volts Surge	0.1	SMG50VBR10M5X11LL	5 × 11	1,989.0	1.3
	0.22	SMG50VBR22M5X11LL	5 × 11	904.091	2.9
	0.33	SMG50VBR33M5X11LL	5 × 11	602.727	4.3
	0.47	SMG50VBR47M5X11LL	5 × 11	423.191	6.2
	1.0	SMG50VB1R0M5X11LL	5 × 11	198.900	17
	2.2	SMG50VB2R2M5X11LL	5 × 11	90.409	28

***The case sizes in table are with no sleeve, refer to diagram for case sizes with sleeve.**

SMG Series

Standard Voltage Ratings - VB/Radial Lead

Rated Voltage (WVDC)	Capacitance (µF)	Catalog Part Number	Nominal Case Size* D × L (mm)	Maximum ESR (Ω) at +20°C, 120Hz	Maximum Ripple Current (mA rms) at +85°C, 120Hz
50 Volts 63 Volts Surge	3.3	SMG50VB3R3M5X11LL	5 × 11	60.273	35
	4.7	SMG50VB4R7M5X11LL	5 × 11	42.319	41
	10	SMG50VB10RM5X11LL	5 × 11	19.890	60
	22	SMG50VB22RM5X11LL	5 × 11	9.041	95
	33	SMG50VB33RM5X11LL	5 × 11	6.027	125
	47	SMG50VB47RM6X11LL	6.3 × 11	4.232	155
	68	SMG50VB68RM8X11LL	8 × 11.5	2.930	210
	100	SMG50VB101M8X11LL	8 × 11.5	1.989	260
	150	SMG50VB151M10X12LL	10 × 12.5	1.326	350
	220	SMG50VB221M10X12LL	10 × 12.5	0.904	430
	330	SMG50VB331M10X16LL	10 × 16	0.603	585
	470	SMG50VB471M10X20LL	10 × 20	0.423	755
	680	SMG50VB681M12X25LL	12.5 × 25	0.293	1,100
	1,000	SMG50VB102M12X25LL	12.5 × 25	0.199	1,340
	1,500	SMG50VB152M16X31LL	16 × 31.5	0.133	1,650
	1,500	SMG50VB152M20X20LL	20 × 20	0.133	1,570
	2,200	SMG50VB222M16X35LL	16 × 35.5	0.105	2,075
	2,200	SMG50VB222M20X25LL	20 × 25	0.105	1,880
	2,700	SMG50VB272M20X30LL	20 × 30	0.086	2,150
	3,300	SMG50VB332M18X35LL	18 × 35.5	0.080	2,500
	3,300	SMG50VB332M20X35LL	20 × 35	0.080	2,420
	3,300	SMG50VB332M22X30LL	22 × 30	0.080	2,420
	3,900	SMG50VB392M20X40LL	20 × 40	0.068	2,590
	3,900	SMG50VB392M22X35LL	22 × 35	0.068	2,590
	4,700	SMG50VB472M22X40LL	22 × 40	0.063	2,960
	6,800	SMG50VB682M25X40LL	25.4 × 40	0.054	3,360
63 Volts 79 Volts Surge	10	SMG63VB10RM5X11LL	5 × 11	14.918	65
	22	SMG63VB22RM5X11LL	5 × 11	6.781	100
	33	SMG63VB33RM6X11LL	6.3 × 11	4.520	140
	47	SMG63VB47RM6X11LL	6.3 × 11	3.174	170
	100	SMG63VB101M10X12LL	10 × 12.5	1.492	300
	220	SMG63VB221M10X16LL	10 × 16	0.678	490
	330	SMG63VB331M10X20LL	10 × 20	0.452	710
	470	SMG63VB471M12X20LL	12.5 × 20	0.317	900
	820	SMG63VB821M20X20LL	20 × 20	0.182	1,370
	1,000	SMG63VB102M16X25LL	16 × 25	0.149	1,300
	1,000	SMG63VB102M20X25LL	20 × 25	0.149	1,600
	1,500	SMG63VB152M20X30LL	20 × 30	0.099	1,850
	2,200	SMG63VB222M20X35LL	20 × 35	0.083	2,330
	2,200	SMG63VB222M22X30LL	22 × 30	0.083	2,190
	2,700	SMG63VB272M20X40LL	20 × 40	0.068	2,640
	3,300	SMG63VB332M22X40LL	22 × 40	0.065	2,810
	3,900	SMG63VB392M25X40LL	25.4 × 40	0.055	3,100
100 Volts 125 Volts Surge	0.1	SMG100VBR10M5X11LL	5 × 11	1,326.0	2.1
	0.22	SMG100VBR22M5X11LL	5 × 11	602.727	4.7
	0.33	SMG100VBR33M5X11LL	5 × 11	401.818	7
	0.47	SMG100VBR47M5X11LL	5 × 11	282.128	10
	1.0	SMG100VB1R0M5X11LL	5 × 11	132.600	21
	2.2	SMG100VB2R2M5X11LL	5 × 11	60.273	30
	3.3	SMG100VB3R3M5X11LL	5 × 11	40.182	40
	4.7	SMG100VB4R7M5X11LL	5 × 11	28.213	45
	10	SMG100VB10RM6X11LL	6.3 × 11	13.260	75
	22	SMG100VB22RM8X11LL	8 × 11.5	6.027	130
	33	SMG100VB33RM8X11LL	8 × 11.5	4.018	180
	47	SMG100VB47RM10X12LL	10 × 12.5	2.821	230
	100	SMG100VB101M10X20LL	10 × 20	1.326	370
	220	SMG100VB221M12X25LL	12.5 × 25	0.603	620

***The case sizes in table are with no sleeve, refer to diagram for case sizes with sleeve.**

SMG Series

Standard Voltage Ratings - VB/Radial Lead

Rated Voltage (WVDC)	Capacitance (µF)	Catalog Part Number	Nominal Case Size* D×L (mm)	Maximum ESR (Ω) at +20°C, 120Hz	Maximum Ripple Current (mA rms) at +85°C, 120Hz
100 Volts 125 Volts Surge	330	SMG100VB331M12X25LL	12.5 × 25	0.402	760
	330	SMG100VB331M20X20LL	20 × 20	0.402	870
	470	SMG100VB471M16X25LL	16 × 25	0.282	1,000
	680	SMG100VB681M20X30LL	20 × 30	0.195	1,360
	820	SMG100VB821M22X30LL	22 × 30	0.162	1,540
	1,000	SMG100VB102M18X40LL	18 × 40	0.133	1,380
	1,000	SMG100VB102M20X35LL	20 × 35	0.133	1,720
	1,200	SMG100VB122M22X40LL	22 × 40	0.111	1,980
	1,800	SMG100VB182M25X40LL	25.4 × 40	0.074	2,490
160 Volts 200 Volts Surge	3.3	SMG160VB3R3M6X11LL	6.3 × 11	100.455	40
	4.7	SMG160VB4R7M6X11LL	6.3 × 11	70.532	48
	10	SMG160VB10RM10X12LL	10 × 12.5	33.150	94
	22	SMG160VB22RM10X20LL	10 × 20	15.068	170
	33	SMG160VB33RM10X20LL	10 × 20	10.045	205
	47	SMG160VB47RM12X20LL	12.5 × 20	7.053	270
	100	SMG160VB101M12X25LL	12.5 × 25	3.315	430
	150	SMG160VB151M20X20LL	20 × 20	1.658	570
	220	SMG160VB221M16X31LL	16 × 31.5	1.510	760
	220	SMG160VB221M20X25LL	20 × 25	1.130	730
	330	SMG160VB331M18X35LL	18 × 35.5	1.005	995
	330	SMG160VB331M20X30LL	20 × 30	0.753	920
	390	SMG160VB391M20X35LL	20 × 35	0.638	1,160
	390	SMG160VB391M22X30LL	22 × 30	0.638	1,160
	470	SMG160VB471M20X40LL	20 × 40	0.529	1,340
	470	SMG160VB471M22X35LL	22 × 35	0.529	1,340
	560	SMG160VB561M22X40LL	22 × 40	0.444	1,470
	680	SMG160VB681M25X40LL	25.4 × 40	0.366	1,570
200 Volts 250 Volts Surge	3.3	SMG200VB3R3M6X11LL	6.3 × 11	100.455	40
	4.7	SMG200VB4R7M8X11LL	8 × 11.5	70.532	55
	10	SMG200VB10RM10X12LL	10 × 12.5	33.150	94
	22	SMG200VB22RM10X20LL	10 × 20	15.068	170
	33	SMG200VB33RM10X20LL	10 × 20	10.045	205
	47	SMG200VB47RM12X20LL	12.5 × 20	7.053	270
	100	SMG200VB101M16X25LL	16 × 25	3.315	475
	100	SMG200VB101M20X20LL	20 × 20	2.486	460
	150	SMG200VB151M20X25LL	20 × 25	1.658	660
	180	SMG200VB181M20X25LL	20 × 25	1.381	660
	220	SMG200VB221M18X35LL	18 × 35	1.510	810
	220	SMG200VB221M20X30LL	20 × 30	1.130	750
	270	SMG200VB271M20X30LL	20 × 30	0.921	830
	330	SMG200VB331M20X35LL	20 × 35	0.753	1,070
	330	SMG200VB331M22X30LL	22 × 30	0.753	1,070
	390	SMG200VB391M20X40LL	20 × 40	0.638	1,190
	390	SMG200VB391M22X35LL	22 × 35	0.638	1,160
	470	SMG200VB471M22X40LL	22 × 40	0.529	1,350
	560	SMG200VB561M22X40LL	22 × 40	0.444	1,430
	680	SMG200VB681M25X40LL	25.4 × 40	0.366	1,620
250 Volts 300 Volts Surge	2.2	SMG250VB2R2M6X11LL	6.3 × 11	150.682	32
	3.3	SMG250VB3R3M8X11LL	8 × 11.5	100.455	46
	4.7	SMG250VB4R7M8X11LL	8 × 11.5	70.532	55
	10	SMG250VB10RM10X16LL	10 × 16	33.150	105
	22	SMG250VB22RM10X20LL	10 × 20	15.068	170
	33	SMG250VB33RM12X20LL	12.5 × 20	10.045	230
	47	SMG250VB47RM12X25LL	12.5 × 25	7.053	295
	82	SMG250VB82RM20X20LL	20 × 20	3.032	420
	100	SMG250VB101M16X31LL	16 × 31.5	3.315	515
	100	SMG250VB101M20X25LL	20 × 25	2.486	490

***The case sizes in table are with no sleeve, refer to diagram for case sizes with sleeve.**

SMG Series

Standard Voltage Ratings - VB/Radial Lead

Rated Voltage (WVDC)	Capacitance (µF)	Catalog Part Number	Nominal Case Size* D × L (mm)	Maximum ESR (Ω) at +20°C, 120Hz	Maximum Ripple Current (mA rms) at +85°C, 120Hz
250 Volts 300 Volts Surge	120	SMG250VB121M20X25LL	20 × 25	2.072	530
	150	SMG250VB151M20X30LL	20 × 30	1.658	620
	180	SMG250VB181M20X30LL	20 × 30	1.381	680
	220	SMG250VB221M18X40LL	18 × 40	1.510	825
	220	SMG250VB221M20X35LL	20 × 35	1.130	780
	220	SMG250VB221M22X30LL	22 × 30	1.130	820
	270	SMG250VB271M20X40LL	20 × 40	0.921	880
	270	SMG250VB271M22X35LL	22 × 35	0.921	880
	330	SMG250VB331M22X40LL	22 × 40	0.753	1,060
	390	SMG250VB391M25X40LL	25.4 × 40	0.638	1,200
315 Volts 365 Volts Surge Not Solvent Proof	47	SMG315VB47RM20X20LL	20 × 20	5.290	310
	68	SMG315VB68RM20X25LL	20 × 25	3.656	400
	82	SMG315VB82RM20X25LL	20 × 25	3.032	440
	100	SMG315VB101M20X30LL	20 × 30	2.486	500
	120	SMG315VB121M20X30LL	20 × 30	2.072	550
	150	SMG315VB151M20X35LL	20 × 35	1.658	640
	180	SMG315VB181M20X40LL	20 × 40	1.381	720
	180	SMG315VB181M22X35LL	22 × 35	1.381	720
	220	SMG315VB221M22X40LL	22 × 40	1.130	810
	270	SMG315VB271M25X40LL	25.4 × 40	0.921	920
350 Volts 400 Volts Surge Not Solvent Proof	0.47	SMG350VBR47M6X11LL	6.3 × 11	846.383	15
	1.0	SMG350VB1R0M6X11LL	6.3 × 11	397.800	22
	2.2	SMG350VB2R2M8X11LL	8 × 11.5	180.818	38
	3.3	SMG350VB3R3M8X11LL	8 × 11.5	120.545	46
	4.7	SMG350VB4R7M10X12LL	10 × 12.5	84.638	65
	10	SMG350VB10RM10X20LL	10 × 20	39.780	115
	22	SMG350VB22RM12X20LL	12.5 × 20	18.082	185
	33	SMG350VB33RM16X25LL	16 × 25	12.055	275
	47	SMG350VB47RM16X25LL	16 × 25	8.464	325
	47	SMG350VB47RM20X20LL	20 × 20	5.290	310
	68	SMG350VB68RM20X25LL	20 × 25	3.656	400
	100	SMG350VB101M18X31LL	18 × 31.5	3.978	530
	100	SMG350VB101M20X30LL	20 × 30	2.486	500
	120	SMG350VB121M20X35LL	20 × 35	2.072	560
	120	SMG350VB121M22X30LL	22 × 30	2.072	560
	150	SMG350VB151M20X40LL	20 × 40	1.658	660
	150	SMG350VB151M22X35LL	22 × 35	1.658	660
	220	SMG350VB221M25X40LL	25.4 × 40	1.130	890
400 Volts 450 Volts Surge Not Solvent Proof	1.0	SMG400VB1R0M6X11LL	6.3 × 11	397.800	22
	2.2	SMG400VB2R2M8X11LL	8 × 11.5	180.818	38
	3.3	SMG400VB3R3M10X12LL	10 × 12.5	120.545	54
	4.7	SMG400VB4R7M10X16LL	10 × 16	84.638	71
	10	SMG400VB10RM10X20LL	10 × 20	39.780	115
	22	SMG400VB22RM12X25LL	12.5 × 25	18.082	205
	33	SMG400VB33RM16X25LL	16 × 25	12.055	275
	33	SMG400VB33RM20X20LL	20 × 20	7.534	260
	47	SMG400VB47RM16X31LL	16 × 31.5	8.464	350
	56	SMG400VB56RM20X25LL	20 × 25	4.440	350
	68	SMG400VB68RM20X30LL	20 × 30	3.656	420
	100	SMG400VB101M20X35LL	20 × 35	2.486	520
	100	SMG400VB101M22X30LL	22 × 30	2.486	520
	120	SMG400VB121M20X40LL	20 × 40	2.072	580
	120	SMG400VB121M22X35LL	22 × 35	2.072	580
	150	SMG400VB151M22X40LL	22 × 40	1.658	710
	180	SMG400VB181M25X40LL	25.4 × 40	1.381	790

***The case sizes in table are with no sleeve, refer to diagram for case sizes with sleeve.**

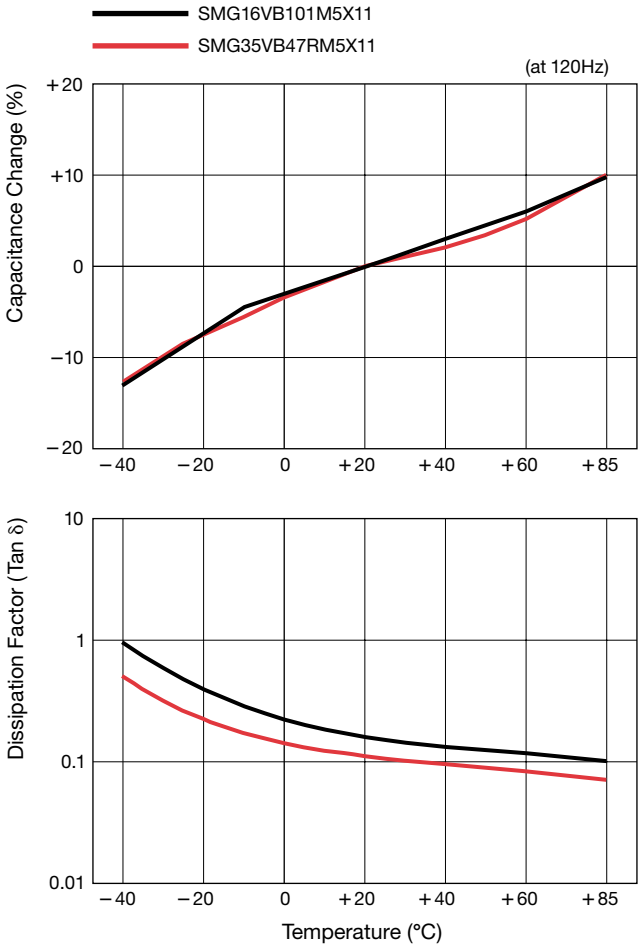
SMG Series

Standard Voltage Ratings - VB/Radial Lead

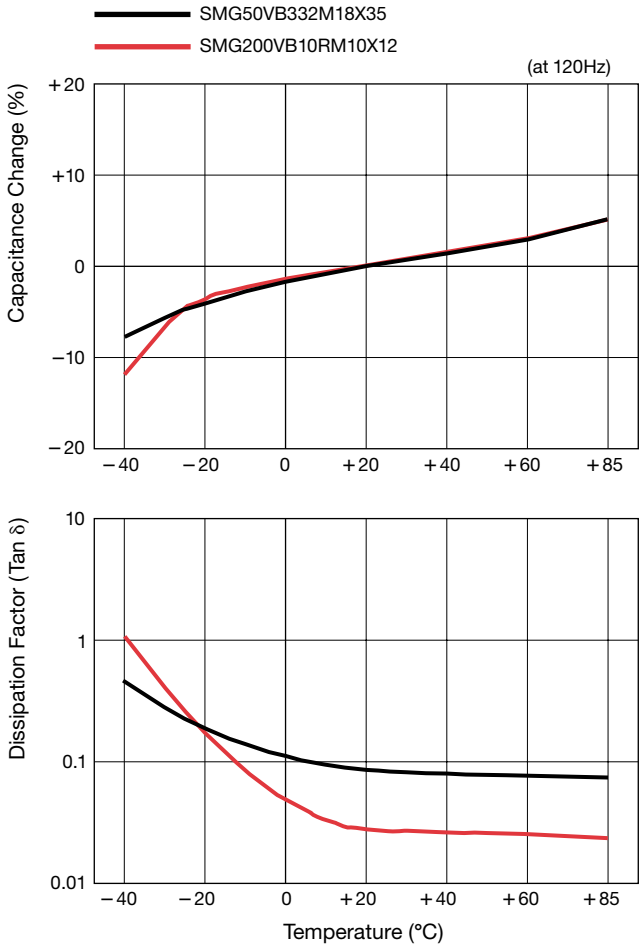
Rated Voltage (WVDC)	Capacitance (µF)	Catalog Part Number	Nominal Case Size* D × L (mm)	Maximum ESR (Ω) at +20°C, 120Hz	Maximum Ripple Current (mA rms) at +85°C, 120Hz
450 Volts **500 Volts Surge** **Not Solvent Proof**	0.47	SMG450VBR47M10X12LL	10 × 12.5	846.383	13
	1.0	SMG450VB1R0M10X12LL	10 × 12.5	397.800	19
	2.2	SMG450VB2R2M10X12LL	10 × 12.5	180.818	32
	3.3	SMG450VB3R3M10X16LL	10 × 16	120.545	44
	4.7	SMG450VB4R7M10X20LL	10 × 20	84.638	56
	10	SMG450VB10RM12X20LL	12.5 × 20	39.780	91
	22	SMG450VB22RM16X25LL	16 × 25	18.082	165
	22	SMG450VB22RM20X20LL	20 × 20	15.068	180
	33	SMG450VB33RM16X31LL	16 × 31.5	12.055	215
	33	SMG450VB33RM20X25LL	20 × 25	10.045	240
	47	SMG450VB47RM16X35LL	16 × 35.5	8.464	265
	47	SMG450VB47RM20X25LL	20 × 25	7.053	290
	56	SMG450VB56RM20X30LL	20 × 30	5.920	320
	68	SMG450VB68RM20X35LL	20 × 35	4.875	370
	68	SMG450VB68RM22X30LL	22 × 30	4.875	370
	82	SMG450VB82RM20X40LL	20 × 40	4.043	420
	82	SMG450VB82RM22X35LL	22 × 35	4.043	420
	100	SMG450VB101M22X40LL	22 × 40	3.315	470
	120	SMG450VB121M25X40LL	25.4 × 40	2.763	520

***The case sizes in table are with no sleeve, refer to diagram for case sizes with sleeve.**

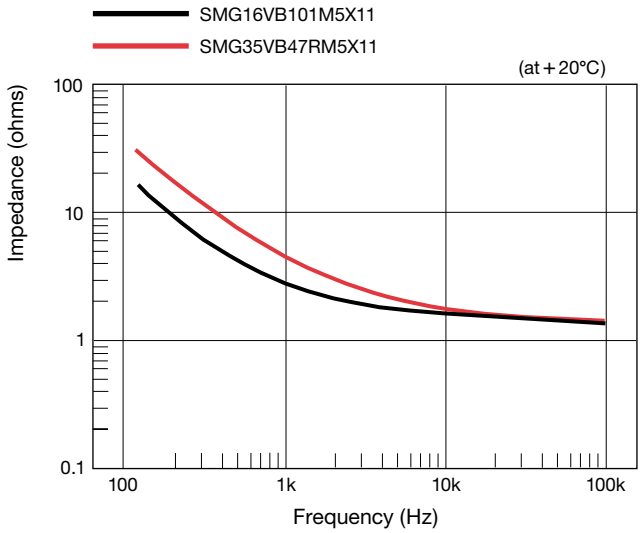
Temperature Characteristics



Temperature Characteristics



Impedance – Frequency Characteristics



Impedance – Frequency Characteristics