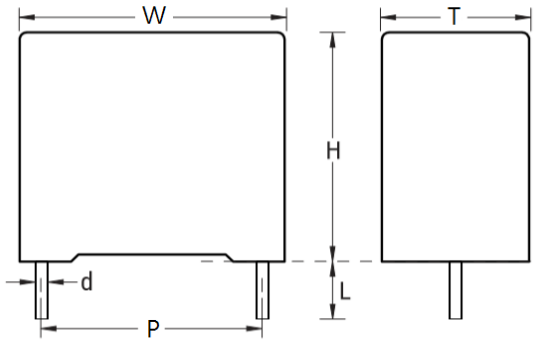
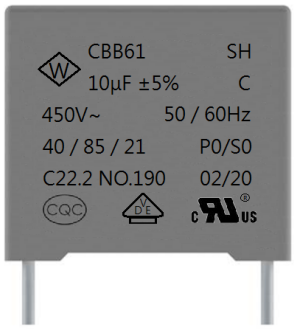
SMCB series

■ Outline Drawing





■ Typical Applications

Widely applied to starting and running of AC Single-phase motors at 50Hz/60Hz frequency power

■ Features

Self-healing property

Extremely stable performance and reliability

■ Construction

Dielectric: Polypropylene film

Electrodes: Metal vapor coating (Zn-Al synthetic)

Case: Flame-retardant PBT (UL94 V-0)

Epoxy Resin coating (UL 94 V-0)

Lead: Tinned wires or insulated flexible lead wires

■ Safety Approvals

VDE	EN 60252-1:2001	Class C of operation	
CQC	GB/T3667.1- 2016	Class B of operation	
UL	UL810, CSA.C22.2 No.190	Construction only	

■ Specifications

Reference Standard		GB/T 3667.1 (IEC 60252-1)				
Rated (AC) Voltage - 50/60 Hz		250Vac	300Vac	350Vac	400Vac	450Vac
Capacitance Tolerance		±5% (J)				
Class of safety protection		P0/S0				
Capacitance Range		CQC	VDE	UL		
		0.50μF ~50μF	1.0μF ~10μF	0.50μF ~50μF		
Voltage Proof	Between Terminals	$2U_R$, 2s				
	Between Terminal and Enclosure	U_R×200%+1000Vac, 60sec				
最高允許電壓 Maximum Permissible Voltage		$1.1U_N$				
最大允許電流 Maximum Permissible Current		$1.3I_N$				
Insulation Resistance		≥ 3,000s (20℃, 100V, 1min)				
Dissipation Factor		0.2% Max, at 1KHz and 25℃				

SMCB series

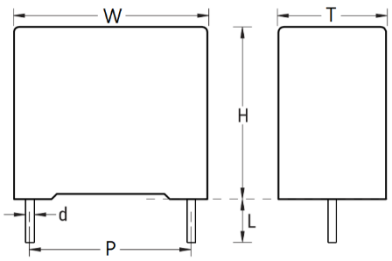
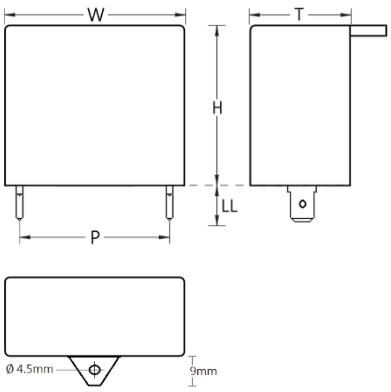
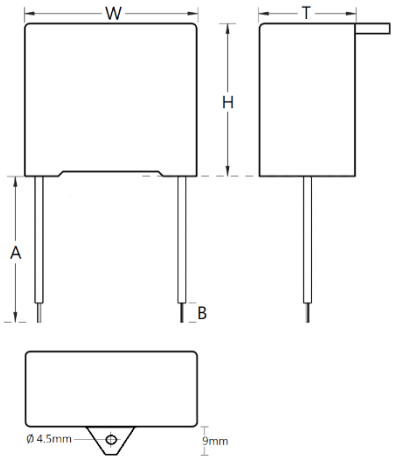
■ Product code system (For Tinned Lead Wires and Flat quick-connectors)

SMCB	H	105	J	0450	A	T	32	15
Type	Internal use	Capacitance	Tolerance	Rated Voltage	Voltage	Lead forming	Lead Pitch	Lead Length
SMCB= AC Film Capacitor Incl. Motor Run Class- P0/S0	--	105 =1000nF =1.0μF	J=±5%	0250=250V 0300=300V 0350=350V 0400=400V 0450=450V	A=AC	Shown as Table I	28=27.5mm 32=31.5mm 38=37.5mm 42=41.5mm 52=52mm	04=3.5mm 15=15mm 23=23mm DP= Flat quick-connectors

■ Product code system (For Insulated Flexible wires)

SMCB	H	105	J	0450	A	20	080
Type	Internal use	Capacitance	Tolerance	Rated Voltage	Voltage	Cable No.	Lead Length
SMCB= AC Film Capacitor Incl. Motor Run Class- P0/S0	--	105 =1000nF =1.0μF	J=±5%	0250=250V 0300=300V 0350=350V 0400=400V 0450=450V	A=AC	18=1015 AWG 18 20=1015 AWG 20 22=1015 AWG 22	060=60mm 080=80mm 100=100mm 120=120mm 150=150mm

■ Table I

Code	T (Tinned Lead Wires)	F (Flat quick-connectors)	P (Insulated Flexible wires)
Lead Forming			

SMCB series

■ Dimensions (mm)

250Vac						
Cap. µF	W	H	T	P	d	Part number
0.5	32	22	13	27.5	0.8	SMCB_505J0250A*28**
1.0	32	19.5	11	27.5	0.8	SMCB_105J0250A*28**
1.2	32	19.5	11	27.5	0.8	SMCB_125J0250A*28**
1.5	32	19.5	11	27.5	0.8	SMCB_155J0250A*28**
1.8	32	22	13	27.5	0.8	SMCB_185J0250A*28**
2.0	32	22	13	27.5	0.8	SMCB_205J0250A*28**
2.2	32	22	13	27.5	0.8	SMCB_225J0250A*28**
2.5	32	23	13	27.5	0.8	SMCB_255J0250A*28**
2.7	32	24.5	14	27.5	0.8	SMCB_275J0250A*28**
3.0	38	24.5	14	31.5	0.8	SMCB_305J0250A*32**
3,5	38	26	15	31.5	0.8	SMCB_355J0250A*32**
4.0	38	26	16	31.5	0.8	SMCB_405J0250A*32**
4.5	38	28	18	31.5	0.8	SMCB_455J0250A*32**
5.0	38	28	18	31.5	0.8	SMCB_505J0250A*32**
5.5	38	30	20	31.5	0.8	SMCB_555J0250A*32**
6.0	38	30	20	31.5	0.8	SMCB_605J0250A*32**
7.0	38	35	21	31.5	0.8	SMCB_705J0250A*32**
8.0	38	28	18	31.5	0.8	SMCB_805J0250A*32**
8.0	38	35	21	31.5	0.8	SMCB_805J0250A*32**
9.0	48	30	20	41.5	0.8	SMCB_905J0250A*42**
10	50	32	22	41.5	0.8	SMCB_106J0250A*42**

300Vac						
Cap. µF	W	H	T	P	d	Part number
0.5	32	22	13	27.5	0.8	SMCB_505J0300A*28**
1.0	36	22	12	31.5	0.8	SMCB_105J0300A*32**
1.2	36	22	12	31.5	0.8	SMCB_125J0300A*32**
1.5	36	22	12	31.5	0.8	SMCB_155J0300A*32**
1.8	36	22	12	31.5	0.8	SMCB_185J0300A*32**
2.0	36	23	14	31.5	0.8	SMCB_205J0300A*32**
2.2	36	23	14	31.5	0.8	SMCB_225J0300A*32**
2.5	37	26	15	31.5	0.8	SMCB_255J0300A*32**
2.7	37	26	15	31.5	0.8	SMCB_275J0300A*32**
3.0	38	26	16	31.5	0.8	SMCB_305J0300A*32**
3,5	38	28	18	31.5	0.8	SMCB_355J0300A*32**
4.0	38	28	18	31.5	0.8	SMCB_405J0300A*32**
4.5	38	30	20	31.5	0.8	SMCB_455J0300A*32**
5.0	38	35	21	31.5	0.8	SMCB_505J0300A*32**
5.5	38	35	21	31.5	0.8	SMCB_555J0300A*32**
6.0	49	30	20	41.5	0.8	SMCB_605J0300A*42**
7.0	50	32	22	41.5	0.8	SMCB_705J0300A*42**
8.0	50	32	22	41.5	0.8	SMCB_805J0300A*42**
9.0	48	37	26	41.5	0.8	SMCB_905J0300A*42**
10	48	37	26	41.5	0.8	SMCB_106J0300A*42**

* = Lead forming

** = Lead length

SMCB series

■ Dimensions (mm)

350Vac						
Cap. µF	W	H	T	P	d	Part number
0.5	32	22	13	27.5	0.8	SMCB_505J0350A*28**
1.0	36	22	12	31.5	0.8	SMCB_105J0350A*32**
1.2	36	22	12	31.5	0.8	SMCB_125J0350A*32**
1.5	36	22	12	31.5	0.8	SMCB_155J0350A*32**
1.8	36	22	12	31.5	0.8	SMCB_185J0350A*32**
2.0	36	23	14	31.5	0.8	SMCB_205J0350A*32**
2.2	36	23	14	31.5	0.8	SMCB_225J0350A*32**
2.5	37	26	15	31.5	0.8	SMCB_255J0350A*32**
2.7	37	26	15	31.5	0.8	SMCB_275J0350A*32**
3.0	38	26	16	31.5	0.8	SMCB_305J0350A*32**
3,5	38	28	18	31.5	0.8	SMCB_355J0350A*32**
4.0	38	28	18	31.5	0.8	SMCB_405J0350A*32**
4.5	38	30	20	31.5	0.8	SMCB_455J0350A*32**
5.0	38	35	21	31.5	0.8	SMCB_505J0350A*32**
5.5	38	35	21	31.5	0.8	SMCB_555J0350A*32**
6.0	49	30	20	41.5	0.8	SMCB_605J0350A*42**
7.0	50	32	22	41.5	0.8	SMCB_705J0350A*42**
8.0	50	32	22	41.5	0.8	SMCB_805J0350A*42**
9.0	48	37	26	41.5	0.8	SMCB_905J0350A*42**
10	48	37	26	41.5	0.8	SMCB_106J0350A*42**

400Vac						
Cap. µF	W	H	T	P	d	Part number
0.5	32	22	13	27.5	0.8	SMCB_505J0400A*28**
1.0	36	22	12	31.5	0.8	SMCB_105J0400A*32**
1.2	36	22	12	31.5	0.8	SMCB_125J0400A*32**
1.5	38	23	14	31.5	0.8	SMCB_155J0400A*32**
1.8	37	26	15	31.5	0.8	SMCB_185J0400A*32**
2.0	38	26	16	31.5	0.8	SMCB_205J0400A*32**
2.2	38	26	16	31.5	0.8	SMCB_225J0400A*32**
2.5	38	26	16	31.5	0.8	SMCB_255J0400A*32**
2.7	38	28	18	31.5	0.8	SMCB_275J0400A*32**
3.0	38	28	18	31.5	0.8	SMCB_305J0400A*32**
3,5	38	30	20	31.5	0.8	SMCB_355J0400A*32**
4.0	38	35	20	31.5	0.8	SMCB_405J0400A*32**
4.5	49	30	20	41.5	0.8	SMCB_455J0400A*42**
5.0	49	30	20	41.5	0.8	SMCB_505J0400A*42**
5.5	50	32	22	41.5	0.8	SMCB_555J0400A*42**
6.0	50	32	22	41.5	0.8	SMCB_605J0400A*42**
7.0	48	37	26	41.5	0.8	SMCB_705J0400A*42**
8.0	48	37	26	41.5	0.8	SMCB_805J0400A*42**
9.0	58	38	25	52	0.8	SMCB_905J0400A*52**
10	58	38	26	52	0.8	SMCB_106J0400A*52**

* = Lead forming

** = Lead length

SMCB series

■ Dimensions (mm)

450Vac						
Cap. µF	W	H	T	P	d	Part number
0.5	32	22	13	27.5	0.8	SMCB_505J0450A*28**
1.0	36	22	12	31.5	0.8	SMCB_105J0450A*32**
1.2	36	22	12	31.5	0.8	SMCB_125J0450A*32**
1.5	38	23	14	31.5	0.8	SMCB_155J0450A*32**
1.8	37	26	15	31.5	0.8	SMCB_185J0450A*32**
2.0	38	26	16	31.5	0.8	SMCB_205J0450A*32**
2.2	38	26	16	31.5	0.8	SMCB_225J0450A*32**
2.5	38	26	16	31.5	0.8	SMCB_255J0450A*32**
2.7	38	28	18	31.5	0.8	SMCB_275J0450A*32**
3.0	38	28	18	31.5	0.8	SMCB_305J0450A*32**
3,5	38	30	20	31.5	0.8	SMCB_355J0450A*32**
4.0	38	35	20	31.5	0.8	SMCB_405J0450A*32**
4.5	49	30	20	41.5	0.8	SMCB_455J0450A*42**
5.0	49	30	20	41.5	0.8	SMCB_505J0450A*42**
5.5	50	32	22	41.5	0.8	SMCB_555J0450A*42**
6.0	50	32	22	41.5	0.8	SMCB_605J0450A*42**
7.0	48	37	26	41.5	0.8	SMCB_705J0450A*42**
8.0	48	37	26	41.5	0.8	SMCB_805J0450A*42**
9.0	58	38	25	52	0.8	SMCB_905J0450A*52**
10	58	38	26	52	0.8	SMCB_106J0450A*52**

* = Lead forming

** = Lead length

SMCB series

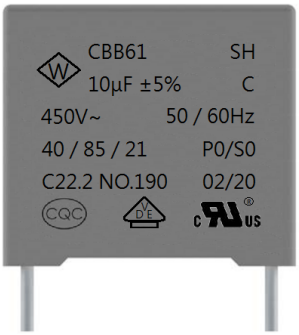
■ Specifications (IEC 60252-1)

試驗項目 Test items	性能要求 Performance requirements	試驗條件 Conditions of test
電容量 Capacitance	在規定公差內 Within the tolerance specified	1KHz, 1Vrms Max. at 25℃
損耗因素 Dissipation Factor	0.002 (0.2%) Max.	1KHz, 1Vrms Max. at 25℃
耐電壓 Voltage proof	應無異常 Shall be no abnormality	引線間 Between terminals $2U_R$ Test of 2sec.
		引線與外盒間 Between terminal and enclosure U_R×200%+1000Vac, 60sec
絕緣電阻 Insulation resistance	IR ≥ 3,000s	100Vdc, 60sec / 20℃
耐久性 Endurance	(1) Appearance : No Visible Damage (2) △C/C : ≤ ±3% of the initial value	實驗電壓 U_R x 135%, 實驗溫度 Temperature: +85°C 實驗時間 Time: 1000Hrs
濕熱穩態 Damp Heat Steady State	△C/C : ≤ ±0.5% of the Initial value	溫度+40°C, 濕度 93%, 21 天 +40°C and 93% RH, 21 days
自愈性 self-healing	(1) △C/C : ≤ ±0.5% of the initial value (2) RC ≥ 100s	電壓 200V/min 上升至 $2.0U_N$, 直到發生 5 次自愈性擊穿, 或直到電壓達到最高值 3.5 U_N 為止 The voltage rises to 2.0un at 200V/min, until 5 times self-healing breakdowns occur, or until the voltage reaches a maximum of 3.5un
引出端強度試驗 Robustness of terminations	無斷線, 電容器無損壞 No wire breakage and no damage of capacitor	端子強度 Tense Strength of Terminal 拉力試驗 Tensile test : 20N 彎曲試驗 Bending test : 2 Time
		抗彎強度 Bending Strength of Terminal 負載重量 Load Force : 0.5 Kg 彎曲時間 Bending Time : 4 x 90 ˚
振動 Vibration	外觀 : 無可見損傷 Appearance : No Visible Damage 電容量不允許有明顯的變化 Capacitance cannot allow the obvious change 耐電壓 Voltage proof : Normal	頻率範圍 Frequency range: 10~55Hz 振幅軸向 Course: X、Y、Z (axis) 持續時間 2h / axis (6h in total) 位移振幅 Displacement amplitude: 0.75mm

SMCB series

■ **Mark** (Example)

For 450Vac



1.	Trademark of WINDAY	2.	Type of the capacitors CBB61=SMCB
3.	Self-healing in nature such as SH	4.	Nominal capacitance such as 10μF
5.	Capacitance tolerance is ± 5%	6.	Class C of operation
7.	Rated Voltage in AC volts, such as 450V~	8.	Working frequency such as 50/60Hz
9.	Climatic category such as 40/085/21	10.	Class of Safety Protection such as P0/S0
11.	Recognized approval mark.	12.	Date code: date code 02/20, Month = 2, Year = 2020

■ **Storage conditions and duration**

Packaged capacitors should be kept in clean, ventilated, dry coffers, not near the heat source, not subject to direct sunlight, is strictly prohibited and chemical reagents, acid and harmful gas storage together.

Capacitor at a temperature within the range 20 ~ 25 ℃, humidity less than 50% of the state of storage for one year.

APPROVAL SHEETS FOR SAFETY STANDARD OF TYPE SMCB-P0/S0

Approval marks	Standards	Certificate	Climatic Category	Rated Cap.	Rated Voltage
	EN 60252-1:2001	40034955	40/85/21	1.0μF ~ 10μF	250V 300V 350V 400V 450Vac
	GB/T3667.1- 2016	CQC10002042525	40/85/21	0.50μF ~ 50μF	250V 300V 350V 400V 450Vac
	UL810 CSA.C22.2 No.190	E353342	40/85/21	0.50μF ~ 50μF	250V 300V 350V 400V 450Vac

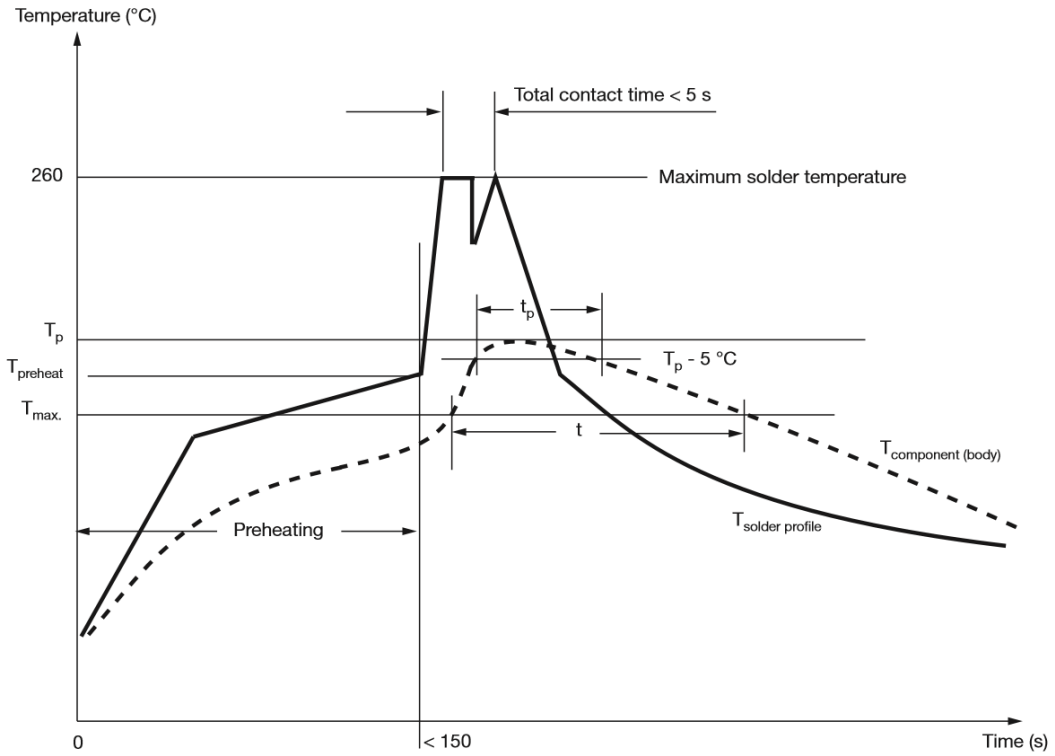
■ Soldering Guidelines for Film Capacitors

WDC recommends that users observe the following guidelines for soldering our film capacitors. Adherence to these recommendations will help to safeguard product specifications and reliability while preventing damage to the capacitors during soldering.

SOLDERING GUIDELINES AND RECOMMENDED WAVE SOLDERING PROFILE

With regard to the resistance to soldering heat and the solderability, our products comply with "IEC 60384-1" and the additional type specifications. The recommended wave soldering profile for our leaded components is defined as follows:

■ Wave Soldering Recommendations



Tp : Peak temperature of the component body (top)

Tmax : Maximum application temperature of the component

The PSL (Process Sensitivity Level) is classified according JEDEC standard J-STD-075 "Classification of Non-IC Electronic Components for Assembly Processes" and summarized in following tables per product family and pitch size of the component:

SERIES	PRODUCT PITCH SIZE							
	22.5 mm	27.5 mm	31.5 mm	37.5 mm	41.5 mm	52 mm	61.5 mm	--
SMCB	(1),(6)	(1),(6)	(1),(6)	(1),(6)	(1),(6)	(1),(6)	(1),(6)	--

(1) No risk

(2) Risk for parameter change if PSL is not strictly followed

(3) Risk for product damage if PSL is not strictly followed

(4) Temperature is measured at the body top and must be kept as follows:

During preheating: $T_{max.} \leq 100$ °C

During soldering: $T_p \leq 110$ °C, $t_p \leq 20$ s, $t \leq 30$ s

(5) Temperature is measured at the body top and must be kept as follows:

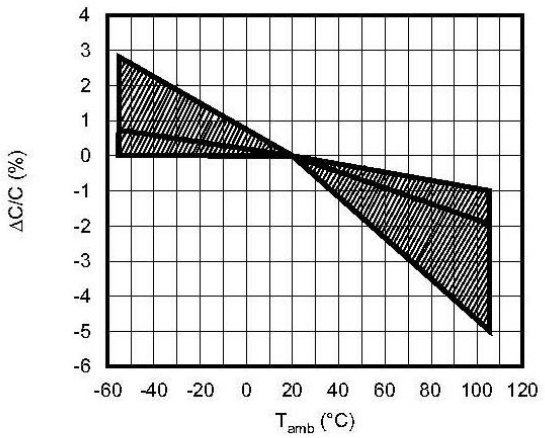
During preheating: $T_{max.} \leq 110$ °C

During soldering: $T_p \leq 120$ °C, $t_p \leq 20$ s, $t \leq 30$ s

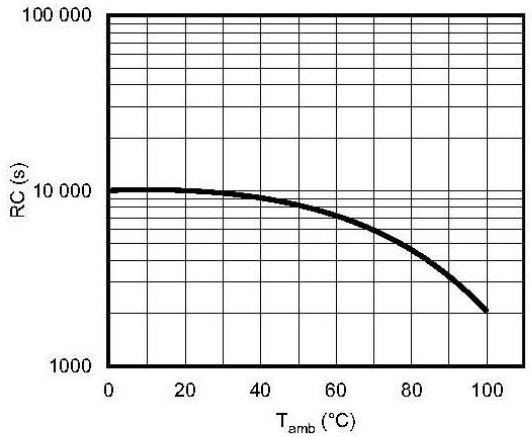
(6) The component has a preheat limitation of 150 °C

SMCB series

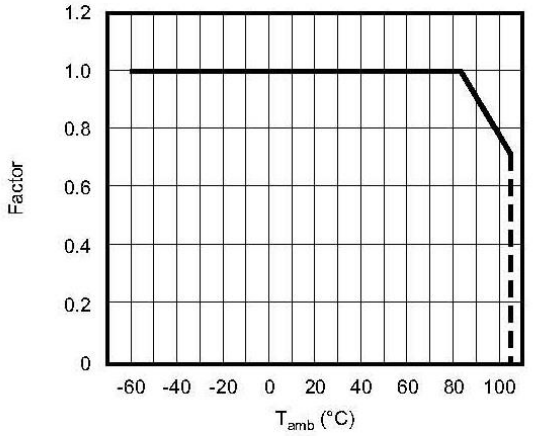
■ Characteristics



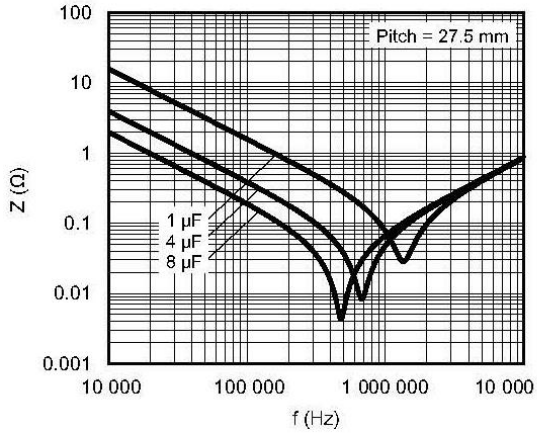
Capacitance as a function of ambient temperature (typical)



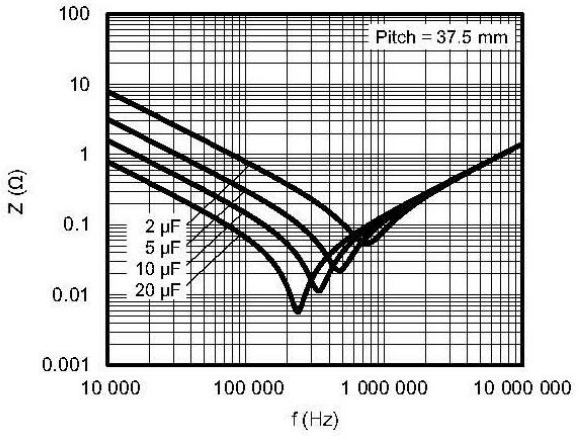
Insulation resistance as a function of ambient temperature (typical)



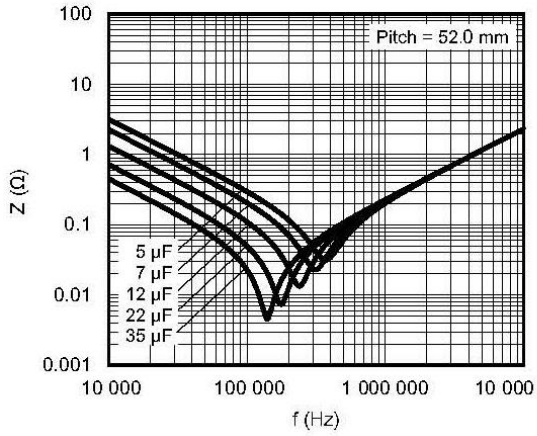
RMS voltage in function of temperature



Impedance vs. Frequency (typical)



Impedance vs. Frequency (typical)



Impedance vs. Frequency (typical)