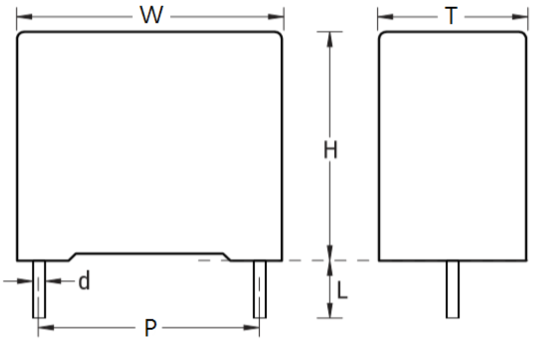
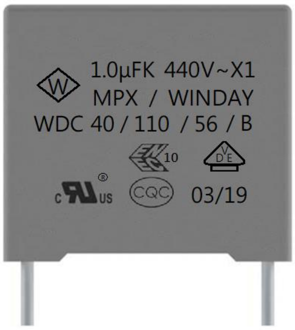
SWX1 series

■ Outline Drawing





■ Typical Applications

Widely used in high frequency, DC, AC and pulse circuits

For across the line X1 applications

■ Features

Withstanding overvoltage stressing

Excellent passive flame resistant abilities

Plastic case (UL94 V-0), Epoxy resin sealing

■ 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 copper clad steel wire

■ Safety Approvals

UL	UL60384-14	
ENEC(VDE)	IEC 60384-14:2013/AMD1:2016	
CQC	IEC 60384-14:2013+AMD1:2016	

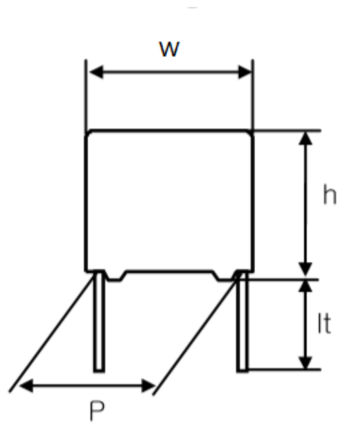
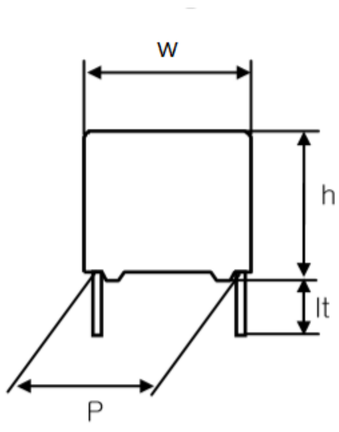
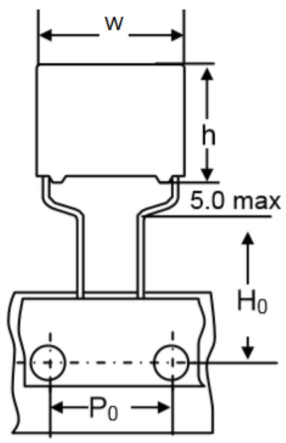
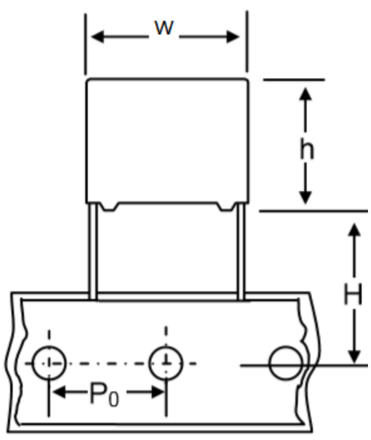
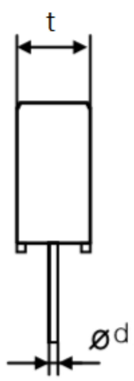
■ Specifications

Climatic Category / Passive Flammability Class		40/110/56/B			
Operating Temperature Range		-40℃~110℃			
Capacitance Range		0.001μF (102) ~ 4.7μF (475)			
Rated Voltage - 50 Hz to 60 Hz		310Vac	380Vac	440Vac	500Vac
Voltage Proof	Between Terminals	$4.3U_R$(Vdc), 60s			
	Between terminal and Enclosure	$U_R \times 200\% + 1500$Vac, 60sec.			
Capacitance Tolerance		±10% (K)			
Insulation Resistance		$C_R \le 0.33\mu F$ IR ≥ 15,000MΩ $C_R > 0.33\mu F$ IR ≥ 5,000s (20℃, 100V, 1min)			
Dissipation Factor		0.1% Max, at 1KHz and 25℃			

■ Product code system

SWX1	J	104	K	D4XX	D	B	15	15
Type	Internal use	Capacitance	Tolerance	Case code	Voltage	Lead forming	Lead Pitch	Lead Length
X1= EMI Suppression Capacitor	--	104 =100000pF =100nF =0.1μF	K=±10%	D2XX=18*12*6 D4XX=18*13.5*7.5 E4XX=26.5*19*10 F3XX=31*25*14	B=310V C=380V D=440V E=500V	Shown as Table I	08=7.5mm 10=10mm 15=15mm 23=22.5mm 28=27.5mm	04=3.5mm 15=15mm 20=20mm

■ Table I

Code	B (Straight 15mm)	K (Short)	U (Vertical Kink)
Lead Forming			
Code	**T** (Taping)	--	--
Lead Forming			--

■ Overview of available types

Lead pitch	10mm	15mm	22.5mm	27.5mm	37.5mm
CR (µF)	310Vac / 380Vac				
0.001					
0.0033					
0.0047					
0.0068					
0.01					
0.012					
0.022					
0.033					
0.039					
0.047					
0.056					
0.068					
0.082					
0.1					
0.12					
0.15					
0.18					
0.22					
0.33					
0.47					
0.56					
0.68					
0.82					
1.0					
1.2					
1.5					
1.8					
2.2					
3.3					
4.7					

SWX1 series

■ **Overview of available types**

Lead pitch	7.5mm	10mm	15mm	22.5mm	27.5mm	37.5mm
CR (μF)	440Vac / 500Vac					
0.001						
0.0033						
0.0047						
0.0068						
0.01						
0.012						
0.022						
0.033						
0.039						
0.047						
0.056						
0.068						
0.082						
0.1						
0.12						
0.15						
0.18						
0.22						
0.33						
0.47						
0.56						
0.68						
0.82						
1.0						
1.2						
1.5						
1.8						
2.2						
3.3						
4.7						

SWX1 series

■ Dimensions (mm)

310Vac/380Vac						
Cap. μF	W	H	T	P	d	Part number
0.010	13	9	4	10	0.6	SWX1_103KC1XX+*10**
0.012	13	9	4	10	0.6	SWX1_123KC1XX+*10**
0.015	13	9	4	10	0.6	SWX1_153KC1XX+*10**
0.018	13	11	5	10	0.6	SWX1_183KC2X1+*10**
0.022	13	11	5	10	0.6	SWX1_223KC2X1+*10**
0.027	13	11	5	10	0.6	SWX1_273KC2X1+*10**
0.033	13	11	5	10	0.6	SWX1_333KC2X1+*10**
0.039	13	12	6	10	0.6	SWX1_393KC3XX+*10**
0.047	13	12	6	10	0.6	SWX1_473KC3XX+*10**
0.056	13	13	7	10	0.6	SWX1_563KC4LT+*10**
0.068	13	14	8	10	0.6	SWX1_683KC5LT+*10**

310Vac/380Vac						
Cap. μF	W	H	T	P	d	Part number
0.010	18	11	5	15	0.8	SWX1_103KD1XX+*15**
0.012	18	11	5	15	0.8	SWX1_123KD1XX+*15**
0.015	18	11	5	15	0.8	SWX1_153KD1XX+*15**
0.018	18	11	5	15	0.8	SWX1_183KD1XX+*15**
0.022	18	11	5	15	0.8	SWX1_223KD1XX+*15**
0.027	18	11	5	15	0.8	SWX1_273KD1XX+*15**
0.033	18	11	5	15	0.8	SWX1_333KD1XX+*15**
0.039	18	11	5	15	0.8	SWX1_393KD1XX+*15**
0.047	18	11	5	15	0.8	SWX1_473KD1XX+*15**
0.056	18	11	5	15	0.8	SWX1_563KD1XX+*15**
0.068	18	12	6	15	0.8	SWX1_683KD2XX+*15**
0.082	18	12	6	15	0.8	SWX1_823KD2XX+*15**
0.10	18	12	6	15	0.8	SWX1_104KD2XX+*15**
0.12	18	13.5	7.5	15	0.8	SWX1_124KD3XX+*15**
0.15	18	14.5	8.5	15	0.8	SWX1_154KD4XX+*15**
0.18	18	14.5	8.5	15	0.8	SWX1_184KD4XX+*15**
0.22	18	15.5	9.5	15	0.8	SWX1_224KD5XX+*15**
0.27	18	19	10.8	15	0.8	SWX1_274KD7XX+*15**
0.33	18	19	10.8	15	0.8	SWX1_334KD7XX+*15**

310Vac/380Vac						
Cap. μF	W	H	T	P	d	Part number
0.039	26.5	15	6	22.5	0.8	SWX1_393KE1XX+*23**
0.047	26.5	15	6	22.5	0.8	SWX1_473KE1XX+*23**
0.056	26.5	15	6	22.5	0.8	SWX1_563KE1XX+*23**
0.068	26.5	15	6	22.5	0.8	SWX1_683KE1XX+*23**
0.082	26.5	15	6	22.5	0.8	SWX1_823KE1XX+*23**
0.10	26.5	15	6	22.5	0.8	SWX1_104KE1XX+*23**
0.12	26.5	15	6	22.5	0.8	SWX1_124KE1XX+*23**
0.15	26.5	15	6	22.5	0.8	SWX1_154KE1XX+*23**
0.18	26.5	15	6	22.5	0.8	SWX1_184KE1XX+*23**
0.22	26.5	16.5	7	22.5	0.8	SWX1_224KE2XX+*23**
0.27	26.5	16.5	7	22.5	0.8	SWX1_274KE2XX+*23**
0.33	26.5	17	8.5	22.5	0.8	SWX1_334KE3XX+*23**
0.39	26.5	19	10	22.5	0.8	SWX1_394KE4XX+*23**
0.47	26.5	19	10	22.5	0.8	SWX1_474KE4XX+*23**
0.56	26	20	11	22.5	0.8	SWX1_564KE5XX+*23**
0.68	26	21.5	12	22.5	0.8	SWX1_684KE6XX+*23**
0.82	26.5	23	13	22.5	0.8	SWX1_824KE7XX+*23**

+	=	Voltage	B=310V, C=380V, D=440V, E=500V
*	=	Lead forming	
**	=	Lead length	

SWX1 series

■ Dimensions (mm)

310Vac/380Vac						
Cap. μF	W	H	T	P	d	Part number
0.15	31	18	9	27.5	0.8	SWX1_154KF5XX+*28**
0.18	31	18	9	27.5	0.8	SWX1_184KF5XX+*28**
0.22	31	18	9	27.5	0.8	SWX1_224KF5XX+*28**
0.27	31	18	9	27.5	0.8	SWX1_274KF5XX+*28**
0.33	31	18	9	27.5	0.8	SWX1_334KF5XX+*28**
0.39	31	18	9	27.5	0.8	SWX1_394KF5XX+*28**
0.47	31	18	9	27.5	0.8	SWX1_474KF5XX+*28**
0.56	31.4	19.5	10.8	27.5	0.8	SWX1_564KF1XX+*28**
0.68	31.4	19.5	10.8	27.5	0.8	SWX1_684KF1XX+*28**
0.82	31.4	19.5	10.8	27.5	0.8	SWX1_824KF1XX+*28**
1.0	31	25	14	27.5	0.8	SWX1_105KF3XX+*28**
1.2	32	25.5	16	27.5	0.8	SWX1_125KF4XX+*28**
1.5	32	25.5	16	27.5	0.8	SWX1_155KF4XX+*28**
1.8	32	28	18	27.5	0.8	SWX1__185KF13X+*28**
2.2	32	28	18	27.5	0.8	SWX1__225KF13X+*28**

310Vac/380Vac						
Cap. μF	W	H	T	P	d	Part number
0.33	42.5	24	13	37.5	1.0	SWX1_334KJ8XM+*38**
0.39	42.5	24	13	37.5	1.0	SWX1_394KJ8XM+*38**
0.47	42.5	24	13	37.5	1.0	SWX1_474KJ8XM+*38**
0.56	42.5	24	13	37.5	1.0	SWX1_564KJ8XM+*38**
0.68	42.5	24	13	37.5	1.0	SWX1_684KJ8XM+*38**
0.82	42.5	24	13	37.5	1.0	SWX1_824KJ8XM+*38**
1.0	42.5	24	13	37.5	1.0	SWX1_105KJ8XM+*38**
1.2	42.5	24	13	37.5	1.0	SWX1_125KJ8XM+*38**
1.5	42.5	24	13	37.5	1.0	SWX1_155KJ8XM+*38**
1.8	42.5	24	13	37.5	1.0	SWX1_185KJ8XM+*38**
2.2	41.5	34	20.5	37.5	1.0	SWX1_225KJ15L+*38**
2.7	41.5	34	20.5	37.5	1.0	SWX1_275KJ15L+*38**
3.3	41.5	34	20.5	37.5	1.0	SWX1_335KJ15L+*38**
3.9	41.5	35.5	22.5	37.5	1.0	SWX1_395KJ20L+*38**
4.7	41.5	35.5	22.5	37.5	1.0	SWX1_475KJ20L+*38**

+	=	Voltage	B=310V, C=380V, D=440V, E=500V
*	=	Lead forming	
**	=	Lead length	

SWX1 series

■ Dimensions (mm)

440Vac/500Vac						
Cap. μF	W	H	T	P	d	Part number
0.0010	10	9	4	7.5	0.6	SWX1_102KB3LT+*08**
0.0012	10	9	4	7.5	0.6	SWX1_122KB3LT+*08**
0.0015	10	9	4	7.5	0.6	SWX1_152KB3LT+*08**
0.0018	10	9	4	7.5	0.6	SWX1_182KB3LT+*08**
0.0022	10	9	4	7.5	0.6	SWX1_222KB3LT+*08**
0.0027	10	9	4	7.5	0.6	SWX1_272KB3LT+*08**
0.0033	10	9	4	7.5	0.6	SWX1_332KB3LT+*08**
0.0039	10	9	4	7.5	0.6	SWX1_392KB3LT+*08**
0.0047	10	9	4	7.5	0.6	SWX1_472KB3LT+*08**
0.0056	10	9	4	7.5	0.6	SWX1_562KB3LT+*08**
0.0068	10	11	5	7.5	0.6	SWX1_682KB4LT+*08**
0.0082	10	11	5	7.5	0.6	SWX1_822KB4LT+*08**
0.010	10	11	5	7.5	0.6	SWX1_103KB4LT+*08**
0.012	10	12	6	7.5	0.6	SWX1_123KB5LT+*08**

440Vac/500Vac						
Cap. μF	W	H	T	P	d	Part number
0.0010	13	9	4	10	0.6	SWX1_102KC1XX+*10**
0.0012	13	9	4	10	0.6	SWX1_122KC1XX+*10**
0.0015	13	9	4	10	0.6	SWX1_152KC1XX+*10**
0.0018	13	9	4	10	0.6	SWX1_182KC1XX+*10**
0.0022	13	9	4	10	0.6	SWX1_222KC1XX+*10**
0.0027	13	9	4	10	0.6	SWX1_272KC1XX+*10**
0.0033	13	9	4	10	0.6	SWX1_332KC1XX+*10**
0.0039	13	9	4	10	0.6	SWX1_392KC1XX+*10**
0.0047	13	9	4	10	0.6	SWX1_472KC1XX+*10**
0.0056	13	9	4	10	0.6	SWX1_562KC1XX+*10**
0.0068	13	9	4	10	0.6	SWX1_682KC1XX+*10**
0.0082	13	9	4	10	0.6	SWX1_822KC1XX+*10**
0.010	13	9	4	10	0.6	SWX1_103KC1XX+*10**

0.012	13	11	5	10	0.6	SWX1_123KC2X1+*10**
0.015	13	11	5	10	0.6	SWX1_153KC2X1+*10**
0.018	13	11	5	10	0.6	SWX1_183KC2X1+*10**
0.022	13	11	5	10	0.6	SWX1_223KC2X1+*10**
0.027	13	12	6	10	0.6	SWX1_273KC3XX+*10**
0.033	13	12	6	10	0.6	SWX1_333KC3XX+*10**
0.039	13	13	7	10	0.6	SWX1_393KC4LT+*10**
0.047	13	14	8	10	0.6	SWX1_473KC5LT+*10**
0.056	13	14	8	10	0.6	SWX1_563KC5LT+*10**

440Vac/500Vac						
Cap. μF	W	H	T	P	d	Part number
0.010	18	11	5	15	0.8	SWX1_103KD1XX+*15**
0.012	18	11	5	15	0.8	SWX1_123KD1XX+*15**
0.015	18	11	5	15	0.8	SWX1_153KD1XX+*15**
0.018	18	11	5	15	0.8	SWX1_183KD1XX+*15**
0.022	18	11	5	15	0.8	SWX1_223KD1XX+*15**
0.027	18	11	5	15	0.8	SWX1_273KD1XX+*15**
0.033	18	11	5	15	0.8	SWX1_333KD1XX+*15**
0.039	18	12	6	15	0.8	SWX1_393KD2XX+*15**
0.047	18	12	6	15	0.8	SWX1_473KD2XX+*15**
0.056	18	13.5	7.5	15	0.8	SWX1_563KD3XX+*15**
0.068	18	13.5	7.5	15	0.8	SWX1_683KD3XX+*15**
0.082	18	14.5	8.5	15	0.8	SWX1_823KD4XX+*15**
0.10	18	14.5	8.5	15	0.8	SWX1_104KD4XX+*15**
0.12	18	15.5	9.5	15	0.8	SWX1_124KD5XX+*15**
0.15	18	19	10.8	15	0.8	SWX1_154KD7XX+*15**
0.18	18	19	10.8	15	0.8	SWX1_184KD7XX+*15**

+	=	Voltage	B=310V, C=380V, D=440V, E=500V
*	=	Lead forming	
**	=	Lead length	

SWX1 series

■ Dimensions (mm)

Cap. µF	W	H	T	P	d	Part number
440Vac/500Vac						
0.039	26.5	15	6	22.5	0.8	SWX1_393KE1XX+*23**
0.047	26.5	15	6	22.5	0.8	SWX1_473KE1XX+*23**
0.056	26.5	15	6	22.5	0.8	SWX1_563KE1XX+*23**
0.068	26.5	15	6	22.5	0.8	SWX1_683KE1XX+*23**
0.082	26.5	15	6	22.5	0.8	SWX1_823KE1XX+*23**
0.10	26.5	15	6	22.5	0.8	SWX1_104KE1XX+*23**
0.12	26.5	15	6	22.5	0.8	SWX1_124KE1XX+*23**
0.15	26.5	16.5	7	22.5	0.8	SWX1_154KE2XX+*23**
0.18	26.5	17	8.5	22.5	0.8	SWX1_184KE3XX+*23**
0.22	26.5	17	8.5	22.5	0.8	SWX1_224KE3XX+*23**
0.27	26.5	19	10	22.5	0.8	SWX1_274KE4XX+*23**
0.33	26	20	11	22.5	0.8	SWX1_334KE5XX+*23**
0.39	26	20	11	22.5	0.8	SWX1_394KE5XX+*23**
0.47	26.5	23	13	22.5	0.8	SWX1_474KE7XX+*23**
0.56	26	25	15	22.5	0.8	SWX1_564KE24L+*23**

Cap. µF	W	H	T	P	d	Part number
440Vac/500Vac						
0.33	42.5	24	13	37.5	1.0	SWX1_334KJ8XM+*38**
0.39	42.5	24	13	37.5	1.0	SWX1_394KJ8XM+*38**
0.47	42.5	24	13	37.5	1.0	SWX1_474KJ8XM+*38**
0.56	42.5	24	13	37.5	1.0	SWX1_564KJ8XM+*38**
0.68	42.5	24	13	37.5	1.0	SWX1_684KJ8XM+*38**
0.82	42.5	24	13	37.5	1.0	SWX1_824KJ8XM+*38**
1.0	42.5	24	13	37.5	1.0	SWX1_105KJ8XM+*38**
1.2	42.5	24	13	37.5	1.0	SWX1_125KJ8XM+*38**
1.5	41.5	30	17	37.5	1.0	SWX1_155KXXXX+*38**
1.8	41.5	30	17	37.5	1.0	SWX1_185KXXXX+*38**
2.2	41.5	34	20.5	37.5	1.0	SWX1_225KJ15L+*38**
2.7	41.5	35.5	22.5	37.5	1.0	SWX1_275KJ20L+*38**
3.3	41.5	41	27.5	37.5	1.0	SWX1_335KJ16L+*38**
3.9	41.5	41	27.5	37.5	1.0	SWX1_395KJ16L+*38**
4.7	41.5	41	27.5	37.5	1.0	SWX1_475KJ16L+*38**

Cap. µF	W	H	T	P	d	Part number
440Vac/500Vac						
0.15	31	18	9	27.5	0.8	SWX1_154KF5XX+*28**
0.18	31	18	9	27.5	0.8	SWX1_184KF5XX+*28**
0.22	31	18	9	27.5	0.8	SWX1_224KF5XX+*28**
0.27	31	18	9	27.5	0.8	SWX1_274KF5XX+*28**
0.33	31	18	9	27.5	0.8	SWX1_334KF5XX+*28**
0.39	31.4	19.5	10.8	27.5	0.8	SWX1_394KF1XX+*28**
0.47	31.4	19.5	10.8	27.5	0.8	SWX1_474KF1XX+*28**
0.56	31.5	21.6	13	27.5	0.8	SWX1_564KF2XX+*28**
0.68	31	25	14	27.5	0.8	SWX1_684KF3XX+*28**
1.0	32	25.5	16	27.5	0.8	SWX1_105KF4XX+*28**
1.2	32	28	18	27.5	0.8	SWX1_125KF13X+*28**
1.5	31	31	22	27.5	0.8	SWX1_155KF8XX+*28**

+	=	Voltage	B=310V, C=380V, D=440V, E=500V
*	=	Lead forming	
**	=	Lead length	

■ **Specifications (IEC 60384-14)**

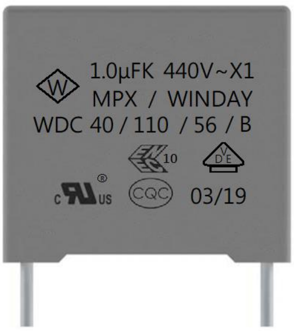
試驗項目 Test items	性能要求 Performance requirements	試驗條件 Conditions of test
電容量 Capacitance	在規定公差內 Within the tolerance specified	1KHz, 1Vrms Max. at 25℃
損耗因素 Dissipation Factor	0.001 (0.1%) Max.	1KHz, 1Vrms Max. at 25℃
耐電壓 Voltage proof	應無異常 Shall be no abnormality	引線間 Between terminals $4.3U_R$ (Vdc) Test of 60sec.
		引線與外盒間 Between terminal and enclosure U_R×200%+1500Vac, 60sec.
絶緣電阻 Insulation resistance	C_R ≤ 0.33μF IR ≥ 15,000MΩ C_R >0.33μF IR ≥ 5,000s	100±15Vdc, 60sec / 20℃
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 負載重量 Load Force : 1.0 Kg 保持時間 Holding Time : 10 ± 1sec
		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 ˚
耐焊接熱 Resistance to soldering heat	(1) Appearance : No visible damage (2) △C/C : ≤ ±5% of the initial value	焊接溫度 Solder temperature: 260±5℃ 焊接時間 Solder time: 5±0.5sec
可焊性 Solderability	表面鍍錫 95% 95% of the surface tinning	焊接溫度 Solder temperature: 260±5℃ 焊接時間 Solder time: 2±0.5sec
溫度快速變化 Rapid change of temperature	應目視檢查電容器，並無可見損壞 The capacitors shall be visually examined and there shall be no visible damage.	下限溫度 Lower category temperature: -40℃ 上限溫度 Upper category temperature: 110℃ 循環次數 Number of cycles: 5 持續時間 Duration t1 = 30 min
振動 Vibration	應目視檢查電容器，並無可見損壞 The capacitors shall be visually examined and there shall be no visible damage	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

■ Specifications (IEC 60384-14)

試驗項目 Test items	性能要求 Performance requirements	試驗條件 Conditions of test
氣候序列 Climatic sequence	(1) Appearance : No visible damage (2) △C/C : ≤ ±5% of the initial value (3) DF (tanδ) : ≤ 0.008 of increased value (4) IR : ≥ 50% of the applicable limits (5) Voltage proof : Normal	乾熱 Dry Heat 上限溫度 Upper Temperature: 110℃ 持續時間 Lower Duration: 16Hrs 寒冷 Cold 下限溫度 Temperature: -40℃ 持續時間 Duration: 2Hrs
濕熱穩態 Damp Heat Steady State	(1) Appearance : No visible damage (2) △C/C : ≤ ±5% of the Initial value (3) DF (tanδ) : ≤ 0.008 of increased value (4) IR : ≥ 50% of the applicable limits (5) Voltage proof : Normal	溫度+40°C, 濕度 93%, 56 天 +40°C and 93% RH, 56 days
充放電 Charge and discharge	(1) Appearance : No visible damage (2) △C/C : ≤ ±10% of the initial value (3) DF (tanδ) : ≤ 0.008 of increased value (4) IR : ≥ 50% of the applicable limits	實驗電壓 Test voltage : $\sqrt{2}$ x U_R VAC 50 Hz 充放電 Charge and discharge: 1/time/sec. 重複次數 Repeated for 10000 cycles
耐久性 Endurance	(1) Appearance : No Visible Damage (2) △C/C : ≤ ±10% of the initial value (3) DF (tanδ) : ≤ 0.008 of increased value (4) IR : ≥ 50% of the applicable limits	額定電壓 x 125%, 每小時上升至 1000VAC 0.1 秒, 上限額定溫度 1000 小時 1.25 x U_R VAC 50 Hz, once every hour increase to 1,000VAC for 0.1 second, 1,000 hours at upper rated temperature

■ Mark

Example



1. Capacitance: 1.0μF indicates 1000nF	2. Capacitors Tolerance: K=±10%
3. Rated Voltage: 440V~ indicates 440Vac	4. Capacitors class, such as X1
5. Type of the capacitors MPX	6. Trademark WINDAY indicating
7. Climatic Category: 40/110/56	8. Recognized approval mark

SWX1 series

APPROVAL SHEETS FOR SAFETY STANDARD OF TYPE MPX-X1

Approval marks	Standards	Certificate	Climatic Category	Rated Cap.	Rated Voltage
c UL us	UL-60384-14	E302125	40/110/56/B	0.001 ~ 4.7μF	310,380,440,500Vac
ENEC 10 VDE	IEC 60384-14:2013	40049581	40/110/56/B	0.001 ~ 4.7μF	310,380,440,500Vac
CQC	IEC 60384-14:2013	CQC17001161585	40/110/56/B	0.001 ~ 4.7μF	310,380,440,500Vac

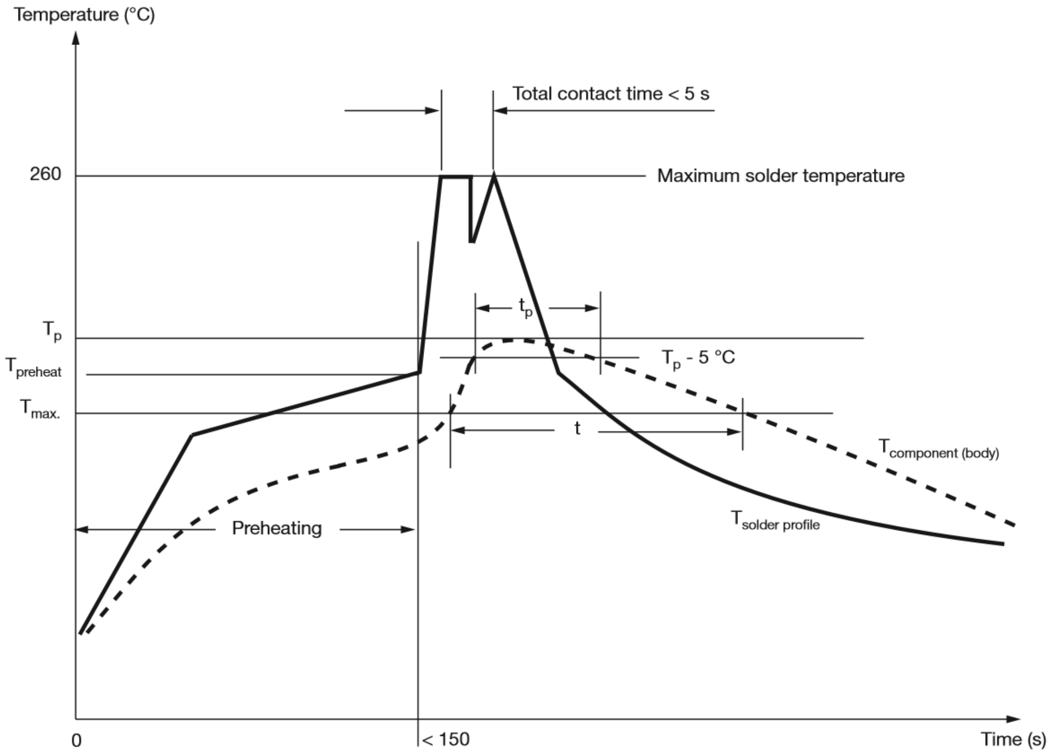
■ Soldering Guidelines for Film Capacitors

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							
	5 mm	7.5 mm	10 mm	15 mm	22.5 mm	27.5 mm	31.5 mm	37.5 mm
SWX1	--	(3),(5)	(2),(5)	(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: Tmax. ≤ 100 °C

During soldering: Tp ≤ 110 °C, tp ≤ 20 s, t ≤ 30 s

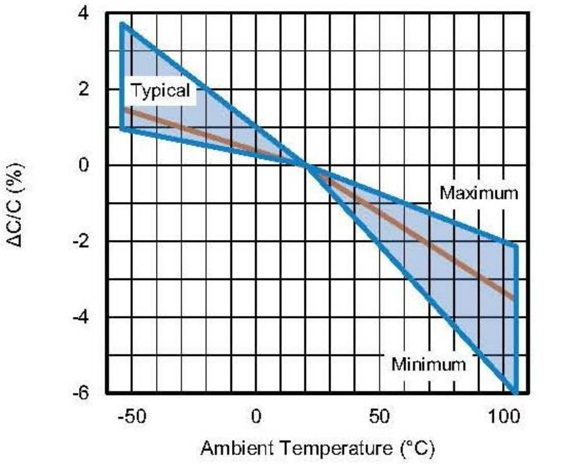
(5) Temperature is measured at the body top and must be kept as follows:

During preheating: Tmax. ≤ 110 °C

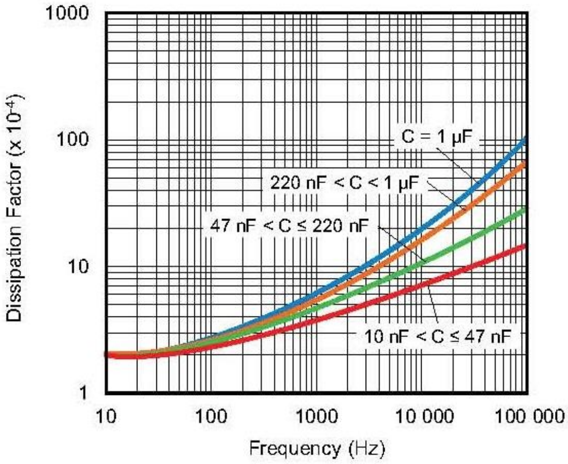
During soldering: Tp ≤ 120 °C, tp ≤ 20 s, t ≤ 30 s

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

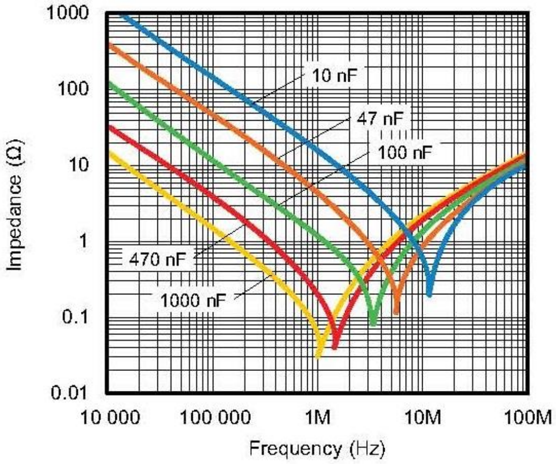
■ **Characteristics**



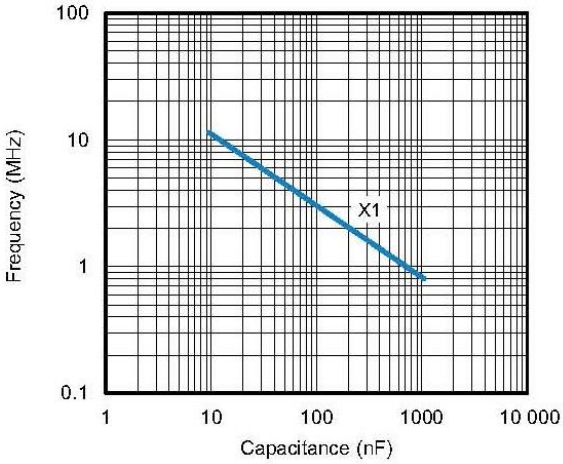
Capacitance as a function of ambient temperature
(typical curve)



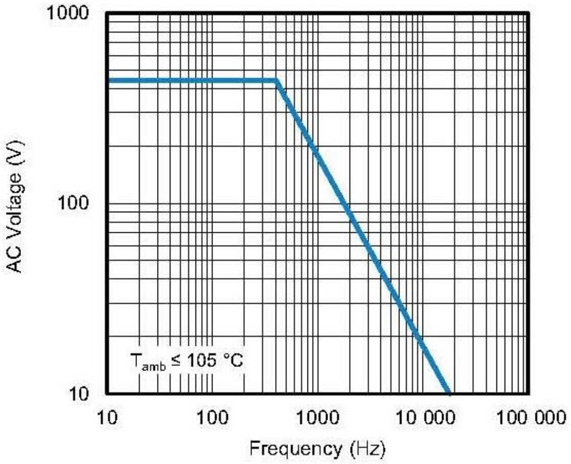
Tangent of loss angle as a function of frequency
(typical curve)



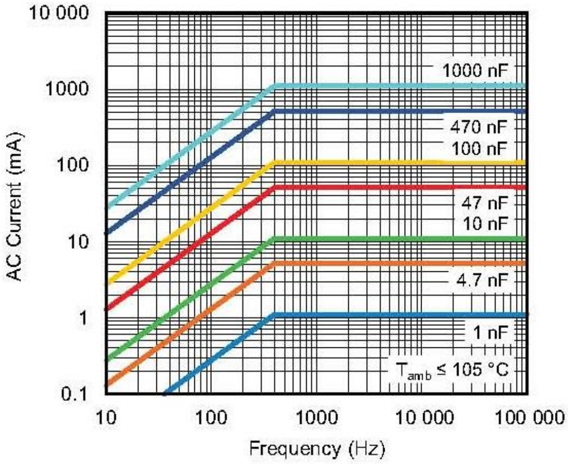
Impedance as a function of frequency
(typical curve)



Resonant frequency as a function of capacitance
(typical curve)



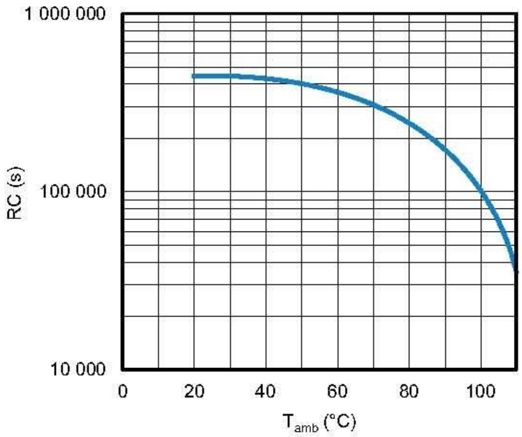
Max. RMS voltage as a function of frequency



Max. RMS current as a function of frequency

SWX1 series

■ Characteristics



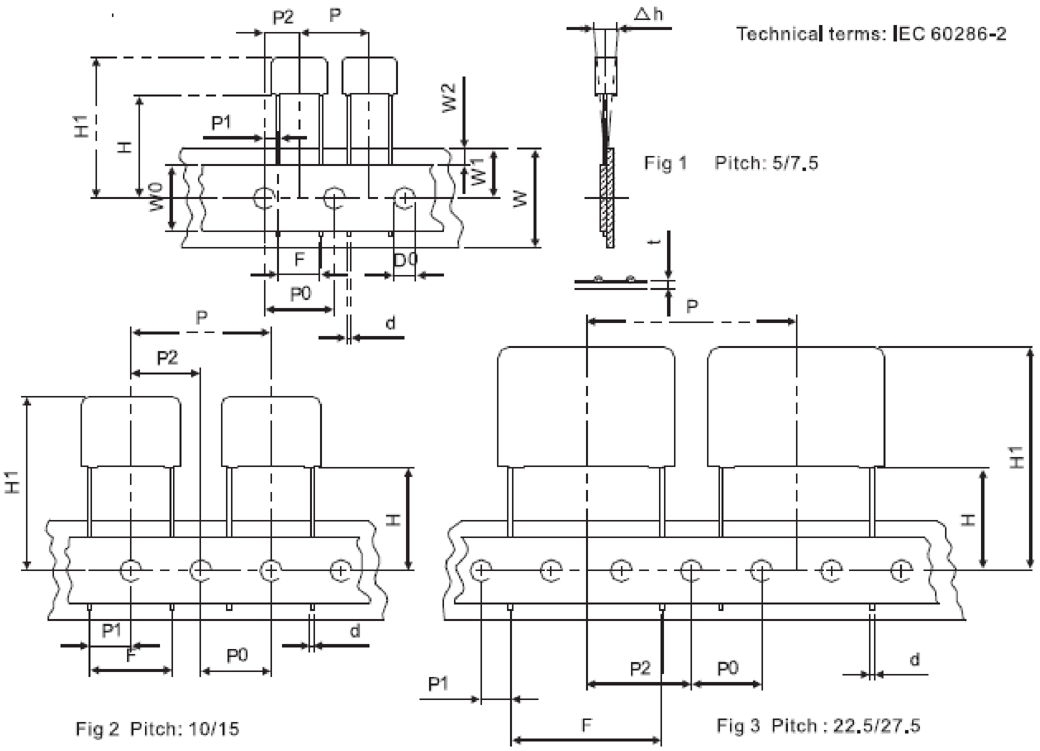
Insulation resistance as a function of ambient temperature

■ 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.

Table II



Description	Symbol	Pitch:5	Pitch: 7.5	Pitch:10	Pitch:15	Pitch:22.5	Pitch:27.5
Carrier tape width	W	18+/-0.5	18+/-0.5	18+/-0.5	18+/-0.5	18+/-0.5	18+/-0.5
Hold down tape width	W0	9.5min	9.5min	9.5min	9.5min	9.5min	9.5min
Hole position	W1	9.0+/-0.5	9.0+/-0.5	9.0+/-0.5	9.0+/-0.5	9.0+/-0.5	9.0+/-0.5
Hold down tape position	W2	0-3.0	0-3.0	0-3.0	0-3.0	0-3.0	0-3.0
Feed hole diameter	D0	4.0+/-0.2	4.0+/-0.2	4.0+/-0.2	4.0+/-0.2	4.0+/-0.2	4.0+/-0.2
Taping pitch	P	12.7+/-1.0	12.7+/-1.0	25.4+/-1.0	25.4+/-1.0	38.1+/-1.0	38.1+/-1.0
Feed hole pitch	P0	12.7+/-0.2	12.7+/-0.2	12.7+/-0.2	12.7+/-0.2	12.7+/-0.2	12.7+/-0.2
Centering of the lead wire	P1	3.85+/-1.3	2.6+/-0.7	7.7+/-0.7	5.2+/-0.7	7.8+/-0.7	5.3+/-0.7
Centering of the body	P2	6.35+/-0.3	6.35+/-0.3	12.7+/-1.3	12.7+/-1.3	19.05+/-1.3	19.05+/-1.3
Height of component from tape center	H△	16.5+/-0.3	16.5+/-0.5	16.5+/-0.5	16.5+/-0.5	16.5+/-0.5	16.5+/-0.5
		18.5+/-0.5	18.5+/-0.5	18.5+/-0.5	18.5+/-0.5	18.5+/-0.5	18.5+/-0.5
Top edge of component	H1	32.2max	32.2max	39.0max	39.0max	44.0max	44.0max
Lead spacing(pitch)	F	5.0+0.8-0.2	7.5+0.8-0.2	10.0+0.8-0.2	15.0+0.8-0.2	22.5+0.8-0.2	27.5+0.8-0.2
Lead wire diameter	d	0.5+/-0.05	0.6+/-0.05	0.6+/-0.05	0.8+/-0.05	0.8+/-0.05	0.8+/-0.05
Component alignment	△h	0+/-2.0	0+/-2.0	0+/-2.0	0+/-2.0	0+/-3.0	0+/-3.0
Tape thickness	t	0.7+/-0.2	0.7+/-0.2	0.7+/-0.2	0.7+/-0.2	0.7+/-0.2	0.7+/-0.2