PRODUCT SPECIFICATIONS

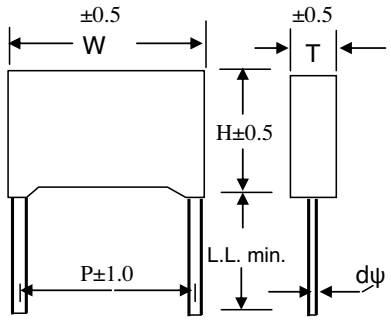
CUSTOMER:

CUSTOMER'S REFERENCE:

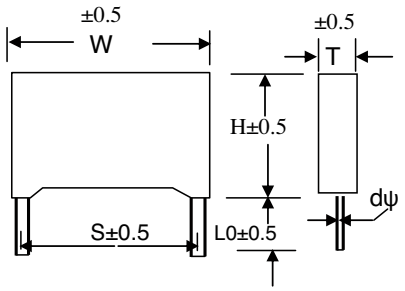
DESCRIPTIONS : **Metallized Polypropylene Film AC Capacitor (Interference Suppressors Class-X2)**

SHENGXIN TYPE: **X2-MKP series**

Fig.



(1)



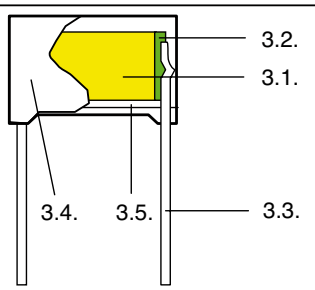
(2)

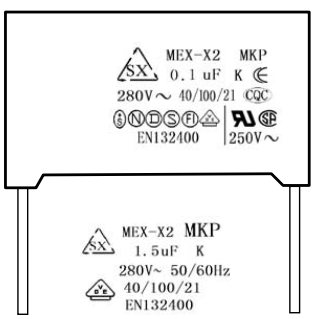
PRODUCT DIMENSIONS: unit : mm

CUSTOMER'S PART NO.	CAP uF	Tol. ±%	R.V. VAC	T.V. VDC	W ±0.5	H ±0.5	T ±0.5	P ±1.0	S ±0.5	dψ ±0.05	L0 ±0.5	LL MIN	Fig.	SHENGXIN PART NO.
3/3936	0,022	10	280	1200	18,0	11,0	5,0	15,0		0,8		20,0	1	X2-MKP 223K280VAC
3/3940	0,033	10	280	1200	18,0	11,0	5,0	15,0		0,8		20,0	1	X2-MKP 333K280VAC
3/3944	0,047	10	280	1200	18,0	11,0	5,0	15,0		0,8		20,0	1	X2-MKP 473K280VAC
3/3948	0,068	10	280	1200	18,0	11,0	5,0	15,0		0,8		20,0	1	X2-MKP 683K280VAC
3/3952	0,100	10	280	1200	18,0	12,0	6,0	15,0		0,8		20,0	1	X2-MKP 104K280VAC
3/3956	0,150	10	280	1200	18,0	13,5	7,5	15,0		0,8		20,0	1	X2-MKP 154K280VAC
3/3960	0,150	10	280	1200	26,5	15,0	6,0	22,5		0,8		20,0	1	X2-MKP 154K280VAC
3/3964	0,220	10	280	1200	18,0	14,5	8,5	15,0		0,8		20,0	1	X2-MKP 224K280VAC
3/3968	0,220	10	280	1200	26,5	16,0	7,0	22,5		0,8		20,0	1	X2-MKP 224K280VAC
3/3972	0,330	10	280	1200	26,5	17,0	8,5	22,5		0,8		20,0	1	X2-MKP 334K280VAC
3/3976	0,470	10	280	1200	26,5	19,0	10,0	22,5		0,8		20,0	1	X2-MKP 474K280VAC
3/3980	0,470	10	280	1200	32,0	18,0	9,0	27,5		0,8		20,0	1	X2-MKP 474K280VAC
3/3984	0,680	10	280	1200	31,5	19,5	10,8	27,5		0,8		20,0	1	X2-MKP 684K280VAC
3/3988	1,000	10	280	1200	31,5	21,6	13,0	27,5		0,8		20,0	1	X2-MKP 105K280VAC
3/3992	1,500	10	280	1200	31,0	24,5	15,0	27,5		0,8		20,0	1	X2-MKP 155K280VAC
3/3996	2,200	10	280	1200	31,0	31,0	22,0	27,5		0,8		20,0	1	X2-MKP 225K280VAC

PRODUCT SPECIFICATIONS **TYPE : X2-MKP**

NO.	ITEM	DESCRIPTIONS
1.	**SCOPE**	This specifications cover the requirements of SHENGXIN's Metallized Polypropylene Film AC Capacitor (Interference Suppressors Class-X2), Type: X2-MKP
2.	**STANDARD ATMOSPHERIC CONDITIONS FOR MAKING MEASUREMENTS**	
2.1.	AMBIENT TEMPERATURE	15°C to 35°C (If there is any doubt on the results, the measurements shall be made at +20 +/- 5°C.)
2.2.	RELATIVE HUMIDITY (R.H.)	45% to 75% (If there is any doubt on the results, the measurements shall be made at 60% to 70%.)
2.3.	AIR PRESSURE	86 kpa to 106 kpa.
2.4.	OPERATING TEMPERATURE RANGE	-40°C to +100 °C for which the capacitor can be operated continuously at rated voltage.
3.	**CONSTRUCTION**	
3.1.	DIELECTRIC	Metallized Polypropylene Film
3.2.	METAL SPRAY	Special Solder
3.3.	LEAD WIRE	Copper-clad Steel Wire
3.4.	PLASTIC CASE	UL94V-0
3.5.	EPOXY RESIN	UL94V-0
4.	**MARKING**	
4.1.	MANUFACTURER'S SYMBOL	stands for SHENGXIN.
4.2.	TYPE OR MATERIAL	"MEX" stands for X2-MKP type.
4.3.	CAPACITOR CLASS	"X2" stands for X2 class
4.4.	CLIMATIC CATEGORY	-40/100/21.
4.5.	NOMINAL CAPACITANCE	Capacitance value in uF.
4.6.	TOLERANCE	"K" for +/-10%; "M" for +/-20%.
4.7.	RATED VOLTAGE	in VAC rating.
4.8.	APPROVAL BRANDS	UL,CSA,VDE,DEMKO, FIMKO, NEMKO, SEMKO, SEV,CQC
4.9.	MARKING COLOR	Black





5.	ELECTRICAL CHARACTERISTICS			
NO.	ITEM		PERFORMANCE	TEST CONDITIONS
5.1.	Withstand Voltage (TV)	Between Terminals	Shall be no abnormality.	Apply 1200VDC for 60 sec or 2050VDC for 1 sec, Charge current must be 1A max.
		Between Terminals & Enclosure	Shall be no abnormality.	Apply 2500VDC for 60sec.
5.2.	Insulation Resistance (I.R.)		>= 15,000 MOhm (C <= 0.33uF) >= 5,000 MOhm (C> 0.33uF)	Apply vt+/-15%for 60+/-5sec.at+20+/-2oC.

5.3.	Capacitance (CAP)		Within the tolerance specified. (at +20 +/- 5°C).	Measuring Frequency : 1 KHz +/- 10%. Measuring Voltage : 1 Vrms.max.
5.4.	Dissipation Factor (DF)		0.001 (0.1%)max. at 1 KHz.	Measuring Frequency : 1 KHz +/- 10%. Measuring Voltage : 1 Vrms.max.
5.5.	Solderability		More than 95% of circumferential surface of lead wire shall be covered with new solder.	Testing method per IEC 68-2-20 Ta. Soldering temperature : +235 +/- 2°C. Immersion duration : 2 +/- 0.5 sec.
6.	**MECHANICAL CHARACTERISTICS**			
NO.	ITEM		PERFORMANCE	TEST CONDITIONS
6.1.	Terminal Strength	Tensile	Shall be no abnormality.	Testing method per IEC 68-2-21. Apply 1.0 kg for 10 +/- 1sec. to the terminal in the axial direction, and acting in a direction away from the body.
		Bending	Shall be no abnormality.	Apply 0.5 kg for 2 cycles. Each cycle includes: 90° once, return to its initial position for 2-3 sec., and then to the opposite direction once.
7.	**ENDURANCE CHARACTERISTICS**			
NO.	ITEM		PERFORMANCE	TEST CONDITIONS
7.1.	Temperature Cycle	Appearance	Shall be no remarkable change.	Test Temperature Cycle : Total 5 cycles. Each cycle includes : 1. +20 +/- 2°C for 3 min. 2. -40 +0/-3 °C for 30 min. 3. +20 +/- 2°C for 3 min. 4. +100 +3/-0 °C for 30 min. 5. +20 +/- 2°C for 3 min.
		Withstand Voltage	Shall satisfy No. 5.1.	
		Capacitance Change Rate (ΔC/C)	Within +/- 2% of the value before test.	
		Dissipation Factor	@ 1 KHz : 0.001 (0.1%) max.	
		Insulation Resistance (I.R.)	>= 50% of the limit value of No. 5.2.	

NO.	ITEM		PERFORMANCE	TEST CONDITIONS
7.2.	High Temperature Loading	Appearance	Shall be no remarkable change.	Testing method per IEC 60384-14. Refer to JIS C 5102-1994. Test Temperature : +100 +/-2 °C. Apply 150% of rated voltage for 2,000 +24/-0 hrs; After test, allow it stay alone for 1.5 +/- 0.5 hrs at standard temperature and humidity before making measurements.
		Withstand Voltage	Shall satisfy No. 5.1.	
		Capacitance Change Rate (ΔC/C)	Within +/-5% of the value before test.	
		Dissipation Factor	0.001 (0.1%) max.at 1Khz	
		Insulation Resistance (I.R.)	>= 50% of the limit value of No. 5.2.	
7.3.	Damp Heat Loading	Appearance	Shall be no remarkable change. The marking shall be legible.	Refer to JIS C 0022. Test temperature :+40 +/- 2°C Test humidity : 90% to 95% R.H. Test voltage : rated voltage. Test duration : 500 +24/-0 hrs. After test,allow it stay alone for 1.5 +/- 0.5 hrs at standard temperature and humidity before making measurements.
		Withstand Voltage	Shall satisfy No. 5.1.	
		Capacitance Change Rate (ΔC/C)	Within +/- 3% of the value before test.	
		Dissipation Factor	0.001 (0.1%) max.at 1Khz	
		Insulation Resistance (I.R.)	>= 50% of the limit value of No. 5.2.	
7.4.	Soldering Heat Resistance	Appearance	Shall be no remarkable change. The marking shall be legible.	Testing method per IEC 68-2-20 Tb. Soldering Temperature : +270 +/- 5°C. Immersion Duration : 10 +/- 1 sec. Immersion Depth : 1.5 +/- 0.5 mm from roots. After test, allow it stay alone for 1.5 +/- 0.5 hrs. at standard temperature and humidity before
		Withstand Voltage Between Terminals	Shall satisfy No. 5.1.	
		Capacitance Change Rate (ΔC/C)	Within +/- 3% of the value before test.	
		Dissipation Factor	0.001 (0.1%) max.at 1Khz	

PRODUCT SPECIFICATIONS **TYPE : X2-MKP**

		Insulation Resistance (I.R.)	>= 50% of the limit value of No. 5.2.	making measurements.
		Connection of Element	Shall be stable.	
7.5.	Dry Heat Resistance	Appearance	Shall be no remarkable change.	Test Temperature : +100 +/- 2°C Test Duration : 48 +1/-0 hrs.
		Withstand Voltage	Shall satisfy No. 5.1.	
		Capacitance Change Rate (ΔC/C)	Within +0/- 3% of the value before test.	
		Dissipation Factor	@ 1 KHz : 0.001 (0.1%) max.	
		Insulation Resistance (I.R.)	>= 50% of the limit value of No. 5.2.	
7.6.	Cold Resistance	Appearance	Shall be no remarkable change.	Test Temperature : -40 +/-2 °C Test Duration : 48 +/-1 hrs.
		Withstand Voltage	Shall satisfy No. 5.1.	
		Capacitance Change Rate (ΔC/C)	Within +3/- 0% of the value before test.	
		Dissipation Factor	@ 1 KHz : 0.001 (0.1%) max.	
		Insulation Resistance (I.R.)	>= 50% of the limit value of No. 5.2.	

NO.	ITEM		PERFORMANCE	TEST CONDITIONS
7.7.	Humidity Resistance	Appearance	Shall be no remarkable change.	Testing method per IEC 68-2-3 Ca. Refer to JIS C 0022. Test Temperature : +40 +/- 2°C. Test Humidity : 90% to 95% R.H. Test Duration : 500 +24/-0 hrs After test, allow it stay alone for 1.5 +/- 0.5 hrs at standard temperature and humidity before making measurements.
		Withstand Voltage	Shall satisfy No. 5.1.	
		Capacitance Change Rate (ΔC/C)	Within +/- 3% of the value before test.	
		Dissipation Factor	@ 1 KHz : 0.001 (0.1%) max.	
		Insulation Resistance	>= 50% of the limit value of No. 5.2.	
7.8.	Vibration Resistance	Connection Strength	Shall be no open nor short-circuiting. The connection shall be stable.	Testing method per IEC 68-2-6 Fc. Frequency Change : 10--55--10 Hz. Vibration Distance : 1.5 mm. Test Direction : X, Y, Z. Test Duration : 2 +1/- 0 hrs each direction.
		Appearance	Shall be no mechanical damage.	
7.9.	Rapid Temperature Change	Appearance	Shall be no remarkable change.	Testing method per IEC 68-2-14 Na. Test Temperature Cycle : Total 5 cycles. High Temperature : +100 +/-5 °C Low Temperature : -40 +/-5°C 30 min +/- 10% for each temperature.
		Withstand Voltage	Shall satisfy No. 5.1.	
		Capacitance Change Rate (ΔC/C)	Within +/- 3% of the value before test.	
		Dissipation Factor	@ 1 KHz : 0.001 (0.1%) max.	
		Insulation Resistance	>= 50% of the limit value of No. 5.2.	

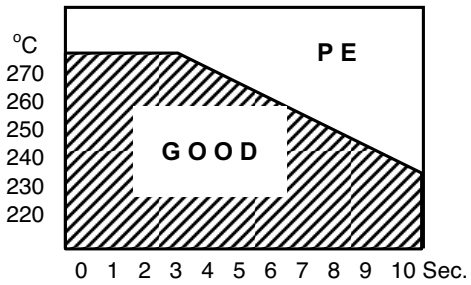
8. ACCEPTABLE QUALITY LEVEL (AQL)

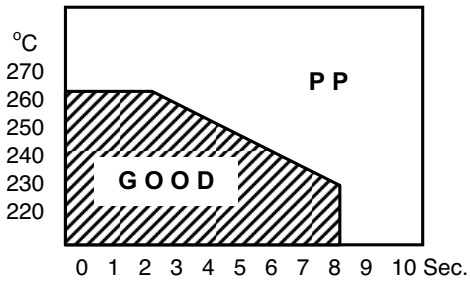
NO.	ITEM	AQL	SAMPLING PLAN
8.1.	Appearance AQL	0,65	
8.2.	Dimension AQL	0,65	
8.3.	Mechanical Characteristics AQL	0,40	
8.4.	Electrical Characteristics AQL		

	CAP, DF, TV, IR,	0,04 Zero Defect	According to MIL-STD-105E level II. By lot outgoing inspection.

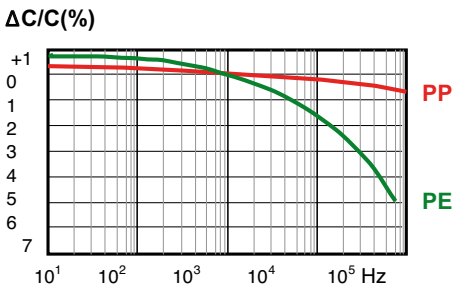
CHARACTERISTICS REFERENCE

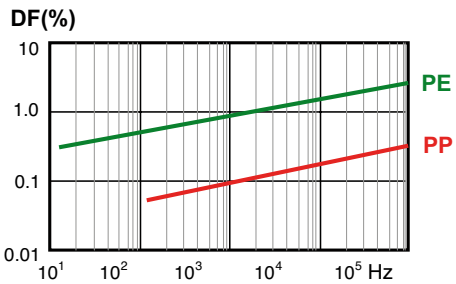
Soldering Temperature VS Time





Frequency Characteristics





Temperature Characteristics