SPECIFICATIONS

Customer	
Product Name	**Common Mode Chokes**
Sunlord Part Number	**CWS7060EF-701T**
Customer Part Number	

[☒New Released, ☐Revised] **SPEC No.: CWS0104210002**

【This SPEC is total 8 pages including specifications and appendix.】
【ROHS, Halogen-Free and SVHC Compliant Parts】

Approved By	Checked By	Issued By
		

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【For Customer approval Only】 Date:_____

Qualification Status: ☐ Full ☐ Restricted ☐ Rejected

Approved By	Verified By	Re-checked By	Checked By

Comments:

_____

Rev.	Effective Date	Changed Contents	Change reasons	Approved By
01	Sep.03,2021	New release	/	Simei Yu

Caution：

All products listed in this specification are developed, designed and intended for use in general electronics equipment. The products are not designed or warranted to meet the requirements of the applications listed below, whose performance and/or quality require especially high reliability, or whose failure, malfunction or trouble might directly cause damage to society, person, or property. Please understand that we are not responsible for any damage or liability caused by use of the products in any of the applications below. Please contact us for more details if you intend to use our products in the following applications.

1. Aircraft equipment
2. Aerospace equipment
3. Undersea equipment
4. nuclear control equipment
5. military equipment
6. Power plant equipment
7. Medical equipment
8. Transportation equipment (automobiles, trains, ships,etc.)
9. Traffic signal equipment
10. Disaster prevention / crime prevention equipment
11. Data-processing equipment
12. Applications of similar complexity or with reliability requirements comparable to the applications listed in the above

1. Scope

This specification applies to CWS7060EF-701T Common Mode Chokes

2. Product Description and Identification (Part Number)

1) Description

Common Mode Chokes, CWS7060EF-701T, 500Ω Min@100MHz, 15mΩ, 4.0A

2) Product Identification (Part Number)

CWS	7060	EF	-701	T
①	②	③	④	⑤

①Type	
CWS	Common Mode Chokes

②External Dimensions (mm)
7060

③Configuration	
EF	EF Type Base

④Nominal Impedance [Ω]	
Example	Example
701	700

⑤Packing	
T	Tape Package

3. Electrical Characteristics

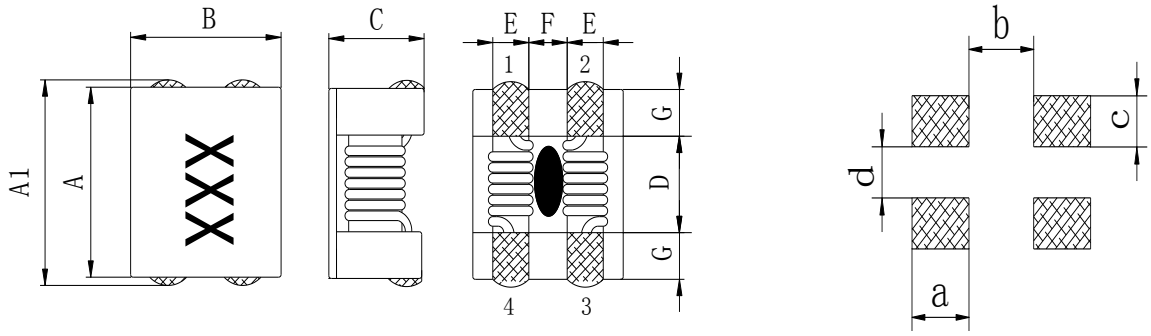
Please refer to **Appendix A**（Page 8）

1) Operating temperature (Including self-generated heat): -40℃~+125℃

2) Storage temperature and humidity range (product with packing): 0℃~+40℃, RH 70% Max.

4. Shape and Dimensions

1.Dimensions and recommended PCB pattern for reflow soldering:.



Unit: mm

Symbol	A	A1	B	C.	D	E	F .	G	a	b	c	d
CWS7060EF	7.0±0.5	7.5±0.6	6.0±0.5	3.8Max	3.5Ref.	1.5Ref.	1.5Ref	1.7Ref	3.0	2.9	1.9	1.3

Marking:White "XXX"**.**

Remarks: A size does not contain solder point.

2. Material List

Symbol	Components	Material
a	Core	Ferrite core
b	Wire	Enamelled copper wire
c	Base	Plastic
d	Adhesive	Epoxy resin
e	Terminal	Sn /Cu
f	Ink	White

5. Test and Measurement Procedures

5.1 Test Conditions

5.1.1 Unless otherwise specified, the standard atmospheric conditions for measurement/test as:

a. Ambient Temperature: 20±15℃

b. Relative Humidity: 65±20%

c. Air Pressure: 86 KPa to 106 KPa

5.1.2 If any doubt on the results, measurements/tests should be made within the following limits:

a. Ambient Temperature: 20±2℃

b. Relative Humidity: 65±5%

c. Air Pressure: 86KPa to 106 KPa

5.2 Visual Examination

a. Inspection Equipment: 20 X magnifier

5.3 Electrical Test

5.3.1 DC Resistance (DCR)

a. Refer to **Appendix A**.

b. Test equipment (Analyzer): HIOKI3540 or equivalent.

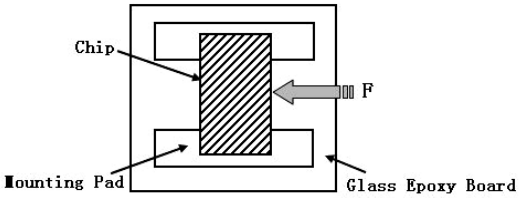
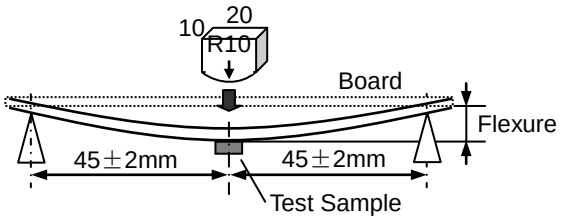
5.3.2 Rated Current

a. Refer to Appendix A.

b. Test equipment: Agilent E3633A, NF ZM2355, R2M-2H3 or equivalent..

c. DC current (A) that will cause an approximate ΔT of 40 °C(reference ambient temperature is 25 °C)

5.4 Reliability Test

<table>
<tr><th>Item</th><th>Requirements</th><th>Test Methods and Remarks</th></tr>
<tr><td>5.4.1
Terminal Strength</td><td>No removal or split of the termination or other defects shall occur.</td><td>① The test samples shall be soldered to the board by the reflow. Then apply force to X and Y directions.
② Applied force: 5N .
③ Keep time: 5s
④ Speed: 1.0 mm/s.
  </td></tr>
<tr><td>5.4.2
Resistance
to Flexure</td><td>① No visible mechanical damage.
② Impedance change: within ±30%.</td><td>d. The test samples shall be soldered to the board by the reflow. Then apply force in the direction of the arrow.
e. Flexure: 2mm
f. Pressurizing Speed: 0.5mm/sec.
g. Keep time: ≧5 sec.
  </td></tr>
<tr><td>5.4.3
Vibration</td><td>① No visible mechanical damage.
② Impedance change: within ±30%.</td><td>① The test samples shall be soldered to the board by the reflow. Then it shall be submitted to below test conditions.
<table>
<tr><td>Fre. Range</td><td>10~55Hz</td></tr>
<tr><td>Total Amplitude</td><td>1.5mm(May not exceed acceleration 196 m/s^2)</td></tr>
<tr><td>Sweeping Method</td><td>10Hz to 55Hz to 10Hz for 1 min.</td></tr>
<tr><td>Time</td><td>For 2 hours on each X,Y,Z axis.</td></tr>
</table>
② Recovery: At least 2 hours of recovery under the standard condition after the test, followed by the measurement within 24 hours.</td></tr>
</table>

<table>
<tr><td>5.4.4
Solderability</td><td>95% or more of mounting terminal side shall be covered with fresh solder.</td><td>① The test samples shall be dipped in flux, and the immersed in molten solder.
② Solder Temperature: 240±5℃
③ Keep time: 3±0.5s
④ Immersion depth: all sides of mounting terminal shall by immersed.
⑤ Flux: 25% Rosin and 75% ethanol in weight.</td></tr>
<tr><td>5.4.5
Resistance to Soldering Heat</td><td>. No visible mechanical damage.
. Impedance change : within ± 30%.</td><td>① The test sample shall be exposed to reflow oven as below.<table><tr><td>230±5℃</td><td>40s</td></tr><tr><td>Peak tem. at 260±5℃</td><td>5s</td></tr></table>② Reflow time: 2times.
③ Recovery: At least 2 hours of recovery under the standard condition after the test , followed by the measurement within 24 hours.</td></tr>
<tr><td>5.4.6
Thermal Shock</td><td>① No visible mechanical damage.
② Impedance change : within ± 30%.</td><td>① The test samples shall be soldered to the board by the reflow. Then it shall be placed at specified temperature for specified time by step 1 to step 4 as shown in below table in sequence.<table><tr><th>Step</th><th>Temperature(℃)</th><th>Duration(min)</th></tr><tr><td>1</td><td>-25</td><td>30±3</td></tr><tr><td>2</td><td>Room temperature</td><td>Within 3</td></tr><tr><td>3</td><td>+85</td><td>30±3</td></tr><tr><td>4</td><td>Room temperature</td><td>Within 3</td></tr></table>② Number of cycle: 100cycles.
③ Recovery: At least 2 hours of recovery under the standard condition after the test , followed by the measurement within 24 hours.</td></tr>
<tr><td>5.4.7
Damp heat</td><td>① No visible mechanical damage.
② Impedance change : within ± 30%</td><td>① The test samples shall be soldered to the board by the reflow. Then it shall be submitted to below test conditions.<table><tr><td>Temperature</td><td>60±2℃</td></tr><tr><td>Humidity</td><td>90~95%RH</td></tr><tr><td>Time</td><td>96hour</td></tr></table>② Recovery: At least 2 hours of recovery under the standard condition after the test , followed by the measurement within 24 hours.</td></tr>
</table>

<table>
<tr><th>Item</th><th>Requirements</th><th>Test Methods and Remarks</th></tr>
<tr><td>5.4.8
Loading Under Damp Heat</td><td>① No visible mechanical damage.
② Impedance change : within ± 30%</td><td>① The test samples shall be soldered to the board by the reflow. Then it shall be submitted to below test conditions.<table><tr><td>Temperature</td><td>60±2℃</td></tr><tr><td>Humidity</td><td>90~95%RH</td></tr><tr><td>Applied current</td><td>Rated current</td></tr><tr><td>Time</td><td>96hour</td></tr></table>② Recovery: At least 2 hours of recovery under the standard condition after the test , followed by the measurement within 24 hours.</td></tr>
<tr><td>5.4.9
Resistance to Low Temperature</td><td>① No visible mechanical damage.
② Impedance change : within ± 30%</td><td>① The test samples shall be soldered to the board by the reflow. Then it shall be submitted to below test conditions.<table><tr><td>Temperature</td><td>-25±3℃</td></tr><tr><td>Time</td><td>96hour</td></tr></table>② Recovery: At least 2 hours of recovery under the standard condition after the test , followed by the measurement within 24 hours.</td></tr>
</table>

5.4.10 Resistance to High Temperature	① No visible mechanical damage. ② Impedance change : within ± 30%.	① The test samples shall be submitted to below test conditions. Temperature: 85±3℃ Time: 96hour ② Recovery: At least 2 hours of recovery under the standard condition after the test , followed by the measurement within 24 hours.
5.4.11 Loading at High Temperature (Life Test)	① No visible mechanical damage. ② Impedance change : within ± 30%.	① The test samples shall be soldered to the board by the reflow. Then it shall be submitted to below test conditions. Temperature: 85±3℃ Applied current: Rated current Time: 96hour ② Recovery: At least 2 hours of recovery under the standard condition after the test , followed by the measurement within 24 hours.

6. Packaging

6.1 Tape Carrier Packaging:

Packaging code: T

(1) Tape carrier packaging are specified in attached figure **Fig.6.1-1~3**

(2) Tape carrier packaging quantity:

a. Reel Drawings (Unit: mm)

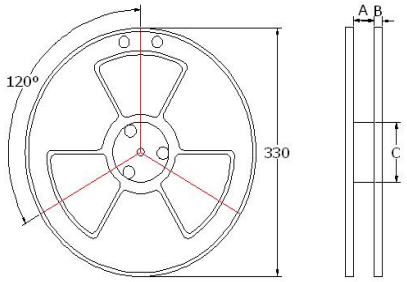


Fig.6.1-1

c. Taping Dimensions (Unit: mm)

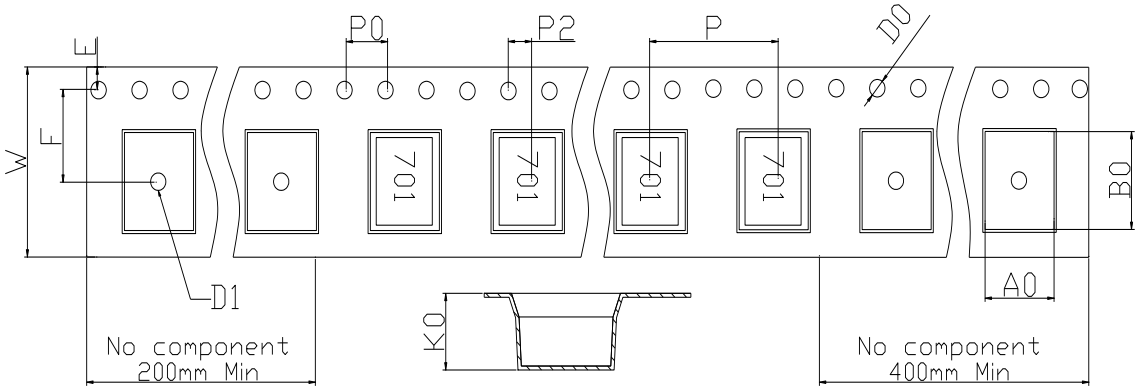


Fig.6.1-2

Type	Tape dimensions (mm)										
	W	P	P0	P2	D0	D1	E	F	A0	B0	K0
CWS7060EF	16	12	4.0	2.0	1.5	1.5	1.75	7.5	6.35	7.85	3.80

Type	Standard Quantity		
	Reel(Pcs)	Middle Carton(Pcs)	Big Carton(Pcs)
CWS7060EF	1500	1500	7500

c. Peeling off force: 10gf to 130gf in the direction show below.

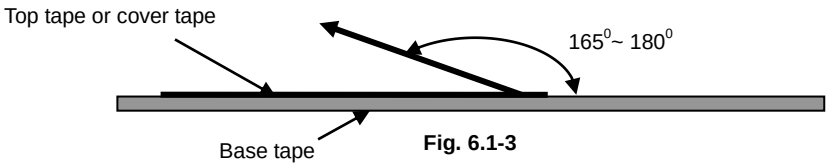
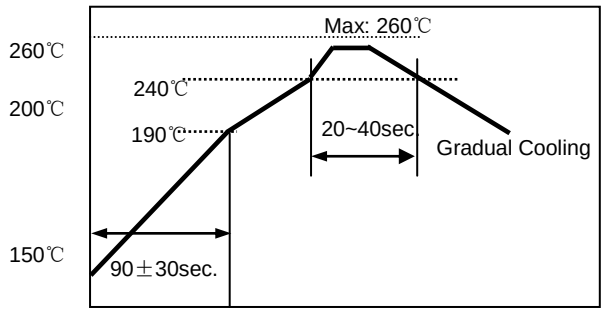


Fig. 6.1-3

7. Recommended Soldering Technologies

7.1 Re-flowing Profile:

△ 1~2 ℃/sec. Ramp
△ Pre-heating: 150~190℃/90±30 sec.
△ Time above 240℃: 20~40sec
△ Peak temperature: 260℃ Max./5sec;
△ Solder paste: Sn/3.0Ag/0.5Cu
△ Max.2 times for Re-flowing



Appendix A: Electrical Characteristics(@ 25℃)

Part Number	Impedance	Max. DC Resistance	Rated Current Typ	Rated Voltage Max	Insulation Resistance Min
Units	Ω	mΩ	A	V(DC)	MΩ
Symbol	Z_{com}	-			
Test Condition	100MHz	-			
CWS7060EF-701T	500Min /700Typ	15	4	125	10

Rated Current：ΔT≦40℃Typ

Curve: