

Specification NO.: 20220322001

Product Certificate NO.:

SPECIFICATION

Customer:

Product Name: Varistor

Customer Item Number:

Supplier Item Number: COV-20D681K

Version: A0

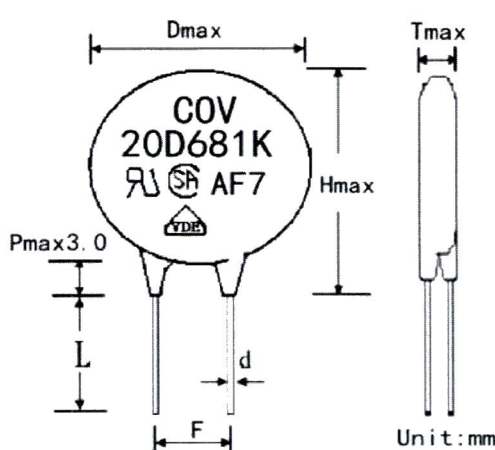
Specification Effective Date:

Manufacturer		Customer Confirmation (Quality)		Customer Confirmation (Research And Development)	
Prepared	Wei Jinzhou	Qualified <input type="checkbox"/>		Qualified <input type="checkbox"/>	
		Unqualified <input type="checkbox"/>		Unqualified <input type="checkbox"/>	
Audit	Chen Qingguo	Audit		Audit	
Approved	Feng Wei	Approved		Approved	

(Both parties confirm the acceptance of the certificate must be signed and sealed)

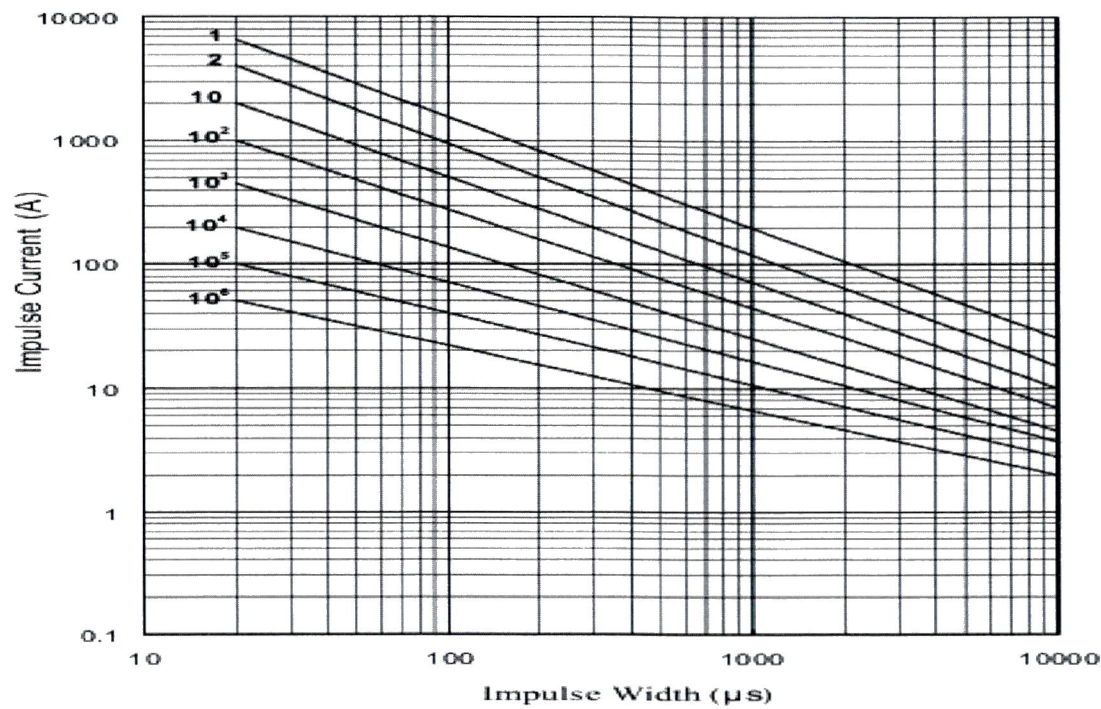
E. C. LIST/变更履历表

Rev.	Description of Change		Changed Date	Manager
	Before	After		
A0				
A1				
A2				
A3				
A4				
A5				
A6				

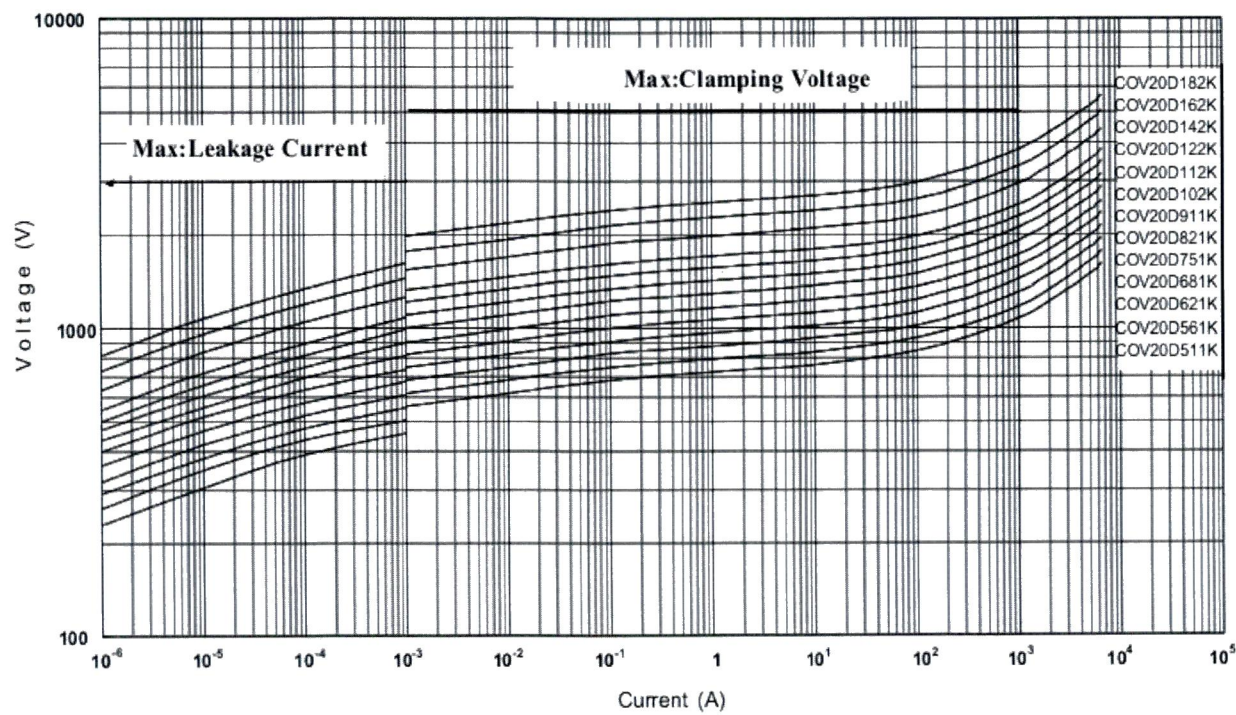
File Number		NO: HR20220322001A		
Specifications: COV-20D681K		UL:E485395 ISO9001/ISO14001/OHSAS18001		
1.Appearance Structure				
1.1	Appearance	Intact, No Damage, LetterIng Clear And Complete		
1.2	Product Structure Diagram		Size (mm)	
			Dmax	25
			Hmax	27.5
			Tmax	7.2
			F	10.0±1.0
			d	1.0±0.05
			L (Min)	20
			Pmax	3
			Lead	CP WIRE
			Sealing Material	Epoxy Resin (UL 94V-0), Black
			Print Mode	Laser printer
2. ELECTRICAL PARAMETERS				
2.1	Max Allowable Voltage	AC: 460 (V)		
		DC :615 (V)		
2.2	Varistor Voltage	675~825 (V)	V1mA <input checked="" type="checkbox"/> V0.1mA <input type="checkbox"/>	
2.3	Rated Wattage	1.0 (W)		
2.4	Max Clamping Voltage	IP: 100 (A)	Wave Form 8*20 μ S	
		Vc:1240 (V)		
2.5	Withstanding Surge Current	1Time: 10000 (A)	Wave Form 8*20 μ S	
		2 Time:6500 (A)		
2.6	Max Energy	420 (J)	Wave Form 10*1000 μ S	
2.7	Temp Coefficient Of Varistor Voltage	530 (PF)	@1KHz	
2.8	Leakage Current	≤ 20 (μ A)	@80%*V1mA	
2.9	Impulse Life	≤ ±10% (V1mA)	WAVE FORM 8*20 μ S	
2.10	Storage Temperature Range	-40℃ ~ +125℃	-40℃ ~ +125℃	
2.11	Operation Ambient Temperature Range	-40℃ ~ +125℃	-40℃ ~ +85℃	

3、Impulse Life Time Rating Curves:

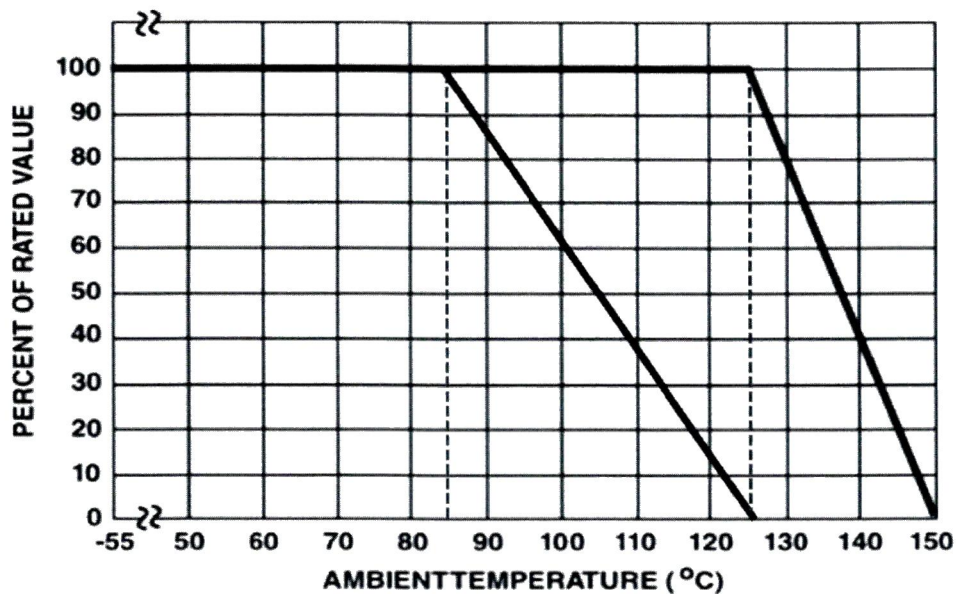
COV-20D681K



COV-20D681K V-I Curve

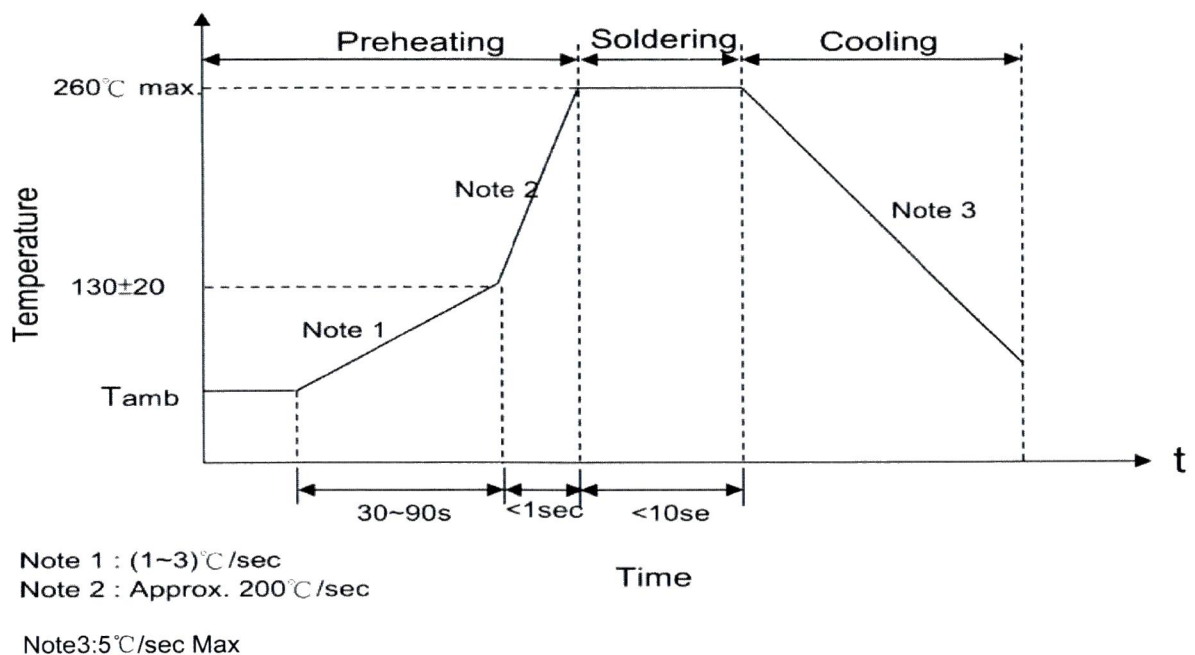


4、Current Energy and Power Derating Curve



(Figure 1: current, energy, power decline curve)

5、Soldering Recommendation Profile

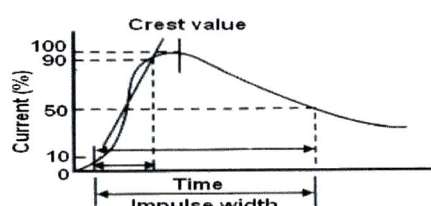


(Figure 2: wave soldering curve)

Recommendation Reworking Conditions with Soldering Iron

Items	Requirement
Temperature Soldering Iron Head	360°C (max.)
Welding Time	3 sec (max.)
Welding Position And Coating	2 mm (min.)

6、 Reliability-Performance Characteristics(Electrical) :

Characteristics		Test Methods/Description	Specifications						
Standard Test Condition		Environmental conditions under which every measuring is done without doubt on the measuring results. Unless specially specified, temperature, relative humidity are 5℃ to 35℃, 45% to 85%RH.	—						
Varistor Voltage		The voltage between two terminals with the specified measuring current C mA DC applied is called Vc or Vc mA. The measurement shall be made as fast as possible to avoid heat affection.	To meet the specified value						
Maximum Allowable Voltage		The maximum sinusoidal RMS voltage or maximum DC voltage that can be applied continuously in the specified environmental temperature range.							
Clamping Voltage		The maximum voltage between two terminals with the specified standard impulse current(8/20 μs) illustrated below applied. <div></div>							
Rated Power		The power that can be applied in the specified ambient temperature.							
Maximum Energy		The maximum energy within the varistor voltage change of ±10% when one impulse of 2 ms or 10/1000 μs is applied.							
Maximum peak Current	2 times	The maximum current within the varistor voltage change of ±10% with the standard impulse current (8/20 μs) applied twice with an interval of 5 minutes.							
Withstanding Surge Current	1 time	The maximum current within the varistor voltage change of ±10% with the standard impulse current (8/20 μs) applied once.							
Temperature Coefficient of Varistor Voltage		$\frac{V_c \text{ at } 85^\circ\text{C} - V_c \text{ at } 25^\circ\text{C}}{V_c \text{ at } 25^\circ\text{C}} \times \frac{1}{60} \times 100 (\% / ^\circ\text{C})$	- 0.05%/℃ Max						
Capacitance		Capacitance shall be measured at 1 KHz ±10%, 1 Vrms max. 0V bias and 20±2 ℃	To meet the						
Dissipation Factor		Dissipation Factor be measured at 1 KHz ±10%, 1 Vrms max. 0V bias and 20±2 ℃	specified value						
Withstanding Voltage (Body Insulation)		<div>The specified voltage shall be applied both terminals of the specimen connected together and metal foil closely wrapped round its body for 1 minute. Electrical breakdown shall be examined.</div> <table><tr><th>Classification (Nominal varistor voltage)</th><th>Test Voltage (AC)</th></tr><tr><td>V0.1mA,V1mA ≤ 330V</td><td>1500Vrms</td></tr><tr><td>V0.1mA,V1mA > 330V</td><td>2500Vrms</td></tr></table>	Classification (Nominal varistor voltage)	Test Voltage (AC)	V0.1mA,V1mA ≤ 330V	1500Vrms	V0.1mA,V1mA > 330V	2500Vrms	No breakdown
Classification (Nominal varistor voltage)	Test Voltage (AC)								
V0.1mA,V1mA ≤ 330V	1500Vrms								
V0.1mA,V1mA > 330V	2500Vrms								

7、Reliability-(Mechanical):

Characteristics	Test Methods	Specifications								
Robustness of Terminal (Tensile)	<p>IEC60068-2-21</p> <p>After gradually applying the force specified below and keeping the unit fixed for the seconds, the terminal shall be visually examined for any damage.</p> <table><thead><tr><th>Terminal diameter</th><th>Force</th></tr></thead><tbody><tr><td>Φ0.6 mm</td><td>9.8N (1.0Kgf)</td></tr><tr><td>Φ0.8 mm</td><td>9.8N (1.0Kgf)</td></tr><tr><td>Φ1.0 mm</td><td>19.6N(2.0Kgf)</td></tr></tbody></table>	Terminal diameter	Force	Φ0.6 mm	9.8N (1.0Kgf)	Φ0.8 mm	9.8N (1.0Kgf)	Φ1.0 mm	19.6N(2.0Kgf)	No visible damage
Terminal diameter	Force									
Φ0.6 mm	9.8N (1.0Kgf)									
Φ0.8 mm	9.8N (1.0Kgf)									
Φ1.0 mm	19.6N(2.0Kgf)									
Robustness of Terminal (Bending)	<p>IEC60068-2-21</p> <p>The unit shall be secured with its terminal kept vertical and the force specified below be applied in the axial direction. The terminal shall gradually be bent by 90° in one direction, then 90° in the opposite direction, and again back to the original position.</p> <p>The terminal shall be visually examined for any damage.</p> <table><thead><tr><th>Terminal diameter</th><th>Force</th></tr></thead><tbody><tr><td>Φ0.6 mm</td><td>4.9N (0.5Kgf)</td></tr><tr><td>Φ0.8 mm</td><td>4.9N (0.5Kgf)</td></tr><tr><td>Φ1.0 mm</td><td>9.8N (1.0Kgf)</td></tr></tbody></table>	Terminal diameter	Force	Φ0.6 mm	4.9N (0.5Kgf)	Φ0.8 mm	4.9N (0.5Kgf)	Φ1.0 mm	9.8N (1.0Kgf)	
Terminal diameter	Force									
Φ0.6 mm	4.9N (0.5Kgf)									
Φ0.8 mm	4.9N (0.5Kgf)									
Φ1.0 mm	9.8N (1.0Kgf)									
Vibration	<p>IEC 60068-2-6</p> <p>After repeatedly applying a single harmonic vibration(amplitude0.75mm) double amplitude:1.5mm with 1 minute vibration frequency cycles(10 Hz to 55 Hz to 10Hz) to each of three perpendicular directions for 2 hours (Duration: 3*2h= 6 h). Thereafter, the unit shall be visually examined.</p>									
Solderability	<p>IEC 60068-2-20</p> <p>After dipping the terminals to a depth of approximately 3mm from the body in a soldering bath of 260±5℃ for 2±0.5 seconds, the terminal shall be visually examined.</p>	Approximately 95% of the terminals shall be covered with solder uniformly								
Resistance to Soldering Heat	<p>IEC 60068-2-20</p> <p>After each lead shall be dipped into a solder bath having a temperature 260±5℃ to a point 2.0 to 2.5 mm from the body of the unit, using shielding board (t=1.5mm), be held there for specified time(3 series: 3±1 s, 5 series:5±1 s and others:10±1 s), and then be stored at room temperature and humidity for 1 to 2 hours. The change of Vc and mechanical damages are examined.</p>	$\Delta V_{cmA}/V_{cmA} \cong \pm 5\%$ No visible damage								

8、Reliability-(Environmental):

Characteristics	Test Methods	Specifications														
High Temperature Storage/Dry Heat	IEC 60068-2-2 The specimen shall be subjected to $125\pm 2^{\circ}\text{C}$ for 1000 hours in a thermostatic bath without load and then stored at room temperature and humidity for 1 to 2 hours. Thereafter, the change of V_c shall be measured.	$\Delta V_{cmA}/V_{cmA} \leq \pm 5\%$														
Damp Heat/Humidity (Steady State)	IEC 60068-2-78 The specimen shall be subjected to $40\pm 2^{\circ}\text{C}$, 90 to 95% RH for 1000 hours without load and then stored at room temperature and humidity for one to two hours. Thereafter, the change of V_c shall be measured.															
Rapid Change of Temperature Cycle	IEC 60068-2-14 The temperature cycle shown below shall be repeated five times and then stored at room temperature and humidity for one to two hours. Then change of V_c and mechanical damage shall be examined. <table border="1"> <thead> <tr> <th>Step</th><th>Temperature($^{\circ}\text{C}$)</th><th>Period(minutes)</th></tr> </thead> <tbody> <tr> <td>1</td><td>-40 ± 3</td><td>30 ± 3</td></tr> <tr> <td>2</td><td>Room temperature</td><td>15 ± 3</td></tr> <tr> <td>3</td><td>125 ± 2</td><td>30 ± 3</td></tr> <tr> <td>4</td><td>Room temperature</td><td>15 ± 3</td></tr> </tbody> </table>		Step	Temperature($^{\circ}\text{C}$)	Period(minutes)	1	-40 ± 3	30 ± 3	2	Room temperature	15 ± 3	3	125 ± 2	30 ± 3	4	Room temperature
Step	Temperature($^{\circ}\text{C}$)	Period(minutes)														
1	-40 ± 3	30 ± 3														
2	Room temperature	15 ± 3														
3	125 ± 2	30 ± 3														
4	Room temperature	15 ± 3														
High Temperature load/Dry Heat Load	IEC 61051-1 After being continuously applied the Maximum Allowable Voltage at $125\pm 2^{\circ}\text{C}$ for 1000 hours. The specimen shall be stored at room temperature and humidity for one to two hours. Thereafter, the change of V_c shall be measured.	$\Delta V_{cmA}/V_{cmA} \leq \pm 10\%$														
Damp Heat load/ Humidity Load	The specimen shall be subjected to $40\pm 2^{\circ}\text{C}$, 90 to 95% RH and the Maximum Allowable Voltage for 1000 hours and then stored at room temperature and humidity for one to two hours. Thereafter, the change of V_c shall be measured.	$\Delta V_{cmA}/V_{cmA} \leq \pm 10\%$														
Low Temperature Storage/Cold	The specimen shall be subjected to $-40\pm 2^{\circ}\text{C}$, without load for 1000 hours and then stored at room temperature for one to two hours. Thereafter, the change of V_c shall be measured.	$\Delta V_{cmA}/V_{cmA} \leq \pm 5\%$														