

承认书编号：20191125001

产品证书编号：

OEM(客户设计)

ODM(供应商设计)

# 产品承认书

产品名称：压敏电阻

客户物料编号：01020103022

供方物料编号：TVR20681R（高能芯片/高低脚）

版本：A0

承认书生效日期：

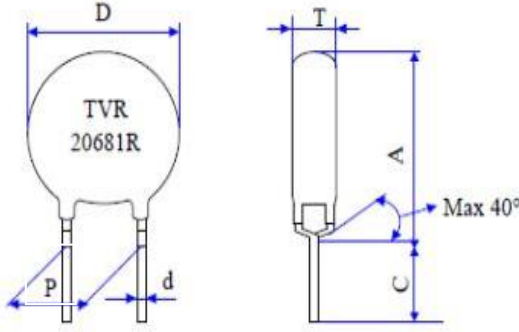
制造商		客户确认（品质）		客户确认（研发）	
拟制	韦金周	合格 <input type="checkbox"/>		合格 <input type="checkbox"/>	
		不合格 <input type="checkbox"/>		不合格 <input type="checkbox"/>	
审核	陈庆国	审核		审核	
批准	付关军	批准		批准	

（双方确认承认书合格后必须签字盖章）

Rev. 版本	Description of Change/变更内容描述		Changed Date/日期	经手人
	Before/变更前	After/变更后		
A0				
A1				
A2				
A3				
A4				
A5				
A6				

文件编号		NO: DX20191125001A
规格型号	<b>TVR20681R (高能芯片)</b>	安规: UL:E485395 体系: ISO9001/ISO14001/OHSAS18001

### 1.外观结构

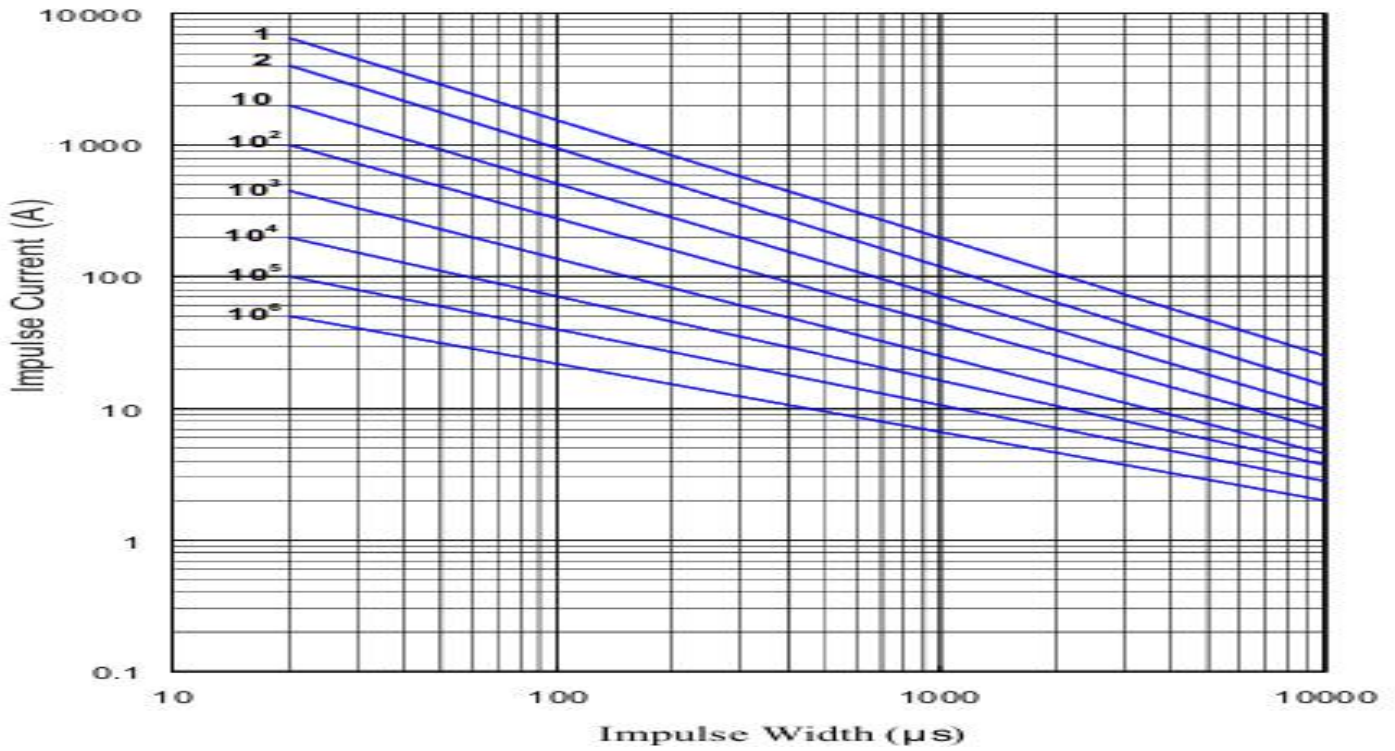
1.1	外观	外观完好, 无损伤, 无氧化	
1.2	尺寸	尺寸 (mm)	
		<b>Dmax</b>	<b>25</b>
		<b>Amax</b>	<b>29.5</b>
		<b>Tmax</b>	<b>7.4</b>
		<b>P</b>	<b>10.0±1.0</b>
		<b>d</b>	<b>1.0±0.05</b>
		<b>Cmin</b>	<b>20</b>
		引线	<b>电镀 CP 线</b>
		包封材料	<b>黄色 (KH)</b>
		打印方式	<b>镭射打印</b>

### 2.电性基本要求

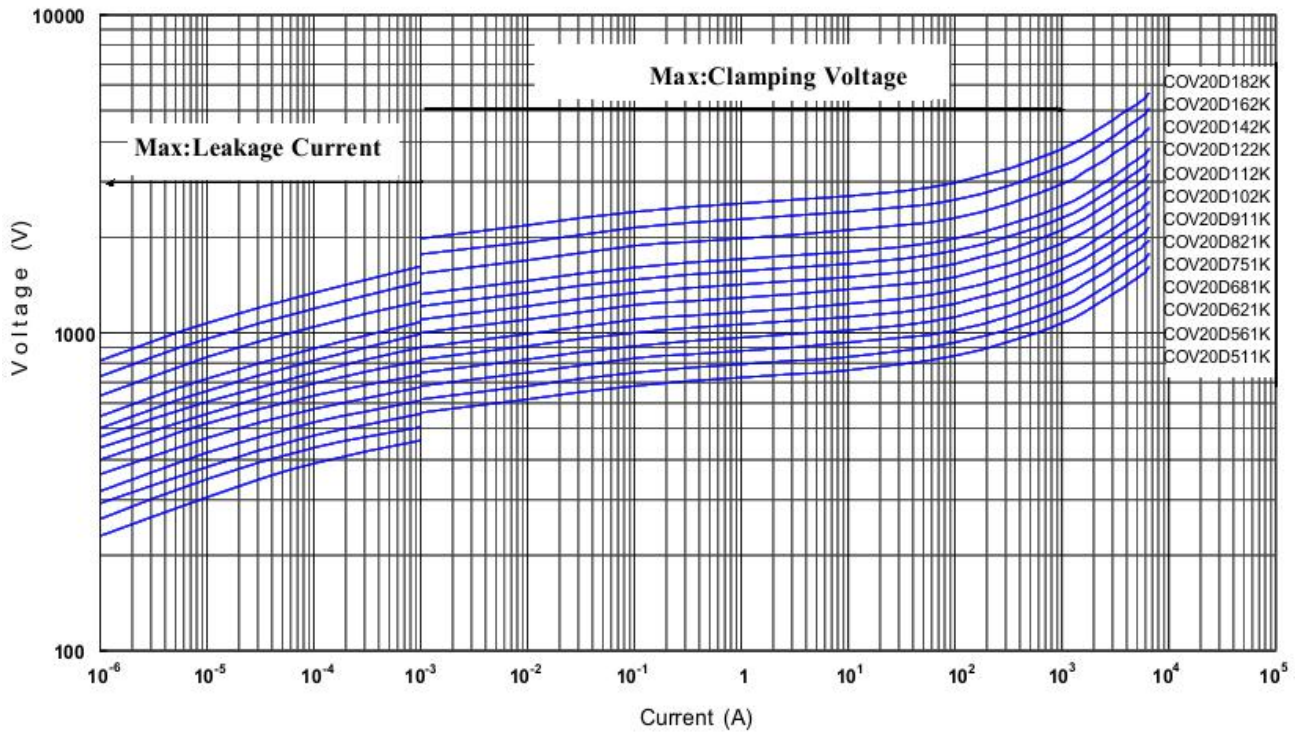
2.1	最大允许使用电压	AC: 460 (V) DC :615 (V)	测试
2.2	压敏电压	<b>675~825 (V)</b>	V1mA <input checked="" type="checkbox"/> V0.1mA <input type="checkbox"/>
2.3	最大静态功率	1.0 (W)	
2.4	最大限制电压	IP: 100 (A) Vc:1240 (V)	测试条件 8/20 μs
2.5	最大通流容量	1 Time: 10000 (A) 2 Time:6500(A)	测试条件 8/20 μs
2.6	最大能量耐量	420 (J)	测试条件 10/1000 μs
2.7	静态参考电容量	530 (PF)	@1KHz
2.8	漏电流	≤ 20 (μA)	@80%*V1mA
2.9	冲击过后最大变化率	≤ ±10% (V1mA)	测试条件 8/20 μs
2.10	工作温度范围	-40°C ~ +125°C	-40°C ~ +125°C
2.11	储存温度范围	-40°C ~ +125°C	-40°C ~ +125°C

### 3、Impulse Life Time Rating Curves:

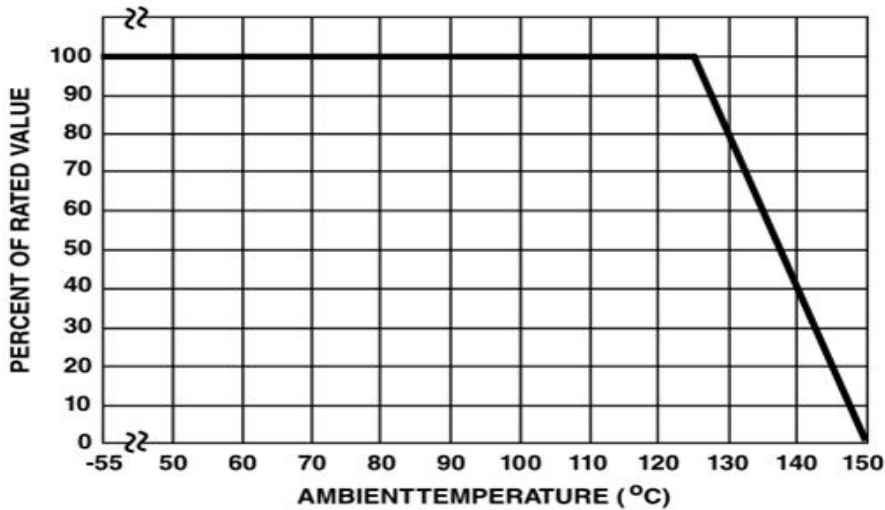
# TVR20681R



## TVR20681R V-I Curve

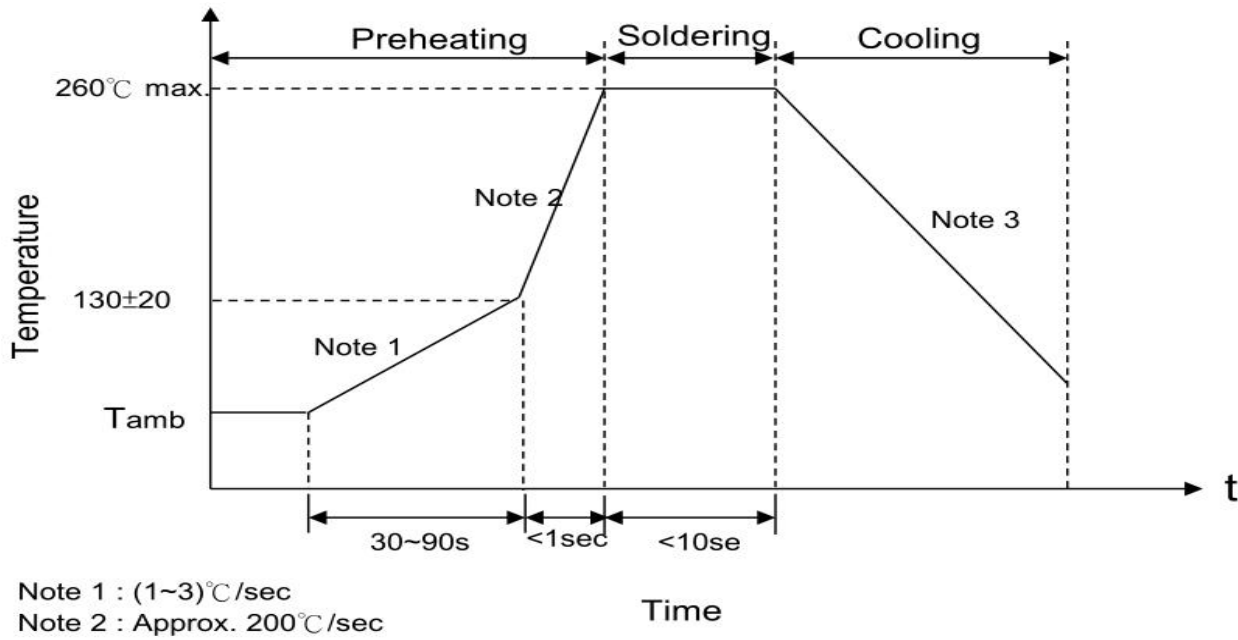


### 4、Current Energy and Power Derating Curve 电流、能量、功率递减曲线



(图 1: 电流、能量、功率递减曲线)

### 5、Soldering Recommendation Profile 推荐焊接条件



(图 2: 波峰焊曲线图)

### Recommendation Reworking Conditions with Soldering Iron 烙铁重工焊接条件

项目	条件
烙铁头部温度	360°C (max.)
焊接时间	3 sec (max.)
焊接位置与涂装层距离	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°C to 35°C, 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.		
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	<p>The maximum voltage between two terminals with the specified standard impulse current(8/20 μs) illustrated below applied.</p>		To meet the specified value
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 Current	peck 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%/°C Max
Capacitance	Capacitance shall be measured at 1 KHz ±10%, 1 Vrms max. 0V bias and 20±2 °C		To meet the
Dissipation Factor	Dissipation Factor be measured at 1 KHz ±10%, 1 Vrms max. 0V bias and 20±2 °C		specified value
Withstanding Voltage (Body Insulation)	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.		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><a href="#">IEC60068-2-21</a></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 border="1"> <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)	
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><a href="#">IEC60068-2-21</a></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 border="1"> <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)	No visible damage
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><a href="#">IEC 60068-2-6</a></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><a href="#">IEC 60068-2-20</a></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><a href="#">IEC 60068-2-20</a></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	<p><a href="#">IEC 60068-2-2</a></p> <p>The specimen shall be subjected to 125±2℃ 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 Vc shall be measured.</p>																
Damp Heat/Humidity (Steady State)	<p><a href="#">IEC 60068-2-78</a></p> <p>The specimen shall be subjected to 40±2℃, 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 Vc shall be measured.</p>																
Rapid Change of Temperature Cycle	<p><a href="#">IEC 60068-2-14</a></p> <p>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 Vc and mechanical damage shall be examined.</p> <table border="1"> <thead> <tr> <th>Step</th> <th>Temperature(℃)</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(℃)	Period(minutes)	1	-40±3	30±3	2	Room temperature	15±3	3	125±2	30±3	4	Room temperature	15±3	$\Delta V_{cmA}/V_{cmA} \leq \pm 5\%$
Step	Temperature(℃)	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	<p><a href="#">IEC 61051-1</a></p> <p>After being continuously applied the Maximum Allowable Voltage at 125±2℃ for 1000 hours. The specimen shall be stored at room temperature and humidity for one to two hours. Thereafter, the change of Vc shall be measured.</p>	$\Delta V_{cmA}/V_{cmA} \leq \pm 10\%$															
Damp Heat load/ Humidity Load	<p>The specimen shall be subjected to 40±2℃, 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 Vc shall be measured.</p>	$\Delta V_{cmA}/V_{cmA} \leq \pm 10\%$															
Low Temperature Storage/Cold	<p>The specimen shall be subjected to -40±2℃, without load for 1000 hours and then stored at room temperature for one to two hours. Thereafter, the change of Vc shall be measured.</p>	$\Delta V_{cmA}/V_{cmA} \leq \pm 5\%$															