

PART NO 型号. MVR0603-120G

1 Electrical Characteristics 电气特性

1.1 Technical Data 技术数据	Symbol	Value	Unit
Maximum allowable continuous AC voltage 最大允许连续交流电压	VRMS	7.0	V
Maximum allowable continuous DC voltage 最大允许连续直流电压	VDC	9.0	V
Varistor voltage Measured 压敏电压	VB	12(±15%)	V
Typical capacitance value measured 测量的典型电容值	C	350	pF
Typical capacitance value tolerance 典型电容值公差		±40	%
Maximum clamping voltage measured 测量的最大箝位电压	VC	24	V
Rated peak single pulse transient current at 额定峰值单脉冲瞬态电流	I P	30	A

1.2 Reference Data 参考数据	Symbol	Value	Unit
Maximum Energy Absorption 10/1000μs 最大能量吸收 10/1000μs	E	0.1	J
Response time 响应时间	T _{rise}	<2	ns
Leakage current at V _{DC} (At initial state) VDC 时的泄漏电流 (初始状态下)	I _L	<50	μA
Leakage current at V _{DC} (After reliability Test) VDC 下的泄漏电流 (可靠性试验后)	I _{LA}	<100	μA
Operating ambient temperature 工作环境温度		-40~+125	°C
Max Reflow temperature profile(Recommend) 最大回流温度曲线 (推荐)		260	°C

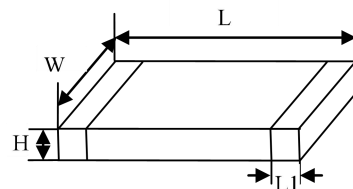
2 Type Code Designation 类型代码名称

MVR 0603 — 120 G
 ① ② ③ ④

- ① MVR : Series name 系列名称
- ② 0603 : Chip size - 0603 (1.6 x 0.8 mm) size 尺寸
- ③ 120 : Varistor voltage(Breakdown voltage) - 12Vdc 压敏电压值
- ④ G : General absorption 常规系列

3 Dimensional Drawings 尺寸图

Type	Length (L)	Width (W)	High (H)	Termination (L1)
0603	1.60±0.25	0.80±0.25	1.00(max)	0.35±0.10



4 Other Data 其它数据

Body	ZnO
主体材料	氧化锌
End Termination	Ag/Ni/Sn
端材	银/镍/锡
Packaging	Bulk/Tape
包装	散装/编带
Complies with Standard	IEC61000-4-5 行业执行标准
符合标准	

4.1 Test record 测试记录

*1 The break down voltage was measured at 1mA current.	*1 在 1mA 的条件下测量压敏电压
*2 The Clamping voltage was measured at 8*20us standard current, 0603(1A)	*2 在 8*20 微秒的 0603 (1安) 标准电流下, 测量钳位电压
*3 The surge current was tested at 8/20 μs waveform.	*3 在 8/20μs 波形下测试浪涌电流。
*4 Typical capacitance value measured at 1KHz	*4 在 1KHz 频率下测得的典型电容值
*5 The components shall be employed within 1 year	*5 这些组件应在一年内使用9

4.2 Storage Condition 储存条件

- As far as possible, the components should be employed within 24 months after delivery from DOWO Semiconductor.

- 器件应尽可能在东沃交付后 24 个月内使用

- They should be left in their original packing to avoid soldering problems due to oxidized contacts.

- 应将其保留在原始包装中, 以避免因氧化触点而出现焊接问题。

- Storage temperature: - 25 up to + 45°C.

- 储存温度: - 25 至+45°C。

- Relative humidity: < 75 % annual average, < 95 % on max. 30 days in a year.

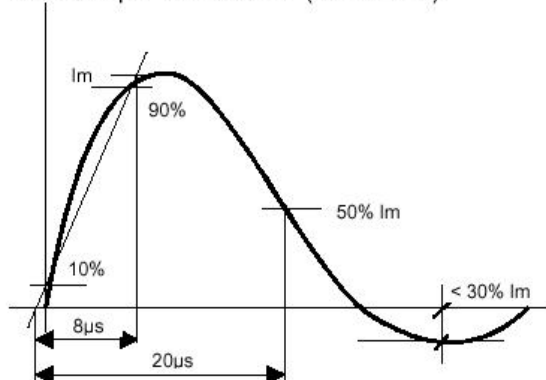
相对湿度: 年平均<75%, 一年中最多 30 天<95%。

4.3 Enviromental Reliability Test 可靠性测试

Characteristic 特性	Test method and description 测试方法及说明			
High Temperature Storage 高温储存	The specimen shall be subjected to 125°C for 1000 hours in a thermostatic bath without load and then stored at room temperature and humidity for 1 to 2 hours. The change of varistor voltage shall be within 10%. 试样应在恒温槽中无负荷放置 125°C 1000 小时，然后在室温 and 湿度下存放 1 至 2 小时。变阻器电压的变化应在 10% 以内。			
Temperature Cycle 温度循环	The temperature cycle of specified temperature shall be repeated five times and then stored at room temperature and humidity for one two hours. The change of varistor voltage shall be within 10% and mechanical damage shall be examined. 规定温度的温度循环应重复五次，然后在室温和湿度下储存一到两个小时。变阻器电压的变化应在 10% 以内，并应检查机械损伤。	Step	Temperature	Period
		1	-40±3°C	30min±3
		2	Room Temperature	1~2hours
		3	125±2°C	30min±3
High Temperature Load 高温负载	After being continuously applied the maximum allowable voltage at 125°C for 1000hours, the specimen shall be stored at room temperature and humidity for one or hours, the change of varistor voltage shall be within 10%. 试样在 125°C 下连续施加最大允许电压 1000 小时后，应在室温和湿度下存放一个或几个小时，压敏电阻电压的变化应在 10% 以内。	4	Room Temperature	1~2hours
Damp Heat Load/ Humidity Load 湿度负荷	The specimen should be subjected to 40°C, 90 to 95%RH environment, and the maximum allowable voltage applied for 1000 hours, then stored at room temperature and humidity for one or two hours. The change of varistor voltage shall be within 10%. 试样应在 40°C、90%-95% 相对湿度的环境中，施加最大允许电压 1000 小时，然后在室温和湿度下储存一到两个小时。变阻器电压的变化应在 10% 以内。			
Low Temperature Storage 低温储存	The specimen should be subjected to -40°C, without load for 1000 hours and then stored at room temperature for one two hours. The change of varistor voltage shall be within 10%. 试样应在 -40°C 无负荷条件下放置 1000 小时，然后在室温下存放一到两小时。变阻器电压的变化应在 10% 以内。			

5 Surge Wave Form 浪涌波形

Wave shape "Short circuit" (Current Isc)



SEVERITY LEVEL	T1	T2
1	8 μ S	20 μ S
2	10 μ S	1000 μ S

8/20 μ s waveform current

IEC61000-4-5 Standards



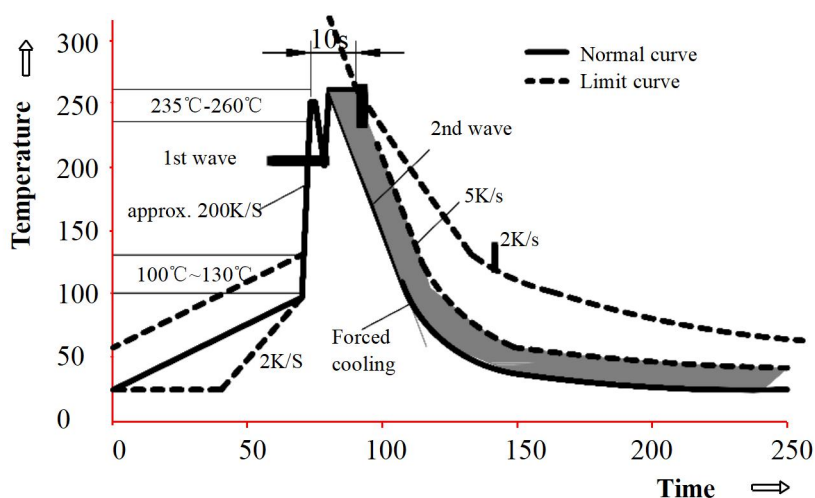
6 Soldering guidelines 焊接指南

The usage of mild, non-activated fluxes for soldering is recommended, as well as proper cleaning of the PCB. 建议使用温和的非活性焊剂进行焊接，并适当清洁PCB

The components are suitable for reflow soldering per JEDEC J-STD-020C

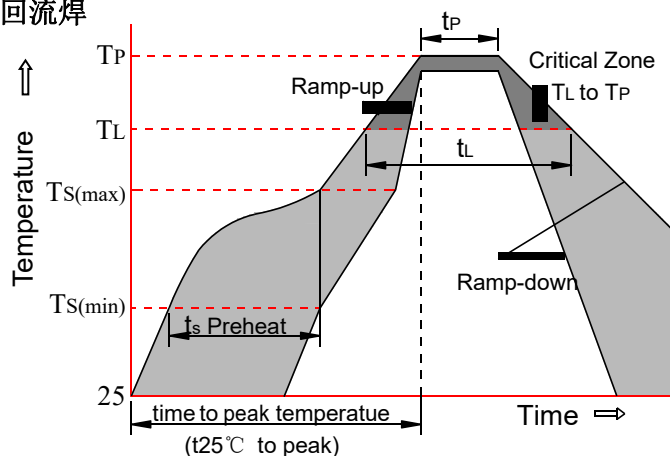
根据 JEDEC J-STD-020C，组件适用于回流焊

6.1 Wave soldering 波峰焊



Temperature characteristics at component terminal with dual-wave soldering

6.2 Reflow soldering 回流焊

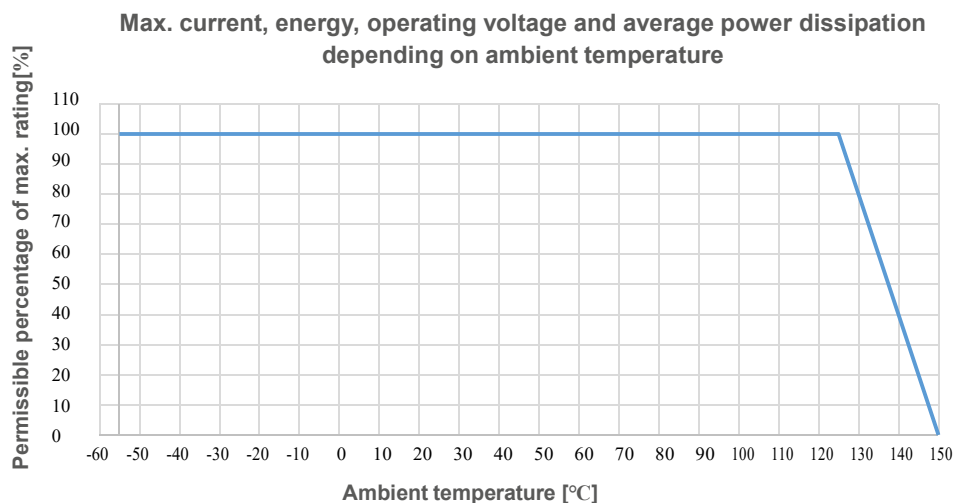


Profile feature 产品特性		Sn-Pb assembly 有铅焊接	Pb-Free assembly 无铅
Average ramp-up rate (T _{Smax} to T _p)		3°C/sec. Max	3°C/sec. Max
Preheat	-Temperature min. (T _{s(min)})	+100°C	+150°C
	-Temperature max.(T _{s(max)})	+150°C	+200°C
	-Time (t _{Smin} to t _{Smax})	60-120 secs.	60-180 secs.
T _{s(max)} to T _L - Ramp-up Rate		3°C/sec. Max	3°C/sec. Max
Time maintained above	-Temperature min. (T _L)	+183°C	+217°C
	-Time (t _L)	60-150 secs.	60-150 secs.
Peak classification temperature (T _p)		+220°C to +240°C	+240°C to +260°C
Time within 5°C of actual peak temperature (t _p)		10 secs. to 30 secs.	20 secs. to 40 secs.
Ramp-down rate		6°C/sec. max.	6°C/sec. max.
Time 25°C to peak temperature		6 min. max.	8 min. max.

Notes: All temperature refer to topside of the package, measured on the package body surface

Maximum number of reflow cycles:所有温度均指包装顶部，在包装体表面测量。最大回流循环次数

7 Temperature derating curve 温度下降曲线



8 Packaging Specification 包装规范

8.1 Carrier tape transparent cover tape should be heat-sealed to carry the products, and the reel should be used to reel the carrier tape.

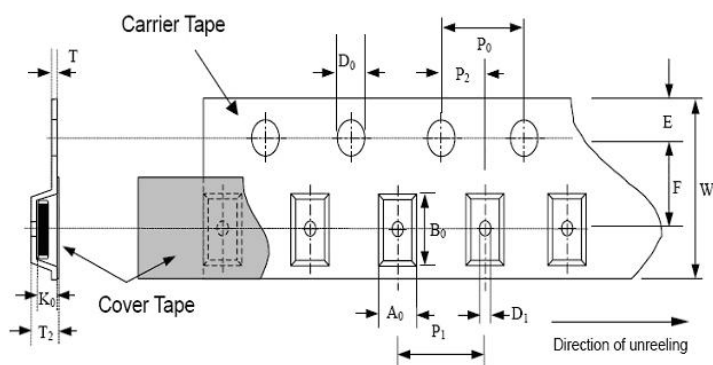
载带透明覆盖带应热密封以承载产品，并且应使用卷轴来卷绕载带。

8.2 The adhesion of the heat-sealed cover tape shall be 40 + 20/ - 15 grams.

热密封覆盖带的附着力应为 40 + 20/ - 15 克。

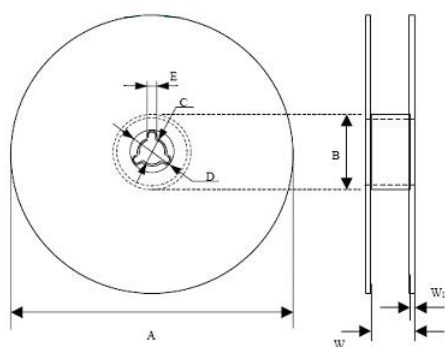
8.3 Both the head and the end portion of taping shall be empty for reel package and SMT auto-pickup machine. And a normal paper tape shall be connected in the head of taping for the operator handle.

卷盘包装和 SMT 自动拾取机的捆扎头和端部都应为空。在操作手柄的捆扎头上应连接一根普通的纸带。



Type	A ₀ ±0.10	B ₀ ±0.10	K ₀ ±0.10	T ±0.05	T ₂ ±0.05	D ₀ +0.10	D ₁ ±0.05	P ₁ ±0.10	P ₂ ±0.05	P ₀ ±0.05	W ±0.20	E ±0.10	F ±0.05
0402	1.08	1.88	1.04	0.22	0.87	1.50	1.00	4.00	2.00	4.00	8.00	1.75	3.50
0603	1.08	1.88	1.04	0.22	1.17	1.50	1.00	4.00	2.00	4.00	8.00	1.75	3.50
0805	1.42	2.30	1.04	0.22	1.26	1.50	1.00	4.00	2.00	4.00	8.00	1.75	3.50
1206	1.88	3.50	1.27	0.20	1.49	1.50	1.00	4.00	2.00	4.00	8.00	1.75	3.50
1210	2.18	3.46	1.45	0.22	1.77	1.50	1.00	4.00	2.00	4.00	8.00	1.75	3.50
1812	3.66	4.95	1.74	0.25	1.99	1.50	1.50	8.00	2.00	4.00	12.00	1.75	5.50
2220	5.10	5.97	2.80	0.25	3.05	1.50	1.50	8.00	2.00	4.00	12.00	1.75	5.50
3220	5.50	8.50	2.80	0.30	3.50	1.50	1.50	8.00	2.00	4.00	16.00	1.75	7.50

9 Reel dimension 卷轴尺寸



type	A	B	C	D	E	W	W ₁
0402-1210	178.0±1.0	60.0±0.5	13.0±0.2	21.0±0.2	2.0±0.5	9.0±0.50	1.5±0.15
1812-3220	178.0±1.0	60.0±0.5	13.5±0.1	21.0±0.2	2.0±0.5	13.6±0.2	1.5±0.15

type	0402	0603	0805	1206	1210	1812	2220	3220
quantity	paper	10000	4000	4000	-	-	-	-
	plastic	-	-	-	3000	3000	2000/3000	1000

Quantity of taping packing(pcs) 每卷数量: 4000