

Part Number Code

2	0	D	4	7	1	K		
Chip Diameter 芯片直径		Chip Shape 芯片形状	Varistor Voltage 压敏电阻动作电压			Tolerance 误差	HighSurge/Lead Style 高焦/脚型	
05	Φ 5mm	圆形 Disc	例如 Examples:			K ±10%	☐ 空白常规	
07	Φ 7mm		4	7	0	L ±15%	☐ J 高能品	
10	Φ 10mm		47 × 10 ⁰ = 47 V			M ±20%	☐ S 直脚	
14	Φ 14mm		4	7	1	Or	☐ O 外弯脚	
20	Φ 20mm		47 × 10 ¹ = 470 V			Customer	☐ I 内弯脚	
25	Φ 25mm		1	1	2	Special	☐ H 高低脚	
			11 × 10 ² = 1100 V			Requirement		

Specifications 规格说明:

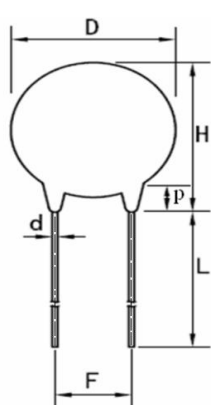
☐ Varistor Voltage Range 压敏电阻动作电压范围	18V~1800V (dc)
☐ Peak Current For 8/20us Current Wave 在 8/20us 电流波形最大通流量	100A~1800A
☐ Energy Range For 10/1000us Current Wave 在 10/1000us 电流波形的能量范围	0.4J~1092J
☐ Storage Temperature Range 储存温度范围	-40℃~125℃
☐ Operation Ambient Temperature Range 作业环境温度范围	-40℃~85℃
☐ Typical Response Time 反应时间	<25ns
☐ Insulation Resistance 绝缘电阻	$\geq 1000\text{M}\Omega$

•20D Specification

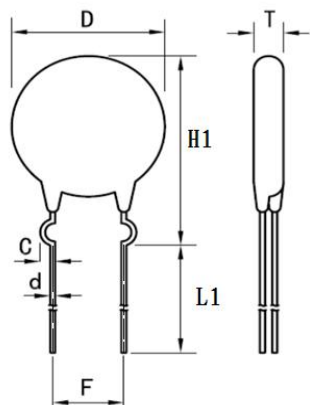
Put "J" In Free Code Stands For High Surge Series

Part Number		Maxlimum Allowable Voltage 最大允许电 压		VaristorVoltage 压敏电阻器 动作电压	ClampingVoltage (Max.) 抑制电压 @(8/20)us	Maxlimum Peak Current 最大电流耐量 (8/20)us		Maxlimum Energy 最大吸收能 (10/1000)us		Rated Power 消耗功率	Typical Capacitance (Reference) 参考电容值	
		AC.rms	DC	V _{1.0mA} (V)	Vc	IP	Standard	High Surge	Standard	High Surge	(W)	@1KHz (pF)
Standard	High Surge	(V)				(V)	(A)	(A)		(J)		
20D180K	J	11	14	18(14.4-21.6)	36	20	2000 / 1000×2	3000 / 2000×2	11.0	13.0	0.2	28500
20D220K	J	14	18	22(18.7-26)	43				14.0	16.0		18500
20D270K	J	17	22	27(23-31.1)	53				16.0	19.0		13000
20D330K	J	20	26	33(29.5-36.5)	65				23.0	24.0		11500
20D390K	J	25	31	39(35-43)	77				26.0	28.0		8500
20D470K	J	30	38	47(42-52)	93				30.0	34.0		7400
20D560K	J	35	45	56(50-62)	110				38.0	44.0		6500
20D680K	J	40	56	68(61-75)	135				41.0	49.0		5800
20D820K	J	50	65	82(74-90)	135	100	6500 / 4500×2	10000 / 6500×2	45.0	56.0	1.00	4900
20D101K	J	60	85	100(90-110)	165				50.0	70.0		4000
20D121K	J	75	110	120(108-132)	200				55.0	85.0		3300
20D151K	J	95	125	150(135-165)	250				70.0	106.0		2700
20D181K	J	115	150	180(162-198)	300				85.0	130.0		2200
20D201K	J	130	170	200(185-225)	340				95.0	140.0		2000
20D221K	J	140	180	220(198-242)	360				100.0	155.0		1800
20D241K	J	150	200	240(216-264)	395				108.0	168.0		1650
20D271K	J	175	225	270(243-297)	455				127.0	190.0		1500
20D301K	J	190	250	300(270-330)	500				136.0	210.0		1300
20D331K	J	210	275	330(297-363)	550				150.0	228.0		1200
20D361K	J	230	300	360(324-396)	595				163.0	255.0		1100
20D391K	J	250	320	390(351-429)	650				180.0	275.0		1000
20D431K	J	275	350	430(387-473)	710				190.0	305.0		930
20D471K	J	300	385	470(423-517)	775				204.0	350.0		850
20D511K	J	320	415	510(459-561)	845				210.0	360.0		780
20D561K	J	350	460	560(504-616)	925				215.0	380.0		710
20D621K	J	385	505	620(558-682)	1025				224.0	390.0		650
20D681K	J	420	560	680(612-748)	1120				230.0	400.0		600
20D751K	J	460	615	750(675-825)	1240				255.0	420.0		530
20D781K	J	485	640	780(702-858)	1290				265.0	440.0		510
20D821K	J	510	670	820(738-902)	1355				282.0	460.0		500
20D911K	J	550	745	910(819-1001)	1500				310.0	510.0		440
20D102K	J	625	825	1000(900-1100)	1650				342.0	565.0		40
20D112K	J	680	895	1100(990-1210)	1815				383.0	620.0		360
20D122K	J	750	990	1200(1080-1320)	1980				408.0	660.0		350
20D142K	J	880	1140	1400(1260-1540)	2310				532.0	784.0		340
20D162K	J	1000	1280	1600(1440-1760)	2640				606.0	896.0		330
20D182K	J	1100	1465	1800(1620-1980)	2970							

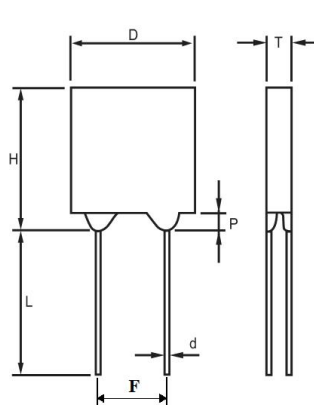
Dimension of Component for Standard Product 标准品尺寸规格



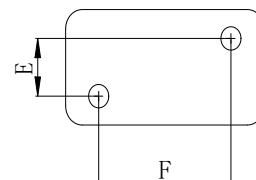
(图 1: 直脚产品图)



(图 2: 外弯脚产品图)



(图 3: 方形产品简图)



(图 4: 脚距图)

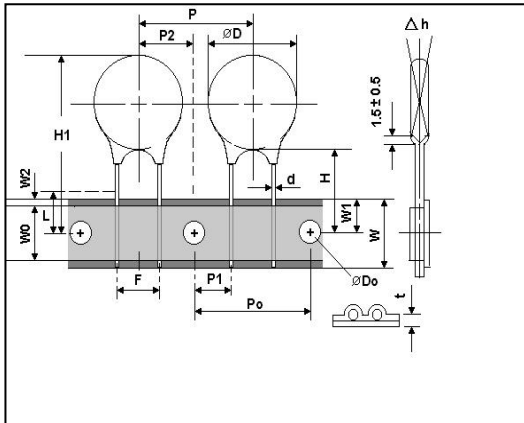
Dimension Table 尺寸规格: Unit:mm

Sizes	MAX			CP Wire $d \pm 0.05$	$F \pm 1.0$	Lmin	L1min	$C \pm 0.4$	Pmax
	D	H	H1						
05D	7.5	10.5	13	0.6	5.0 ± 1.0	20	20	1.2	3.0
07D	9	12	15	0.6	5.0 ± 1.0	20	20	1.2	3.0
10D	12.5	16.5	19.5	0.8	7.5 ± 1.0	20	20	1.8	3.0
14D	16.5	20	23.5	0.8	7.5 ± 1.0	20	20	1.8	3.0
20D	23	26.5	29.5	0.8	7.5 ± 1.0	20	20	1.8	3.0
				1.0	10.0 ± 1.0				

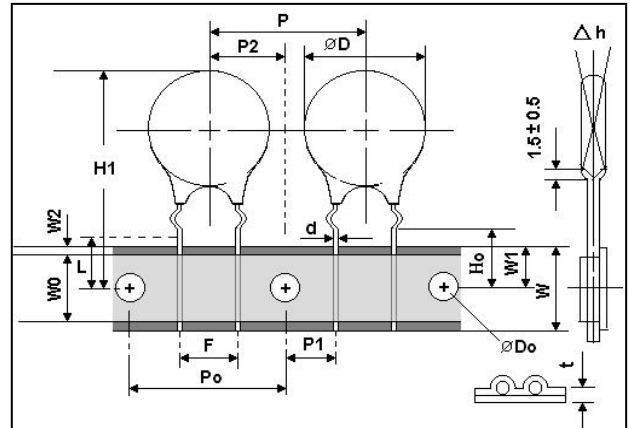
Product Thickness (Tmax) Table 成品厚度尺寸: Unit :mm

Part Code	05D	07D	10D	14D	20D	E (±1.0)
180K	3.4	3.6	4.0	4.1	4.4	1.3
220K	3.6	3.8	4.0	4.3	4.5	1.4
270K	3.8	4.0	4.3	4.5	4.8	1.5
330K	3.5	3.7	4.1	4.2	4.5	1.7
390K	3.7	3.9	4.3	4.4	4.7	1.8
470K	3.8	4.1	4.5	4.6	4.9	1.8
560K	3.8	4.2	4.5	4.7	4.7	1.9
680K	4.0	4.3	4.5	4.5	5.0	2.2
820K	3.3	3.5	3.9	4.0	4.3	1.6
101K	3.6	3.8	4.2	4.3	4.6	1.8
121K	3.8	4.0	4.4	4.5	4.8	2
151K	4.1	4.3	4.7	4.8	5.1	1.8
181K	3.2	3.4	3.8	3.9	4.2	1.6
201K	3.3	3.5	3.9	4.0	4.3	1.7
221K	3.4	3.6	4.0	4.1	4.4	1.7
241K	3.5	3.7	4.1	4.2	4.5	1.8
271K	3.7	3.9	4.2	4.3	4.6	1.9
301K	3.9	4.1	4.3	4.4	4.7	2.1
331K	4.0	4.2	4.5	4.6	4.9	2.2
361K	4.1	4.3	4.7	4.8	5.1	2.3
391K	4.2	4.4	4.8	4.9	5.2	2.5
431K	4.4	4.6	5.0	5.1	5.4	2.5
471K	4.8	5.0	5.2	5.5	5.8	2.6
511K	5.0	5.2	5.5	5.6	5.9	2.6
561K	5.2	5.4	5.7	5.8	6.1	2.8
621K	5.3	5.5	5.7	5.8	6.1	3
681K	5.4	5.6	5.8	5.9	6.2	3.2
751K	5.6	5.8	6.0	6.1	6.4	3.4
781K	—	6.0	6.3	6.4	6.7	3.7
821K	—	6.3	6.5	6.6	6.9	3.4
911K	—	—	6.6	6.7	7.0	3.7
102K	—	—	7.0	7.1	7.4	4
112K	—	—	7.4	7.5	7.9	4.3
122K	—	—	—	7.7	8.1	5.2
142K	—	—	—	8.7	9.1	5.6
152K	—	—	—	9	9	6
162K	—	—	—	9.7	9.9	6.7
182K	—	—	—	9.7	10.1	7.4

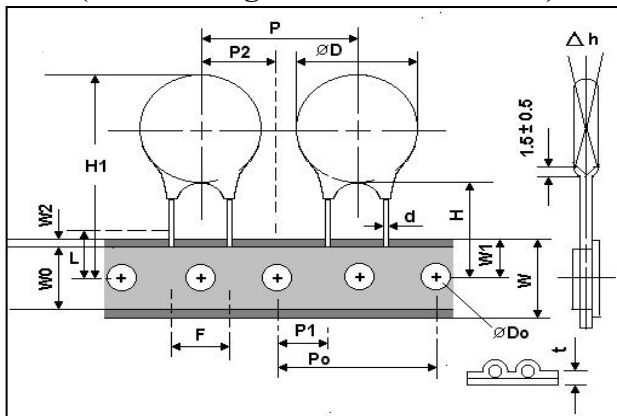
Tape and Reel Specifications 编带装尺寸规格



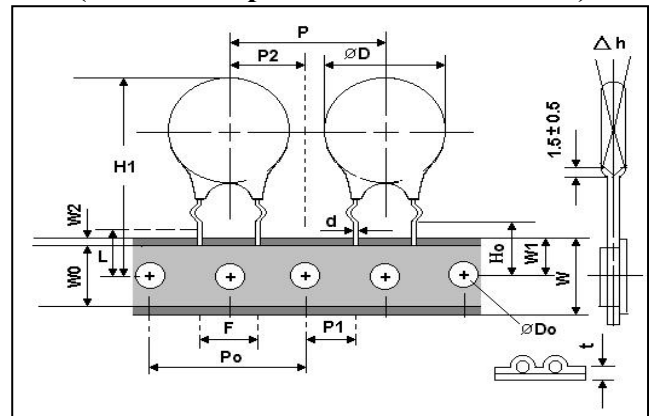
(图 1: Straight Leads 05D\07D\10D)



(图 2: Crimped Leads 05D\07D\10D)



(图 3: Straight Leads 10D\14D\20D)



(图 4: Crimped Leads 10D\14D\20D)

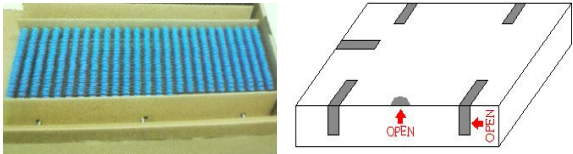
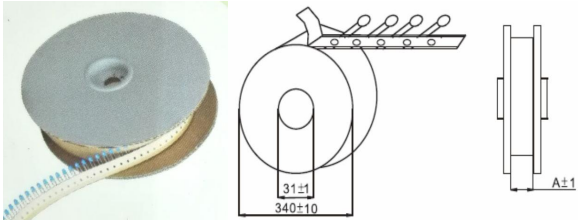
Symbol	PARAMETER	Series (Unit:mm)						
		05D series	07D series	10D series		14D series		20D series
P	Pitch of Componet	12.7±1.0	12.7±1.0	12.7±1.0	15.0±1.0	25.4±1.0	30±1.0	25.4±1.0
P ₀	Feed Hole Pitch	12.7±0.3	12.7±0.3	12.7±0.3	15.0±0.3	25.4±0.3	15±0.3/30±0.3	12.7±0.3
P ₁	Feed Hole Center to Lead	3.85±0.7	3.85±0.7	2.60±0.7	3.75±0.7	8.95±0.7	3.75±0.7	8.95±0.7
P ₂	Hole Center to Component Center	6.35±0.7	6.35±0.7	12.7±0.7	7.5±1.3	12.7±0.7	7.5±0.7	12.7±0.7
F	Lead to Lead Distance	5.0±0.8	5.0±0.8	7.5±0.8	7.5±0.8	7.5±0.8	7.5±0.8	10/7.5±0.8
Δ h	Component Alignment	2.0 Max	2.0 Max	2.0 Max	2.0 Max	2.0 Max	2.0 Max	4.0 Max
W	Tape Width	18.0 ^{+1.0} _{-0.5}	18.0 ^{+1.0} _{-0.5}	18.0 ^{+1.0} _{-0.5}	18.0 ^{+1.0} _{-0.5}	18.0 ^{+1.0} _{-0.5}	18.0 ^{+1.0} _{-0.5}	18.0 ^{+1.0} _{-0.5}
W ₀	Hold Down Tape Width	5.0MIN.	5.0MIN.	5.0MIN.	5.0MIN.	5.0MIN.	5.0MIN.	5.0MIN.
W ₁	Hole Position	9.0 ^{+0.75} _{-0.50}	9.0 ^{+0.75} _{-0.50}	9.0 ^{+0.75} _{-0.50}	9.0 ^{+0.75} _{-0.50}	9.0 ^{+0.75} _{-0.50}	9.0 ^{+0.75} _{-0.50}	9.0 ^{+0.75} _{-0.50}
W ₂	Hold Down Tape Position	3.0Max	3.0Max	3.0Max	3.0Max	3.0Max	3.0Max	3.0Max
H	Height from Tape Center to Component Base	18.0 ^{+2.0} _{-0.0}	18.0 ^{+2.0} _{-0.0}	18.0 ^{+2.0} _{-0.0}	18.0 ^{+2.0} _{-0.0}	18.0 ^{+2.0} _{-0.0}	18.0 ^{+2.0} _{-0.0}	18.0 ^{+2.0} _{-0.0}
H ₀	Seating Plane Height	16.0±0.5	16.0±0.5	16.0±0.5	16.0±0.5	16.0±0.5	16.0±0.5	16.0±0.5
H ₁	Component Height	29.0Max	32.0Max	36.0Max	36.0Max	40.0Max	40.0Max	40.0Max
D ₀	Feed Hole Diameter	4.0±0.2	4.0±0.2	4.0±0.2	4.0±0.2	4.0±0.2	4.0±0.2	4.0±0.2
t	Total Tape Thickness	0.7±0.2	0.7±0.2	0.7±0.2	0.7±0.2	0.7±0.2	0.7±0.2	0.7±0.2
L	Leagth of Clipped Lead	11.0 Max	11.0 Max	11.0 Max	11.0 Max	11.0 Max	11.0 Max	11.0 Max

Packaging Specifications 包装说明书

Bulk Packaging 散装:

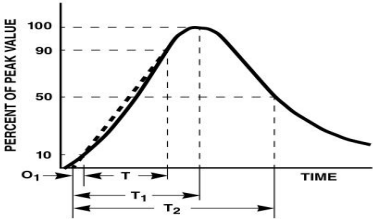
Series	Min./Plastic bag Quantity
05D	1000PCS
07D	1000PCS
10D	500PCS
14D	500PCS
20D	250PCS
25D	200PCS

Taping Packaging 编带包装:

Packing	Dimensions in mm	Series	Min Quantity(pcs)
Ammo		05D、07D	1500/1000
		10D、14D	1000/750
		20D	500/250
Reel		05D、07D	1500/1000
		10D、14D	1000/750
		20D	500/250

Or Customer Request

Performance Characteristics (Electrical)性能特性

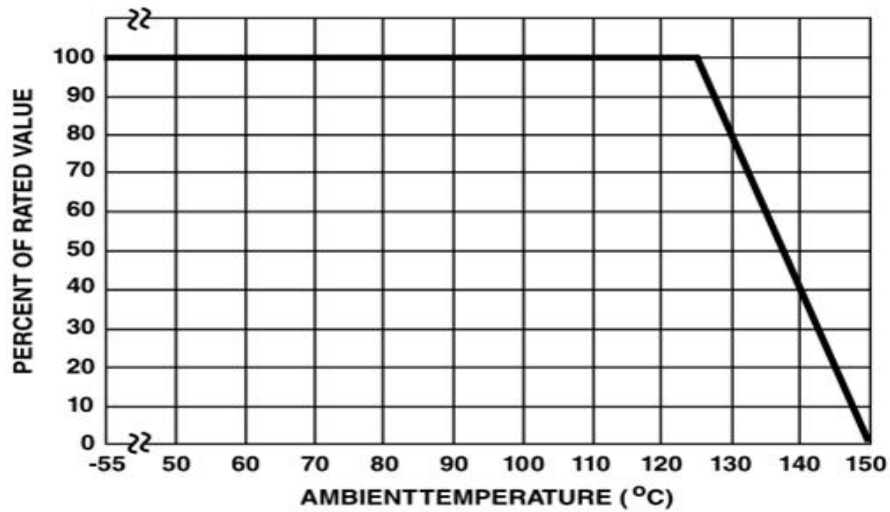
Test Item/Standard 测试项目/标准		Test Methods/Description 测试方法/说明	Specifications 规格值
Standard Test Condition 标准测试条件		Environmental conditions under which every measuring is done without doubt on the measuring results. Unless specified. Temperature humidity are 5 to 35°C 45 to 85%RH. 原则上以室温 25°C, 65%RH 为实验条件, 判定上有疑义时以温度: 室温 5-35°C、相对湿度: 45-85%RH 为条件不特别限定。	—
Maximum Allowable Voltage 最大容许电压		The maximum sinusoidal RMS voltage or maximum DC voltage that can be applied continuously in the specified environmental Temperature range. 连续施以交流电压或直流电压之最大值	To meet the specified value 如规格表
Varistor Voltage 压敏电压		The voltage between two terminals with the specified measuring current C mA DC applied is called V _c or V _{cmA} , the measurement shall be made as fast as possible to avoid heat affection. 使用 C mA DC 之电流施以压敏电阻器测量两端之电压即为压敏电压或称 V _c 。为了避免热效应影响, 测量时间尽可能快。(一般为 40ms)	
Clamping Voltage 抑制电压		The maximum voltage between two terminals with the specified standard impulse current (8/20us) illustrated below applied. 使用一标准 8/20 规格脉冲电流通过压敏电阻器, 此时两端之最大电压。 	
Maximum Peak Current 突波耐量 (Withstanding Surge Current)	2times 2 次	The maximum current within the varistor voltage change of ±10% with the standard impulse current (8/20us) applied two times with an interval of 5 minutes. 以 8/20 之标准波形电流加于压敏电阻器两端两次, 中间间隔 5 分钟, 使压敏电压偏移量在 ±10 以内之最大电流值。	
	1time 1 次	The maximum current within the varistor voltage change of ±10% with the standard impulse current (8/20us) applied one time. 以 8/20 之标准波形电流加与压敏电阻器两端一次, 压敏电压偏移量在 ±10 以内之最大电流值。	
Maximum Energy 最大吸收能量		The maximum energy within the varistor voltage change of ±10% when one impulse of 2ms or 10/1000us is applied. 以 2ms 或 10/1000us 方波加于压敏电阻器上一次, 压敏电压偏移量在 ±10% 以内的能量。 $E(\text{能量}) = V_m \cdot I_m \cdot T$ I _m : 最大容许的方波电流 V _m : 在 I _m 时的最大抑制电压 T: 突波电流的经过时间 (有效波宽)	

Rated Power 消耗功率	The power that can be applied in the specified ambient temperature. 在 85±2℃ 的交流电连续施加于压敏电阻器上 1000 小时, 压敏电压偏移量在±10% 以内的最大电力。	
Capacitance 电容	Capacitance shall be measured at 1kHz ±10%.1Vrms max.(1 MHz below 100pF).0V bias and 20±2℃. 电容应在 1KHz±10%, 1Vrms max.,(>100pF 用 1MHz)0V bias 下测得且周围温度是 20±2℃。	
Dissipation Factor 消散要素	Dissipation Factor shall be measured at 1KHz±10%.1Vrms max.(1MHz±10% below 100pF).0V bias and 20±2℃ 消散要素应在 1KHz±10%, 1Vrms max.,0V bias 下测得且周围温度是 20±2℃。	To meet the specified value 如规格表
Temperature Coefficient of Varistor Voltage 电压温度系数	$\frac{V_c \text{ at } 85^{\circ}\text{C} - V_c \text{ at } 25^{\circ}\text{C}}{V_c \text{ at } 25^{\circ}\text{C}} \times \frac{1}{60} \times 100(\%/^{\circ}\text{C})$	±0.05%/℃ max
Withstanding Voltage (Body Insulation) 封装树脂耐压 (本体绝缘性) IEC 61051-1	The specified voltage shall be applied both terminals of the specimen connected together and metal foil closely wrapped round its body for at AC 2500V 1minute. Electrical breakdown shall be examined. 将封装完成之成品于瓷片上有树脂封装部分, 以金属线烧成紧密线圈状, 于线圈出头端与铜脚端输入电压 AC 2500V 1 分钟, 看其电性崩溃情形。	No breakdown 无崩溃情形

Note:Varistor voltage change of forward direction shall be measured in the test of uni-pole surge life and DC Load life

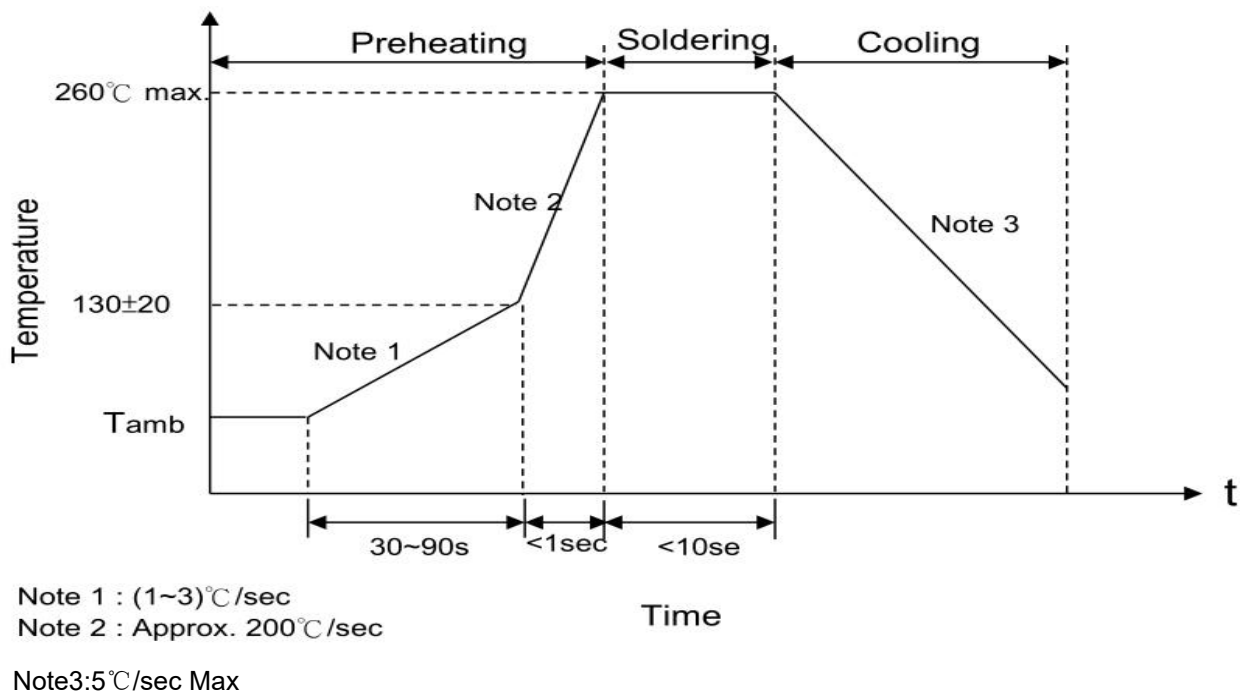
备注：压敏电阻试验后应以同一方向试验测量电压变化量。

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)

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.)