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广东科尼盛电子科技有限公司
KNSCHA ELECTRONICS CO., LIMITED

规格承认书

Specification For Approval

客户名称: (Customer Name)	
产品名称: (Product Name)	NTC塑封热敏电阻
客户料号: (Customer part number)	
科尼盛料号: (KNSCHA number)	192NTC0007
型号规格: (Specifications)	NTC 2.5D-11 2.5Ω+20% 5A 4032封装
日期: DATE	2025.12.22

制 造 Manufacture	
核 准 APPROVAL	制 作 PREPARED
王帅	张优美

客户承认栏 CUSTOMER APPROVED		
核 准 APPROVED	确 认 CHECKED	经 办 DESIGNED

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PART NO 型号. KNS4032N2R5M5R0

1 Type Code Designation 类型代码名称

KNS	4032	N	2R5	M	5R0
①	②	③	④	⑤	⑥

① KNS: 品牌

② 4032: Chip Size 尺寸

③ N: Negative Temperature Coefficient NTC 负温度系数

④ 2R5: 2.5Ω Rated Zero-Power Resistance 额定零功率电阻值

⑤ M: Accuracy Error 20% 精度误差

⑥ 5R0: 5.0A Max. Steady State Current 最大稳态电流

2 Electrical Characteristics 电气特性

Technical Data 技术数据	Symbol	Value	6.3	J
Rated Zero-Power Resistance 额定零功率电阻值	R25	2.5	Ω	
Material Constant 材料常数	B25/85	2700	K	
Max. Steady State Current 最大稳态电流	Imax/25℃	5.0	A	
Thermal Dissipation Constant 耗散系数	mW	≥13	℃	
Thermal Time Constant 热时间常数		≤55	S	
Operating Temperature Range 工作温度范围		-40 ~ 175	℃	
Max.Load Capacitance 最大允许电容量(μF)		110Vac/1050 240Vac/220 290Vac/150	uF	
Vax Energy(J) 最大能量		6.3	J	

3 NSPECTION 检验方法

3-1. Lot Inspection 批量检验

Sampling with IEC410 / DIN ISO 2859-1 (GB/T2828.1-2012) ; Testing with SPEC.NO. :
EKT4032N2R5M5R0

抽样方法按 IEC410/ DIN ISO 2859-1 (GB/T2828.1-2012); 试验方法按 SPEC.NO. :
EKT4032N2R5M5R0

Item 指标项目	IL	AQL		Item 指标项目	IL	AQL
Appearance 外观	II	0.65		Rated Zero-Power Resistance 额定零功率电阻 R_N	II	0.65
ldering-Ability 可焊性	S-2	2.5		Max.Steady State Curre 最大稳态电流(A)	S-2	2.5

4. STORAGE CONDITIONS 存贮环境条件:

4-1. Temperature 温度: -10℃~+40℃

4-2. Humidity 湿度: ≤70% RH

4-3. Term 期限: ≤6 months (First-in/ First-out 先进先出)

4-4. Place 地点:

Do not exposing the components to the following conditions, otherwise, it may result in deterioration of characteristics:
不要暴露在下列环境条件下，否则将导致性能衰退或参数飘移:

1) Corrosive gas or deoxidizing gas. 腐蚀性或易氧化气体
2) Flammable and explosive gases. 易燃易爆气体
3) Oil, water and chemical liquid. 油、水和化学溶液
4) Under the sunlight. 太阳光下

4-5. Handling after seal open:After unpacking of the minimum package, reseal it promptly or store it inside a sealed container with a drying agent.

尽量保证开口最小化，立即重新封好，并贮存在密封、带有干燥剂的容器中。

5. WARNING 注意、警告 !

Do not apply the components under the following conditions, otherwise, it may result in deterioration of characteristics, destruction of components or in the worst case, to catching fire:

请不要在下列条件下使用本元件，否则将可能导致产品性能衰退或产品损毁，甚至引发火灾：

1) Exceeding Imax . 超过最大工作电流
2) Exceeding rated temperature range. 超过许可工作温度范围
3) Inferior thermal dissipation (Due to badly inferior thermal dissipation, some part of the components body will become overheated and then be damaged.) 散热不良（由于散热不良，本元件可能因部份过热而导致破坏。)

6. MECHANICAL CHARACTERISTICS 机械性能		
Item 指标项目	Specification 技术要求	Test Conditions & Methods 测试条件/方法
6-1. Solder-ability 可焊性	① 无外观损伤； No visible damage. ② 元件端电极的焊锡覆盖率不小于 95%。 Wetting shall exceed 95% coverage	① 焊接温度 Solder temperature: 255±5℃. ② 回流焊时间 Reflow soldering: 4±0.3s. ③ 焊锡成分 Solder: 96.5Sn/3.0Ag/0.5Cu. ④ 助焊剂 Flux: （重量比）25%松香和 75%酒精 25% Resin and 75% ethanol in weight
6-2. Resistance To Soldering Heat 耐焊接热	No visible mechanical damage. 无可见损伤 ΔR/ RN ≤20% (ΔR = ｜RN-RN'｜)	The test shall be conducted according to IEC68-2-20 (GB2423. 28) test Tb.Using the welding method, after the end electrode is coated with solder paste, the temperature is 255 ± 5 ℃, and it is maintained for 10 ± 1 second After 4-5h recovery at 25 ± 2 ℃, retest the rated zero power resistance RN '根据 IEC68-2-20 (GB2423 .28) 试验 Tb 进行试验。 采用焊接法，将端电极沾锡膏后，温度为 255±5℃、维持 10±1 秒，在 25±2℃ 条件下恢复 4—5h 后，复测额定零功率电阻 RN'.
6-3. Strength of lead terminal 引出端强度	No break out 无损坏 ΔR/ RN ≤20% (ΔR = ｜RN-RN'｜)	Fasten the body and apply a force gradually to each lead until 10N and then keep for 10 sec, Hold body and apply a force to each lead until 90°slowly at 5N in the direction of lead axis and then keep for 10sec, and do this in the opposite direction repeat for other terminal. After recovering 4~5h under 25 ± 2 ℃, the rated zero power resistance value RN' shall be measured. (See IEC68-2-21/GB2423.29 Ua / Ub) 根据 IEC68-2-21 (GB2423 .29) 试验 U 进行试验。 试验 Ua：拉力 10N，持续 10 S； 试验 Ub：弯曲 90°，拉力 5N ，持续 10 S； 扭转 180°，拉力 5N，持续 10 S。 在 25±2℃条件下恢复 4~5 h 后，复测额定零功率电阻 RN'

7.ELECTRICAL CHARACTERISTICS 电气性能测试

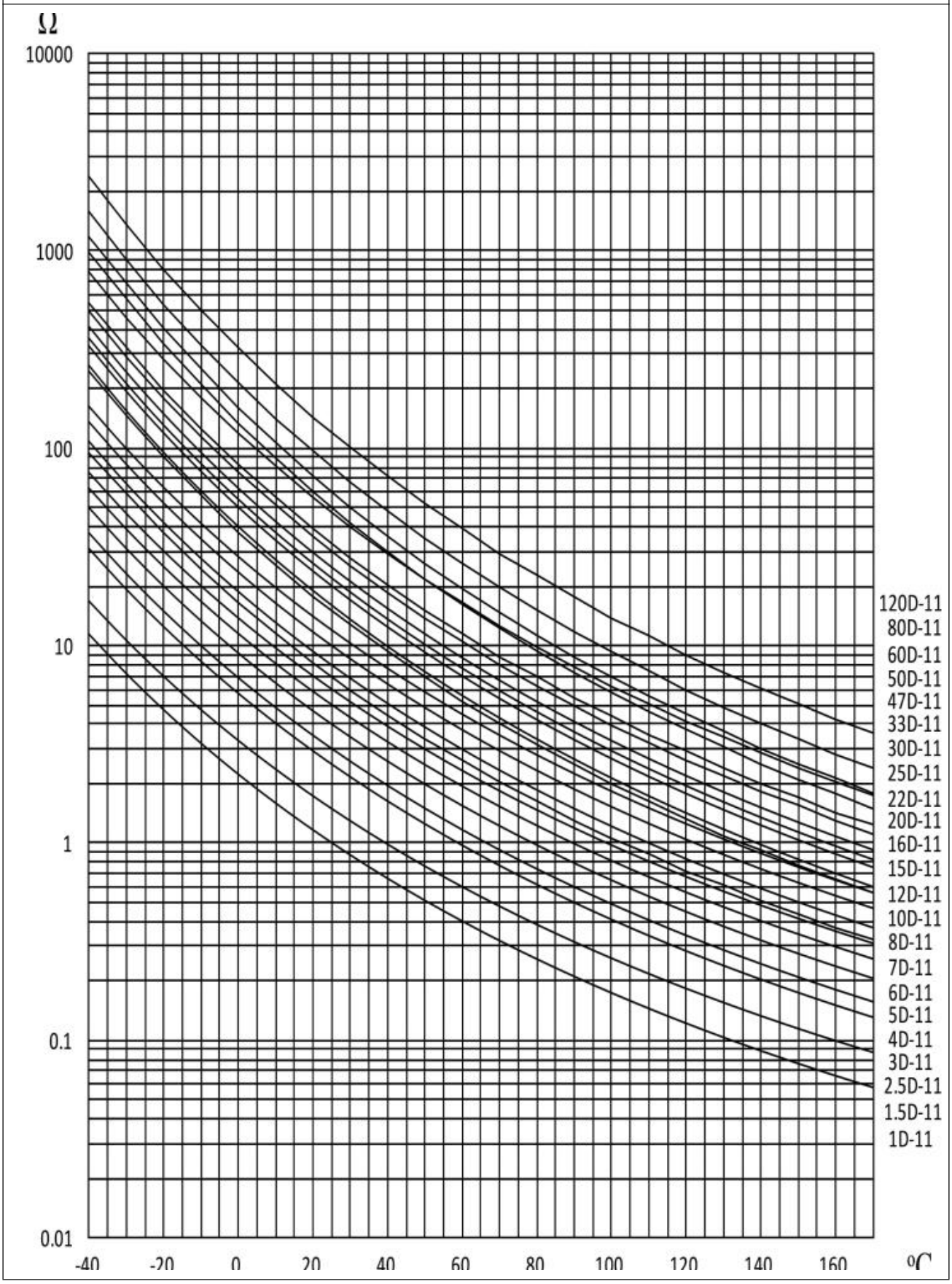
7-1.Test Conditions & Method 测试条件/方法

Items 指标项目	Spec. 技术要求	Test Conditions & Methods 测试条件/方法
7-1-1.Rated Zero- Power Resistance 额定零功率电阻 R_N (Ω)	2.5± 20%	A mbient temp . Range:25℃±2℃(T_A). Testing voltage: 1.5V_{DC} After placing for 1~2 hours under T_A, the resistance value shall be measured. 环境温度 T_A: 25℃±2℃ 测试电压: 1.5V_{DC} 在常温 T_A 条件下，放置 1~2 小时 后测得阻值 R_N。
7-1-2.Thermal Dissipation Constant 热耗散系数 (mW/℃)	≥13	The thermal dissipation constant(6) could be calculated by the ratio of a change in power dissipation(Δ P) of the thermistor to a change in temperature(ΔT) of the thermistor at a specified ambient temperature. 在特定的环境温度下，热耗散系数(6)为热敏电阻电功率消耗(ΔP)与本体温度变化量 (ΔT)的比值。
7-1-3.Thermal Time Constant 热时间常数 T (s)	≤55	The time(T) shall be measured within which the temperature change of NTC thermistor is reached at 63.2% of the ambient temperature change under zero power condition. 热时间常数(T)为在零功率条件下，热敏电阻的温度下降到其最初温度与最终温度之差为 63.2% 时所需要的时间。
7-1-4.Material Constant 材料常数 B (K)	2700± 10% $B=T_1T_2/(T_2-T_1)\times L_n(R_1/R_2)$	R_1 , R_2 is zero-power resistance at T_1 , T_2 R_1, R_2 分别为 T_1, T_2 温度下的零功率电阻 T_1 = 298.15K(25℃) T_2 = 358.15K(85℃)
7-1-5.Max.Steady State Current 最大稳态电流(A)	5.0A No visible mechanical damage. 无可见损伤 $\Delta R_N/R_N \leq 20\%$ ($\Delta R = \lvert R_N - R_N' \rvert$)	Environmental temperature 环境温度: 25℃±2℃ Testing Current 测试电流: 5.0A

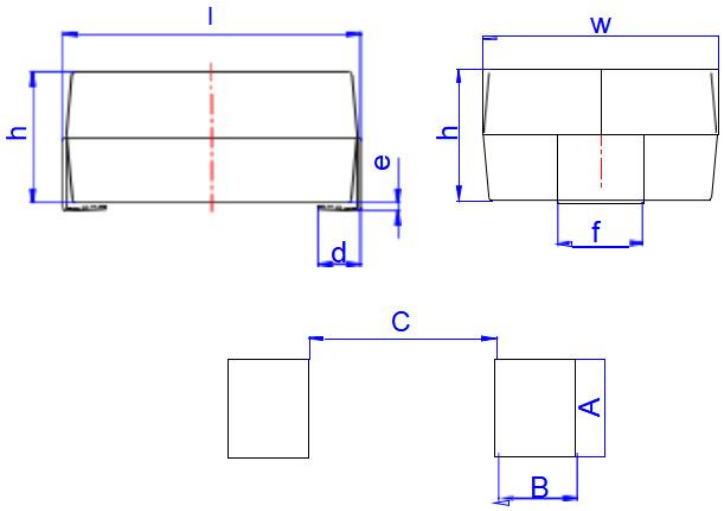
8. Reliability Test 可靠性试验 (周期性检测项目)

Items 指标项目	Spec. 技术要求	Test Conditions & Methods 测试条件/方法
*8-1. Temp. Cycling Testing 温度循环测试	No visible mechanical damag 无可见损伤 $\Delta R_N / R_N \leq 20\%$ ($\Delta R = \lvert R_N - R_N' \rvert$)	Ta: -40±3°C/ 30min→25±2°C/ 5min Tb: 150±3°C/ 30min→25±2°C/ 5min Cycles: 5 times After recovering 4~5 h under 25±2°C, the rated zero power resistance value R_N' shall be measured. 在 Ta=-40±3°C和 Tb=150±3°C的环境温度中各存放 30 分钟, 循环 5 次，每次高低温循环都有在25±2°C的环境中过渡 5 分钟。 样品进行温度循环测试后，取出放置室温(25±2°C) 4~5 小时后测量零功率电阻 R_N'.
*8-2. Electrical Cycling Testing 电循环测试	No visible mechanical damage. 无可见损伤 $\Delta R_N / R_N \leq 20\%$ ($\Delta R = \lvert R_N - R_N' \rvert$)	A mbient temp. Range:25°C±2°C. Cycles: 2,000 times On / Off: 5 s / 55 s Test Current: 5.0 A After recovering 4~5 h under 25 ± 2 °C, the rated zero power resistance value R_N' shall be measured. 环境温度: 25°C±2°C . 循环次数: 2,000 次 通/断: 5 s / 55 s 测试电流: 5.0 A 样品置于室温 (25±2°C) 4~5 小时后,测量其零功率电阻 R_N'.
*8-3.LoadLife (Endurance) Testing 持久性测试	No visible mechanical damage. 无可见损伤 $\Delta R_N / R_N \leq 20\%$ ($\Delta R = \lvert R_N - R_N' \rvert$)	A mbient temp. Range: 25°C±2°C; 5.0 A/ 1,000±24 h. After recovering 4~5 h under 25±2°C, the rated zero power resistance value R_N' shall be measured. 环境温度: 25°C±2°C . 样品通过最大工作电流 5.0 A, 1,000±24 小时后，取出置于室温 (25±2°C) 4~5 小时后,测量其零功率电阻 R_N'.
*8-3. Humidity Testing 耐湿性测试	No visible mechanical damage 无可见损伤 $\Delta R_N / R_N \leq 20\%$ ($\Delta R = \lvert R_N - R_N' \rvert$)	A mbient temp . range : 40°C±2°C R.H.: 93±3% , Energized time: 1000±24 h After recovering 4~5 h under 25 ±2 °C, the rated zero power resistance value R_N' shall be measured. 在温度 40 ±2°C，相对湿度 93 ±3% 的环境中放置 1000±24 小时后，取出置于室温 (25±2°C) 4~5 小 时后，测量其零功率电阻 R_N

9. R/T curve 阻温曲线 （KNS4032N2R5M5R0）2.5D-11



10. Dimensional drawings 尺寸图 4032



Recommended solder pad layout

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
l	10.20		11.00	0.402		0.433
w	7.90		8.50	0.311		0.335
h	3.75		4.50	0.173		0.197
d	1.20		1.80	0.047		0.071
e	0		0.30	0		0.012
f	2.70		3.30	0.106		0.130
A		3.50			0.138	
B		2.80			0.110	
C		6.50			0.256	

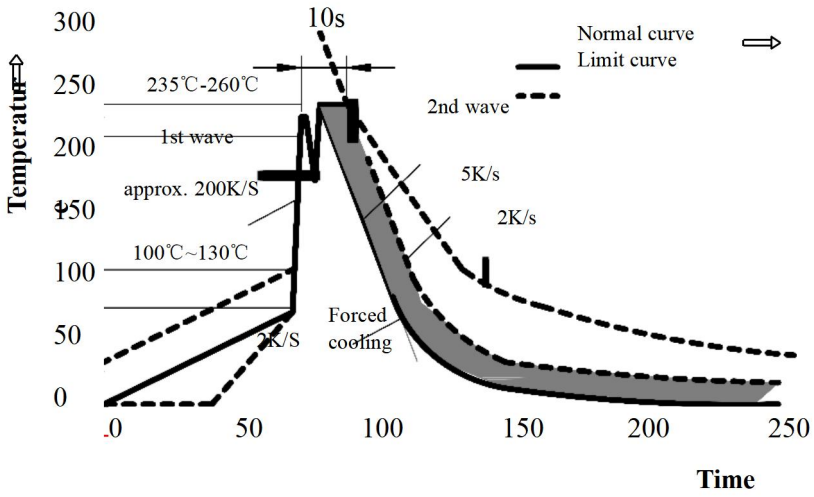
11. Soldering guidelines 焊接指南

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

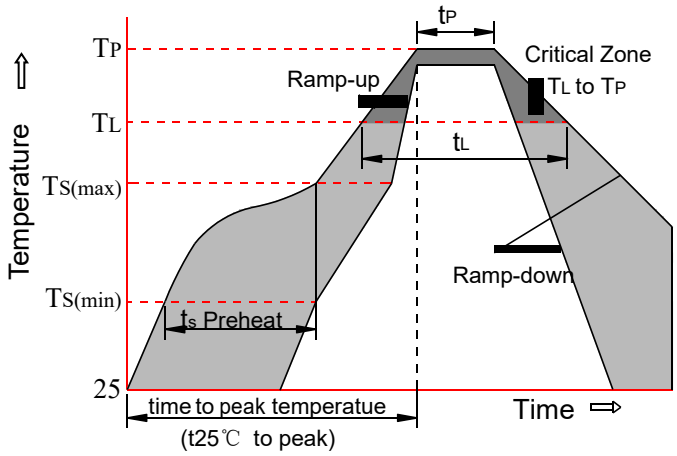
根据 JEDEC J-STD-020C，组件适用于回流焊

11.1 Wave soldering波峰焊



Temperature characteristics at component terminal with dual-wave soldering

11.2 Reflow soldering 回流焊

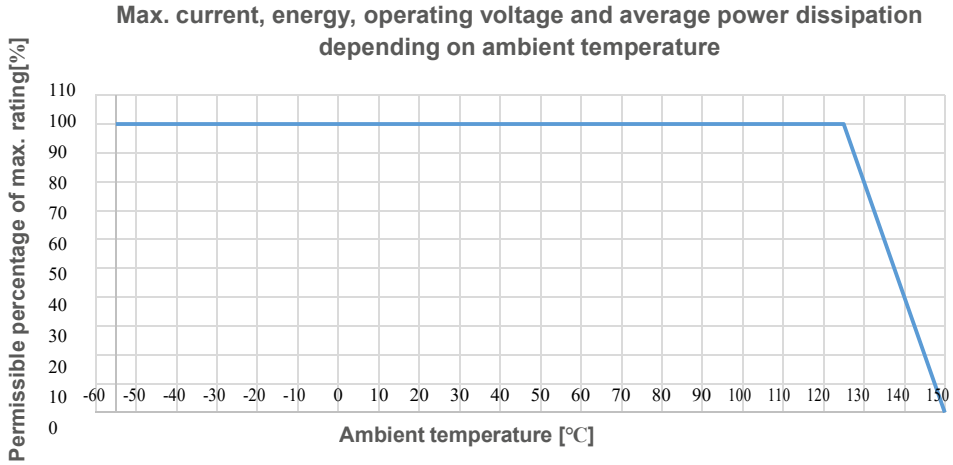


Profile feature 产品特性		Sn-Pb assembly 有铅焊接	Pb-Free assembly 无铅焊
Average ramp-up rate (T_{Smax} to T_p)		3℃/sec. Max	3℃/sec. Max
Preheat	-Temperature min. ($T_{s(min)}$)	+100℃	+150℃
	-Temperature max.($T_{s(max)}$)	+150℃	+200℃
	-Time (t_{Smin} to t_{Smax})	60-120 secs.	60-180 secs.
$T_{s(max)}$ to T_L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

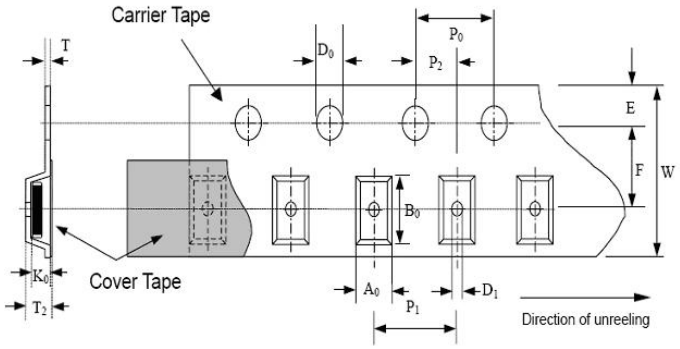
Notes: All temperature refer to topside of the package, measured on the package body surface

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

12 Temperature derating curve 温度下降曲线

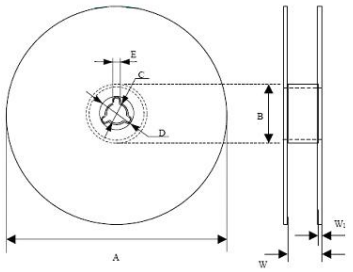


13.1 Packaging Specification 包装规格



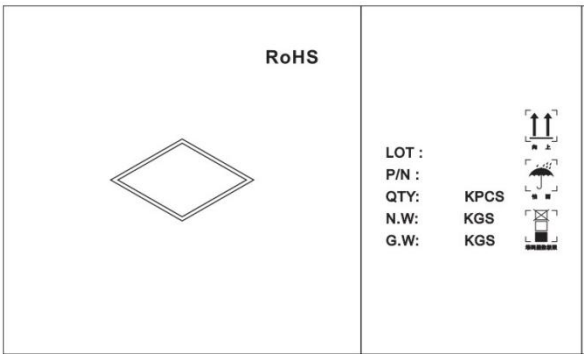
type	A_0 ±0.20	B_0 ±0.20	K_0 ±0.10	T max	T_2 max	D_0 +0.05	D_1 ±0.05	P_1 ±0.10	P_2 ±0.05	P_0 ±0.1	W ±0.30	E ±0.10	F ±0.05
2220	6.0	8.15	4.00	0.3	4.50	1.55	1.55	8.00	2.00	4.00	16.00	1.75	7.50
3220	7.0	8.7	4.50	0.3	5.20	1.55	1.55	12.00	2.00	4.00	16.00	1.75	7.50
4032	8.4	10.8	4.50	0.3	5.50	1.55	1.55	12.00	2.00	4.00	16.00	1.75	7.50

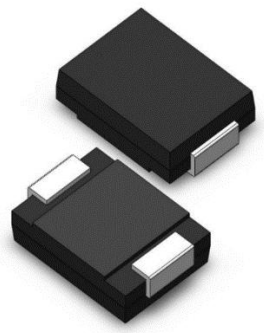
13.2 reel dimension 卷轴尺寸



type	A	B	C	D	E	W-W1	W_1
2220-4032	329.0±1.0	60.0±0.5	13.0±0.2	21.0±0.2	2.0±0.5	17.2±0.7	2.3±0.15

1) Quantity of taping packing(pcs) 胶带包装每盘数量: 1000 只





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KNSCHA:

RVT4.7UF100V67RV0118 SHG330UF50V01EC2021 189RV0063 225RV0065 MPP104J2J15AJ22600 126RV0004 189RV0006 225RV0031 225RV0058 MPX472K31C2KN15600 MPX824K31DLKN15800 RVE100UF35V67RV0072 RVT100UF35V34RV0158 RVT22UF50V67RV0028 XT47UF35V90RV0081 FZ220UF50V90RV0126 VT10UF16V167RV0128 XT220UF50V90RV0078 126RV0008 178MU0009 MEB105J63V82CB0235 MPX155K31D7KN15800 RVT100UF16V67RV0016 01EC4294SHC1000UF25V 225RV0026 MPP224J2J10NN22600 RVT100UF50V67RV0040 XT100UF10V90RV0060 FZ100UF35V90RV0145 189RV0036