



Features

- Surface mount
- Halogen free / Sb free
- RoHS compliance
- Fast response time
- Protect Li-ion battery from overcurrent

Applications

- Vacuum cleaner
- Powertools
- Lawn mower
- Energy storage batteries
- Battery Management System

TEPK Series

Alpha-Top (Sea & Land Alliance)

Specifications

Model	I _{rated}	Cells in series	V _{max}	I _{break}	V _{op}	Resistance		Agency Approval	
						R _{heater}	R _{fuse}	UL	TUV
	(A)		(V)	(A)	(V)	(Ω)	(mΩ)		
TEPK0130N	30	1	80	80	4-6.6	0.8-1.2	0.5-2.5	√	
TEPK0230N	30	2	80	80	5.6-9.0	1.5-2.4	0.5-2.5	√	
TEPK0330N	30	3	80	80	8.4-13.2	3.2-5.2	0.5-2.5	√	
TEPK0430N	30	4	80	80	11.1-18.4	6.3-9.3	0.5-2.5	√	
TEPK0530N	30	5	80	80	14.0-23.4	10.0-15.0	0.5-2.5	√	
TEPK0630N	30	6	80	80	19.8-27.6	14.1-30.1	0.5-2.5	√	
TEPK0830N	30	7-8	80	80	24.5-36.8	27.0-42.8	0.5-2.5	√	
TEPK1030N	30	9-10	80	80	28.0-46.9	40.0-60.0	0.5-2.5	√	
TEPK1230N	30	12	80	80	36.0-55.2	58.0-92.0	0.5-2.5	√	
TEPK1330N	30	13	80	80	36.2-58.5	64.0-96.0	0.5-2.5	√	
TEPK1430N	30	14	80	80	42.0-64.4	80.0-125.0	0.5-2.5	√	
TEPK1530N	30	15	80	80	42.0-67.5	83.0-135.6	0.5-2.5	√	
TEPK1730N	30	16-17	80	80	44.8-76.5	108.0-154.3	0.5-2.5	√	
TEPK1830N	30	18	120	80	50.4-81	121.6-195.4	0.5-2.5	√	
TEPK1930N	30	19	120	80	53.2-85.5	135.4-217.6	0.5-2.5	√	
TEPK2030N	30	20	120	80	56-90	150.0-241.2	0.5-2.5	√	
TEPK2130N	30	21	120	80	58.8-94.5	165.4-265.8	0.5-2.5	√	
TEPK2230N	30	22	120	80	61.6-99	181.6-291.8	0.5-2.5	√	
TEPK2330N	30	23	120	80	64.4-103.5	198.4-319.0	0.5-2.5	√	
TEPK2430N	30	24	120	80	67.2-108	216.0-347.2	0.5-2.5	√	
TEPK2530N	30	25	120	80	70-112.5	234.4-376.8	0.5-2.5	√	
TEPK2630N	30	26	120	80	72.8-117	253.6-407.6	0.5-2.5	√	
TEPK0830L	30	7-8L	80	80	20.0-30.0	18.0-29.0	0.5-2.5	√	
TEPK1030L	30	9-10L	80	80	25.6-37.5	28.2-50.4	0.5-2.5	√	
TEPK1230L	30	11-12L	80	80	31.4-45.0	40.5-75.8	0.5-2.5	√	
TEPK1430L	30	13-14L	80	80	35.0-52.5	55.0-87.5	0.5-2.5	√	
TEPK1630L	30	15-16L	80	80	40.0-60.0	72.0-114.3	0.5-2.5	√	
TEPK1830L	30	17-18L	80	80	42.5-63.7	81.2-129.0	0.5-2.5	√	
TEPK2030L	30	19-20L	120	80	50.0-74.5	112.5-178.5	0.5-2.5	√	
TEPK2430L	30	22-24L	120	80	60.0-90.0	150.0-276.8	0.5-2.5	√	
TEPK2630L	30	25-26L	120	80	65.0-97.5	176.2-325.0	0.5-2.5	√	
TEPK2830L	30	27-28L	120	80	70.0-105.0	204.2-376.8	0.5-2.5	√	
TEPK3030L	30	29-30L	120	80	75.0-112.5	234.4-432.6	0.5-2.5	√	
TEPK3230L	30	31-32L	120	80	80.0-120.0	266.8-492.2	0.5-2.5	√	
TEPK0345N	45	3	80	120	9.8-13.5	1.9-2.9	0.4-2.0	√	
TEPK0445N	45	4	80	120	13.0-18.4	3.4-5.1	0.4-2.0	√	
TEPK0545N	45	5	80	120	16.7-23.5	5.6-8.4	0.4-2.0	√	
TEPK0745N	45	6-7	80	120	22.3-31.5	10.0-15.0	0.4-2.0	√	
TEPK0845N	45	7-8	80	120	21.7-36.0	15.2-23.5	0.4-2.0	√	
TEPK1045N	45	9-10	80	120	33.0-46.9	22.0-33.0	0.4-2.0	√	
TEPK1245N	45	11-12	80	120	39.6-55.2	33.9-52.2	0.4-2.0	√	
TEPK1445N	45	13-14	80	120	46.8-64.4	46.1-73.0	0.4-2.0	√	
TEPK1545N	45	15-16	80	120	52.5-72.0	46.3-69.5	0.4-2.0	√	
TEPK1745N	45	17	80	120	59.5-76.5	63.5-95.0	0.4-2.0	√	
TEPK1845N	45	18	120	120	63.0-81.0	73.0-132.0	0.4-2.0	√	
TEPK2045N	45	20	120	120	60.0-90.0	90.0-140.0	0.4-2.0	√	
TEPK2145N	45	21	120	120	63.0-94.5	99.5-147.0	0.4-2.0	√	
TEPK2245N	45	22	120	120	66.0-99.0	98.2-132.0	0.4-2.0	√	
TEPK2345N	45	23	120	120	69.0-103.5	107.2-144.2	0.4-2.0	√	
TEPK2445N	45	24	120	120	72.0-108.0	116.8-157.0	0.4-2.0	√	
TEPK2545N	45	25	120	120	75.0-112.5	126.6-170.4	0.4-2.0	√	



Features

- Surface mount
- Halogen free / Sb free
- RoHS compliance
- Fast response time
- Protect Li-ion battery from overcurrent

Applications

- Vacuum cleaner
- Powertools
- Lawn mower
- Energy storage batteries
- Battery Management System

TEPK Series

Alpha-Top (Sea & Land Alliance)

Specifications

Model	I _{rated} (A)	Cells in series	V _{max} (V)	I _{break} (A)	V _{op} (V)	Resistance		Agency Approval	
						R _{heater} (Ω)	R _{fuse} (mΩ)	UL	TUV
TEPK2645N	45	26	120	120	78.0-117.0	137.0-184.2	0.4-2.0	√	
TEPK0845L	45	7-8L	80	120	20.0-30.0	10.6-16.0	0.4-2.0	√	
TEPK1045L	45	9-10L	80	120	25.6-37.5	16.6-26.2	0.4-2.0	√	
TEPK1245L	45	11-12L	80	120	31.4-45.0	24.0-39.2	0.4-2.0	√	
TEPK1445L	45	13-14L	80	120	37.1-52.5	32.5-55.0	0.4-2.0	√	
TEPK1645L	45	15-16L	80	120	40.0-60.0	42.4-80.0	0.4-2.0	√	
TEPK1845L	45	17~18L	80	120	45.9~67.5	53.8-84.2	0.4-2.0	√	
TEPK2045L	45	19-20L	120	120	51.3-75.0	66.2-105.2	0.4-2.0	√	
TEPK2445L	45	22-24L	120	120	60.0-90.0	95.3-144.0	0.4-2.0	√	
TEPK2645L	45	25-26L	120	120	65-97.5	105.6-140.8	0.4-2.0	√	
TEPK2845L	45	27-28L	120	120	70-105	110.4-148.4	0.4-2.0	√	
TEPK3045L	45	29-30L	120	120	75-112.5	126.6-170.4	0.4-2.0	√	
TEPK0360N	60	3	80	160	9.8-13.5	2.0-3.2	0.4-2.0	√	
TEPK0460N	60	4	80	160	13.0-18.4	3.8-5.6	0.4-2.0	√	
TEPK0560N	60	5	80	160	16.7-23.5	6.1-9.3	0.4-2.0	√	
TEPK0760N	60	6-7	80	160	22.3-31.5	11.0-16.6	0.4-2.0	√	
TEPK0860N	60	8	80	160	24.5-36.0	14.4-20.0	0.4-2.0	√	
TEPK1060N	60	9-10	80	160	33.0-46.9	24.4-36.3	0.4-2.0	√	
TEPK1460N	60	12-14	80	160	43.7-62.0	42.7-63.7	0.4-2.0	√	
TEPK1560N	60	15	80	160	48.0-67.5	50.6-76.8	0.4-2.0	√	
TEPK1660N	60	16	80	160	51.2-72.0	57.6-87.2	0.4-2.0	√	
TEPK1760N	60	17	80	160	54.4-76.5	65.0-98.6	0.4-2.0	√	
TEPK1860N	60	18	120	160	57.6-81.0	73.0-110.0	0.4-2.0	√	
TEPK2060N	60	20	120	160	60.0-90.0	90.0-120.0	0.4-2.0	√	
TEPK2160N	60	21	120	160	63.0-94.5	99.0-132.2	0.4-2.0	√	
TEPK2260N	60	22	120	160	66.0-99.0	98.0-132.0	0.4-2.0	√	
TEPK2360N	60	23	120	160	69.0-103.5	107.2-144.2	0.4-2.0	√	
TEPK2460N	60	24	120	160	72.0-108.0	116.8-157.0	0.4-2.0	√	
TEPK2560N	60	25	120	160	75.0-112.5	126.6-170.4	0.4-2.0	√	
TEPK2660N	60	26	120	160	78.0-117.0	137.0-184.3	0.4-2.0	√	
TEPK1060L	60	10L	80	160	27.0-37.5	15.8-24.2	0.4-2.0	√	
TEPK1460L	60	14L	80	160	37.8-52.5	30.8-47.6	0.4-2.0	√	
TEPK1560L	60	15L	80	160	37.5-56.3	35.2-46.9	0.4-2.0	√	
TEPK1660L	60	16L	80	160	40.0-60.0	40.0-53.3	0.4-2.0	√	
TEPK2060L	60	20L	120	160	50.0-75.0	62.5-83.3	0.4-2.0	√	
TEPK2460L	60	24L	120	160	60.0-90.0	90.0-120.0	0.4-2.0	√	
TEPK2660L	60	26L	120	160	65-97.5	95.2-128.0	0.4-2.0	√	
TEPK2860L	60	28L	120	160	70-105	110.4-148.4	0.4-2.0	√	
TEPK3060L	60	30L	120	160	75-112.5	126.6-170.4	0.4-2.0	√	
TEPK3260L	60	32L	120	160	80-120	144-193.8	0.4-2.0	√	

I_{rated} = Current carrying capacity that is measured at 25°C thermal equilibrium condition

Cells in series = Number of battery cells connected in series in the circuit.

V_{max} = The maximum voltage that can be cut off by fuse

I_{break} = The current that the fuse element is able to interrupt

V_{op} = Range of operation voltage

R_{heater} = The resistance of the heating element

R_{fuse} = The resistance of the fuse element

Cells in series = Number of battery cells connected in series in the circuit.

• **Specifications are subject to change without notice.**



Features

- Surface mount
- Halogen free / Sb free
- RoHS compliance
- Fast response time
- Protect Li-ion battery from overcurrent

Applications

- Vacuum cleaner
- Powertools
- Lawn mower
- Energy storage batteries
- Battery Management System

TEPK Series

Alpha-Top (Sea & Land Alliance)

Electrical Characteristics

Items	Conditions	Specifications
Current carrying capacity	100% x I _{rated}	No melting.
Fusing time	200% x I _{rated}	The fuse shall be melt within 1min.
	In operation voltage range	
Operating temperature range	The following examinations are executed respectively within the range from -10 to 65°C. ● Fusing time test ● Current carrying capacity test	The fuse shall be passed each test.

Environmental Specifications

Test	Conditions	Specifications
Dry heat	The fuse shall be stored at a temperature of 100±5°C for 250h. And then it shall be subjected to standard atmospheric conditions for 24h, after which its measurement shall be made.	● Without damage such as deformation or disconnection of fuse element. ● Internal resistance shall be relative to the value before test 110% or less.
Cold	The fuse shall be stored at a temperature of -20±3°C for 500h. And then it shall be subjected to standard atmospheric conditions for 24h, after which its measurement shall be made.	
Damp heat	The fuse shall be stored at a temperature of 60±2°C with relative humidity of 90~95%RH for 250h. And then it shall be subjected to standard atmospheric condition for 24h, after which its measurement shall be made.	
Endurance test	300% x I _{rated} shall be carried for a period of 5ms. The current is there switched off for a period of 995ms. This cycle is repeated 10000 times.	

*[Electrical Characteristics] is influenced by thermal capacity of PCB, parts, pattern width, and so on. Therefore you should check it on your PCB.

Agency Approvals :



E550184

Regulation/Standard:

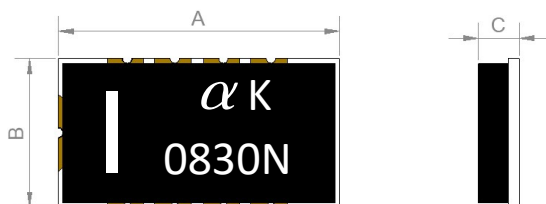


2011/65/EU & (EU)2015/863

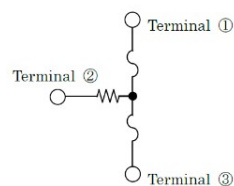
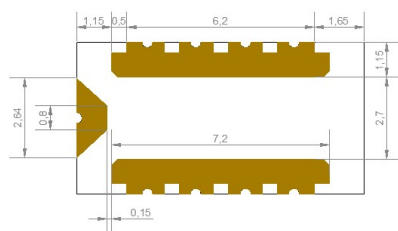


EN14582:2016

Construction And Dimension (Unit:mm)



Code	A	B	C
Spec.(mm)	9.5 ±0.5	5 ±0.5	2.2max
* Without extra notification the tolerance is ± 0.20 mm			





TEPK Series

Features

- Surface mount
- Halogen free / Sb free
- RoHS compliance
- Fast response time
- Protect Li-ion battery from overcurrent

Applications

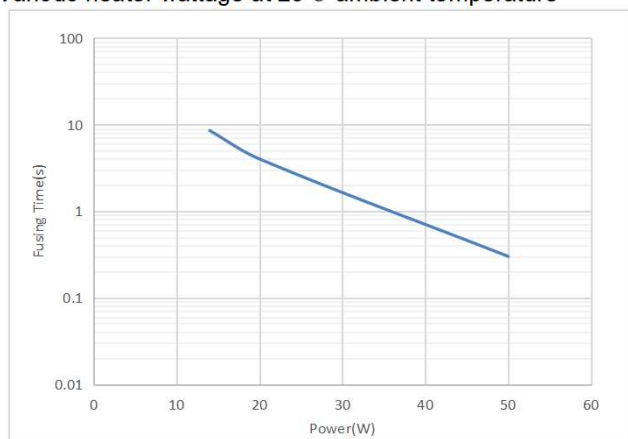
- Vacuum cleaner
- Powertools
- Lawn mower
- Energy storage batteries
- Battery Management System

Alpha-Top (Sea & Land Alliance)

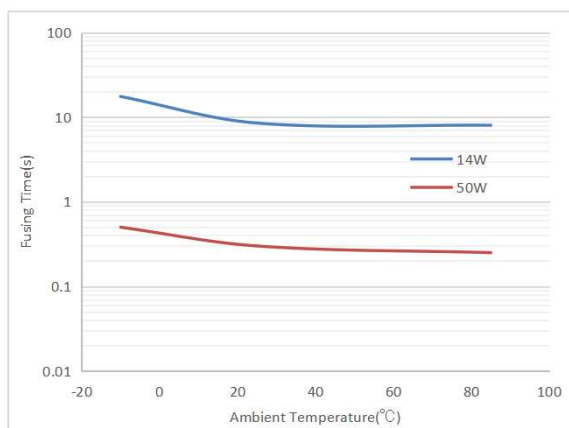
Typical Performance Data

Cut Time by Heater Operation (TEPK30A series)

Various heater wattage at 25°C ambient temperature

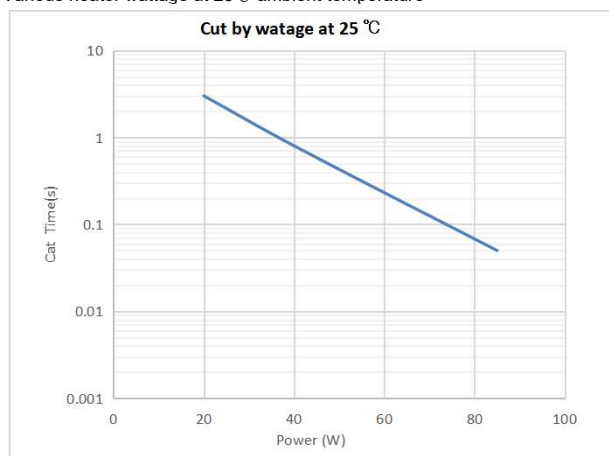


Constant heater wattage at various ambient temperature

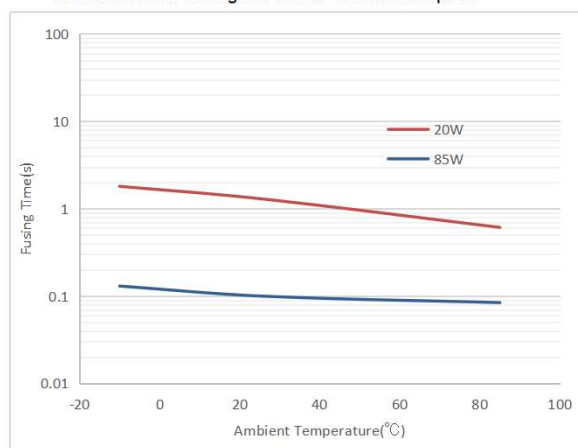


Cut Time by Heater Operation (TEPK45A series)

Various heater wattage at 25°C ambient temperature

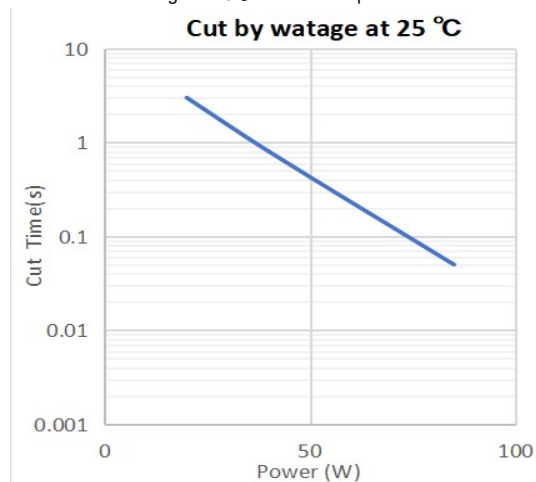


Constant heater wattage at various ambient temperature

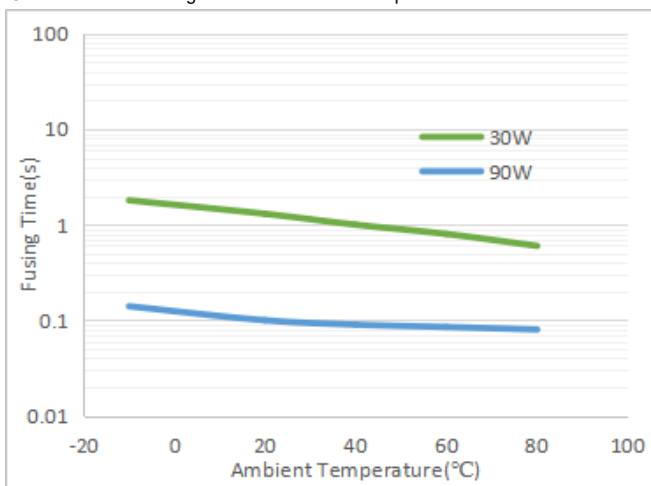


Cut Time by Heater Operation (TEPK60A series)

Various heater wattage at 25°C ambient temperature



Constant heater wattage at various ambient temperature





TEPK Series

Features

- Surface mount
- Halogen free / Sb free
- RoHS compliance
- Fast response time
- Protect Li-ion battery from overcurrent

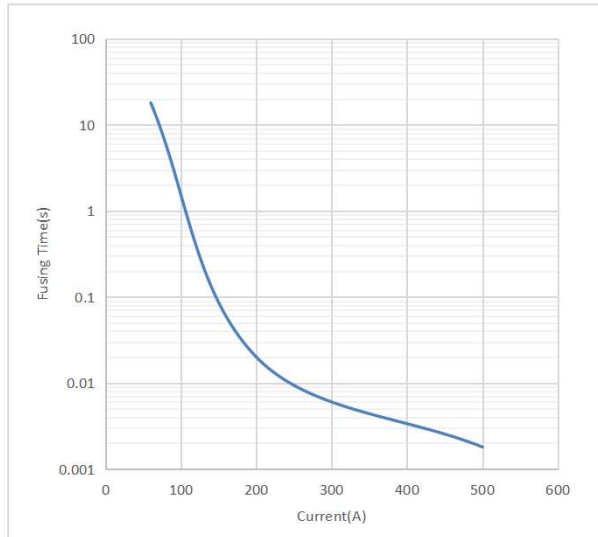
Applications

- Vacuum cleaner
- Power tools
- Lawn mower
- Energy storage batteries
- Battery Management System

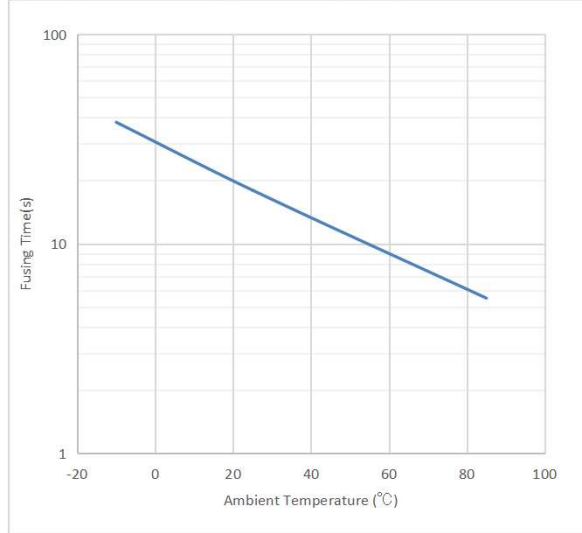
Alpha-Top (Sea & Land Alliance)

Cut Time by Current Operation (TEPK30A series)

Various interrupting current at 25°C ambient temperature Constant

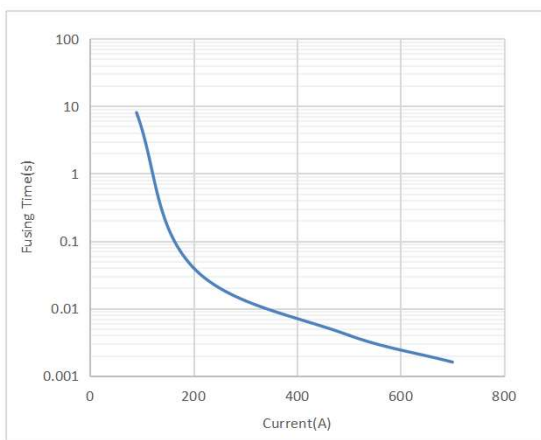


2x rated current at various ambient temperature

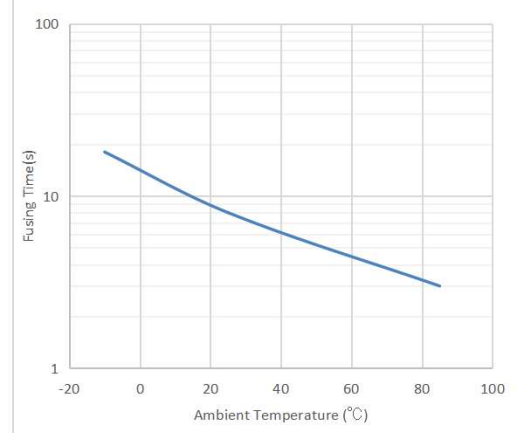


Cut Time by Current Operation (TEPK45A series)

Various interrupting current at 25°C ambient temperature Constant

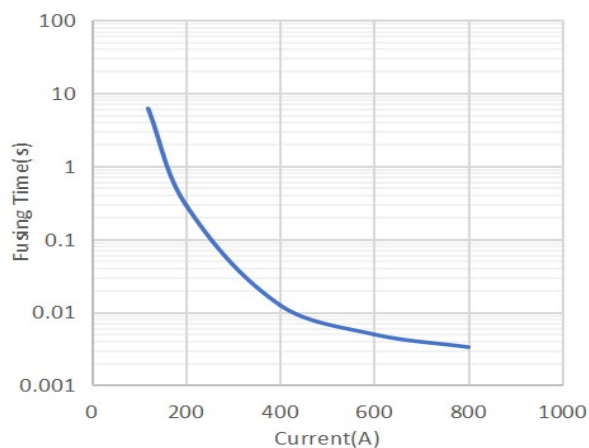


2x rated current at various ambient temperature

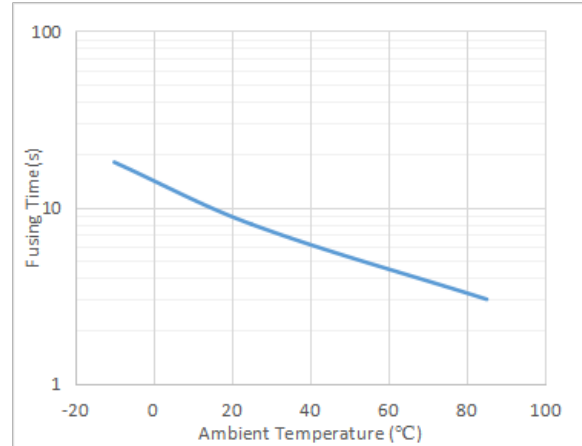


Cut Time by Current Operation (TEPK60A series)

Various interrupting current at 25°C ambient temperature Constant



2x rated current at various ambient temperature





Features

- Surface mount
- Halogen free / Sb free
- RoHS compliance
- Fast response time
- Protect Li-ion battery from overcurrent

Applications

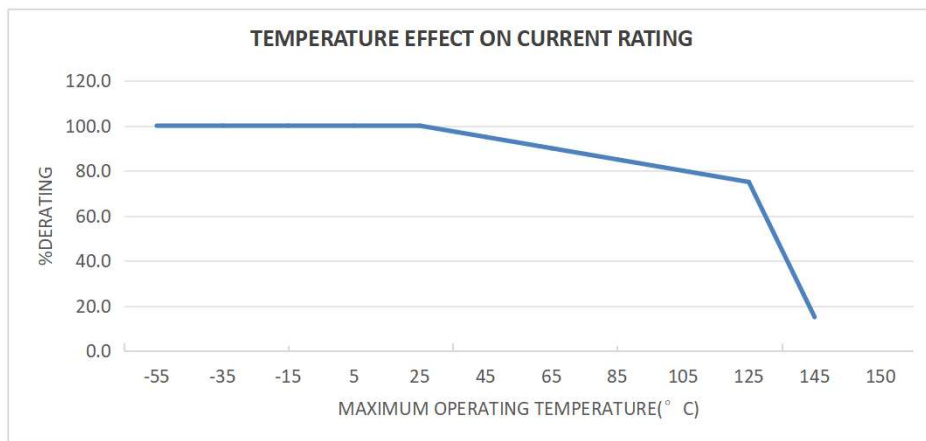
- Vacuum cleaner
- Powertools
- Lawn mower
- Energy storage batteries
- Battery Management System

TEPK Series

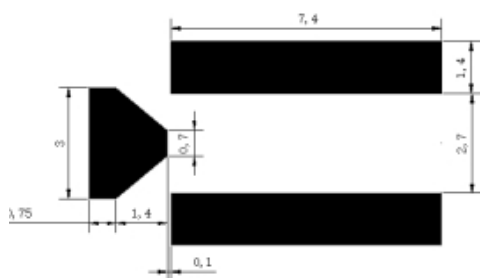
Alpha-Top (Sea & Land Alliance)

Current Carrying Capacity (TEPK30A series / TEPK45A series / TEPK60A series)

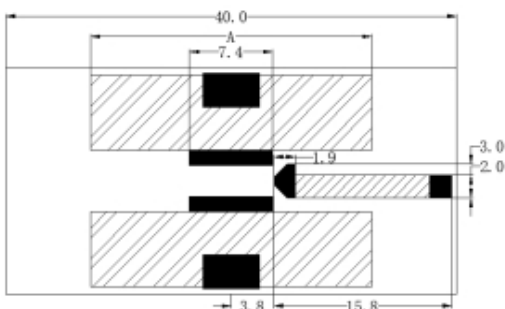
Current Carrying Capacity at various ambient temperature



Dimensions & Marking



Recommended Pad Layout (mm)



Unit: mm

Type	Materials	Width of copper coating	Thickness	Copper thickness	Wires
规格	材质	覆铜宽度	厚度	铜厚	引出线
30A	FR-4	6mm	0.6 mm	3.00Z	AWG10
45A	FR-4	25mm	0.6 mm	3.00Z	AWG10
60A	FR-4	25mm	0.6 mm	3.00Z	AWG7

Part Number and Marking System

TEP	K	08	30	N	
1~3	4	5~6	7~8	9	10~12

- 1~3 : Product series
TEP: Sea&Land battery fuses
- 4 : Device Size
K: 9550 Size
- 5~6 : Cells in series
08:8 Cells in series
- 7~8 : Rated Current
30: I_{rated} 30A
- 9 : Battery category / 应用电池类别
N: NCM/NCA / 三元锂电池
L: LFP / 磷酸铁锂电池
- 10~12 : Special suffix / 其他备注



- α: Sea&Land battery fuses
- K: 9550 series
- xx: Cells in series
- 30: Rated Current 30A
- N: Applied to NCM / NCA (L: Applied to LFP)



Features

- Surface mount
- Halogen free / Sb free
- RoHS compliance
- Fast response time
- Protect Li-ion battery from overcurrent

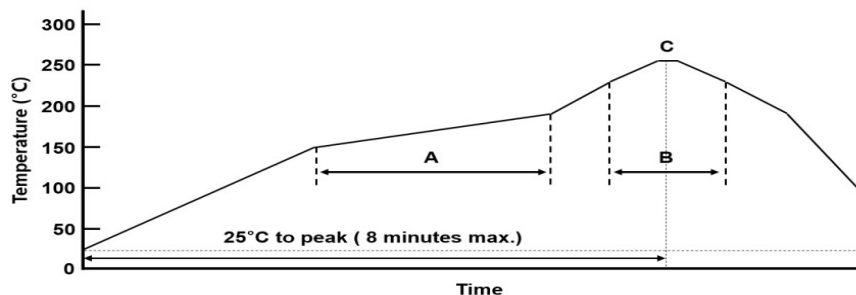
Applications

- Vacuum cleaner
- Powertools
- Lawn mower
- Energy storage batteries
- Battery Management System

TEPK Series

Alpha-Top (Sea & Land Alliance)

Recommended Solder Reflow Conditions

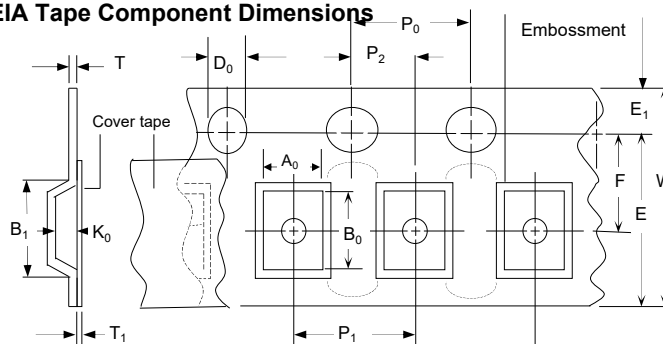


	A (Pre-Heating)	B	C (Peak)
Temperature(°C)	150~190°C	230±5°C	255±5°C
Time(s)	90±30s	Max.30s	Max.5s

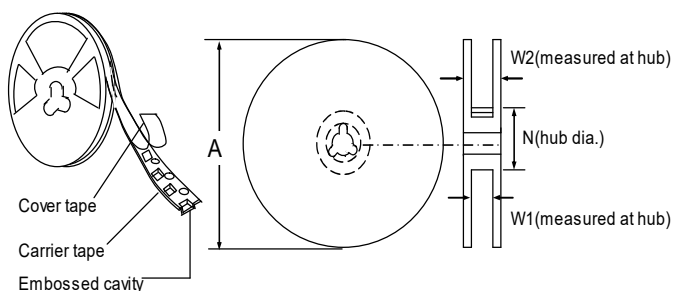
Tape And Reel Specifications (mm)

Governing Specifications	EIA 481-1
W	16.0 ± 0.2
P0	4.0 ± 0.10
P1	8.0 ± 0.10
P2	2.0 ± 0.05
A0	5.50 ± 0.10
B0	10.0 ± 0.10
D0	1.55 ± 0.05
F	7.5 ± 0.20
E1	1.75 ± 0.10
T	0.30
T1max.	0.1
K0	2.4± 0.1
Leader min.	400
Trailer min.	110
Reel Dimensions	
A max.	330 ± 2
N min.	80
W1	17.4 + 1, -0.5
W2 min.	22.7

EIA Tape Component Dimensions



EIA Reel Dimensions



Storage

This product must be stored in shaded area where it is not too dusty, under 40°C or less with no sudden temperature change, with relative humidity of 60% or less, and no corrosive gas in the air. The maximum storage period under above condition is 12 months.

Order Information

Packaging

TEPKSeries	08	30	N	
Product name	Cells in Series	Rated	Battery category	3,000 pcs/reel
Size 9550mm	08: 8 cells in series	30: 30A	N: NCM/NCA	or 800 pcs/reel
SMD: surface mount device			L: LFP	

Devices taped with reference to EIA481 standard.



TEPK Series

Features

- Surface mount
- Halogen free / Sb free
- RoHS compliance
- Fast response time
- Protect Li-ion battery from overcurrent

Applications

- Vacuum cleaner
- Powertools
- Lawn mower
- Energy storage batteries
- Battery Management System

Alpha-Top (Sea & Land Alliance)

Cautions

(1) It is necessary to foresee there are possibilities that "Current-Carrying Capacity" and "Heater Operation Characteristic" may be varied along with the condition change in the substrate thermal capacity, etc. Therefore you should check it on your PCB. Generally, when thermal capacity of PCB increases, Current-carrying capacity will increase accordingly and Clearing-time will be longer.

“载流能力”和“加热电阻动作特性”应根据基板热容量等条件的变化来预测，因此，需根据实际使用的PCB板的状态确认其特性，一般来说，由于基板多层化、双面覆铜、基材厚度增加等热容量增加原因，可通电的极限电流值（允许通电电流）较大，切断时间较长。

(2) The data on this specification is measured with UL standard PCB (0.6t Glass Epoxy single-sided copper laminated). The characteristics are influenced by thermal capacity of PCB, so it is recommended checking it on actual PCB.

本规范中的数据是用UL标准PCB测量的。特性受PCB热容量的影响，因此建议在实际PCB上进行检查。

(3) Ultrasonic-cleaning or immersion-cleaning and so on must not be done to product before and after mounted. When cleaning is done, flux on element would flow, and it would not be satisfied its specification. Moreover, a similar influence happens when the product comes in contact with cleaning-solution. These products after cleaning will not be guaranteed.

安装前后不得进行超声波清洗或浸泡清洗等。因为清洗完成时，元件上的焊剂会流动，并且不符合其规格。此外，当产品与清洁溶液接触时，也会产生类似的影响。清洁后的这些产品将无法得到保证。

(4) Please avoid contacting fuse and resin-mold. The resin might infiltrate into the product, and it doesn't meet the specification when the resin-mold is done to this product. These products after resin-mold will not be guaranteed.

请避免接触保险丝和树脂模具。树脂可能渗透到产品中，当对该产品进行树脂成型时，树脂不符合规格。树脂成型后的这些产品将无法得到保证。

(5) Please do not re-use of the fuse removed by the solder correction.

请不要使用二次拆除的保险丝。

(6) Make sure that the terminals of this product are connected property on the land of circuit board, and the value falls in the rated heater resistance between Terminal 1-2 and 3-2.

确保本产品的端子在电路板的焊盘上具有连接特性，并且该值在端子1-2和3-2之间的额定加热器电阻范围内。

(7) This product's terminals use Ag or Au plating. Especially with Ag terminals, as they tend to easily get sulfurized or tarnished, please be cautious about their storage environment as follows. Unopen packages also must be stored under the storage condition. After opening packages, products shall be sealed in a bag with high gas barrier property (e.g. aluminum laminated bag), and must be stored under the storage condition.

该产品的端子使用Ag或Au镀层。尤其是Ag端子，因为它们很容易硫化或失去光泽，请注意以下存储环境。

未开封的包装也必须在储存条件下储存。

打开包装后，产品应密封在具有高气体阻隔性能的袋子（如铝层压袋）中，并且必须在储存条件下储存。

(8) This product is designed and produced for only general-use of electronics devices. Therefore, we do not suppose that it is used for the applications [Military, Medical and so on] which may cause direct damages on life, bodies or properties of third party.

本产品的设计和生产仅适用于电子设备的一般用途。

因此，我们不认为它用于[军事、医疗等]可能对第三方的生命、身体或财产造成直接损害的应用。

(9) It is amended in conference with the supplier and the customer when the necessity of the change or doubt occurs in this specification.

当本规范中出现变更或疑问的必要性时，在与供应商和客户的会议上对其进行修订。