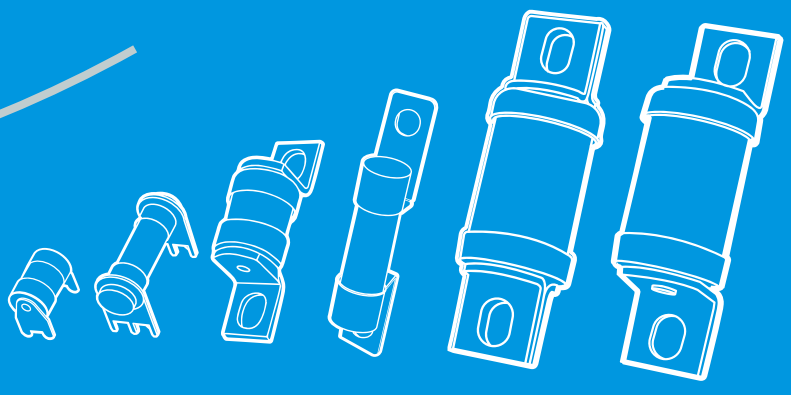

CONQUER

Product Brochure

Conquer is driving our business further to become a top fuse manufacturing company in Asia. We’re absolutely committed to ensuring Conquer's products and technology keep pace with the rapidly changing technology industry. By persistently striving for excellence within our own company, we provide outstanding products and services to ensure our clients achieve nothing less than exemplary product safety—thereby assisting in propelling their businesses forward.

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Pg.	Series Name	Size	F/T	Current Rating (Amps)	Voltage Rating (Volt)		Agency Approval / Certificate						
					AC	DC						ISO 8820	AEC-Q200
17	EVS	10Ø x 38 mm	--	10A-50A	275V	450/550V						V	
18	AHF/AHF-A/AHF-L	6.3Ø x 32 mm	F	15A-35A	500V	305/500V		V					V
19	AHF-R	6.3Ø x 32 mm	F	30A-50A	305/500V	305/500V		V					V
20	QEV10	10Ø x 38 mm	--	10A-30A	--	1000V						V	V
21	QEV24	24.4 Ø x 88.38 mm	--	60A-125A	690V	1000V		V				V	
22	K8F/K8F-A	24.1Ø x 91.6 mm 35.2Ø x 95.0 mm	--	50A-400A	800V	800V		V					
23	K6F/K6F-R	10Ø x 38 mm	--	6A-30A	600V	600V	V		V	V			
24	KSF/KSF-R	10Ø x 38 mm	--	15A-30A	--	1000V	V						
25	BMC	17.4Ø x 42 mm	--	50A-180A	240V	150V		V			V		
26	K5F	35.0Ø x 78.0 mm 50.0Ø x 83.0 mm	--	225A-700A	500V	500V		V			V		
27	AUC	10.4Ø x 38.5 mm	--	25A-70A	250/500V	125V		V					
28	ALC	14.6Ø x 38.5 mm 14.6Ø x 39.5 mm	--	25A-90A	250/500/600V	125V		V					
29	AMC	14.6Ø x 22.3 mm	--	30A-125A	--	170V		V					
30	ACF/ACF-A	7Ø x 32.5 mm	F	35A-45A	305/350/500V	500V		V	V				
31	CMC	14.3Ø x 39 mm	--	125A	170/240V	170V		V					
32	BMI-LS	17.4Ø x 22.2 mm	--	50A-100A	400V	400V		V					

Product Cross-Reference Chart

Prodoct Line	CONQUER	BUSSMANN	LITTELFUSE	MERSEN	DAITO	HINODE
Power Fuse	EVS	XEV10/EV-10	10EV/HEV	MEV55C	--	500KFF/KFK
	QEV24	EVK22/EVK25	EV1K(60~125A)/ 25EV1K	MEV100A(60~125A)	--	--
	K8F/K8F-A	FWP	L75QS	A70P/A70Q	--	--
	K6F/K6F-R	PVM	KLKD/LVSP	ATM/HP6M	--	--
	KSF/KSF-R	PV	SPF	HP10M	--	--
	BMC	LET	--	MF/A15QS	--	--
	BMI-LS	--	--	--	--	350GH/GHK
	K5F	FWH	L50QS	A50P	--	--
	AUC	--	606	--	GAC	--
	ALC	--	--	--	LAC	--
	AMC	TPS	TLS	TGS	--	--
	QEV10	EKM10	--	--	--	--
	AHF-A/AHF-L	--	525	--	--	--
	AHF-R	--	527	--	--	--
	ACF/ACF-A	--	532	--	--	--

1.過電流保護基本原理
Basic Principles of Overcurrent Protection

Basic Principles

Overcurrent refers to any current that exceeds the rated current of equipment or electronic devices. If not promptly eliminated, it will cause rapid heating of electronic components in the system, leading to damage to the electric circuit.

基本原理

過電流是指超過設備或電子器件額定電流的任何電流，如果不及時排除，將會使系統電子器件快速發熱，造成電路系統損壞。

1.1 過電流類型Types of Overcurrent

Overload Current Fault

- In practical applications, a fault current that exceeds the rated current is referred to as overload current.
- The thermal effects from the overload current may lead to damage to equipment or connected wire. So the function of overcurrent protection devices is to limit the duration of overload current.
- Overcurrent exceeding 200% of the rated current is termed overload fault current.

過載電流故障

- 應用上超過額定工作電流的故障電流稱做為過載。
- 電流熱效應可能會導致設備或連接配線的損壞，過電流保護裝置的功能是限制過載電流的持續時間。
- 大於額定電流200%的過電流稱作過載故障電流。

Short-Circuit Fault

- Fault currents caused by the abnormal circuits are referred to as short-circuit faults.
- Insulation breakdown or connection faults are common causes that damages the power systems.
- The short-circuit protection devices is to limit the peak current and energy in the circuit. Short-circuit fault current is termed when exceeding 800% of the rated current.

短路電流故障

- 從非正常電路中流出的故障電流稱做為短路故障。
- 絕緣崩潰或連接故障是常見原因，容易造成電力系統損壞。
- 短路保護裝置的功能是限制電路中流動的電流峰值與能量，大於額定電流800%的過電流稱作短路故障電流。

IEC and UL standards fuse operational characteristics

- Full-Range Protection: Provides protection against both overload and short-circuit currents. The “g” indicates full-range protection, while “R” or “PV” represents application categories.
- Partial-Range Protection: Provides protection only against short-circuit currents. The “a” indicates partial-range protection, while “R” or “PV” represents application categories.

IEC與UL標準按照使用類型對保險絲工作特性進行分類

- 全範圍保護：對過載和短路電流提供保護，標誌上“g”表示全範圍保護，而“R”或“PV”等表示應用類別。
- 部分範圍保護：僅對短路電流提供保護，標誌上“a”表示部份範圍保護，而“R”或“PV”等表示應用類別。

1.2 保險絲性能特性 Fuse characteristics

Characteristic Curves

• Time-Current Curve • Melting I²t Curve • Temperature De-rating Curve • Breaking Capacity • Peak Let-Through Curve • Arc Voltage Curve • Power Loss Curve

▶Time-Current Curve

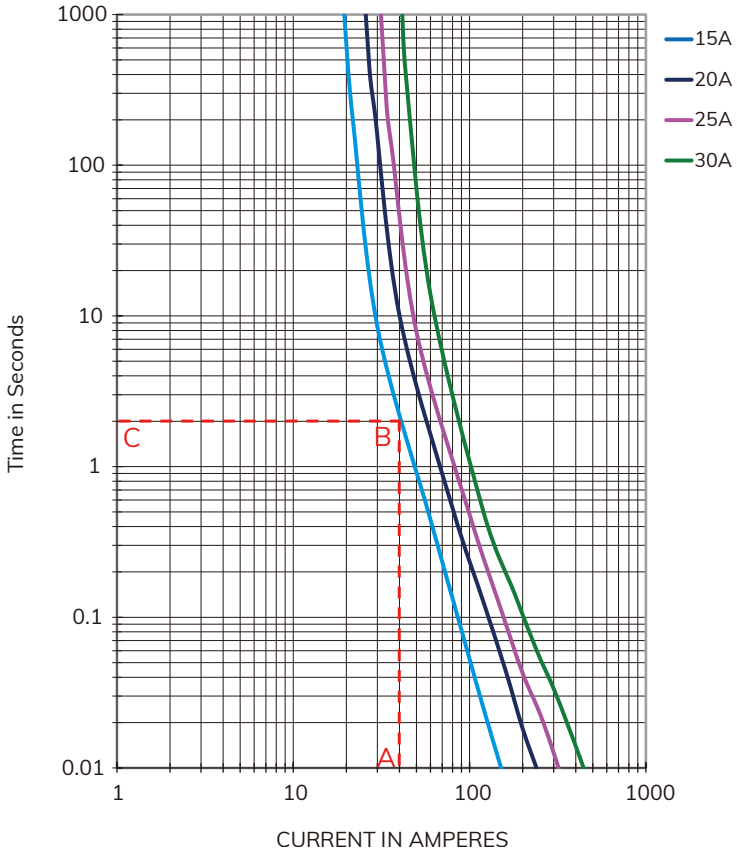
The time-current curve illustrates the relationship between expected current and the melting time of a fuse. The X-axis represents the current in amperes, and the Y-axis represents the melting time (Tpre-arc). This curve provides the functional relationship between the RMS current value and the actual melting time.

特性曲線

• 時間電流曲線 • 熔斷I²t • 溫度降額曲線 • 分斷能力 • 峰值允通曲線 • 電弧電壓曲線 • 功率損耗曲線

▶時間電流曲線

時間電流曲線說明預期電流與保險絲的反應時間關係特性X軸表示單位為安培，Y軸表示單位為融化時間 (Tpre-arc)。透過曲線可以了解電流RMS值與實際熔斷時間的函數關係：



Extend a straight line vertically upward from the expected current of 40A on the X-axis (point A) until it intersects the curve (point B). Then, reference the corresponding value on the Y-axis (point C), indicating a melting time of 2 seconds.

在X軸(A點)上確定預期電流40A向上延伸一條直線至曲線(B點)相交，然後參考Y軸(C點)的對應值，表示熔斷時間2sec

*Testing conditions at ambient temperature of 23 ± 5°C

*測試條件在23±5°C的環境溫度範圍內進行

▶Clearing I^2t:Current * Current * Time (A^2s)

It is a way of converting electrical energy into heat energy. There are two processes of interrupting a short-circuit current for a fuse:

(A) Pre-arc I^2t: The energy of current flowing through the fuse until the fuse element melts.

(B) Arcing I^2t: The energy of arcing after the fuse element melts.

(C) Clearing I^2t: The energy from the beginning of the overcurrent until the current is completely interrupted.

Clearing I^2t = Pre-arc I^2t + Arcing I^2t

*At abnormal current, the Clearing I^2t of fuse need to be less than the maximum withstand I^2t of the protective device.

*The Pre-arc I^2t of fuse need to be larger than the normal circuit pulse I^2t to avoid inappropriate action of the fuse.

▶總熔斷 I^2t：電流平方*熔化時間 (A^2s)

電能轉換成熱能的一種方式，保險絲面臨短路故障分斷過程共分兩階段:

(A)弧前 I^2t：電流流過熔絲直至熔絲熔化的能量。

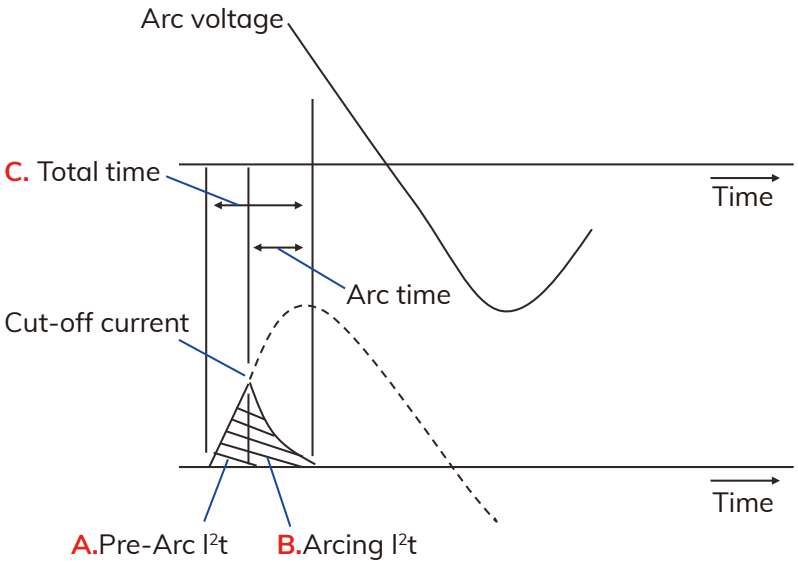
(B)電弧放電 I^2t：熔絲熔化後電弧放電到熄滅的能量。

(C)總熔斷 I^2t：過電流開始直到電流被完全分斷的能量。

總熔斷 I^2t =弧前 I^2t +電弧放電 I^2t

※異常電流時，保險絲的【總熔斷I^2t】<【保護器件的最大耐受I^2t】，以保護器件。

※保險絲的【弧前I^2t】>【迴路正常脈衝I^2t】，以避免保險絲誤動作。

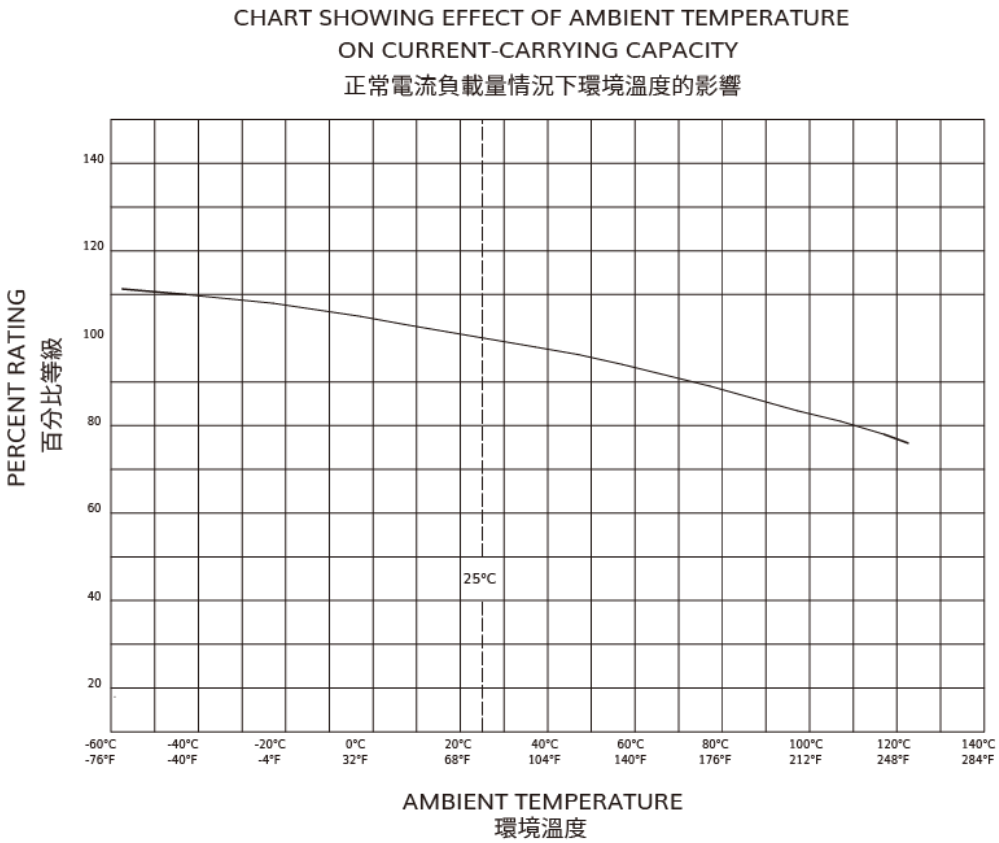


▶Ambient Temperature Re-rating Curve

The current-carrying performance of a fuse may vary depending on the ambient temperature of the working environment. Below curve is used to determine the current-carrying capacity within the ambient temperature range.

▶溫度降額曲線

保險絲載流性能會因工作環境溫度的高低而有所上升或下降，溫度降額曲線可用於確定保險絲工作溫度範圍內的性能變化。



▶Breaking Capacity (or Interrupting Rating)

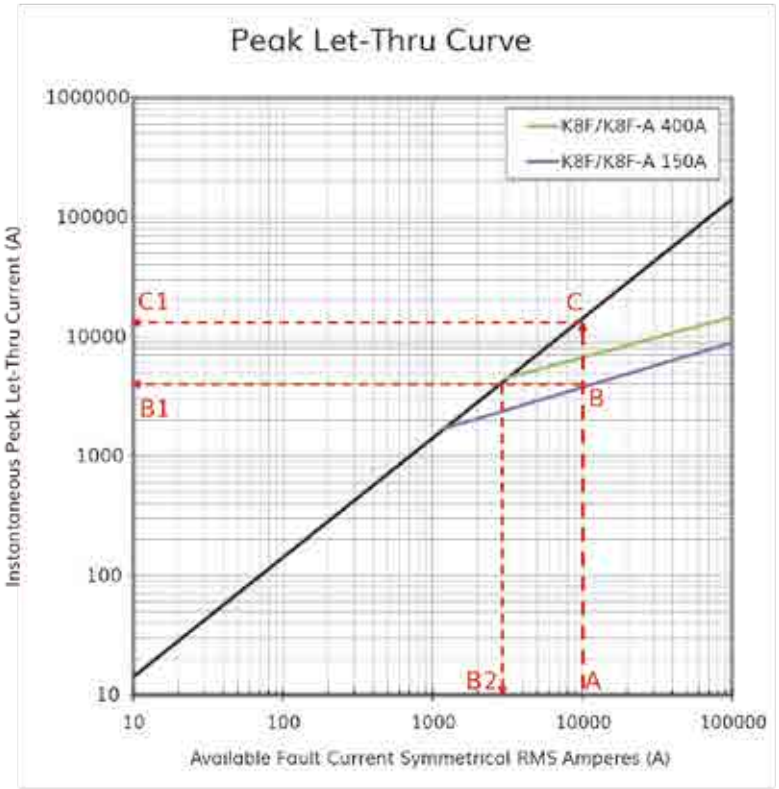
Breaking capacity is the maximum fault current that a fuse can interrupt without causing any damage. When selecting a fuse, it's essential to consider the breaking capacity of the fuse. Ensure that the breaking capacity is greater than the maximum expected short-circuit fault current.

▶分斷能力

分斷能力是保險絲可以清除而不造成任何破壞的最大故障電流，選用時需注意保險絲的分斷額定值，確保分斷值大於應用電路系統的預期短路故障電流最大值。

▶Peak Let-Through Curve

The peak let-through curve illustrates the maximum instantaneous current passing through the fuse during the complete melting period. It ensures that the current-limiting capability of the fuse can effectively protect electrical devices in circle. The fuse element in power fuses is specially designed to provide better arc extinction during fault current interrupting and to clear short-circuit faults within less than half a cycle. This design helps reduce the maximum peak value of fault currents. The peak let-through curve graphically displays the current-limiting effect of the fuse.



▶峰值允通曲線

峰值允通電流曲線說明了在完全熔斷期間通過保險絲的最大瞬間電流，確保保險絲的限流能力可以妥當保護電器設備，電力型保險絲的熔絲會經過特殊設計在清除故障電流的時候有更好的消弧，在不到1/2週期內清除短路故障，降低故障電流最大峰值，在峰值允通曲線上以圖形方式顯示了保險絲的限流效應。

Extend a straight line vertically upward from the expected fault current (RMS) of 10kA on the X-axis (point A) to points C and B (where it intersects).
Then, reference the corresponding values on the Y-axis (points B1 and C1). It indicates the maximum peak current which is 14kA at point C1.

This shows that for a 150A fuse, the maximum peak current is 4kA(point B1). And, the fault current (RMS) decreases to point B2, 2.8kA.

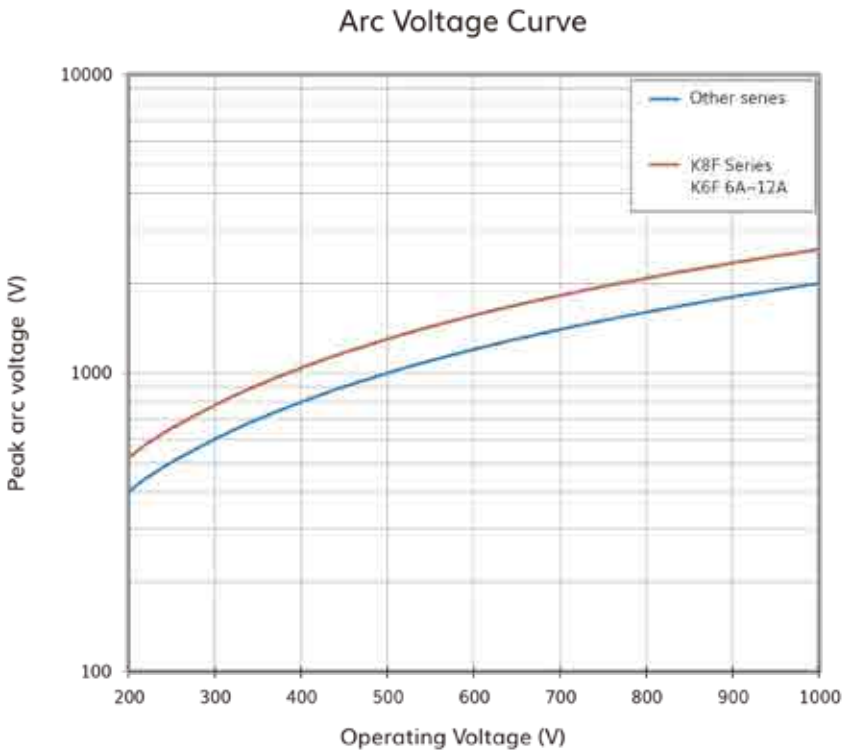
X軸(A點)預期故障電流(RMS)10KA，向上延伸一條直線至C點與B點(相交，然後參考Y軸(B1點)與(C1點)的對應值，最大峰值電流C1點：14KA。由此顯示150A保險絲最大峰值電流B1點：4KA，故障電流(RMS)降低至B2點：2.8KA。

▶Arc Voltage Curve

When a fuse interrupts a fault current, there is a peak arc voltage (Vpeak) generated between the electrodes that exceeds the system voltage. This is generally designed to be twice the rated voltage. Factors affecting arc voltage include rated voltage and power factor.
The curve provides the functional relationship between the rated voltage (RMS) and arc voltage.

▶電弧電壓曲線

保險絲分斷故障電流的瞬間，電極之間會產生高於系統電壓的峰值電弧電壓 (Vpeak) ，一般設計於為額定電壓的2倍，影響電弧電壓因素包括額定電壓與功率因數，透過曲線可以了解額定電壓(RMS)與電弧電壓的函數關係。



When selecting a fuse, it is important that the peak arc voltage should be less than the peak inverse voltage (PIV) of the semiconductor device to avoid the device being damaged by the arc. This involves silicon controlled rectifiers (SCR), rectifier diodes, and MOSFET.

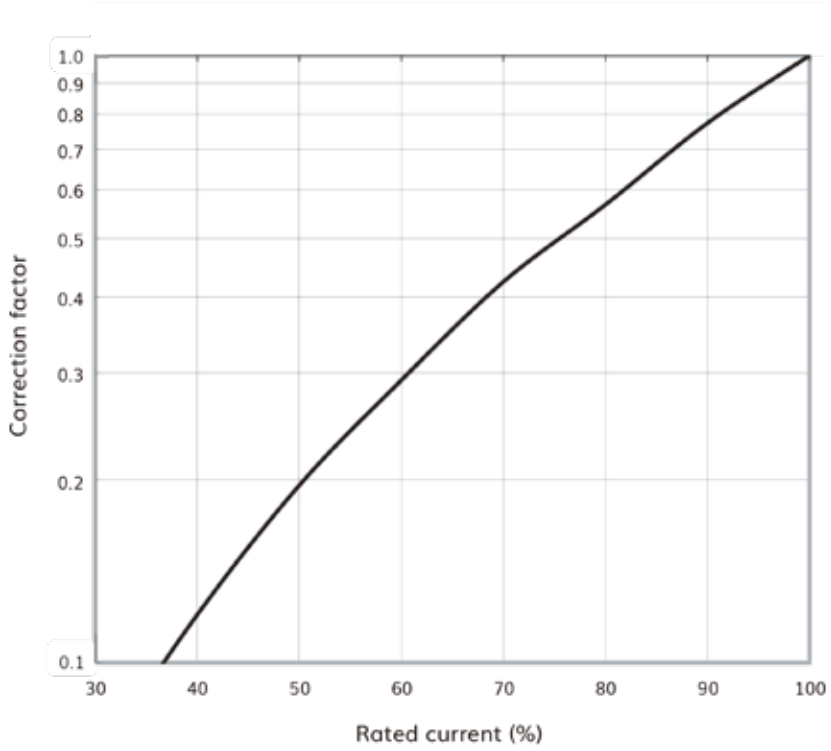
選用時，要注意峰值電弧電壓應小於半導體器件的峰值反向電壓(PIV)，以避免器件被電弧擊穿。這涉及到可控矽整流器(SCR)、整流二極體和金屬氧化物半導體場效應電晶體(MOSFET)。

▶Power Loss Curve

The energy consumed by the fuse during its energized period is referred to as power loss. The product characteristic tables provide power loss at rated current. The curve illustrates the power loss differences when the load current is below the rated current.

▶功率損耗曲線

保險絲在通電期間消耗的能量被稱為能量允耗或功率損耗，標準產品參數表中給出了額定電流時的功率損耗，透過曲線可以了解當負載電流低於額定電流時的功率損耗差異。



2.保險絲選用準則 Fuse Selection Criteria

Selection Criteria

When selecting the appropriate fuse, it's crucial to pay attention to product specifications. Consider factors such as the required rated voltage, rated current, breaking capacity, melting time, and total melting I^2t values. Afterward, confirm the selection of the fuse type based on various application conditions.

International Standards

Conquer Power Fuse complies with UL or IEC safety standard, and some power fuse meeting both standards . Below are the international standards for Power Fuse in three major application markets :

1.Semiconductor: UL248-13 and IEC60269-4

2.Automotive: ISO 8820-8, AEC-Q200, and UL248-20

3.Renewable Energy: UL248-19 and IEC60269-6

選用準則

正確保險絲選擇注意產品規格，例如需要的額定電壓、額定電流、分斷能力、熔化時間和完全熔斷I^2t值等後，再按照各種應用條件確認其選用型號。

國際規範

功得電子 Power Fuse 系列幾乎都有符合【UL】或【IEC】的安規認證,並在許多情況下,有同時符合這兩種標準。以下為功得電子 Power Fuse 三大應用市場的對應國際標準規範:

1.半導體保險絲：UL248-13 and IEC60269-4

2.車載保險絲：ISO 8820-8,AEC-Q200and UL248-20

3.新能源保險絲：UL248-19 and IEC60269-6

2.1 額定電壓 Rated Voltage

Voltage Selection Guide

The rated voltage of a fuse indicates that the maximum circuit voltage can be withstanded. When using a fuse, the rated voltage of the fuse must be equal to or greater than the operating voltage.

電壓選用指南

保險絲的額定電壓表示可承受的最大電路電壓，使用時保險絲額定電壓必須等於或大於工作電壓。

Impact of Operating Frequency

According to UL and IEC standards, fuses are tested at rated voltages in frequency range of 45-62Hz. In low-frequency AC applications, as frequency decreases, the wave period increases. Suggest to choose a fuse with a rated voltage greater than the operating voltage for low-frequency AC application.

工作頻率的影響

根據UL和IEC的標準，保險絲是在45~62Hz的交流額定電壓下測試。當應用頻率越低，相對電源波形的週期越長，對保險絲安全分斷故障電流能力負擔越重。所以應用於低頻交流電時，保險絲的額定電壓建議一定要大於工作電壓。

Impact of Time Constant

In DC circuits, the ratio of inductance to resistance (L/R) influences the rise rate of the DC circuit (di/dt). The longer the time constant, the burden on the fuse's ability to safely interrupt fault currents gets heavier. According to international standards, different types of fuses have corresponding time constant requirements:

- Photovoltaic Systems: IEC & UL 1~3ms and 100μH±10%
- Industrial Systems: 10~15ms
- Vehicle Circuit Systems: 1.5~3ms

When the time constant of the circuit system exceeds the fuse standard, the rated voltage of the fuse should be greater than the operating voltage to ensure reliability and safety.

時間常數的影響

直流電路中電感與電阻 (L/R) 比率，影響直流電路的上升速率(di/dt)，時間常數越長，對保險絲安全分斷故障電流能力負擔越重。根據國際標準，對於不同類型的保險絲，有對應的時間常數要求:

- 光伏系統PV Fuse : IEC&UL 1~3ms and 100μH ±10%
- 低壓工業系統: 10~15ms
- 車輛電路系統: 1.5~3ms

應用於電路系統時間常數大於保險絲標準時，保險絲額定電壓建議一定要大於工作電壓。

2.2 額定電流(選用步驟) Rated Current

Current Selection Guide

The current-carrying capacity of a fuse is given in amperes. In practical applications, the fuse's operating environment may differ from the laboratory test environment. When selecting a fuse, it's important to consider the actual operating conditions of the circuit to ensure application longevity. In order to guarantee the application's lifespan, it may be necessary to consider the following steps for de-rating use.

電流選用指南

保險絲可承受的負載電流值，以安培為單位，通常情況下保險絲應用環境與在實驗室測試環境不相同，選用上需考量實際電路情況，為了確保應用壽命，必要時需考慮以下步驟做降額使用。

Selection Step#1: Determine the Normal Full-Load Current and Calculate the RMS Current

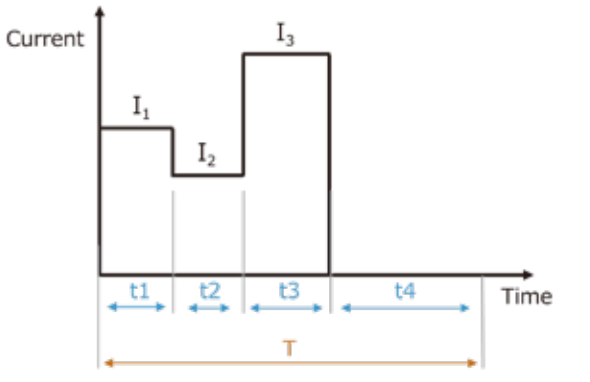
The load current passing through the fuse varies depending on its installation position (AC side / DC side). The normal full-load current can be obtained from the application design engineer. For applications with continuously changing load currents (cyclic currents), to calculate the RMS current for one operating cycle to determine the normal load current passing through the fuse.

*Consideration should be given to the fuse's rated current, and it is recommended to choose a value greater than the circuit system's RMS current and peak current.

選用步驟#1：確定保險絲正常滿載電流，計算電路中的工作電流有效值

根據保險絲安裝位置 (交流側/直流側) 通過的負載電流會不同，首先可從應用設計工程師取得正常工作電流，對於不斷變化的負載電流應用 (循環電流)，可通過計算一個工作週期的有效值電流，得知通過保險絲的正常負載電流。

*選用時需注意保險絲額定電流，建議要大於電路系統的電流有效值及電流峰值。



$$\sqrt{\frac{(I_1^2 \times t_1) + (I_2^2 \times t_2) + (I_3^2 \times t_3)}{T}}$$

Selection Step#2 :Determine Rated Current

The following are various factors that can affect the electrical performance of a fuse (the factors and their related correction need to be considered when selecting)

$$I_N = \frac{I_{rms}}{K_t \times K_v \times K_e \times K_a \times K_z \times K_s}$$

I_N: Rated Current	Irms: Circuit Current
Ke: Thermal Connection Factor	Ka: Altitude Correction
Kt: Temperature Correction	Kv: Cooling Air Correction
Kz: Frequency Correction	Ks: Load Correction

▶Kt: Temperature Correction

When the ambient temperature of fuse installation is not within the range of 23 ℃ ±5℃, it has to be corrected by referring to temperature correction curve shown in the product specifications.

*Example: Suppose you choose the EVS series, with maximum ambient temperature 110℃. According to the temperature de-rating curve, the de-rating factor is 90%.

選用步驟#2：確定保險絲的額定電流

以下有各種應用參數會影響保險絲電氣性能表現（選用時需要考慮的應用參數及其相關修正系數）

$$I_N = \frac{I_{rms}}{K_t \times K_v \times K_e \times K_a \times K_z \times K_s}$$

I_N: 額定電流	Irms: 電路電流
Ke: 熱連接校正	Ka: 高海拔校正
Kt: 溫度校正	Kv:冷卻空氣校正
Kz: 頻率校正	Ks: 負載校正

▶Kt: 溫度校正

保險絲安裝環境溫度不在23°C ±5°C時，請參考產品規格書所示的溫度校正曲線進行修正

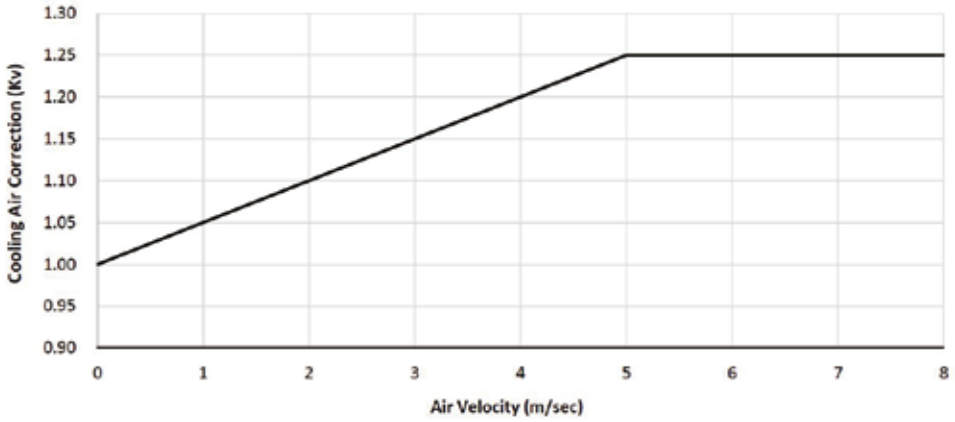
*案例：假如選用EVS系列，工作電流為40A，環溫最高達110°C，根據EVS系列的溫度降額曲線，降額為90%。

▶Kv: Cooling Air Correction

When the fuse is installed in an environment with forced air cooling, the air cooling may cause variations in the fuse's melting time.
Therefore, it is essential to consider the cooling air correction factor.

▶Kv: 冷卻空氣校正

當保險絲安裝位置處於強制風冷的環境時，過多的冷卻散熱將使保險絲熔斷時間出現變化，因此需注意冷卻空氣校正係數。

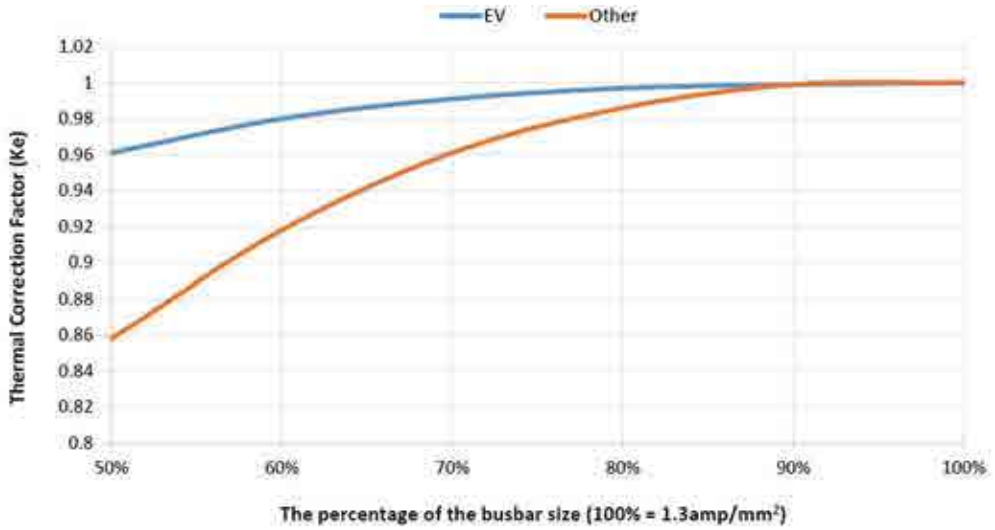


▶Ke: Thermal Connection Factor

The current density flowing through wire connecting the fuse affects the heat dissipation performance of fuse. It 's crucial to refer to UL and IEC standards in product development.
In practical applications, if the current density carried by the conductor is too high, it's important to consider the thermal correction factor to ensure proper heat conduction

▶Ke: 熱連接校正

連接保險絲的電線承載電流密度將影響到保險絲工作時的散熱表現，開發過程中會參照UL與IEC標準，應用上要注意導線截面積與負載電流的密度，如果承載電流密度過大，請注意導線校正係數。



▶Ka: Altitude Correction

Due to the decrease in air density and atmospheric pressure at higher altitudes, the efficiency of heat dissipation reduces significantly. When the fuse is used at an altitude above 2000 meters, it's important to consider the altitude correction factor with the following de-rating formula:
*Ka = (1-((h-2000)/100)*0.005); where h = application altitude.

▶Ka: 高海拔校正

由於空氣對流傳熱是通過分子碰撞傳遞能量，在高海拔地區使用，空氣密度與大氣壓力的下降，空氣變稀薄，這樣熱傳遞效率就會降低，電子零件的散熱性能變差。所以應用於海拔高度2000公尺以上時，請注意海拔校正係數，請套用以下公式計算降額：

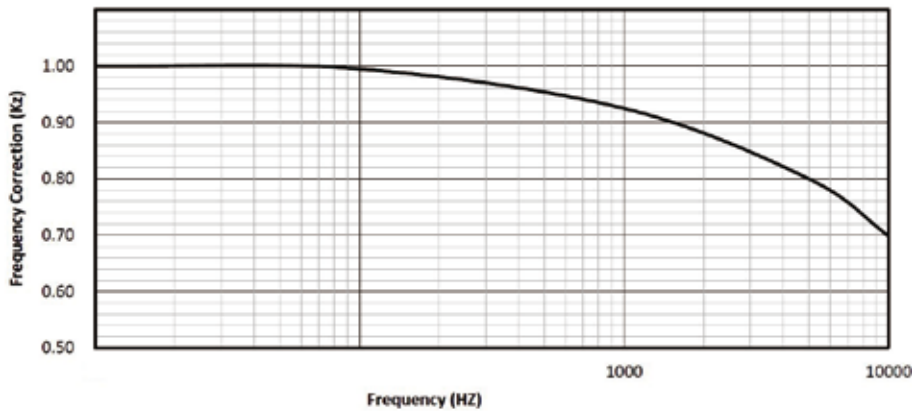
*Ka=(1-((h-2000)/100)*0.005)；h=應用海拔高度

▶Kz: Frequency Correction

For AC circuits, as the application frequency increases, the period of the wave becomes shorter. As a result, RMS current increases, leading to an increase in temperature rise of fuse. Therefore, when used in high-frequency AC applications it is essential to consider the frequency correction.

▶Kz: 頻率校正

使用於AC電路時，當應用頻率越高，則相對電源波形週期越短，保險絲承載電流隨著電流有效值增加，易造成保險絲通電溫度上升，應用於高頻交流電時請注意頻率校正係數



▶Ks: Load Correction

UL and IEC standards typically verify the temperature rise and current-carrying capacity of fuse by passing steady currents that is less than the rated current of the fuse. In practical applications, there may be continuously changing load currents (cyclic currents), so it is crucial to consider below load correction factor:
*General Load Factor 0.75~0.8
*Recommended Automotive Load Factor 0.7 (According to ISO 8820)

▶Ks: 負載校正

UL與IEC標準對於保險絲的溫升和載流能力驗證，大多使用不超過保險絲額定電流的穩態電流作為驗證標準,實際應用上電路可能存在不斷變化的負載電流應用(循環電流),考量實際應用與測試標準的電流有效值差異。請注意負載校正系數
*常規負載係數:0.75~0.8
*車用建議負載係數:0.7(根據 ISO 8820)

Selection Step#3: Evaluate Pulses & Surges

After determining the rated value of the fuse, it can be confirmed the lifespan impact of the fuse in this application by calculating the value of pulse surges and short-term overloads.

Calculating Pulse I²t

The energy contained in a current pulse depends on the waveform shape, peak current and duration of pulse. Determining the energy contained in a particular waveform can be very difficult. Table 1 presents a variety of waveforms and the I^2t calculation formula of the corresponding waveforms. Current pulses in most applications can be approximated by one of the waveforms in Table 1. For a complex waveform, it could be separated into several simple waveforms. The estimation of a complex waveform's I^2t is the sum of the several simple waveform's I^2t.

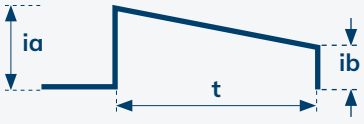
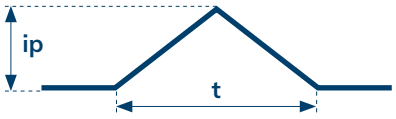
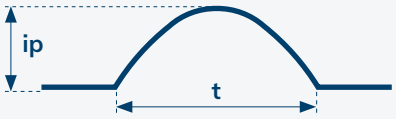
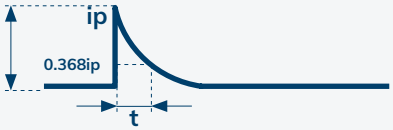
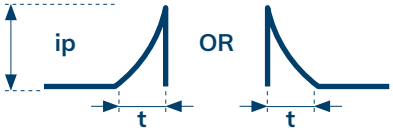
選用步驟#3：評估脈衝突波與短暫過載

選定保險絲額定值後，可以透過計算脈衝突波與短暫過載，確認保險絲在此應用的壽命影響。

計算脈衝I²t

電流脈衝含有的能量大小，取決於電流脈衝波形的形狀、峰值電流以及持續時間。測量特定波形含有的能量可能非常困難，表1列出各種波形及其對應的I²t計算公式。大多數應用對應的電流脈衝可依據表1的其中一個波形進行近似計算，而複雜波形，則可分成幾個簡單的波形。複雜波形I²t的估算值為多個簡單波形I²t的總和。

Table 1. Waveform I^2t formula

Waveforms 波形	Joule-integral Values 焦耳積分值
① 	$I^2t = \frac{1}{3}(ia^2+iaib+ib^2)t$
② 	$I^2t = \frac{1}{3} ip^2t$
③ 	$I^2t = \frac{1}{2} ip^2t$
④	$I^2t = ip^2t$
⑤ 	$I^2t = \frac{1}{2} ip^2t$
⑥ 	$I^2t = \frac{1}{5} ip^2t$

Pulse Cycle Withstand Capability

100,000 Pulses
Pulse $I^2t \leq 22\%$ of nominal melting I^2t

10,000 Pulses
Pulse $I^2t \leq 29\%$ of nominal melting I^2t

1,000 Pulses
Pulse $I^2t \leq 38\%$ of nominal melting I^2t

100 Pulses
Pulse $I^2t \leq 48\%$ of nominal melting I^2t

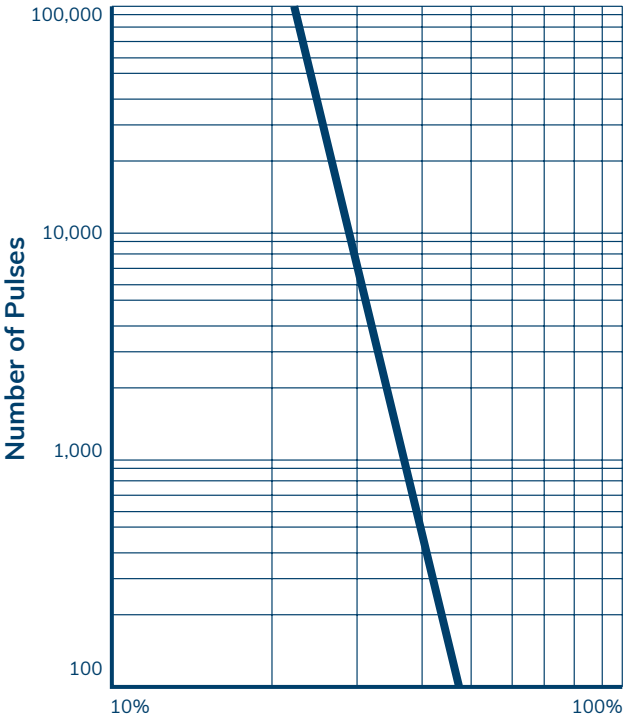


Table 2. Pulse I²t / Average Melting I²t

Note: Adequate time (10 seconds) must exist between pulse events to make heat from the previous event to dissipate.

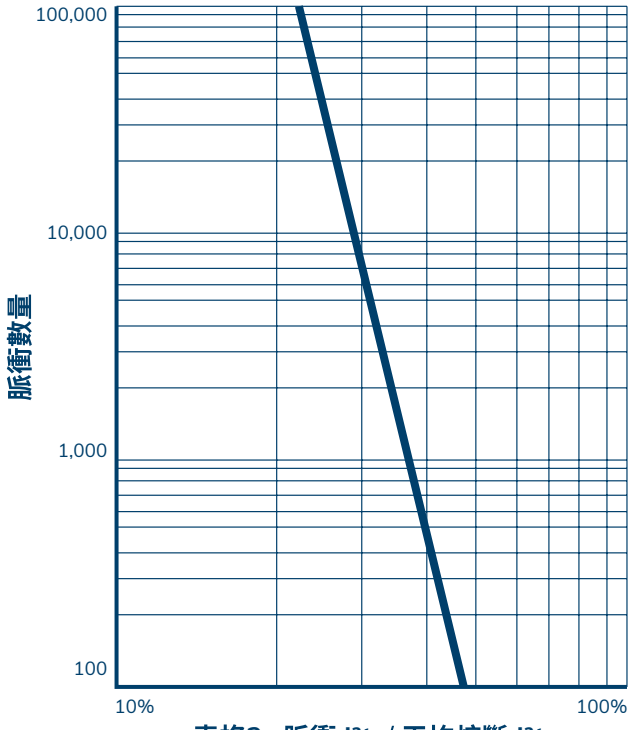
突波循環抵抗能力

量測脈衝I^2t的值小於/等於保險絲熔斷I^2t數值的22%時，該保險絲可承受高達100,000次的脈衝突波。

量測脈衝I^2t的值小於/等於保險絲熔斷I^2t數值的29%時，該保險絲可承受高達10,000次的脈衝突波。

量測脈衝I^2t的值小於/等於保險絲熔斷I^2t數值的38%時，該保險絲可承受高達1,000次的脈衝突波。

量測脈衝I^2t的值小於/等於保險絲熔斷I^2t數值的48%時，該保險絲可承受高達100次的脈衝突波。

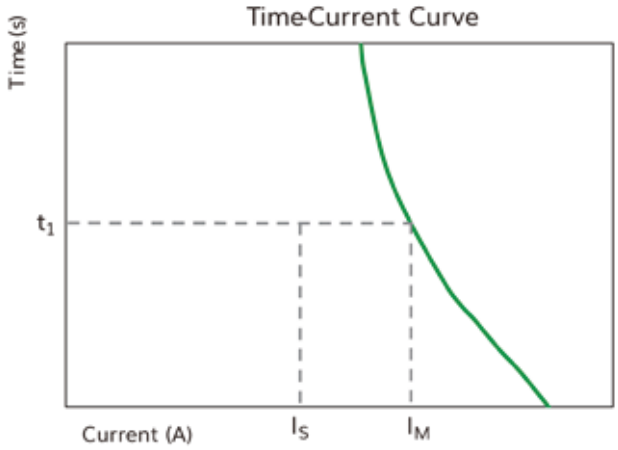


表格2. 脈衝 I²t / 平均熔斷 I²t

註釋：從消散先前事件提供的熱到脈衝事件之間須存在足夠的時間(10秒)。

▶Short-Term Overload

The impact of short-term overloads on the fuse's lifespan is crucial. The melting current can be obtained through the time-current curve and to calculate the load ratio between the overload current and the melting current. It is recommended that [Peak Current (Is)] should be less than [50% of the Melting Current (IM)] to ensure proper performance and longevity of the fuse in the presence of short-term overloads.



▶短期過載

短期過載對保險絲壽命的影響也非常重要，可以透過時間-電流曲線獲得熔斷電流，計算過載電流與熔斷電流的負荷率。建議【峰值電流(Is)】<【熔斷電流(IM)的50%】確保在短期過載情況下能夠保持正常性能和長壽命。

t1 = 工作時間 [Operating time]

Is = 峰值電流(有效值) [Peak current]

IM=工作時間對應的熔斷電流 [Correspond melting current]

$$\text{負荷率 (Load Ratio)} = \frac{\text{(Is)峰值電流(有效值)}}{\text{(IM)保險絲熔斷電流}}$$

2.3 並聯選用準則 Fuses in parallel

Selection of Rated Current of Parallel Fuses

Using parallel connection of two or more fuses, additional de-rating becomes necessary. This is because as parallel fuses are placed in closer proximity, the environmental thermal conditions intensify. Besides, it has uneven current distribution due to variations in product resistance.

Derating Factor (Kp) for Parallel Fuses
- 2 to 4 fuses: Kp = 0.9
- More than 4 fuses: Kp = 0.8

The rated current(Inp) of parallel fuses is calculated as: Inp = (I1 + I2 + ... + In) x Kp

Notice for parallel fuses:

1. The specification and brand of the parallel fuses must be the identical.
2. The breaking capacity factor should follow the specification of a single fuse.

並聯保險絲額定電流選用指南

當考慮並聯兩個或以上保險絲時，並聯保險絲的組合額定電流總是小於單一個保險絲額定電流的數值總和。載流能力下降的原因是，當保險絲彼此靠近放置環境熱狀況增加，而且並聯保險絲因產品阻值的差異會存在不均勻的電流分布。

並聯保險絲的降額係數(Kp)：
- 當並聯2~4顆保險絲時：Kp = 0.9
- 當並聯超過4顆保險絲時：Kp = 0.8

並聯保險絲的額定電流(Inp)由此公式計算：Inp= (I1 + I2+...+ In) x Kp

考慮並聯保險絲時：

1. 並聯保險絲的規格與廠牌必須相同
2. 分斷能力的電流與電壓必須以單一保險絲規格為主 (非並聯保險絲的總合)

EVS

10Ø x 38 mm

Compliant with the ISO 8820 standard
2022 Taiwan Excellence Award Recipient

Interrupting Rating

10,000 amperes at 275V AC
10,000 amperes at 450V DC
20,000 amperes at 550V DC

Electrical Characteristics

Ampere Rating	Opening Time				
	1.1 In	1.35 In		1.5 In	
	MIN	MIN	MAX	MIN	MAX
10A - 50A	4 hr	150 sec	3600 sec	10 sec	1000 sec

Ampere Rating	Opening Time					
	2 In		3 In		5 In	
	MIN	MAX	MIN	MAX	MIN	MAX
10A - 50A	500 ms	100 sec	100 ms	15 sec	50 ms	1 sec

Product Characteristics

Operating Temperature	-55 °C to 125 °C
Material	Body: Ceramic Caps: Nickel Plated Copper Alloy Terminal: Tin Plated Copper Alloy

Packaging

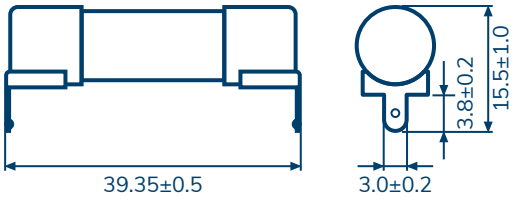
Packaging Option	Quantity
Bulk	**PCBL (PCB Mount):** 50 pcs / tray 20 trays / carton **BD (Bolt Down):** 40 pcs / tray 20 trays / carton

Catalog Number	Ampere Rating (A)	Voltage Rating (V)	Max Voltage Drop (mV)	Nominal Cold Resistance (Ohms)	Clearing I^2t (A^2 sec.)
EVS 010	10A	550V	200	0.01148	380
EVS 015	15A			0.00665	719
EVS 020	20A			0.00502	620
EVS 030	30A			0.00243	2533
EVS 040	40A			0.00171	5733
EVS 050	50A			0.00123	9320

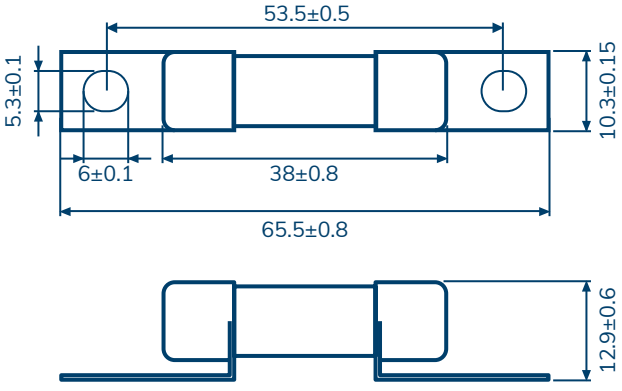
* Time constant (2.0 ± 0.5) ms at DC test

(*I^2t measured at 20 kA / 550 VDC)

Mechanical Dimensions(mm)



EVS PCBL (PCB Mount)



EVS BD (Bolt Down)

AHF/AHF-A/AHF-L

6.3Ø x 32 mm

Fast-Acting Fuse

Compliant with the AEC-Q200 standard

Agency Approvals

Agency	Ampere Rating
Recognized Component for Canada and US	**AHF**: 15A - 35A **AHF-A**: 15A - 35A **AHF-L**: 30A

Interrupting Rating

15A - 30A:	10,000 amperes at 500V AC 10,000 amperes at 500V DC
35A:	10,000 amperes at 500V AC 10,000 amperes at 305V DC

Product Characteristics

Operating Temperature	-55 °C to 125 °C
Material	**AHF:** Body: Ceramic Caps: Nickel Plated Copper Alloy **AHF-A:** Body: Ceramic Caps: Nickel Plated Copper Alloy Lead Wire: Tin Plated Copper Alloy **AHF-L:** Body: Ceramic Caps: Nickel Plated Copper Alloy Terminal: Tin Plated Copper Alloy
Leads Wire	Ø1.0 mm for rating above 15A. Ø1.2 mm for rating above 20A to 35A.

Packaging

Packaging Option	Quantity
Bulk	**AHF:** 500 pcs / inner box **AHF-A:** 250 pcs / inner box **AHF-L:** 42 pcs / tray 26 trays / carton

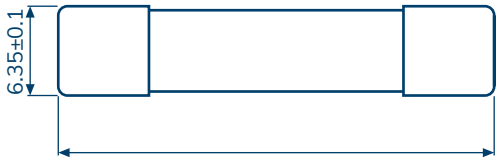
Electrical Characteristics

Ampere Rating	Opening Time		
	1 In	2 In	3 In
	MIN	MAX	MAX
15A - 35A	4 hr	120 sec	10 sec

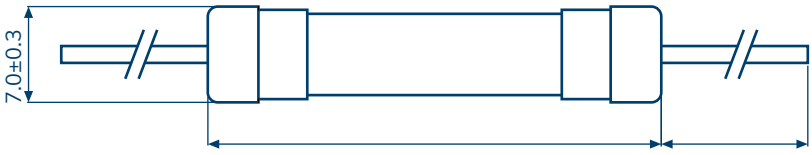
Catalog Number	Ampere Rating (A)	Voltage Rating (V)	Nominal Cold Resistance (Ohms)	Nominal Melting I^2t (A^2 sec.)
AHF / AHF-A 015	15A	500V	0.00788	60
AHF / AHF-A 020	20A		0.00511	240
AHF / AHF-A 025	25A		0.00467	360
AHF / AHF-A / AHF-L 030	30A		0.00340	500
AHF / AHF-A 035	35A		0.00286	750

(*I^2t measured at 1000% rated current)

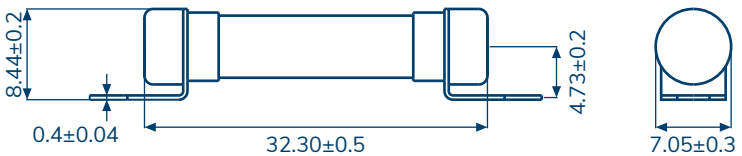
Mechanical Dimensions (mm)

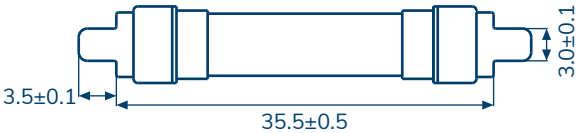


AHF



AHF-A





AHF-L

AHF-R

6.3Ø x 32 mm

Fast-Acting Fuse

Compliant with the AEC-Q200 standard

Agency Approvals

Agency	Ampere Rating
Recognized Component for Canada and US	30A - 50A

Interrupting Rating

30A:	10,000 amperes at 500V AC 10,000 amperes at 500V DC
40A:	10,000 amperes at 500V AC 10,000 amperes at 305V DC
50A:	10,000 amperes at 305V AC 10,000 amperes at 305V DC

Product Characteristics

Operating Temperature	-55 °C to 125 °C
Material	Body: Ceramic Caps: Nickel Plated Copper Alloy Terminal: Tin Plated Copper Alloy

Packaging

Packaging Option	Quantity
Bulk	70 pcs / tray 26 trays / carton

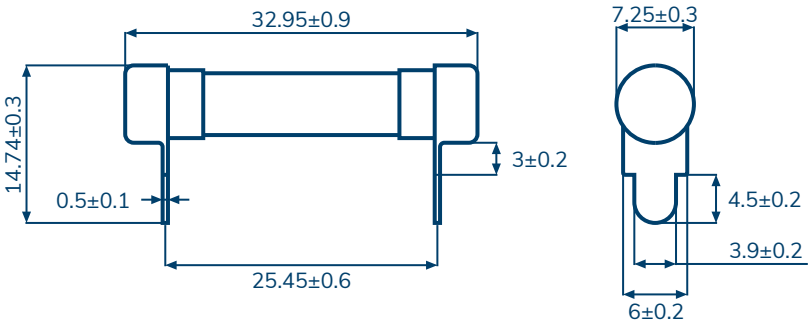
Electrical Characteristics

Ampere Rating	Opening Time		
	1 In	2 In	3 In
	MIN	MAX	MAX
30A - 50A	4 hr	120 sec	10 sec

Catalog Number	Ampere Rating (A)	Voltage Rating (V)	Nominal Cold Resistance (Ohms)	Nominal Melting I^2t (A^2 sec.)
AHF-R 030	30A	500V	0.00315	700
AHF-R 040	40A		0.00270	900
AHF-R 050	50A		0.00183	2500

(*I^2t measured at 1000% rated current)

Mechanical Dimensions (mm)



AHF-R

QEV10

10Ø x 38 mm

Compliant with the ISO 8820 standard
Compliant with the AEC-Q200 standard

Pb RoHS

Interrupting Rating

25,000 amperes at 1000V DC

Product Characteristics

Operating Temperature	-40 °C to 125 °C
Material	Body: Ceramic Caps: Nickel Plated Copper Alloy Terminal: Tin Plated Copper Alloy

Packaging

Packaging Option	Quantity
Bulk	50 pcs / tray 20 trays / carton

Electrical Characteristics

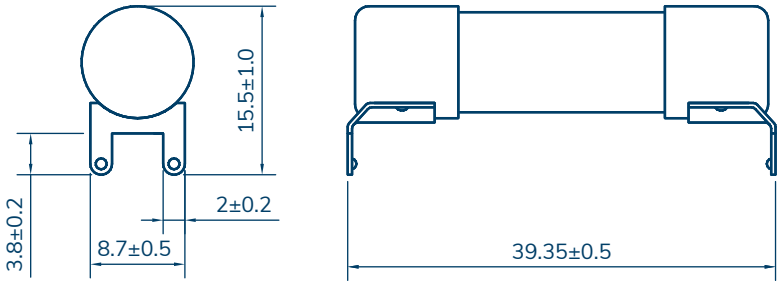
Rated Current	Opening Time					
	1.35 In		1.5 In		2 In	
	Min	Max	Min	Max	Min	Max
10A	-	3600 sec	-	1000 sec	500 ms	100 sec
20A-30A	150 sec	3600 sec	10 sec	1000 sec	500 ms	100 sec

Rated Current	Opening Time					
	3 In		5 In			
	Min	Max	Min	Max		
10A	100 ms	15 sec	50 ms	1 sec		
20A-30A	100 ms	15 sec	50 ms	1 sec		

Catalog Number	Ampere Rating (A)	Voltage Rating (V)	Max Voltage Drop (mV)	Nominal Cold Resistance (Ohms)	Clearing I^2t (A^2 sec.)
QEV10 10	10A	1000V	-	0.0155	98.0
QEV10 20	20A		200	0.0057	417.0
QEV10 30	30A		200	0.0031	1335.0

* Time constant (2.0 ± 0.5) ms at DC test (*I^2t measured at 25 kA / 1000 Vdc)

Mechanical Dimensions(mm)



QEV24

24.4 Ø x 88.38 mm

Compliant with the ISO 8820 standard
2025 Taiwan Excellence Award Recipient

Interrupting Rating

30,000 amperes at 1000V DC
20,000 amperes at 690V AC

Electrical Characteristics

Ampere Rating	Opening Time				
	1.1 In	1.35 In		1.5 In	
	MIN	MIN	MAX	MIN	MAX
60A - 125A	4 hr	150 sec	3600 sec	20 sec	1500 sec

Ampere Rating	Opening Time					
	2 In		3 In		5 In	
	MIN	MAX	MIN	MAX	MIN	MAX
60A - 125A	1 sec	300 sec	200 ms	30 sec	50 ms	1 sec

Product Characteristics

Operating Temperature	-40°C to +125°C
Material	Body: Ceramic Caps: Tin Plated Copper Alloy Terminal: Tin Plated Copper Alloy

Packaging

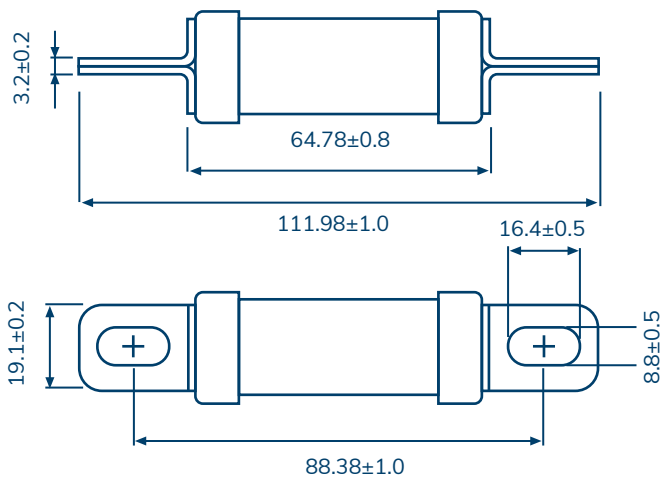
Packaging Option	Quantity
Bulk	20 inner boxes / mid box 5 mid boxes / carton

Catalog Number	Ampere Rating (A)	Voltage Rating (V)	Max. Voltage Drop (mV)	Nominal Cold Resistance (Ohms)	Pre-arcing I^2t (A^2 sec.)	Clearing I^2t (A^2 sec.)
QEV24 060	60A	1000V	250	0.002218	691.5	3830
QEV24 070	70A			0.001849	981.5	5560
QEV24 080	80A			0.001701	1295	6130
QEV24 090	90A			0.001403	1895	8510
QEV24 100	100A			0.001156	3410	10950
QEV24 125	125A		200	0.000890	6930	22250

Time constant (2.0 ± 0.5) ms at DC test
Minimum breaking capacity : 800 % rating currentst

(*I^2t measured at 30 kA / 1000 VDC)

Mechanical Dimensions(mm)



K8F/K8F-A

24.1Ø x 91.6 mm / 35.2Ø x 95.0 mm

Ideal for use in electric vehicles charging protection boards
2022 Taiwan Excellence Award Recipient

Agency Approvals

Agency	Ampere Rating
Recognized Component for Canada and US	50A - 400A

Interrupting Rating

50A - 150A:	100,000 amperes at 800V AC 50,000 amperes at 800V DC
160A -400A:	100,000 amperes at 800V AC 50,000 amperes at 800V DC

Catalog Number	Ampere Rating (A)	Voltage Rating (V)	Watts Loss 100% In(W)	Clearing I^2t (A^2 sec.)
K8F / K8F-A 050	50A	800V	11	800
K8F / K8F-A 075	75A		15.5	1500
K8F / K8F-A 100	100A		24	3100
K8F / K8F-A 125	125A		28	10000
K8F / K8F-A 150	150A		32	16900
K8F / K8F-A 160	160A		33	17100
K8F / K8F-A 175	175A		35	17500
K8F / K8F-A 200	200A		40.5	22000
K8F / K8F-A 225	225A		43	30000
K8F / K8F-A 250	250A		46	37000
K8F / K8F-A 300	300A		56	52000
K8F / K8F-A 350	350A		65	81000
K8F / K8F-A 400	400A		77	110000

(*I^2t measured at 50 kA / 800 VDC)

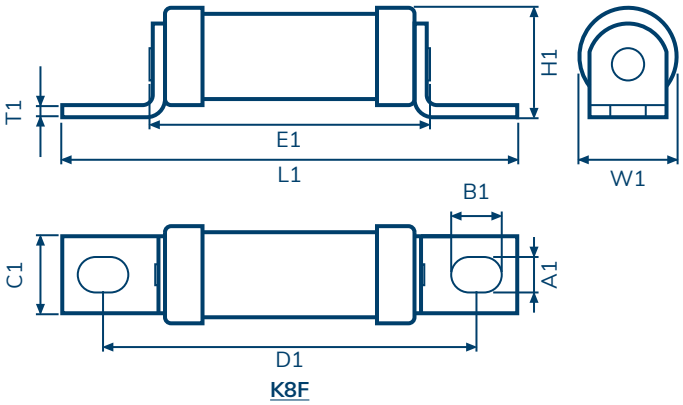
Product Characteristics

Operating Temperature	-55 °C to 125 °C
Material	Body: Ceramic Caps: Tin Plated Copper Alloy Terminal: Tin Plated Copper Alloy

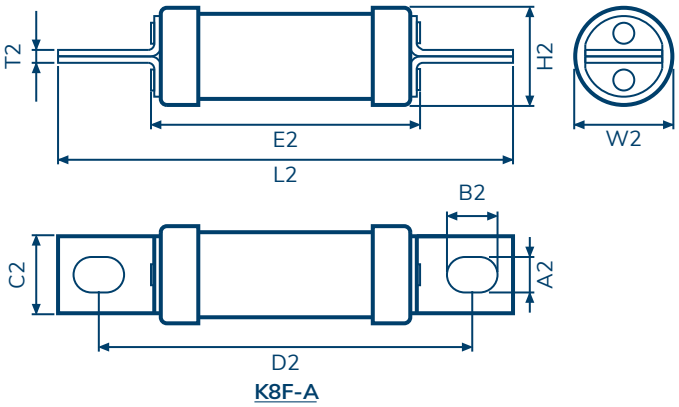
Packaging

Packaging Option	Quantity	
Bulk	**50A-150A:** 20 inner boxes / mid box 5 mid boxes / carton	**160A-400A:** 10 inner boxes / mid box 5 mid boxes / carton

Mechanical Dimensions (mm)



K8F



K8F-A

K8F Series	A1	B1	C1	D1	E1	H1	L1	T1	W1
50A - 150A	8.8±1.0	12.4±1.0	19.1±1.0	91.6±3.6	69.0±3.0	27.1±2.0	111.6±3.0	3.0±0.2	24.1±2.0
160A - 400A	10.5±1.0	15.0±1.0	26.0±1.0	95.0±4.5	69.2±3.0	38.2±2.0	117.6±3.0	3.0±0.2	35.2±2.0
K8F-A Series	**A2**	**B2**	**C2**	**D2**	**E2**	**H2**	**L2**	**T2**	**W2**
50A - 150A	8.8±1.0	12.4±1.0	19.1±1.0	91.6±3.6	66.0±3.0	24.1±2.0	111.6±3.0	3.4±0.2	24.1±2.0
160A - 400A	10.5±1.0	15.0±1.0	26.0±1.0	95.0±4.5	69.2±3.0	35.2±2.0	117.6±3.0	6.0±0.2	35.2±2.0

K6F/K6F-R

10Ø x 38 mm

Over current protection in solar system

Agency Approvals

Agency	Ampere Rating
Certified products for U.S. and Canada	6A - 30A
TUV	15A - 30A
CQC	15A - 30A

Electrical Characteristics

Ampere Rating	Opening Time					
	1 In	1.05 In	1.35 In		2 In	
	MIN	MIN	MIN	MAX	MIN	MAX
6A - 12A	4 hr	-	-	60 min	-	120 sec
15A - 30A	4 hr	60 min	-	60 min	-	240 sec

Interrupting Rating: 6A-12A

UL248-14	100,000 amperes at 600V AC 100,000 amperes at 600V DC

Interrupting Rating: 15A-30A

UL248-14	150,000 amperes at 600V AC 50,000 amperes at 600V DC
UL248-19	50,000 amperes at 600V DC
IEC60269-6 GB / T13539.6	10,000 amperes at 600V DC

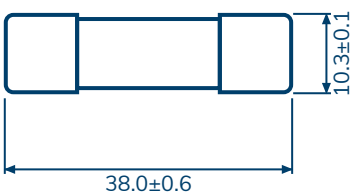
Catalog Number	Ampere Rating (A)	Voltage Rating (V)	Nominal Cold Resistance (Ohms)	Watts Loss 70% In (W)	Watts Loss 100% In (W)	Nominal Melting I^2t (A^2 sec.)
K6F/K6F-R 006	6A	600V	0.0268	1.05	2.4	50.72
K6F/K6F-R 012	12A		0.0108	1.7	4.3	258.19
K6F/K6F-R 015	15A		0.0081	2.2	5.4	51.64
K6F/K6F-R 020	20A		0.0049	2.6	6.3	206.48
K6F/K6F-R 025	25A		0.0037	3.1	6.9	1067.18
K6F/K6F-R 030	30A		0.0028	3.5	7.6	1740.00

(*I^2t measured at 1000% rated current)

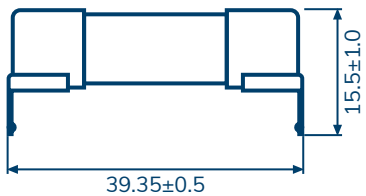
Product Characteristics

Operating Temperature	-55 °C to 125 °C
Material	Body: Ceramic Caps: Nickel Plated Copper Alloy Terminal: Tin Plated Copper Alloy

Mechanical Dimensions(mm)



K6F



K6F-R

Packaging

Packaging Option	Quantity
Bulk	**K6F:** 10 pcs / inner box 10 inner boxes / mid box **K6F-R:** 50 pcs / tray 20 trays / carton

KSF/KSF-R

10Ø x 38 mm

Over current protection in solar system
2022 Taiwan Excellence Award Recipient

Safety Approvals

Agency	Ampere Rating
Certified products for U.S. and Canada	15A - 30A

Electrical Characteristics

Ampere Rating	Opening Time							
	1 In	1.13 In	1.35 In		1.45 In		2 In	
	MIN	MIN	MIN	MAX	MIN	MAX	MIN	MAX
15A - 30A	4 hr	60 min	-	60 min	-	60 min	-	240 sec

Interrupting Rating

20,000 amperes at 1000V DC

Catalog Number	Ampere Rating (A)	Voltage Rating (V)	Nominal Cold Resistance (Ohms)	Watts Loss 70% In (W)	Watts Loss 100% In (W)	Clearing I^2t (A^2 sec.)
KSF/KSF-R 015	15A	1000V	0.00854	1.24	3.06	365
KSF/KSF-R 020	20A		0.00505	1.33	3.22	804.3
KSF/KSF-R 025	25A		0.00396	1.66	4.28	1202
KSF/KSF-R 030	30A		0.00302	1.78	4.56	2229

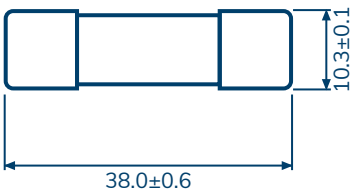
Time constant ≤ 2.0 ms at DC test.

(*I^2t measured at 20 kA / 1000 VDC)

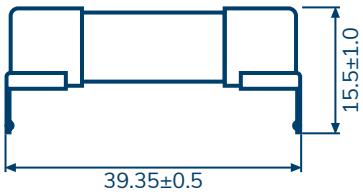
Product Characteristics

Operating Temperature	-55 °C to 125 °C
Material	Body: Ceramic Caps: Nickel Plated Copper Alloy Terminal: Tin Plated Copper Alloy

Mechanical Dimensions(mm)



KSF



KSF-R

Packaging

Packaging Option	Quantity
Bulk	**KSF:** 10 pcs / inner box 10 inner boxes/ mid box **KSF-R:** 50 pcs / tray 20 trays / carton

BMC

17.4Ø x 42 mm

Ideal for use in electric vehicles charging protection boards

Agency Approvals

Agency	Ampere Rating
Recognized Component for Canada and US	50A - 180A
CCC	50A - 180A

Interrupting Rating

160,000 amperes at 240V AC
50,000 amperes at 150V DC

Catalog Number	Ampere Rating (A)	Voltage Rating (V)	Nominal Cold Resistance (Ohms)	Watts Loss 100% In (W)	Clearing I^2t (A^2 sec.)
BMC 050	50A	240V	0.00183	8.800	2463.00
BMC 060	60A		0.00156	11.00	3574.30
BMC 070	70A		0.00117	12.50	4047.00
BMC 080	80A		0.00098	13.70	5447.00
BMC 100	100A		0.00072	16.20	8352.00
BMC 125	125A		0.00060	22.00	10077.0
BMC 150	150A		0.00049	25.00	15100.0
BMC 180	180A		0.00038	25.00	17268.0

(*I^2t measured at 160 kA / 240 VAC)

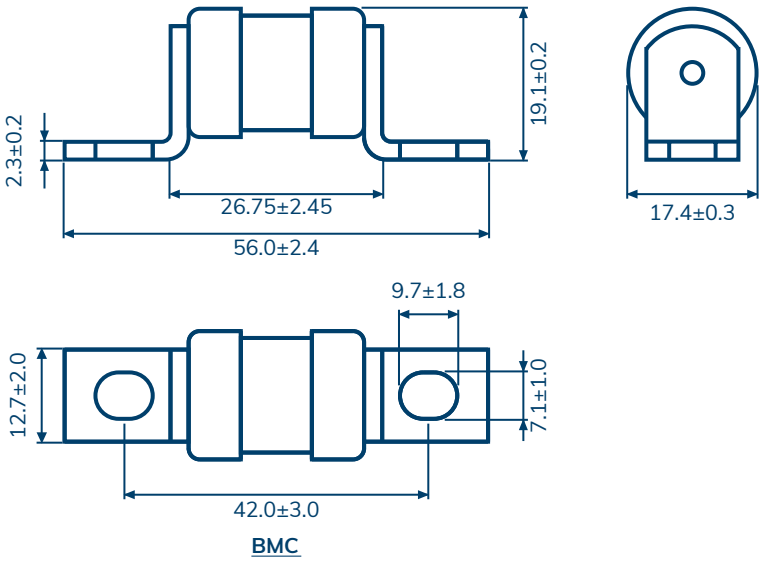
Product Characteristics

Operating Temperature	-55 °C to 125 °C
Material	Body: Ceramic Caps: Tin Plated Copper Alloy Terminal: Tin Plated Copper Alloy

Packaging

Packaging Option	Quantity
Bulk	10 pcs / inner box 20 inner boxes / carton

Mechanical Dimensions(mm)



BMC

K5F

35.0Ø x 78.0 mm / 50.0Ø x 83.0 mm

Ideal for use in electric vehicles charging protection boards
2022 Taiwan Excellence Award Recipient

Agency Approvals

Agency	Ampere Rating
Recognized Component for Canada and US	225A - 700A
CCC	225A - 700A

Interrupting Rating

225A - 400A:	150,000 amperes at 500V AC 50,000 amperes at 500V DC
450A -700A:	150,000 amperes at 500V AC 50,000 amperes at 500V DC

Product Characteristics

Operating Temperature	-55 °C to 125 °C
Material	Body: Ceramic Caps: Tin Plated Copper Alloy Terminal: Tin Plated Copper Alloy

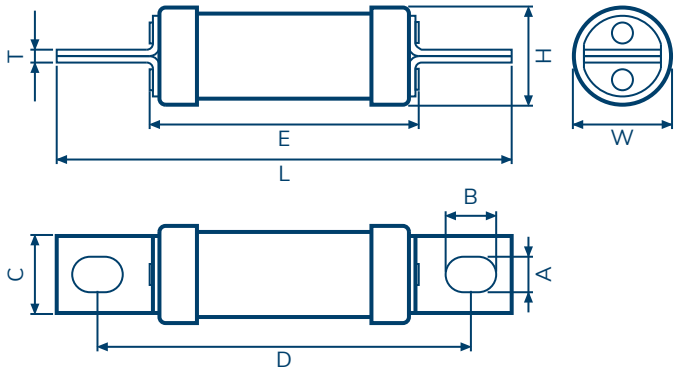
Catalog Number	Ampere Rating (A)	Voltage Rating (V)	Watts Loss 100% In (W)	I^2t (A^2 Sec)	
				Pre-arc	Clearing I^2t (A^2 sec.)
K5F 225	225A	500V	38	6430	16800
K5F 250	250A		40	10100	27700
K5F 275	275A		45	11500	31600
K5F 300	300A		49	17700	45600
K5F 325	325A		51	24800	63500
K5F 350	350A		58	36100	80600
K5F 400	400A		64	36900	91300
K5F 450	450A		72	80600	152000
K5F 500	500A		81	109000	193000
K5F 600	600A		103	178000	304000
K5F 700	700A		114	244000	419000

(*I^2t measured at 50 kA / 500 VDC)

Packaging

Packaging Option	Quantity	
Bulk	**225A-400A:** 10 inner boxes / mid box 5 mid boxes / carton	**450A-700A:** 6 inner boxes / mid box 4 mid boxes / carton

Mechanical Dimensions (mm)



K5F

K5F Series	A	B	C	D	E	H	L	T	W
225A - 400A	10.5±1.0	19.0±1.0	26.0±1.0	78.0±4.5	47.0±3.0	35.0±2.0	110.0±3.0	6.0±0.2	35.0±2.0
450A - 700A	10.5±1.0	16.0±1.0	38.0±1.0	83.0±4.5	57.0±3.0	50.0±2.0	112.0±3.0	6.0±0.2	50.0±2.0

AUC

10.4Ø x 38.5 mm

Designed for use in large-scale air conditioning units

Agency Approvals

Agency	Ampere Rating
Recognized Component for Canada and US	25A - 70A

Interrupting Rating

2,000 amperes at 500V AC
2,000 amperes at 250V AC
1,000 amperes at 125V DC

Product Characteristics

Operating Temperature	-55 °C to 125 °C
Material	Body: Ceramic Caps: Nickel Plated Copper Alloy Terminal: Tin Plated Copper Alloy

Packaging

Packaging Option	Quantity
Bulk	80 pcs / inner box 10 inner boxes / carton

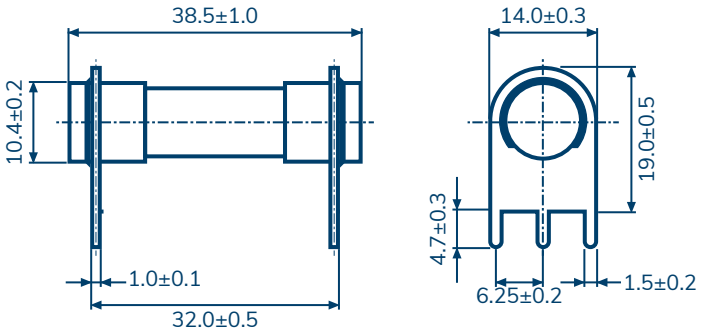
Electrical Characteristics

Ampere Rating	Opening Time	
	1 In	2 In
	MIN	MAX
25A - 70A	4 hr	120 sec

Catalog Number	Ampere Rating (A)	Voltage Rating (V)	Nominal Cold Resistance (Ohms)	Nominal Melting I^2t (A^2 sec.)
AUC 030	30A	250V / 500V	0.00283	675.00
AUC 040	40A		0.00190	2616.00
AUC 050	50A		0.00140	3975.00
AUC 063	63A		0.00110	6271.00
AUC 070	70A		0.00100	11760.0

(*I^2t measured at 1000% rated current)

Mechanical Dimensions(mm)



AUC

ALC

14.6Ø x 38.5 mm

Designed for over-current protection in high voltage applications

Agency Approvals

Agency	Ampere Rating
Recognized Component for Canada and US	25A - 90A

Interrupting Rating

25A - 63A:	500 amperes at 125V DC 1,500 amperes at 600V AC 2,000 amperes at 250V AC
90A:	1,500 amperes at 500V AC

Product Characteristics

Operating Temperature	-55 °C to 125 °C
Material	Body: Ceramic Caps: Nickel Plated Copper Alloy Terminal: Tin Plated Copper Alloy

Packaging

Packaging Option	Quantity
Bulk	60 pcs / inner box 10 inner boxes / carton

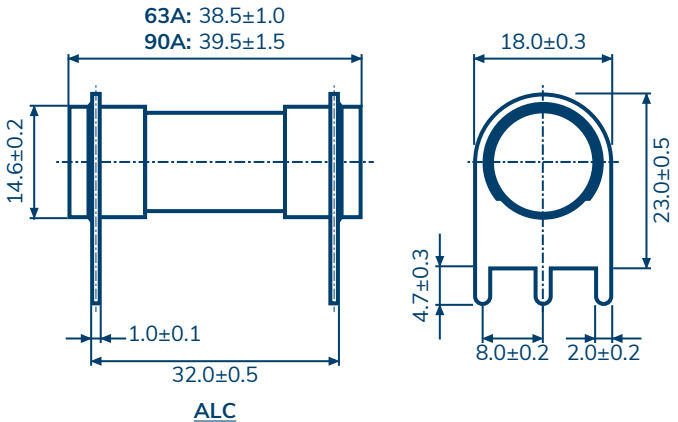
Electrical Characteristics

Ampere Rating	Opening Time	
	1 In	2 In
	MIN	MAX
25A - 63A	4 hr	120 sec
90A	4 hr	360 sec

Catalog Number	Ampere Rating (A)	Voltage Rating (V)	Nominal Cold Resistance (Ohms)	Nominal Melting I^2t (A^2 sec.)
ALC 063	63A	250V / 600V	0.00129	9892.95
ALC 090	90A	500V	0.00085	9234.00

(*I^2t measured at 1000% rated current)

Mechanical Dimensions(mm)



ALC

AMC

14.6Ø x 22.3 mm

Suitable for the telecommunications industry

Agency Approvals

Agency	Ampere Rating
Recognized Component for Canada and US	30A - 125A

Interrupting Rating

100,000 amperes at 170V DC

Product Characteristics

Operating Temperature	-55 °C to 125 °C
Material	Body: Ceramic Caps: Nickel Plated Copper Alloy (AMC-LS, AMC-V) Caps: Tin Plated Copper Alloy (AMC-LSE) Terminal: Tin Plated Cooper Alloy

Packaging

Packaging Option	Quantity
Bulk	10 pcs / inner box

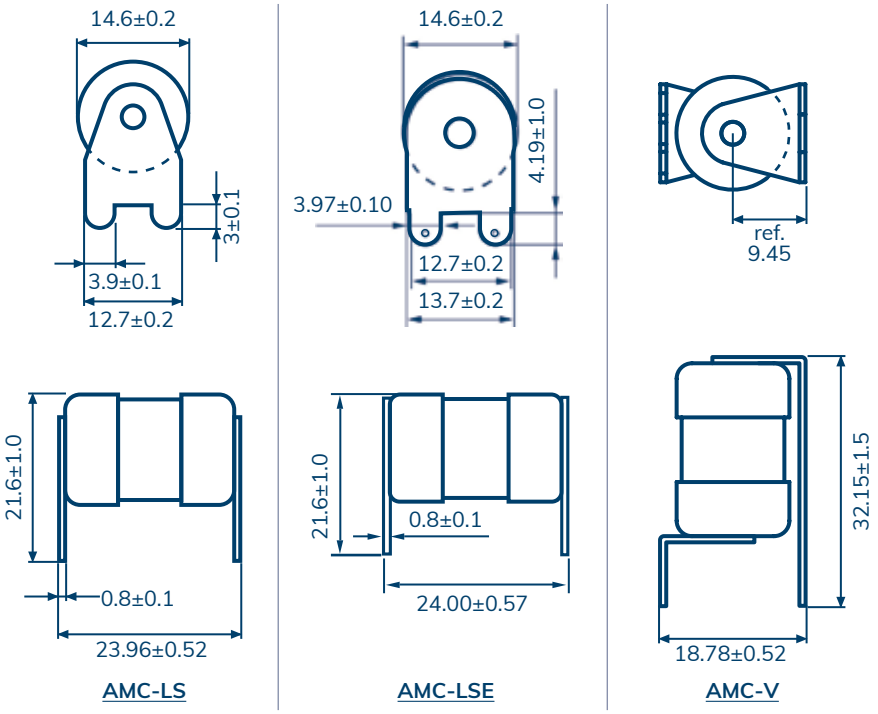
Electrical Characteristics

Ampere Rating	Opening Time		
	1 In	1.35 In	2 In
	MIN	MAX	MAX
31A - 60A	4 hr	1 hr	6 min
61A - 100A	4 hr	2 hr	8 min
101A - 125A	4 hr	--	10 min

Catalog Number	Ampere Rating (A)	Voltage Rating (V)	Nominal Cold Resistance (Ohms)	Watts Loss 100% In (W)	Clearing I^2t (A^2 sec.)	Version
AMC 040	40A	170V	0.00156	3.73	1974	-LS/-V
AMC 050	50A		0.00123	4.60	4139	
AMC 060	60A		0.00090	5,00	6454	
AMC 080	80A		0.00074	7.20	8236	
AMC 100	100A		0.00057	9.43	10250	
AMC 125	125A		0.00041	12.14	14633	-LSE

(* I^2t mesured at 100kA / 170 VDC)

Mechanical Dimensions(mm)



ACF/ACF-A

7.0Ø x 32.5 mm

Fast-Acting Fuse

Agency Approvals

Agency	Ampere Rating
Recognized Component for Canada and US	**ACF:** 35A - 40A **ACF-A:** 35A - 45A
TUV	**ACF:** 35A - 40A **ACF-A:** 35A - 45A

Interrupting Rating

35A - 45A:	30,000 amperes at 500V AC 30,000 amperes at 500V DC
35A - 40A:	42,000 amperes at 350V AC 42,000 amperes at 305V AC

Product Characteristics

Operating Temperature	-55 °C to 125 °C
Material	**ACF:** Body: Ceramic Caps: Tin Plated Copper Alloy **ACF-A:** Body: Ceramic Caps: Nickel Plated Copper Alloy Lead Wire: Tin Plated Copper Alloy

Packaging

Packaging Option	Quantity
Bulk	**ACF:** 70 pcs / tray 26 trays / carton **ACF-A:** 250 pcs / inner box 10 inner boxes / carton

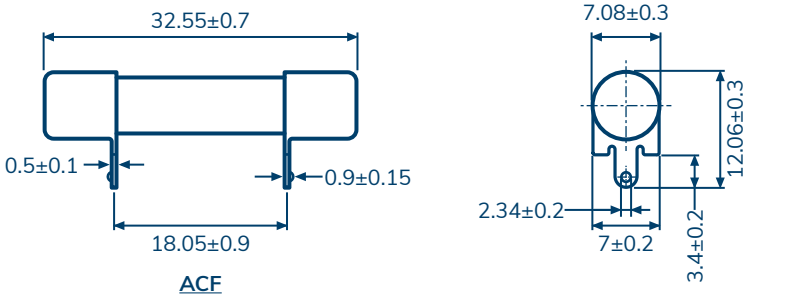
Electrical Characteristics

Ampere Rating	Opening Time		
	1 In	2 In	10 In
	MIN	MAX	MAX
35A - 45A	4 hr	4 min	1 sec

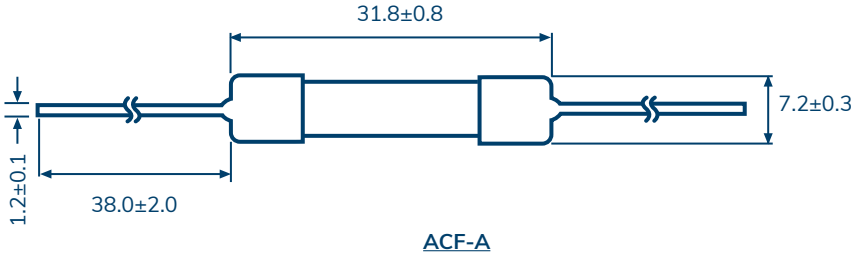
Catalog Number	Ampere Rating (A)	Voltage Rating (V)	Nominal Cold Resistance (Ohms)	Watts Loss 100% in (W)	Clearing I^2t (A^2 sec.)
ACF / ACF-A 035	35A	500V	0.00328	12.3	485
ACF / ACF-A 040	40A		0.00265	14.0	664
ACF-A 045	45A		0.00227	18.0	927

(*35A - 40A : I^2t measured at 10kA / 500VAC)
(*45A : I^2t measured at 30kA / 500VAC)

Mechanical Dimensions (mm)



ACF



ACF-A

CMC

14.3Ø x 39 mm

Suitable for the telecommunications industry

Agency Approvals

Agency	Ampere Rating
Recognized Component for Canada and US	125A

Interrupting Rating

125A	100,000 amperes at 170V DC
	100,000 amperes at 170V AC
	100,000 amperes at 240V AC (optional)

Electrical Characteristics

Ampere Rating	Opening Time			
	1.5 In	2 In	400A	
	MIN	MAX	Min	Max
125A	4 hr	10 min	1.7 sec	3.3 sec

Catalog Number	Ampere Rating (A)	Voltage Rating (V)	Nominal Cold Resistance (Ohms)	Clearing I^2t (A^2 sec.)
CMC	125A	170V	0.00036	16850

(* I^2t mesured at 100kA / 170 VDC)

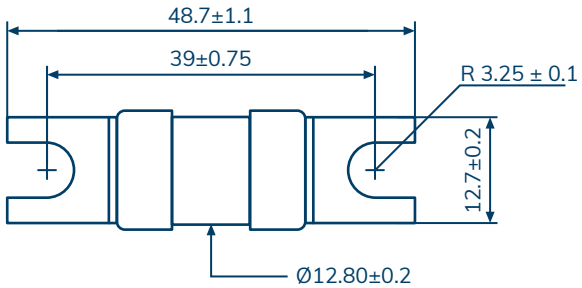
Product Characteristics

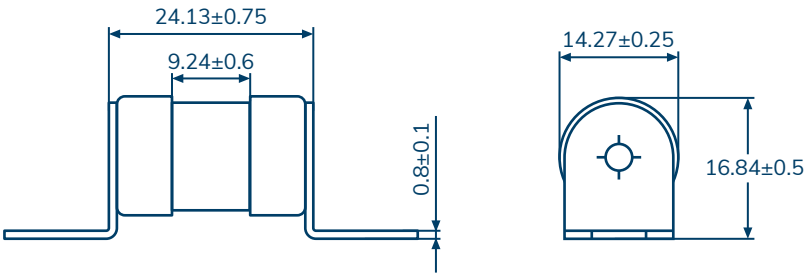
Operating Temperature	-55 °C to 125 °C
Material	Body: Ceramic Caps: Tin Plated Copper Alloy Terminal: Tin Plated Copper Alloy

Packaging

Packaging Option	Quantity
Bulk	30 pcs / tray 14 trays / carton

Mechanical Dimensions(mm)





BMI-LS

17.4Ø x 22.2 mm

Ideal for protects semiconductor devices

Agency Approvals

Agency	Ampere Rating
Recognized Component for Canada and US	50A - 100A

Interrupting Rating

10,000 amperes at 400V AC
10,000 amperes at 400V DC

Catalog Number	Ampere Rating (A)	Voltage Rating (V)	Nominal Cold Resistance (Ohms)	Watts Loss 100% In (W)	Clearing I^2t (A^2 sec.)
BMI-LS 050	50A	400V	0.00130	4.8	3820
BMI-LS 063	63A		0.00100	7.6	5690
BMI-LS 080	80A		0.00086	9.6	8130
BMI-LS 100	100A		0.00064	13.5	9940

(* I^2t mesured at 10kA / 400 VAC)

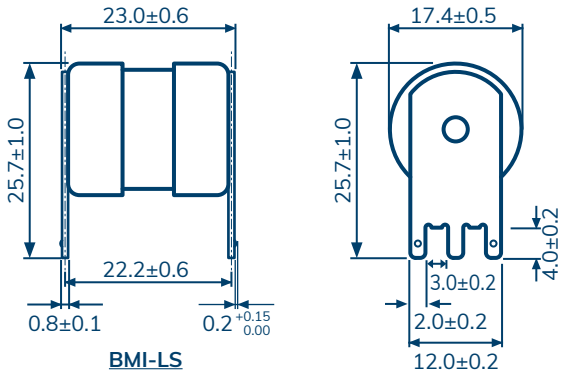
Product Characteristics

Operating Temperature	-55 °C to 125 °C
Material	Body: Ceramic Caps: Tin Plated Copper Alloy Terminal: Tin Plated Copper Alloy

Packaging

Packaging Option	Quantity
Bulk	30 pcs / box

Mechanical Dimensions(mm)



BMI-LS

Circuit Protection for AI Data Center Power Systems

Precision Circuit Protection for Smart Industrial Automation

Reliable Protection for AI Infrastructure Systems

Lightning Simulation Test: Perfect for Outdoor Telecom Station

High-Power Protection for EV Systems

Reliable Protection for Renewable Energy Systems

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