# MHP-TAC Series Breakers (Thermal Cutoff Devices) Metal Hybrid PPTC





## **Additional Information**



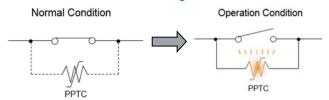
Resources





Samples

**Circuit Diagram** 



#### **Agency Approvals**

Agency	Agency File Number				
c <b>FL</b> °us	E349829				
IFCEE St	DK-75944-UL				

# **Description**

The new Metal Hybrid PPTC breaker, MHP-TAC, offers higher voltage rating (12VDC) and smaller size than typical MHP-TAM breakers. MHP-TAC helps to meet the battery safety requirements of higher-capacity Lithium (Ion) Polymer and Prismatic batteries found in most mobile devices such as laptop PC's, tablets, and smart phones. MHP technology connects a bimetal protector in parallel with a Polymeric Positive Temperature Coefficient (PPTC) device. The PPTC device is to act as a heater and to help keep the bimetal latched until the fault is removed. The resulting MHP-TAC helps to provide resettable overtemperature protection.

#### **Features**

- High voltage rating
- Overtemperature and overcurrent protection for Lithium (Ion) Polymer and Prismatic cells
- Multiple activation temperature ratings (72°C, 77°C, 82°C, 85°C, and 90°C)
- Evaluated to UL 60730-1, UL 60730-2-9, CAN/CSA E60730-1, CAN/CSA E730-2-9, IEC 60730-1 and IEC 60730-2-9

# **Applications**

Battery cell protection for Lithium Polymer and Prismatic cells used in:

- Notebook PCs
- Ultra-books
- Tablets
- Smart Phone
- Battery-powered portable devices

# **Typical Electrical Ratings**

Part Description	MHP-TAC15-12-72N	MHP-TAC15-12-77N	MHP-TAC15-12-82N	MHP-TAC15-12-85N	MHP-TAC15-12-90N	
Operation Temperature	72°C+/-5°C	77°C+/-5°C	82°C+/-5°C	85°C+/-5°C	90°C+/-5°C	
Ordering Part Number	RF4780-000	RF4781-000	RF4782-000	RF4783-000	RF4784-000	
Reset Temperature	≥40°C	≥40°C	≥40°C	≥40°C	≥40°C	
Contact Rating	DC 12V/25A, 6000 Cycles					
Maximum Breaking Current	DC 5V/80A, 100 Cycles					
Minimum Hold Voltage	3V					
Maximum Leakage Current	150mA@25°C					
Hold Current	15A@25°C					
Resistance	5 milliohms Max.					
Operating Temperature Range	-30~100°C					



# MHP-TAC Series Breakers (Thermal Cutoff Devices) Metal Hybrid PPTC

Part Description	MHP-TAC6-12-72N	MHP-TAC6-12-77N	MHP-TAC6-12-82N	MHP-TAC6-12-85N		
Operation Temperature	72°C+/-5°C	77°C+/-5°C	82°C+/-5°C	85°C+/-5°C		
Ordering Part Number	RF4788-000	RF4789-000	RF4790-000	RF4791-000		
Reset Temperature	≥40°C	≥40°C	≥40°C	≥40°C		
Contact Rating	DC 12V/12A, 6000 Cycles					
Maximum Breaking Current	DC 5V/40A, 100 Cycles					
Minimum Hold Voltage	2V					
Maximum Leakage Current	150mA@25°C					
Hold Current	6A@25°C					
Resistance	15 milliohms Max.					
Operating Temperature Range	-30~100°C					

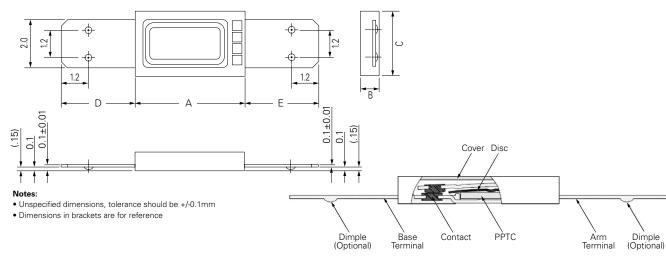
#### **Precautions for Electrical Characteristics**

- a. Device electrical characteristics may change depending on installation conditions. Users should independently evaluate the suitability of and test each product in their own application.
- b. If any terminal or lead extensions are added to the device, especially in the case of high current discharging, the device performance may be negatively impacted due to variations in welding methods or materials. Please avoid designs that might cause heat to be generated around the joints of the lead extensions or on the extended terminals.
- SMT solder reflow, wave-soldering and manual soldering irons are not permitted.

## **Precautions for Rating**

- **a.** The power supply voltage must be less than the rated voltage of the device. Operation above the voltage rating may result in device damage, smoking or flame.
- b. Designs must be selected in such a manner that the device hold current is higher than the normal current value in the circuit and that the device trip current is lower than the abnormal current value. Selecting device hold current and trip current values that are too low for the application may interrupt the circuit under normal usage conditions.
- c. This product should not be used in an application where the maximum interrupt current can be exceeded in a short circuit condition.
- d. The devices are intended for protection against damage caused by occasional over current or over temperature fault conditions and should not be used when repeated fault conditions or prolonged trip events are anticipated.
- e. The devices may not perform as specified if mechanical pressure is added while the device is in the tripped state or exposed to temperature conditions over 100°C.

## Dimensions

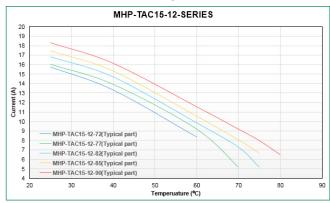


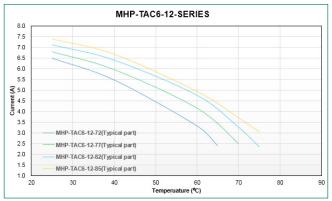
		4	E	3	(	;		)	E	
Unit = mm	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
	4.65	4.85	0.75	0.85	2.7	2.9	3.1	3.3	3.1	3.3



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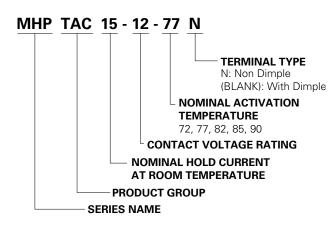
### **Current Vs. Temperature Curves**



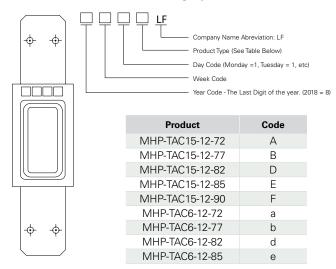


The current vs. temperature curve was derived from placing test samples in an oven at 25°C, 40°C, 60°C, 70°C, 75°C, and 80°C, increasing current flow through the sample at a rate of 0.1 A/minute and recording the current value when the sample trips.

## **Part Naming System**



## **Part Marking System**



#### **Application Environment**

The device is intended to be used for applications which are common for general electronic devices. Usage in any of the special environments or conditions as listed below may adversely impact the device performance and therefore users should carefully consider conditions of use of the end product and the potential impact on reliability or performance when incorporating this device into any design to carefully examine the actual performance and reliability of the device.

- Environment where the devices are exposed to water, oil, chemical solutions, and/or organic solvents.
- Installation in an area close to a heat source or adjacent to or near flammable objects such as plastic wires.
- Environment in which the device is constrained by pressure, sealing or resin coating.
- Environment where water condenses on the device.
- Environment with salt air or with corrosive gas such as CL2, H2S, NH3, SO2, and NOX.
- Environment with grit and dust and/or under direct sunlight.
- Environment outside of recommended operating temperature.

#### **Packaging**

Packaging Option	Quantity	Quantity & Packaging Code
20,000 pcs. Minimum	1000 pcs/bag	1 bag per inner box 20 inner box in 1 outer box

