

PYROFUSE

Pyrotechnic Circuit Breaker

Introducing the PyroFuse from Sensata Technologies – the ultimate high-voltage safety solution. The STPS500 series PyroFuse is specifically designed to support a wide range of high-voltage applications, including automotive, charging, aerospace, and industrial systems. In the event of a short circuit or accident, the device quickly disconnects the load, safeguarding both the electrical system and the safety of drivers and passengers. It offers key features such as high continuous current-carrying capability, rapid response time, high breaking capacity, excellent post-isolation resistance, and a fully enclosed housing that prevents gas release during interruption events. These features work together to enhance overall system safety and reliability, all in a lightweight, compact design that integrates seamlessly without adding significant weight or bulk.

Highlights

- Sensata part number: STPS500
- Max continuous current 500A.
- Max breaking capacity:
  1) 500V/20000A @14uH.
  2) 1000V/18000A @10uH.
- Bi-directional device
- Irreversible current separation

Features

- Active Safety with external trigger.
- Fast disconnect <1ms.
- High post IR >50MΩ@1000V.
- Lightweight design and small form factor.

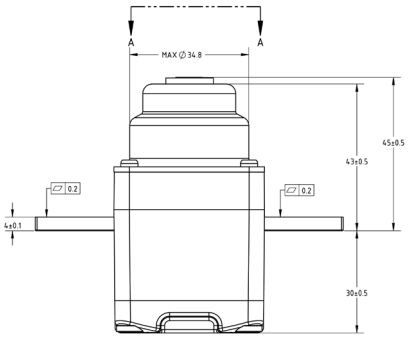
Applications

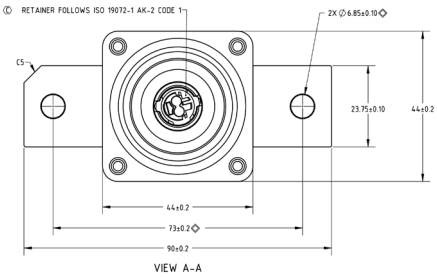
- Battery disconnection to prevent fire or damage from short circuits or electrical shock during/after accident.
- For high voltage applications in electric vehicles, aerospace (including eVTOL) and industrial.



PYROFUSE Technical Specifications

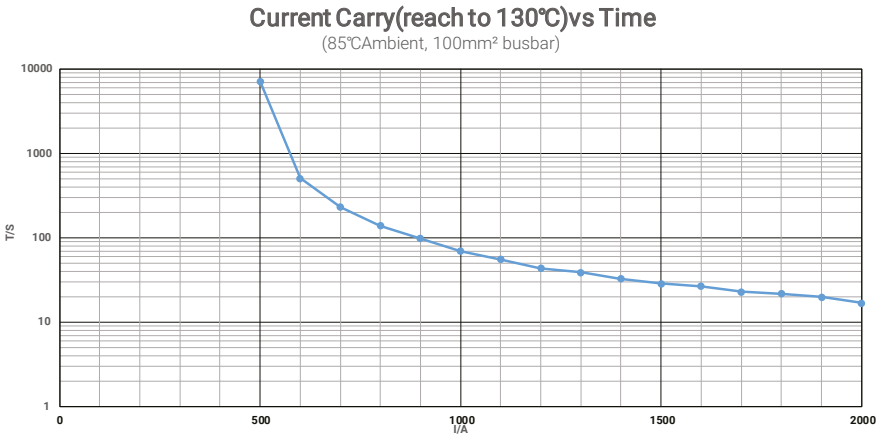
Tolerance, unless otherwise noted:
All dimensions are in millimeters [millimeter]
Total weight: 230g ± 5%





Breaking capability	Units
Max breaking capacity Breaking capacities reflect peak values interrupted before max current. Contact Sensata for additional details.	500V/22kA/10uH 1000V/18kA/10uH
Min breaking capacity	0A
Action time	< 1ms
IR at 1000V@RT after break	50MΩ
Busbar	
Contact raw material (base)	Copper
Plating (lead free)	Sn over Ni
Resistance @RT before break	≤ 40μΩ
Cross section	95mm²
Initiator data	
Pyrotechnics	GTMS igniter (AK-LV 16 & USCAR-28)
Initiator resistance	≥ 1.7Ω and ≤ 2.5Ω
All fire current	≥ 1.75A/0.5ms or ≥1.2A/2.0ms
No fire current	≤ 0.4A/10s or ≤ 5.0A/≤4us
Diagnose current	≤ 100mA
Temperature	
Operating temperature	-40°C ~ +85°C
Environmental temperature	-40°C~ +85°C
Storage temperature	-40°C ~ +65°C
Self-ignition	≥ 250°C
Other specifications	
Vibration resistance acc. to	AK-LV 124
Mech. Shock resistance acc. to	AK-LV 124
Temperature cycle resistance acc. to	AK-LV 124
Chemical load resistance acc. to	AK-LV 124
Terminal on busbar	M6 screw, 12N.m
Terminal on initiator	ISO 19072-1 AKII
Altitude	-400m to 5500m
Flammability	TL1011-A V0, UL94-V0

CURRENT CARRY



Retainer	Mate Connector	Mark	Manufacturer
2330574	CA 288A Serial	ISO 19072-4 AK2, Code 1	Amphenol
1-1823640-1(TE)	2330574(-1--8)		TE

PYROFUSE Technical Specifications

Ordering Options	Example: STPS500 -001
Family STPS: Sensata Pyro Switch (Pyrofuse)	
Section 500: 500A continuous current	
Configuration -001: Default	

General Notes

1. The connector of pyro fuse has a short-circuit ring structure. While the connector is not fully inserted into the position, the short-circuit ring will short the two pins of the circuit to prevent mis-operation during transportation, installation, and usage.
2. The trigger signal (low voltage) must not be connected to the same ground (or conductor connection) as the high voltage system.
3. Contact Sensata if the electric power level exceeds the breaking capability.
4. Do not use product if it happens to drop.
5. Do not use productif the body is damaged.
6. It is prohibited to trigger pyro fuse with lead-acid or dry battery.

Agency Approvals & Certifications

1. Product not subject to IATA DGR per UN Recommendations on the TRANSPORT OF DANGEROUS GOODS, Manual of Tests and Criteria, Eighth revised edition; GB/T 14372-2013 Transport of dangerous goods
2. CE certification for B2 design, final design certification in progress
3. ADR certification for B1 design, final design certification in progress
4. SprengG not applicable, per Bundesanstalt für Materialforschung und -prüfung confirmation
5. Classification of Explosives (EX2024092142) with U.S. Department Of Transportation, non-Class 1
6. Special Explosives Device Determination (ATF tracking number EX2024092142) with U.S. Department of Justice



RISK OF MATERIAL DAMAGE AND HOT ENCLOSURE
• The product's side panels may be hot, allow the product to cool before touching
• Follow proper mounting instructions including torque values
• Do not allow liquids or foreign objects to enter this product
Failure to follow these instructions can result in severe injury, or equipment damage



HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH
• Disconnect all power before installing or working with this equipment
• Verify all connections and replace all covers before turning on power
Failure to follow these instructions will result in death or severe injury.

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