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Pyro Safety Switches

Prevention in milliseconds to avoid short-circuits,
fire ignition & battery draining.

Pyro Safety Switch PSS-1

Autoliv's industry-standard Pyro Safety Switches comply with the high-quality requirements of the vehicle industry. Our Pyro Safety Switches offer a range of technical specifications, including different voltages, short circuit resistance and maximum current.

- Maximum continuous current 300 A at 85°C
- Non-reversible device
- Suitable for voltage levels up to 400 VDC
- High peak current carrying capability up to 2 000 A

Product specifications

Switching capacity

Inductive load (5 µH max)	200 A / 400 V
Inductive load (60 µH)	2000 A / 150 V
Capacitive load	> 400V, contact us

Current carrying capacity

85°C, load cable 50 mm²	300 A
105°C, load cable 50 mm²	250 A
125°C, load cable 50 mm²	200 A
Maximum short-time current	
23°C, load cable 50 mm²	2 000 A / 10 s
	25 000 A / 5 ms

Triggering conditions

Qualified acc. to	AK-LV 16 & USCAR
Triggering circuit resistance	≥1,7 Ω and ≤ 2,5 Ω
Triggering current	1,75 A / 0,5 ms
Or	1,20 A / 2,0 ms
No-triggering current	≤ 0,4 A
Or	≤ 5,0 A / ≤ 4 µs
Diagnostic current:	< 100 mA
Triggering pulse slope	> 8 mA / µs

Busbar

Contact raw-material (base)	CuSn 0,15
Contact plating material (lead-free)	Sn/Ni
Busbar profile	
Cross-section nominal	32 mm²

Operation time

Release time	< 3 ms

Resistance & Insulation data

Busbar resistance (at RT)	
before ops.	≤ 0,1 m Ω
after ops	≥ 10 M Ω

Temperature

Operating temperature	-40°C... + 105°C
Environmental temperature	-40°C... + 105°C
Storage temperature	-40°C... + 65°C

Other Data

Vibration resistance acc. to	ISO 16 750 – 3
Mech. Shock resistance acc. to	ISO 16 750 – 3
Temperature cycle resistance acc. to	ISO 16 750 – 4
Chemical loads resistance acc. to	ISO 16 750 – 5
Terminal type	
on bus-bar	M8 screw
on initiator	AK-1 / AK-2
	ABX-3 unsealed
	ABX-3 sealed
Weight	60 g

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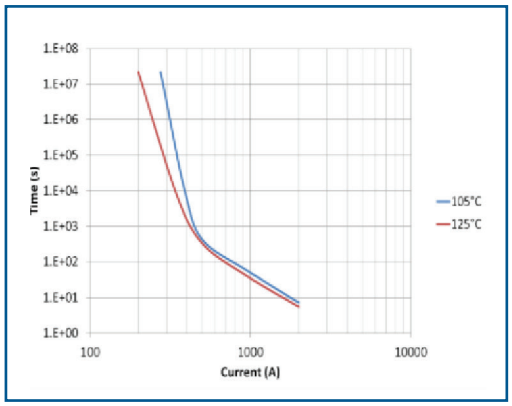
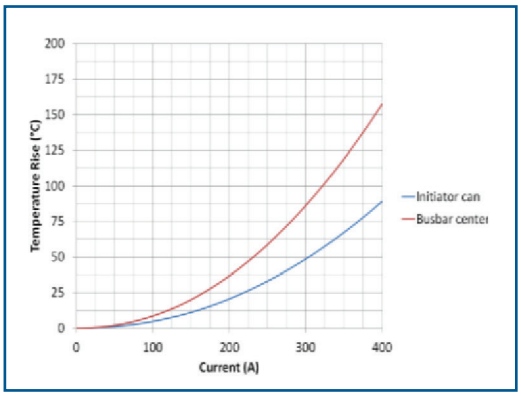
Technical Data & Dimensions

Derating curve



Temperature rise curve



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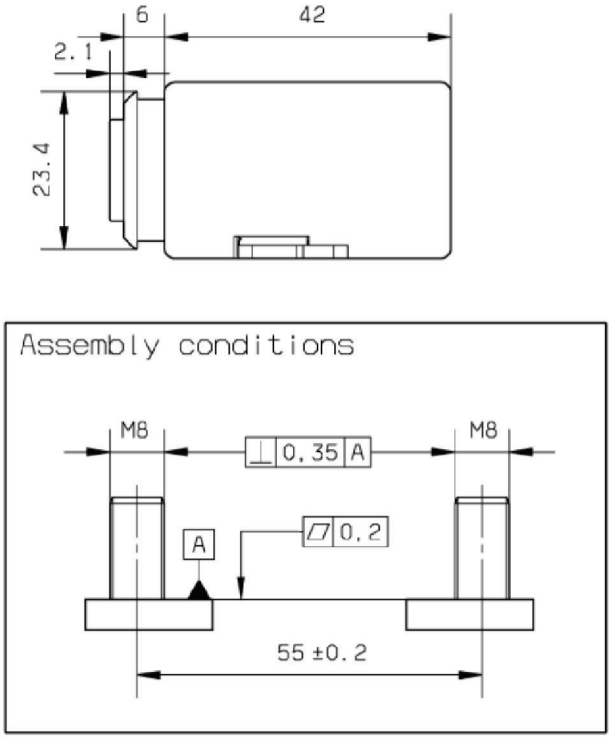

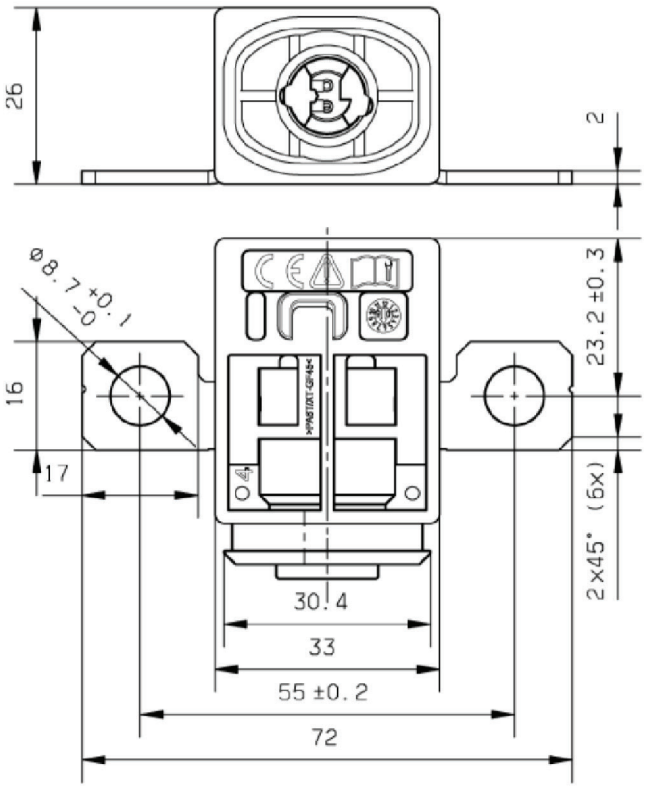

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Prevention in milliseconds to avoid short-circuits,
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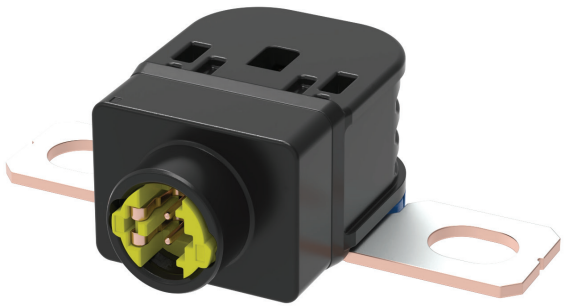
Pyro Safety Switch PSS-2

Autoliv's industry-standard Pyro Safety Switches comply with the high-quality requirements of the vehicle industry. Our Pyro Safety Switches offer a range of technical specifications, including different voltages, short circuit resistance and maximum current.

- Maximum continuous current 300 A at 85°C
- Non-reversible device
- Suitable for voltage levels up to 70 VDC
- High peak current carrying capability up to 2 000 A



Product specifications

Switching capacity

Inductive load (60 µH max)	1 400 A / 70 V
Inductive load (60 µH)	2000 A / 32 V
For other requests, please contact us	

Current carrying capacity

85°C, load cable 50 mm²	300 A
105°C, load cable 50 mm²	250 A
125°C, load cable 50 mm²	200 A
Maximum short-time current	
23°C, load cable 50 mm²	2 000 A / 5 s

Triggering conditions

Qualified acc. to	AK-LV 16 & USCAR
Triggering circuit resistance	≥1,7 Ω and ≤ 2,5 Ω
Triggering current	1,75 A / 0,5 ms
Or	1,20 A / 2,0 ms
No-triggering current	≤ 0,4 A
Or	≤ 5,0 A / ≤ 4 µs
Diagnostic current:	< 100 mA
Triggering pulse slope	> 8 mA / µs

Busbar

Contact raw-material (base)	CuSn 0,15
Contact plating material (lead-free)	Sn/Ni
Busbar profile	
Cross-section nominal	22 mm²

Operation time

Release time	< 3 ms

Resistance & Insulation data

Busbar resistance (at RT)	
before ops.	≤ 0,1 m Ω
after ops	≥ 10 M Ω

Temperature

Operating temperature	-40°C... + 105°C
Environmental temperature	-40°C... + 105°C
Storage temperature	-40°C... + 65°C

Other Data

Vibration resistance acc. to	ISO 16 750 – 3
Mech. Shock resistance acc. to	ISO 16 750 – 3
Temperature cycle resistance acc. to	ISO 16 750 – 4
Chemical loads resistance acc. to	ISO 16 750 – 5
Terminal type	
on bus-bar	M8 screw
on initiator	AK-1 / AK-2 ABX-3
Weight	40 g

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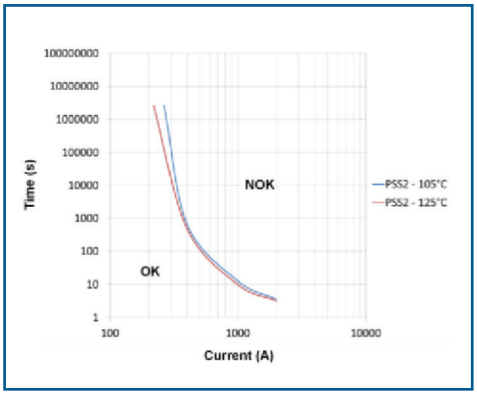
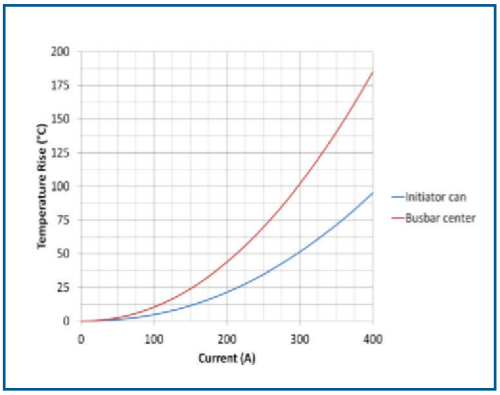
Technical Data & Dimensions

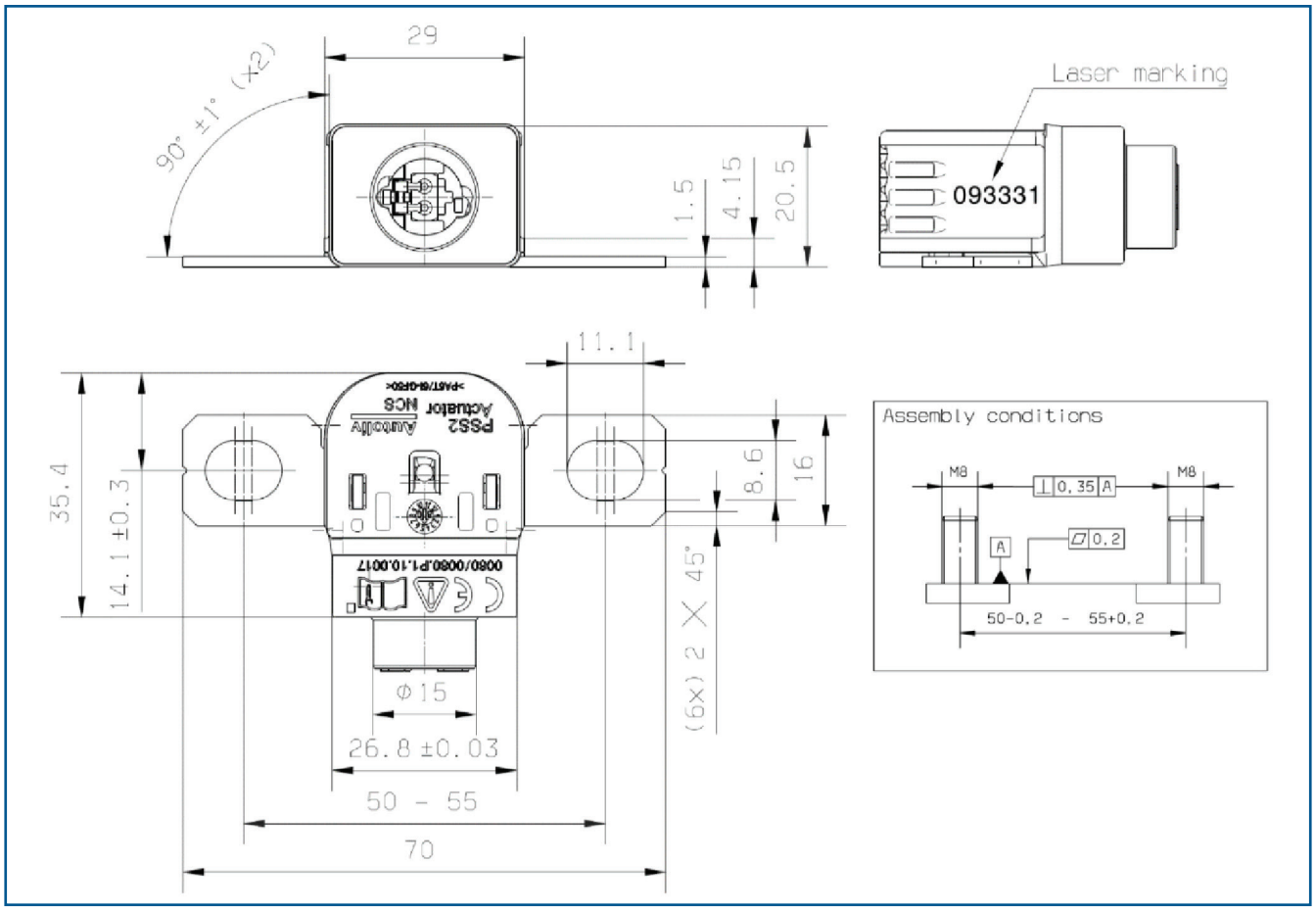
Derating curve



Temperature rise curve



Dimensions



Pyro Safety Switch

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Prevention in milliseconds to avoid short-circuits,
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Pyro Safety Switch PSS-3

Autoliv's industry-standard Pyro Safety Switches comply with the high-quality requirements of the vehicle industry. Our Pyro Safety Switches offer a range of technical specifications, including different voltages, short circuit resistance and maximum current.

- Maximum continuous current 300A at 85° C
- Second circuit power off simultaneously
- Non-reversible device
- High peak current carrying capability up to 2 000 A

Product specifications

Switching capacity

Ohmic load	2 000 A / 200 V
Inductive load (60µH)	2 000 A / 150 V
Capacitive load	> 200 V, contact us

Current carrying capacity

85°C, load cable 50 mm²	300 A
105°C, load cable 50 mm²	250 A
125°C, load cable 50 mm²	200 A
Maximum short-time current	
23°C, load cable 50 mm²	2 000 A / 10 s
	25 000 A / 5 ms

Triggering conditions

Qualified acc. to	AK-LV 16 & USCAR
Triggering circuit resistance	≥1,7 Ω and ≤ 2,5 Ω
Triggering current	1,75 A / 0,5 ms
Or	1,20 A / 2,0 ms
No-triggering current	≤ 0,4 A
Or	≤ 5,0 A / ≤ 4 µs
Diagnostic current:	< 100 mA
Triggering pulse slope	> 8 mA / µs

Busbar

Contact raw-material (base)	CuSn 0,15
Contact plating material (lead-free)	Sn/Ni
Busbar profile	
Cross-section nominal	32 mm²

Second circuit

Contact raw-material (base)	Cu-Alloy
Contact plating material (lead-free)	Ag/Ni
wire cross section	0.2 mm²

Operation time

Release time	< 3 ms

Resistance & Insulation data

Busbar resistance (at RT)	
before ops.	≤ 0,1 m Ω
after ops	≥ 10 M Ω

Temperature

Operating temperature	-40°C... + 105°C
Environmental temperature	-40°C... + 105°C
Storage temperature	-40°C... + 65°C

Other Data

Vibration resistance acc. to	ISO 16 750 – 3
Mech. Shock resistance acc. to	ISO 16 750 – 3
Temperature cycle resistance acc. to	ISO 16 750 – 4
Chemical loads resistance acc. to	ISO 16 750 – 5
Terminal type	
on bus-bar	M8 screw
on second circuit	NanoMQS
on initiator	AK-1
Weight	65 g

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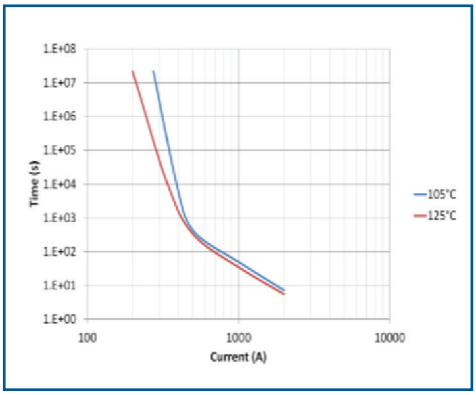
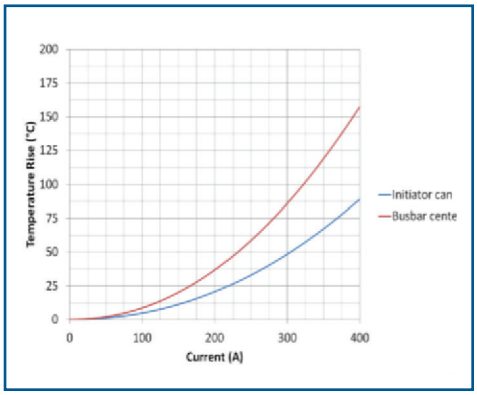
Technical Data & Dimensions

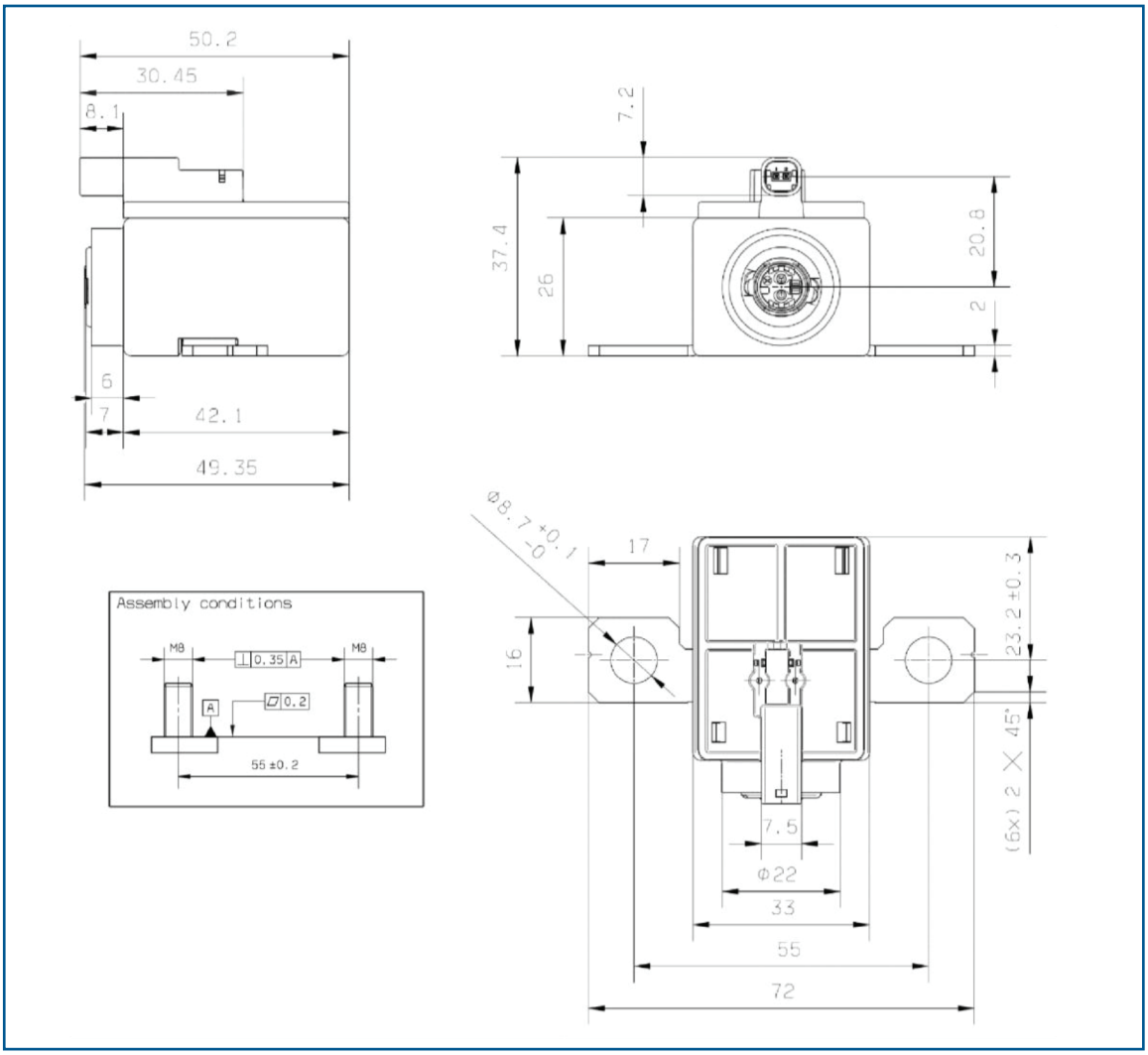
Derating curve



Temperature rise curve



Dimensions



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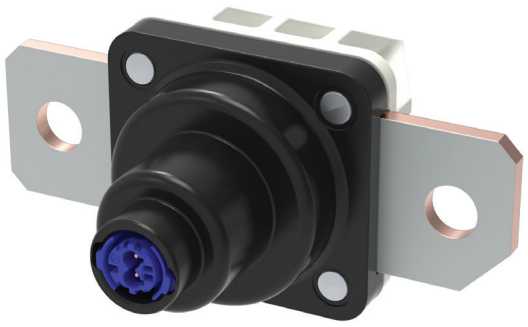
Pyro Safety Switches

Prevention in milliseconds to avoid short-circuits,
fire ignition & battery draining.

Pyro Safety Switch PSS-4

Autoliv's industry-standard Pyro Safety Switches comply with the high-quality requirements of the vehicle industry. Our Pyro Safety Switches offer a range of technical specifications, including different voltages, short circuit resistance and maximum current.



- Maximum continuous current 500 A
- Non-reversible device
- Suitable for voltage levels up to 600 VDC
- High peak current carrying capability up to 25 000 A

Product specifications

Switching capacity

Inductive load	475 V / 13 300 A / 20 µH
	475 V / 23 500 A / 2,3 µH
(Other request, Contact us)	
Maximum switching capacity	1800J
Max switching capacity, 2 PSS-4 in series triggered simultaneously (max delay 15µs between triggering signals)	1000 V / 25 000 A / ≤ 5 µH

Current carrying capacity

Customer cooling system must guarantee the temperature at terminals' connection point does not exceed +125°C

Customers applications examples:

105°C Max, load cable 70 mm² min	350 A DC
85°C Max, load cable 70 mm² min	420 A DC
50°C Max, load cable 70 mm² min	500 A DC
Maximum pulse current	25 000 A / 5 ms

Busbar

Contact raw-material (base)	CuSn 0,15
Contact plating material (lead-free)	Sn/Ni
Busbar profile	
Cross-section nominal	78 mm²
Busbar resistance (at RT)	
before ops.	≤ 0,05 mΩ
after ops	≥ 1 MΩ / 500 V

Operation time

Operating time	< 2 ms
Typical	0.8 ms for 450 V / 8 000 A / 15 µH
	0.8 ms for 530 V / 24 000 A / 3 µH

Triggering conditions

Qualified acc. to	AK-LV 16 & USCAR
Triggering circuit resistance	≥1,7 Ω and ≤ 2,5 Ω
Triggering current	1,75 A / 0,5 ms
Or	1,20 A / 2,0 ms
No-triggering current	≤ 0,4 A
Or	≤ 5,0 A / ≤ 4 µs
Diagnostic current:	< 100 mA
Triggering pulse slope	> 8 mA / µs

Temperature

Operating temperature	-40°C... + 105°C
Environmental temperature	-40°C... + 105°C
Storage temperature	-40°C... + 65°C

Other Data

Vibration resistance acc. to	AK-LV 124
Mech. Shock resistance acc. to	AK-LV 124
Temperature cycle resistance acc. to	AK-LV 124
Chemical loads resistance acc. to	AK-LV 124

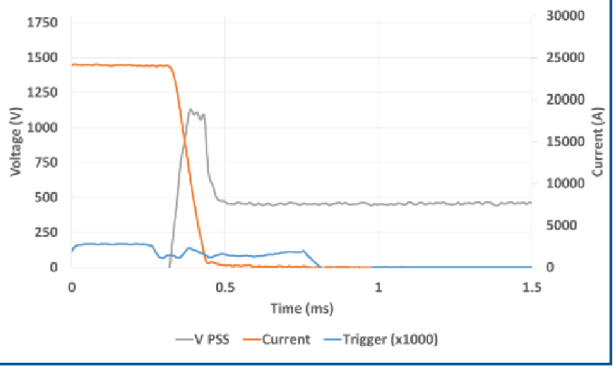
Other: No ionizing gases / No particles exhaust

Terminal type	
on bus-bar	M6 or M8
on initiator	ABX-5 or AK-2
Weight	≤ 145 g

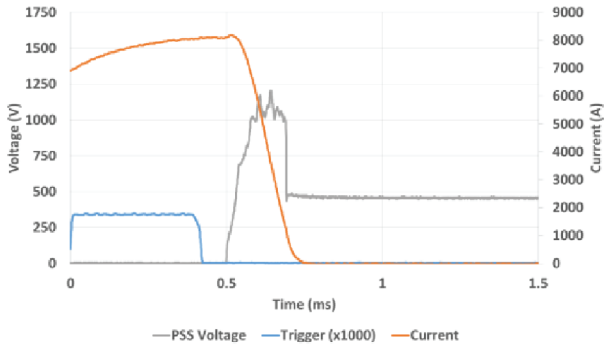
Technical Data & Dimensions

Performance & Dimensions

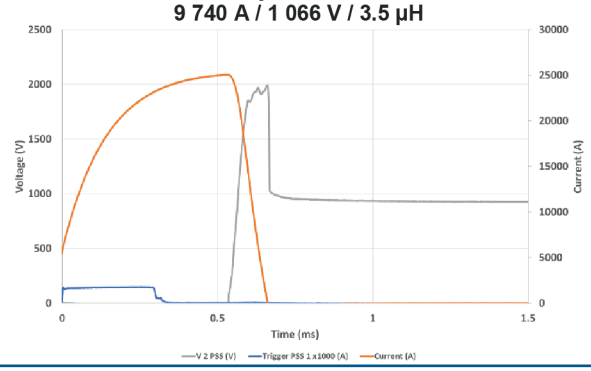
PSS-4 Typical current switch-off / Battery short-circuit
24 000 A / 532 V / 3.1 µH

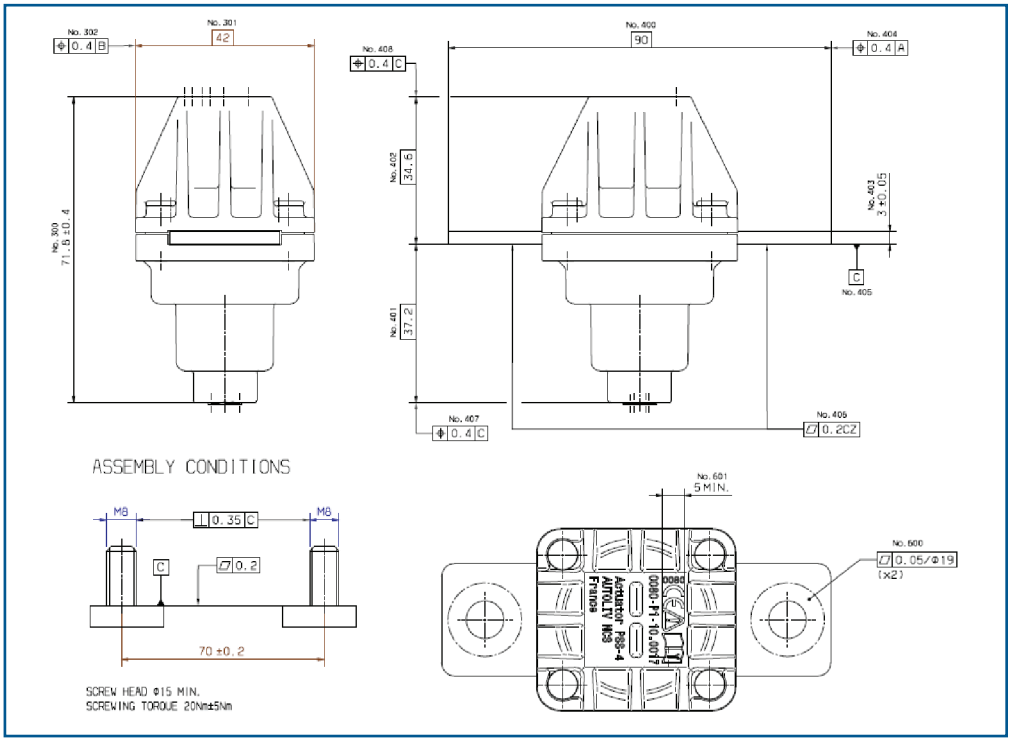


PSS-4 Typical current switch-off / Test bench
8 000 A / 450 V / 15 µH



2 * PSS-4 in series / Typical current switch-off
Battery short-circuit
9 740 A / 1 066 V / 3.5 µH





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Prevention in milliseconds to avoid short-circuits,
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Pyro Safety Switch PSS-4 500V 1000J

Autoliv's industry-standard Pyro Safety Switches comply with t high-quality requirements of the vehicle industry. Our Pyro Safe Switches offer a range of technical specifications, including different voltages, short circuit resistance and maximum currer

- Maximum Switching capacity : 1000 J
- Maximum continuous current 500 A
- Non-reversible device
- Suitable for voltage levels up to 600 VDC
- High peak current carrying capability up to 25 000 A

CE
UK
CA

Product specifications

Switching capacity

Inductive load	490 V / 10 000 A / 20 µH 475 V / 12 000 A / 15 µH
(Other request, Contact us)	
Maximum switching capacity	1000J

Current carrying capacity

Customer cooling system must guarantee the temperature at terminals' connection point does not exceed +125°C

Customers applications examples:

105°C Max, load cable 70 mm² min	350 A DC
85°C Max, load cable 70 mm² min	420 A DC
50°C Max, load cable 70 mm² min	500 A DC
Maximum pulse current	25 000 A / 5 ms

Busbar

Contact raw-material (base)	CuSn 0,15
Contact plating material (lead-free)	Sn/Ni
Busbar profile	
Cross-section nominal	60 mm² or 78 mm²
Busbar resistance (at RT)	
before ops.	≤ 0,05 mΩ
after ops	≥ 50 MΩ / 500 V

Operation time

Operating time	< 2 ms
Typical	0.8 ms for 450 V / 10 000 A / 20 µH

Triggering conditions

Qualified acc. to	AK-LV 16 & USCAR
Triggering circuit resistance	≥1,7 Ω and ≤ 2,5 Ω
Triggering current	1,75 A / 0,5 ms
Or	1,20 A / 2,0 ms
No-triggering current	≤ 0,4 A
Or	≤ 5,0 A / ≤ 4 µs
Diagnostic current:	< 100 mA
Triggering pulse slope	> 8 mA / µs

Temperature

Operating temperature	-40°C... + 105°C
Environmental temperature	-40°C... + 105°C
Storage temperature	-40°C... + 65°C

Other Data

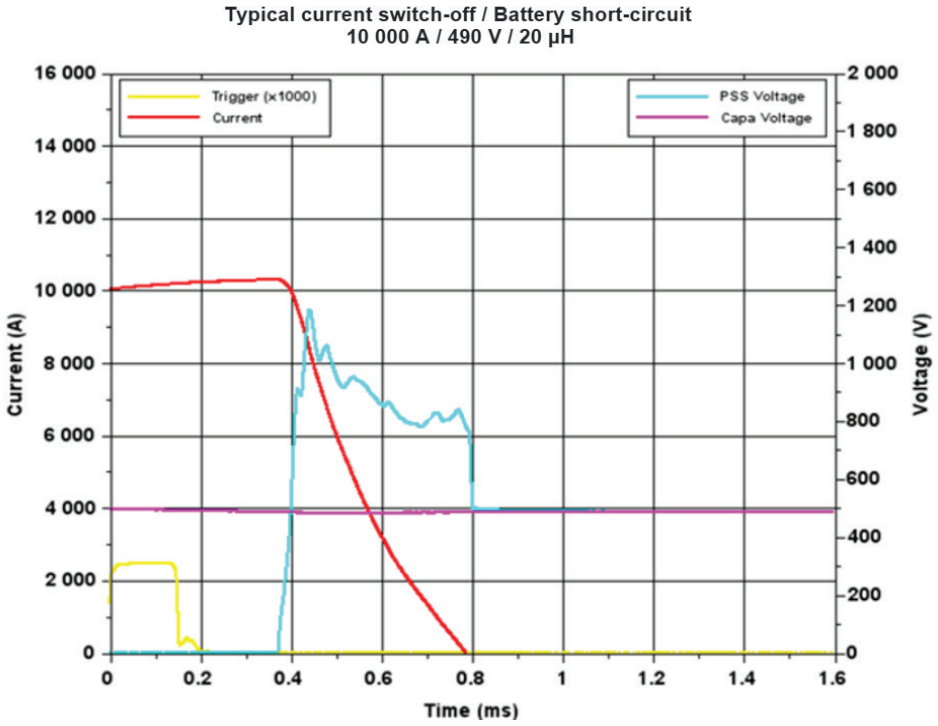
Vibration resistance acc. to	AK-LV 124
Mech. Shock resistance acc. to	AK-LV 124
Temperature cycle resistance acc. to	AK-LV 124
Chemical loads resistance acc. to	AK-LV 124

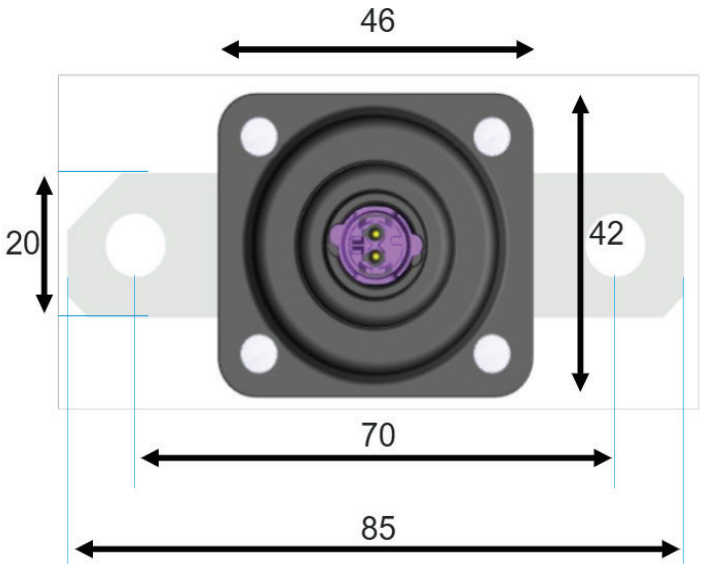
Other: No ionizing gases / No particles exhaust

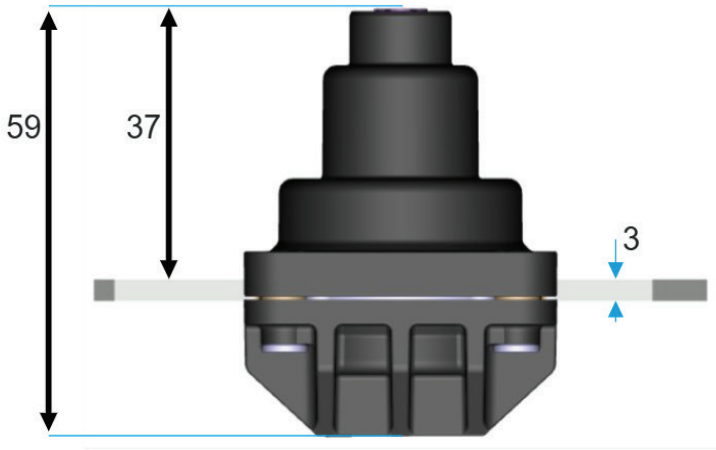
Terminal type	
on bus-bar	M6 or M8
on initiator	ABX-5 or AK-2
Weight	≤ 125 g

Technical Data & Dimensions

Performance & Dimensions







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Prevention in milliseconds to avoid short-circuits,
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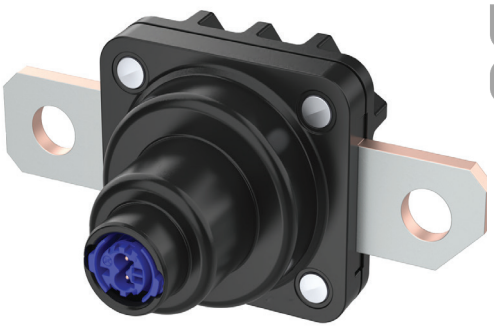
Pyro Safety Switch PSS-4 1000V 1200J

Autoliv's industry-standard Pyro Safety Switches comply with the high-quality requirements of the vehicle industry. Our Pyro Safety Switches offer a range of technical specifications, including different voltages, short circuit resistance and maximum current.

- Maximum continuous current 500 A
- Non-reversible device
- Suitable for voltage levels up to 1000 VDC
- High peak current carrying capability up to 25 000 A
- No ionizing gases / No particles exhaust
- Material Flammability : V0



Product specifications

Maximum switching capacity	Typical 1600J with Cpk 1200J
Systems configurations tested (Other request, Contact us)	900 V / 10 000 A / 20 µH

Current carrying capacity
Customer cooling system must guarantee the temperature at terminals' connection point does not exceed +125°C

Customers applications examples:

105°C Max, load cable 70 mm² min	350 A DC
85°C Max, load cable 70 mm² min	420 A DC
50°C Max, load cable 70 mm² min	500 A DC
Maximum pulse current	25 000 A / 5 ms

Busbar

Raw-material (base)	CuSn 0,15
Plating material (lead-free)	Sn/Ni
Cross-section nominal	60 mm²
Busbar resistance (at RT)	
before ops.	≤ 0,05 mΩ
after ops	≥ 50 MΩ / 500 V

Operation time

Operating time (900V/10kA/20µH)	With Cpk 1,67 < 1,5 ms Typical 0,8 ms

Triggering conditions acc. to AK-LV 16 & USCAR

Ohmic resistance	≥1,7 Ω and ≤ 2,5 Ω
Current pulse	1,75 A / 0,5 ms Or 1,20 A / 2,0 ms
Pulse slope	> 8 mA / µs
No-triggering current	≤ 0,4 A Or ≤ 5,0 A / ≤ 4 µs
Diagnostic current	< 100 mA

Temperature

Operating temperature	-40°C... + 105°C
Environmental temperature	-40°C... + 105°C
Storage temperature	-40°C... + 65°C

Validations

Vibration resistance	AK-LV 124
Mech. Shock resistance	AK-LV 124
Temperature cycle resistance	AK-LV 124
Chemical loads resistance	AK-LV 124
HV-LV resistance before/after ops.	≥ 1 GΩ / 500 V

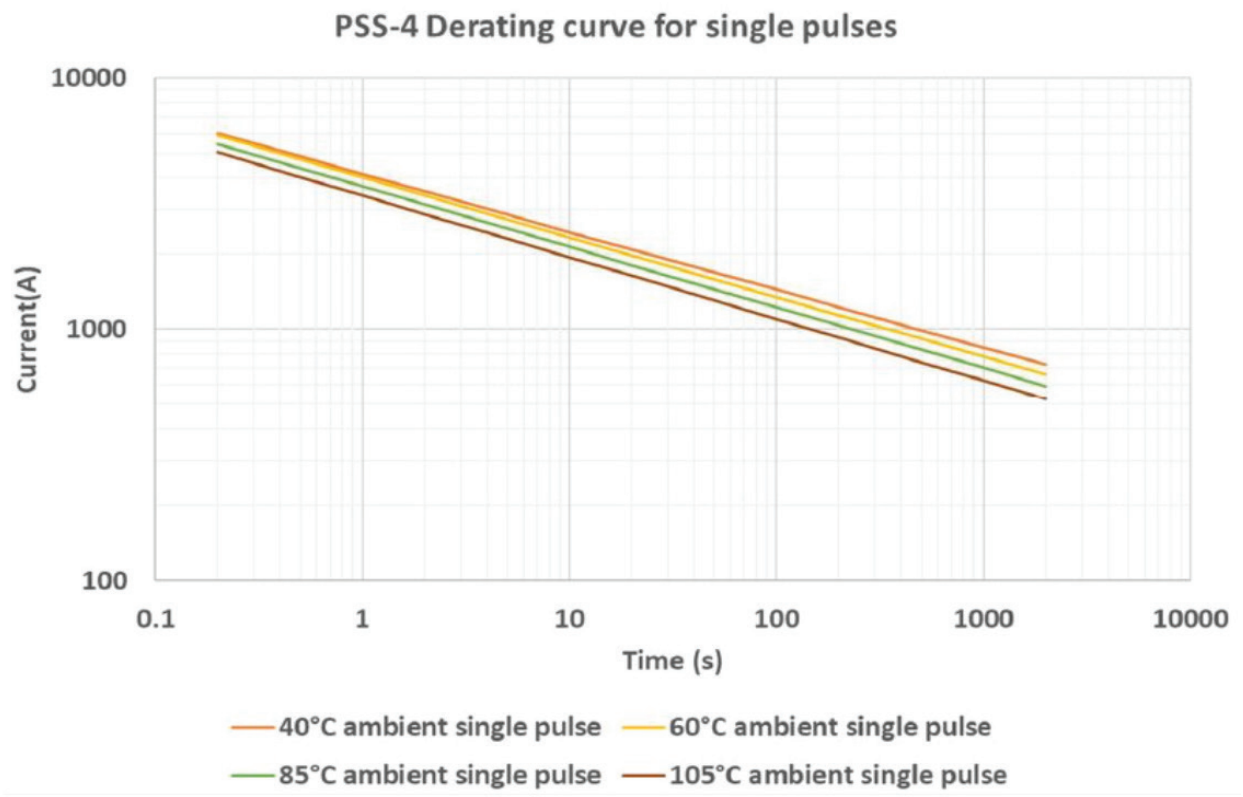
Terminal type

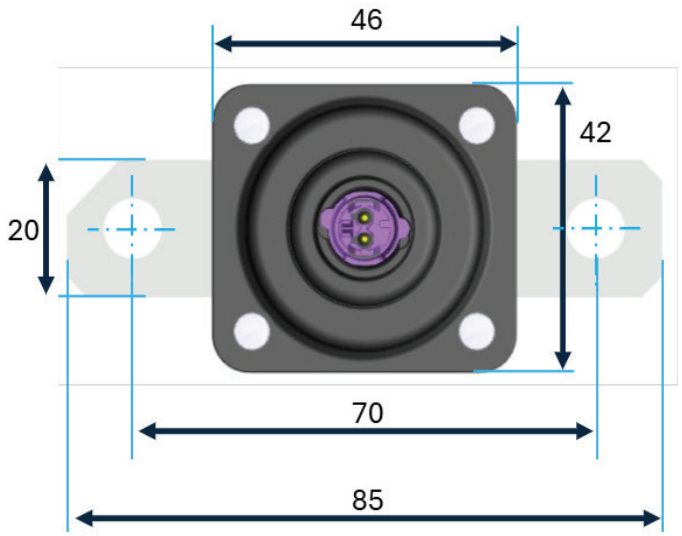
HV	M6 or M8
Triggering	ABX-5 or AK-2

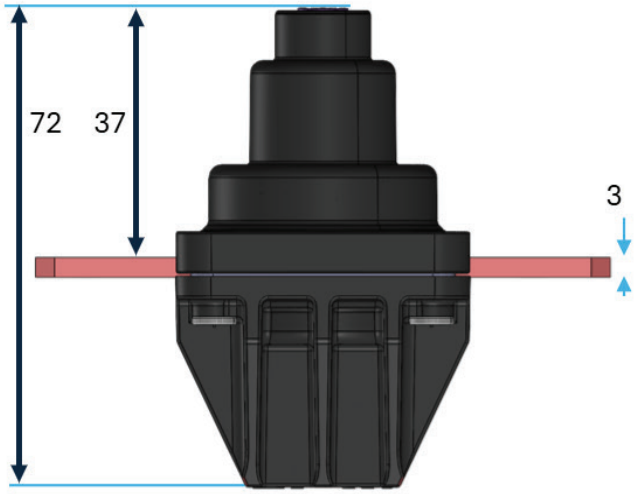
Weight ≤ 125 g

Technical Data & Dimensions

Performance & Dimensions







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Pyro Safety Switches

Prevention in milliseconds to avoid short-circuits,
fire ignition & battery draining.

Pyro Safety Switch PSS-5

Autoliv's industry-standard Pyro Safety Switches comply with the high-quality requirements of the vehicle industry. Our Pyro Safety Switches offer a range of technical specifications, including different voltages, short circuit resistance and maximum current.

- Maximum continuous current 500 A
- Non-reversible device
- Suitable for voltage levels up to 1000 VDC
- High peak current carrying capability up to 3500J

CE
UK CA

Product specifications

Switching capacity

Inductive load	920 V / 16 000 A / 16 µH
	900 V / 15 000 A / 25 µH
	900 V / 16 800 A / 25 µH

Equivalent Coil Energy Performance : 3 500 J

$$\left(\frac{1}{2} L \times I^2\right)$$

(Other request, contact us)

Current carrying capacity

Customer cooling system must guarantee the temperature at terminals' connection point does not exceed +125°C

Customers applications examples:

105°C Max, load cable 95 mm² min	350 A DC
85°C Max, load cable 95 mm² min	420 A DC
50°C Max, load cable 95 mm² min	500 A DC
Maximum pulse current	25 000 A / 5 ms

Busbar

Contact raw-material (base)	CuSn 0,15
Contact plating material (lead-free)	Sn/Ni
Busbar profile	
Cross-section nominal	60 mm²
Busbar resistance (at RT)	
before ops.	≤ 0,055 mΩ
after ops	≥ 50 MΩ / 1000 V

Operation time

Operating time	< 2 ms
Typical	< 1 ms for 920 V / 16 000 A / 16 µH
	< 1 ms for 900 V / 15 000 A / 25 µH

Triggering conditions

Qualified acc. to	AK-LV 16 & USCAR
Triggering circuit resistance	≥1,7 Ω and ≤ 2,5 Ω
Triggering current	1,75 A / 0,5 ms
Or	1,20 A / 2,0 ms
No-triggering current	≤ 0,4 A
Or	≤ 5,0 A / ≤ 4 µs
Diagnostic current:	< 100 mA
Triggering pulse slope	> 8 mA / µs

Temperature

Operating temperature	-40°C... + 105°C
Storage temperature	-40°C... + 65°C

Other Data

Vibration resistance acc. to	AK-LV 124
Mech. Shock resistance acc. to	AK-LV 124
Temperature cycle resistance acc. to	AK-LV 124
Chemical loads resistance acc. to	AK-LV 124

Other: No ionizing gases / No particles exhaust

Terminal type	
on bus-bar	M6 screw
on initiator	ABX-5
Weight	≤ 320 g

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Pyro Safety Switches

Prevention in milliseconds to avoid short-circuits,
fire ignition & battery draining.

Pyro Safety Switch PSS-6

Autoliv's industry-standard Pyro Safety Switches comply with the high-quality requirements of the vehicle industry. Our Pyro Safety Switches offer a range of technical specifications, including different voltages, short circuit resistance and maximum current.

- Highly reliable over vehicle lifetime
- Robust design, solid standby operation
- Safe crowbar connection based on proven airbag technol
- Stable and reliable contact
- Flameless

Product specifications

Voltage

Rated voltage	450 V

Current

Maximum short circuit current	5 kA / 5 ms + 600 A / 60 s

Busbar

Contact raw-material (base)	CuSn 0,15
Contact plating material (lead-free)	Ni/Ag
Busbar profile	
Cross-section nominal	38 mm²

Operation time

Release time	< 1 ms

Resistance & Insulation data

Busbar resistance (at RT)	
before ops.	≥ 10 MΩ
after ops	≤ 0,3 mΩ

Typical applications

The closing device "crowbars" or short-circuits the two Fuel Cell terminals in less than three milliseconds. This consumes Hydrogen contained in the Fuel Cell and makes it safe. It can be used as a relay to activate any electrical system or discharge capacitors from DC-DC converters.

Triggering conditions

Qualified acc. to	AK-LV 16 & USCAR
Triggering circuit resistance	≥1,7 Ω and ≤ 2,5 Ω
Triggering current	1,75 A / 0,5 ms
Or	1,20 A / 2,0 ms
No-triggering current	≤ 0,4 A
Or	≤ 5,0 A / ≤ 4 µs
Diagnostic current:	< 100 mA
Triggering pulse slope	> 8 mA / µs

Temperature

Operating temperature	-40°C... + 105°C
Environmental temperature	-40°C... + 105°C
Storage temperature	-40°C... + 90°C

Other Data

Vibration resistance acc. to	LV 124
Mech. Shock resistance acc. to	LV 124
Temperature cycle resistance acc. to	LV 124
Chemical loads resistance acc. to	LV 124

Other No ionizing gases / No particles exhaust

Terminal type	
on bus-bar	M8 screw
on initiator	ABX-5
	ISO 19072-1 and -5 compliant (sealed and un-sealed)
Weight	80 g

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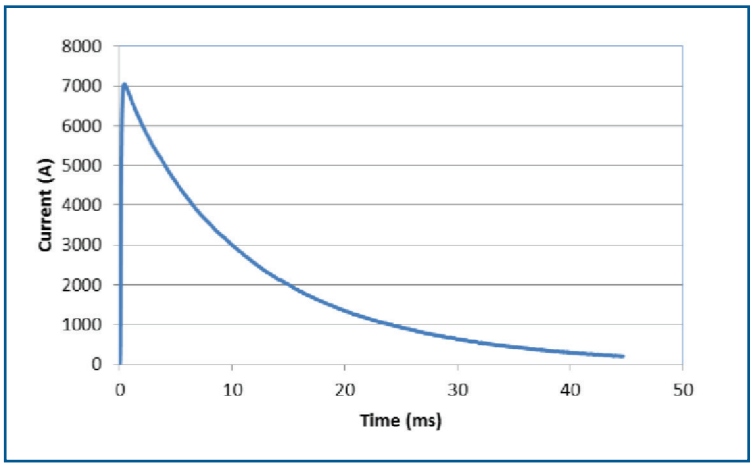
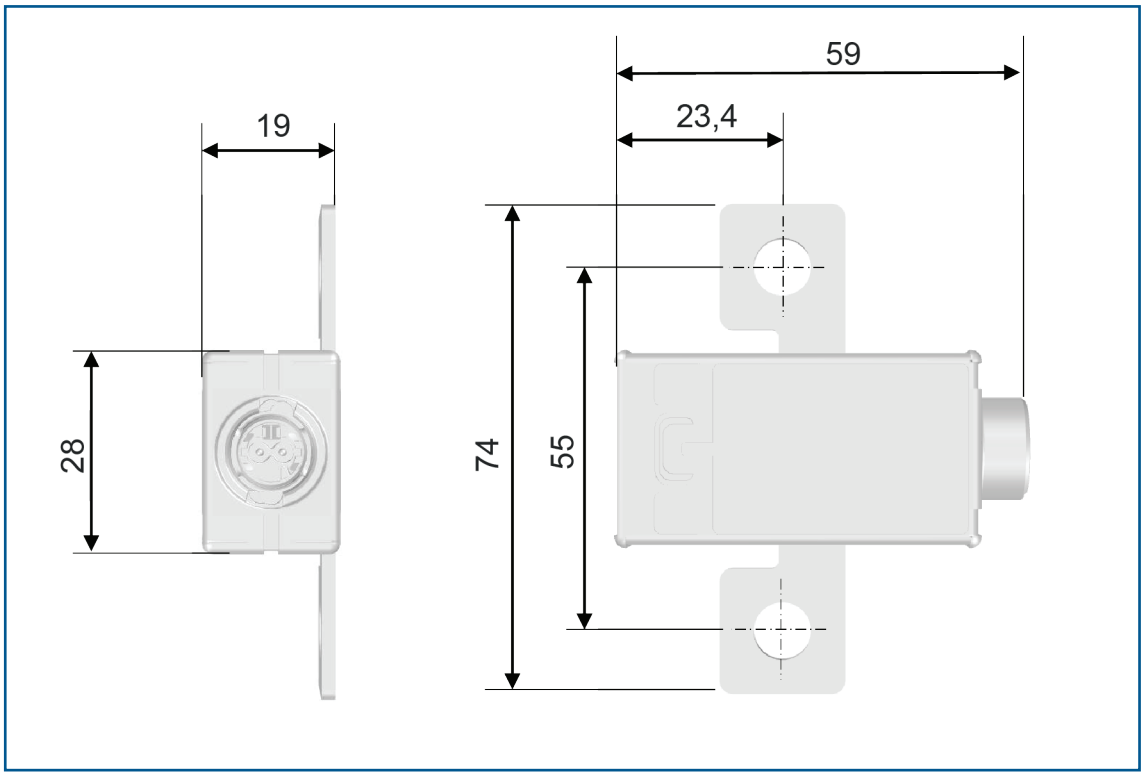
Technical Data & Dimensions

Short circuit example



Dimensions



Pyro Safety Switch

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