

# CIRCUIT BREAKER 1000

Pyrotechnic circuit breaker for high-voltage applications in electric vehicles

- Provides irreversible secure separation over full current range
- Low internal resistance
- High insulation resistance after activation



## Key functional parameters

Separation capacity (voltage   current   inductance)	900 V   30 kA   5 $\mu$ H 900 V   20 kA   15 $\mu$ H (higher/alternative values on request)
Separation time	< 2 ms (typically <1 ms)
Operating temperature	-40 °C to +120 °C*
Ambient temperature	-40 °C to +85 °C
Product lifetime	15 years**
Qualification	in accordance with LV 123 and LV 124
Weight	410 g

\*for a limited time interval

\*\*operating hours depending on temperature collective & activation energy

## HV connection (busbar)

Busbar - igniter - insulation resistance	> 50 M $\Omega$ (before and after activation)
Busbar resistance	$\leq$ 70 $\mu\Omega$ (before activation) > 50 M $\Omega$ (after activation)
Busbar material	copper + Sn plating (alternatives on request)
Busbar cross-section area	16 mm $\times$ 4 mm
Intended type of connection	screwing (M6)
Distance between screw holes	98 mm

## LV connection (igniter)

Terminal type	Pin type (2 pins), gold-coated
11 mm Squib-Interface (unsealed)	AK-1/AK-2/ABX-5 following ISO 19072-1 commonly used: AK-2 Code I with shorting clip
Pyrotechnics	GTMS igniter (TS 70116 (LV 16) & USCAR-28), maximum pyrotechnic mass 118 mg
Igniter resistance	2.1 $\Omega$ $\pm$ 0.4 $\Omega$ (TS 70116 (LV 16)) 2.0 $\Omega$ $\pm$ 0.3 $\Omega$ (USCAR28)
Igniter parameter "No fire"	$\leq$ 0.4 A $\leq$ 5 A for $\leq$ 4 $\mu$ s
Igniter parameter "All fire"	1.75 A to 40 A for 0.5 ms $\geq$ 1.2 A for $\leq$ 2 ms

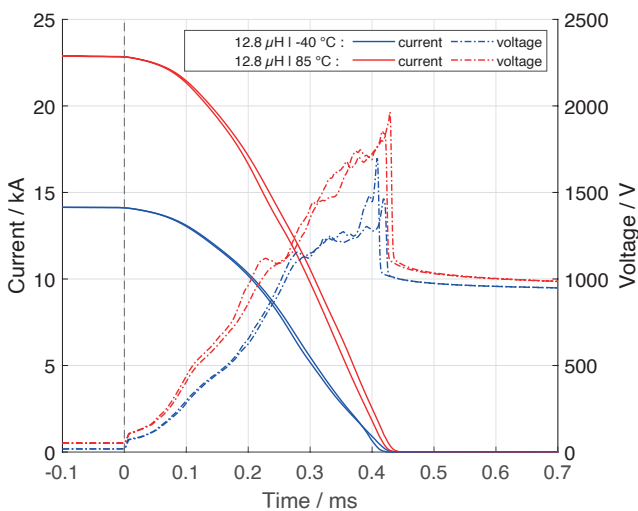
## Current carrying capacity\*

Ambient temperature	Current	Duration
+85 °C	370 A	continuous
+60 °C	430 A	continuous
+60 °C	1100 A	70 s
+60 °C	800 A	3 min
+60 °C	500 A	20 min

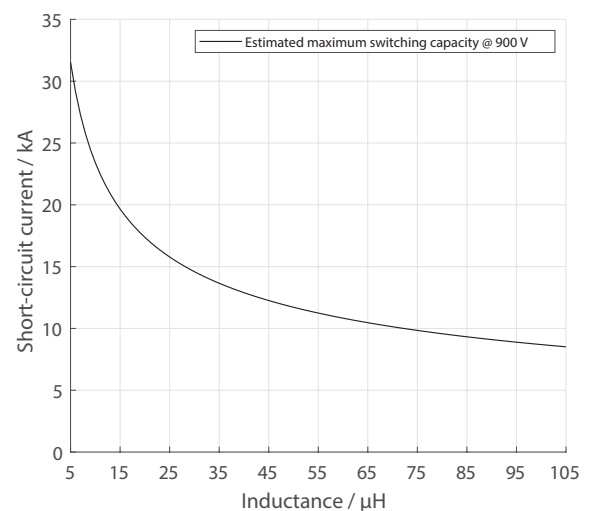
\*depending on cooling, convection, cross-section, contact surface etc. (thermal model upon request)

## Typical curves

Typical current and voltage curves

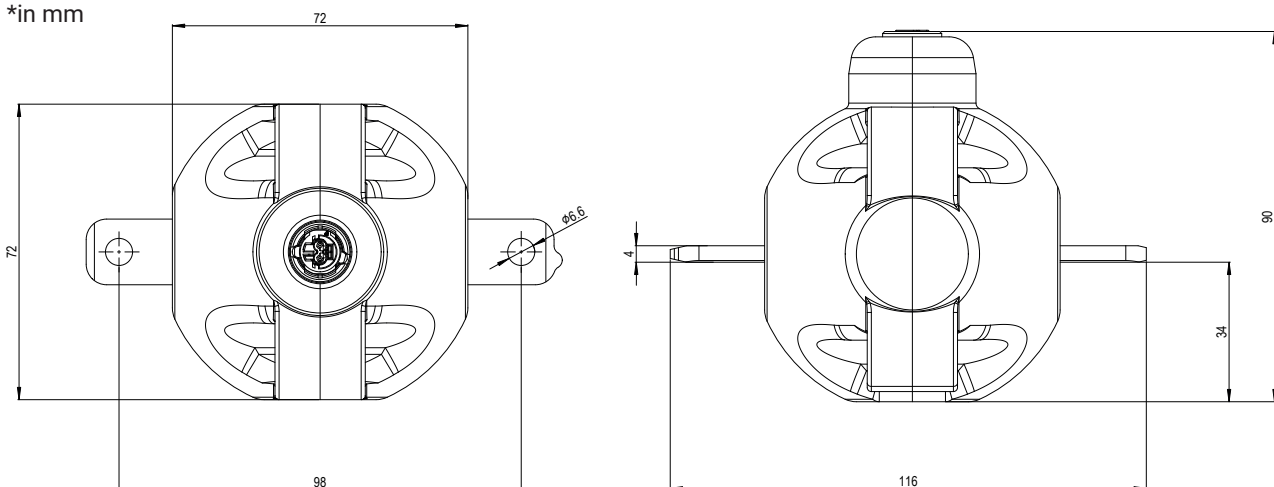


Estimated maximum switching capacity



## Outline dimensions\*

\*in mm



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