

IGNITERS

AUTOMOTIVE SAFETY PRODUCTS



The igniter is the core piece of every airbag, seatbelt pretensioner and actuator. Hirtenberger manufactures the

HPP plastic igniter and GTMS igniter in state-of-the-art production process.

HPP IGNITERS

- First plastic igniter approved acc. AK-LV 16
- For tailor-made ignition units
- Highest integration level
- Cost effective



CHARACTERISTICS

type	pintype (with tailor-made interface) or leadwire
specification	AK-LV 16-2006
electrical resistance	1.70 Ω to 2.50 Ω according to AK-LV 16
insulation resistance	1 M Ω , 500 V, 2 s DC
operating temperature	-40 $^{\circ}$ C to +95 $^{\circ}$ C
all-fire value 1	$\leq 1.200 \text{ A } t = 2 \text{ ms}$ temperature = -40 $^{\circ}$ C $t_i \leq 2 \text{ ms}$ $t_{tff} \leq 2.2 \text{ ms}$
all-fire value 2	$\leq 1.750 \text{ A } t = 0.5 \text{ ms}$ temperature = -40 $^{\circ}$ C $t_i \leq 0.5 \text{ ms}$ $t_{tff} \leq 0.7 \text{ ms}$
no-fire value	$> 0.400 \text{ A } t = 10 \text{ s}$ or AK-LV 16 no-fire ignition test; temperature = +95 $^{\circ}$ C
ignition composition charge	Zirconium / Potassium Perchlorate (ZPP)
electro static discharges in air	20 discharges; time lag of 5 s pin-pin discharge in air 150 Ω , 150 pF, U = 25 kV change of electrical and ballistic values acc. specification
electro static contact discharges	20 discharges; time lag of 5 s pin-pin discharge in air 150 Ω , 150 pF, U = 8 kV change of electrical and ballistic values, varistor integration possible
hermetically sealed	tested with helium leak test ($< 1 \cdot 10^{-6}$ ccm/s), verified with 1000 h Toyota constant moisture test, proved with 1344 h AK-LV 16 constant moisture test
pins (pintype)	gold-plated pins





HSZ GTMS IGNITERS

- Meet and exceed all major specifications (incl. AK-LV 16)
- Reliability at the highest stage
- Hermetically sealed GTMS type (glass-to-metal-seal body, laser welded)
- Meet end-of-life regulation (free of lead, CR6, ...)
- Also available in 1A / 1W configuration



CHARACTERISTICS

IGNITER TYPE	HAS 1002	HAS 1008	HAS 1009	HAS 1019
specification	USCAR (11/1999) BMW QV 65011 (07/2003)	VW TL 80150 (04/2000)	Toyota TSF 6716G (03/2000)	AK-LV 16 (03/2006)
electrical resistance	2.00 ± 0.30 Ω	2.15 ± 0.35 Ω	2.00 ± 0.30 Ω	1.70-2.50 Ω
all-fire value	< 1.2 A / 2 ms / -40 °C (C = 95 %, R = 99.9999 %)	< 1.2 A / 2 ms / -40 °C (C = 95 %, R = 99.9999 %) < 1.75 A / 0.5 ms / -40 °C (C = 95 %, R = 99.9999 %)	< 1.2 A / 2 ms / -40 °C (C = 95 %, R = 99.9999 %)	< 1.2 A / 2 ms / -40 °C (C = 95 %, R = 99.9999 %) < 1.75 A / 0.5 ms / -40 °C (C = 95 %, R = 99.9999 %)
no-fire value	> 0.5 A / 10 s / +85 °C (C = 95 %, R = 99.9999 %)	> 0.5 A / 10 s / +90 °C (C = 95 %, R = 99.9999 %) > 2.5 A / 0.05 ms / +90 °C (C = 95 %, R = 99.9999 %)	> 0.5 A / 10 s / +90 °C (C = 95 %, R = 99.9999 %)	> 0.4 A / 10 s / +95 °C (C = 95 %, R = 99.9999 %) > 4 μs / 5 A / +95 °C (C = 95 %, R = 99.9999 %)
TTFP	< 2 ms / 1.2 A	< 2 ms / 1.2 A < 0.7 ms / 1.75 A	< 2 ms / 1.2 A	< 2 ms / 1.2 A < 0.7 ms / 1.75 A
monitor current	160 mA DC / 1008 h	100 mA pulsed 50 mA DC	50 mA DC / 3000 h	100 mA pulsed
ESD immunity	150 pF / 500 Ω / ±25 kV 500 pF / 5 kΩ / ±25kV	150 pF / 150 Ω / ±25 kV	150 pF / 150 Ω / ±25 kV	150 pF / 150 Ω / ±25 kV
helium leakage rate	< 1*10 ⁻⁶ ccm/s @ 1 atm differential pressure			
primary charge	ZPP (typical 45 ± 3 mg)			
secondary charge	TPP or BKN ₂ O ₃ (40-280 ± 5 mg), inert material, autoignition			
interface	11 mm interface (PA 6.6 + 30% GF)			
pins	hard gold plated			
total length	17.50 mm - 22.30 mm (depending on charge)			

Technology

- Innovative ignition element (noble metal alloy)
- Electrical contact: adhesive technology (eliminating danger of soldering- or welding failures)
- Coaxial design
- No additional components for ESD protection required







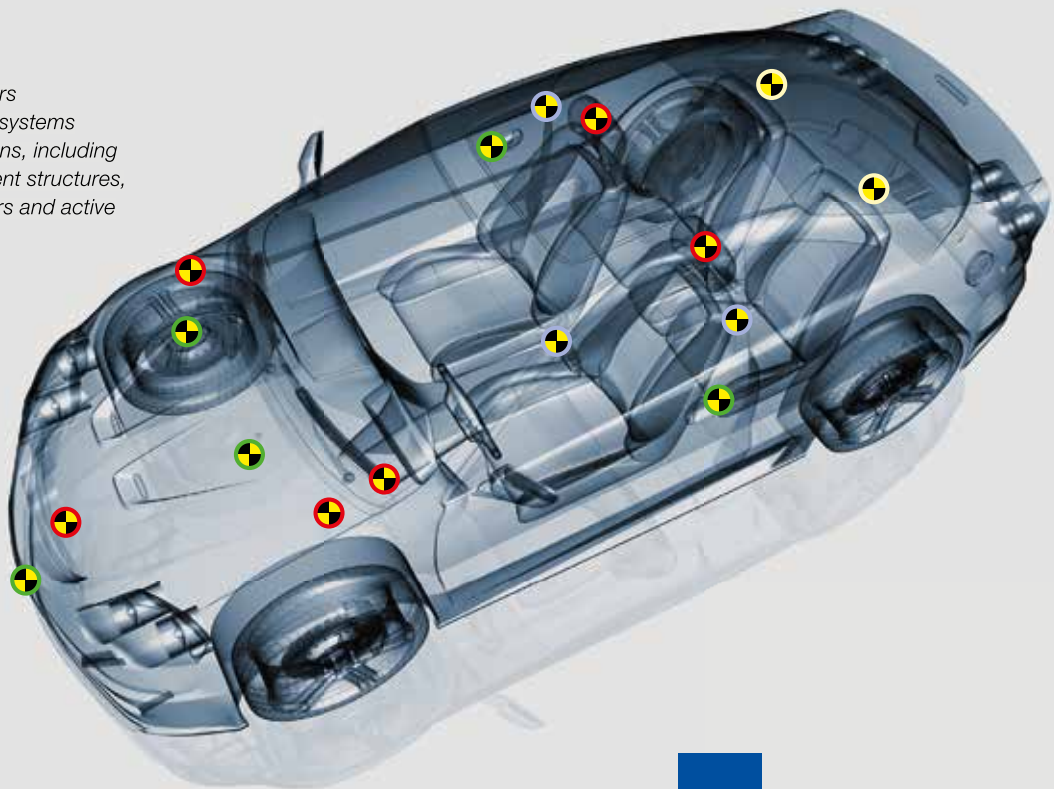


PROTECTING PEOPLE

Hirtenberger solutions

Actuators for pedestrian-protection systems, crash-active headrests, active hood locks, adaptive steering columns, pedal releases **Micro Gas Generators** for belt and buckle pretensioners and adaptive airbags.

-  Actuators
-  Micro Gas Generators
-  Roll-over protection systems
-  Various other solutions, including pipe cutters, intelligent structures, battery disconnectors and active door locks



Various other solutions, including roll-over protection systems, pipe cutters, intelligent structures, battery disconnectors and active door locks.