



GLOBAL AUTOMOTIVE DIVISION



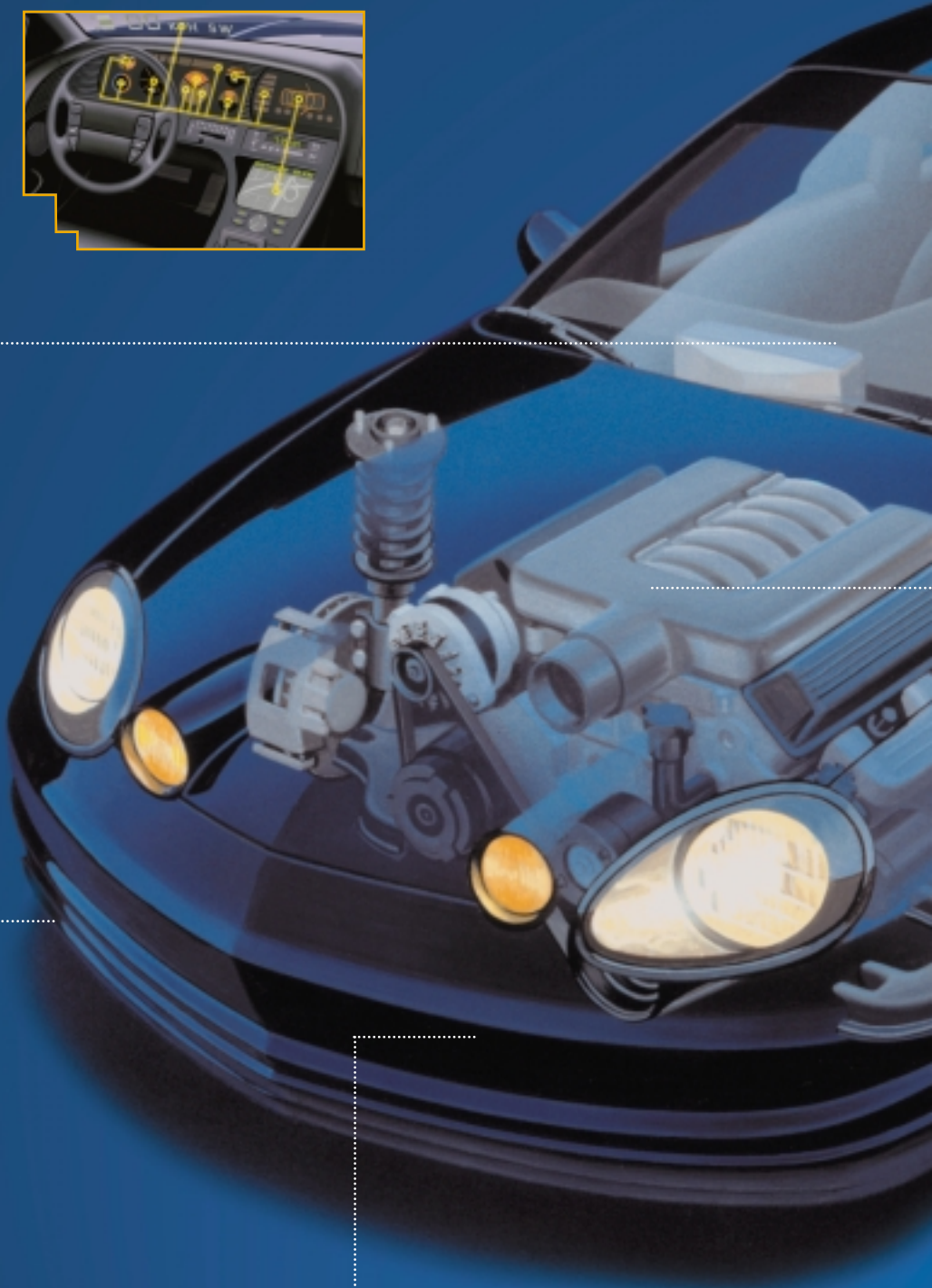
Connections for Electrical and Electronic Devices

TYCO ELECTRONICS GLOBAL AUTOMOTIVE DIVISION

Driver Information



Safety



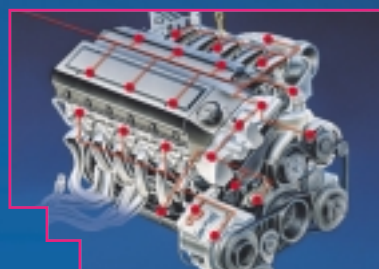
Body



THE 7 APPLICATION AREAS



► Convenience

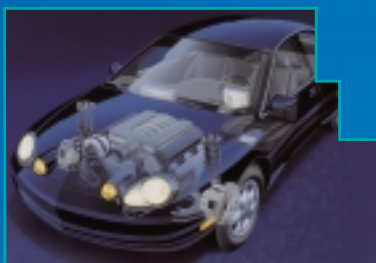


► Powertrain Systems

► Security



► Chassis Systems





► Powertrain Systems

1. Motormanagement

In the future, the requirements for a 'responsible' fuel consumption and legal emission limits will be even tighter than today's. At the same time the car manufacturers have to meet increasing requirements from the customers concerning higher and safer performance. An improved engine and powertrain management will help them to meet these challenges.

A whole series of abbreviations is used to identify new high-tech developments, such as TBI (Throttle Body Injection), MPI (Multi Point Injection) or Full EM (Fully-integrated digital Engine Management). As a result of the described developments, individual mechanical components are gradually being replaced by "drive by wire"-Systems. Sensors and electronically controlled ignitions will control the fuel supply, air flow and circulation of the exhaust gasses.

Tyco Electronics is extremely familiar with the special requirements of the engine environment: Our connector sealing systems protect the electrical connections from the influence of gasses and liquids in the engine compartment. Special contact systems defy corrosion caused by contact vibration. Tyco Electronics employs the advancements in the Mechatronics technology for the development of shaped Connecting instruments, that simplify the connection of electronic systems with several components.

New connector systems for the engine environment will connect many sensors, control instruments and actuators. Once more the Mechatronics technology has shown the way, with the development of intelligent connectors for the new generation of actuators.

Tyco Electronics is also developing solutions for High-Density-seals, using our experience with various technologies and products.

2. Powertrain Management Systems

Also for powertrain systems the electrical share is increasing. Manual drive housings with electronic couplings are already common in heavy trucks with many speeds, and are increasingly built in smaller cars.

Tyco Electronics has developed a complete range of specific connector solutions in this field and offers contact systems that meet all requirements for the powertrain control. This includes special mating devices, based on modular and hybrid concepts. Depending on the version, these connectors are suitable for cable core diameters of 0.2 to 3 mm² – from two, to several hundreds of contacts.

► Chassis Systems

For chassis systems the requirements for the electronics are very special: high pole connectors are required, which are small at the same time. Our new connector systems for control equipment and sensors enhance the performance and the quality of the ride stabilization (DSC3/ESP/TRUST) resp. – control of the active shock absorbing and comfort electronics – e.g. for the electronic adjustment of the mirrors and seats.



Whether transverse, longitudinal or rotation acceleration sensors, steering angle sensors or sensor controlled head light control – the individual electronic components and control devices of modern chassis are increasingly networked.

Chassis Systems

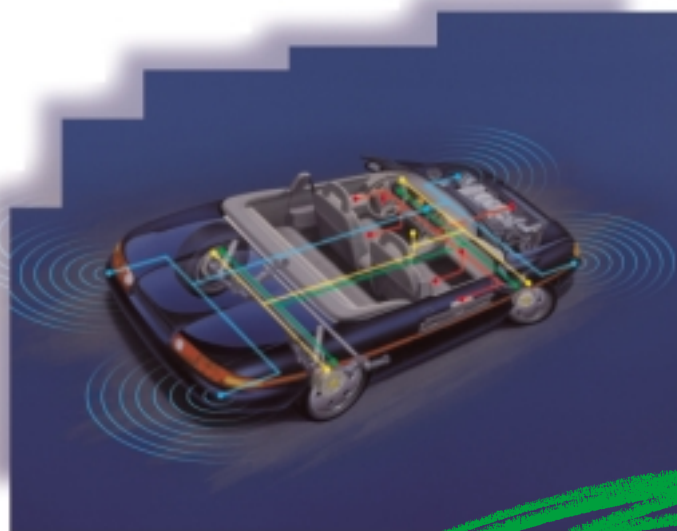
► Safety Systems

Safety systems of all kinds are a particularly important application area for intelligent systems in the automotive technology. Within a foreseeable period of time, all cars, from the luxurious limousine to the economical small car, will be fitted with intelligent systems that will help save lives.

Anti-lock brakes (ABS) help to prevent accidents, while other systems – e.g. airbags or safety belt pre-tensioners – reduce the risk of injuries, should an accident occur. The increasing implementation of these and similar systems, that register for example the presence of the passengers sets higher requirements concerning the precise coordination of the multiple electronic systems.

The passenger safety is improved even more by intelligent navigation control, distance warning systems and blind spot control. After an accident GPS and automatic telephone dialing will call for immediate help at the accident site.

The Tyco Electronics connector products for the automotive industry are extremely suitable for safety systems such as airbags and seatbelt pre-tensioners. Flexible flat cable (FFC), cable for the driver airbag as well as discrete cable lead assemblies are used. All these Tyco Electronics components are thoroughly tested for their quality.



In addition Tyco Electronics has extensive technological competence in the field of wireless technologies (High frequency and microwave applications). Tyco Electronics offers radar sensors and the suitable connectors – sealed and unsealed, wire to pc board, pc board to pc board – for airbags, seatbelt pre-tensioner systems, and ABS/ASR-Systems.

Tyco Electronics is the ideal strategic partner, in order to develop and implement customer specific modules.

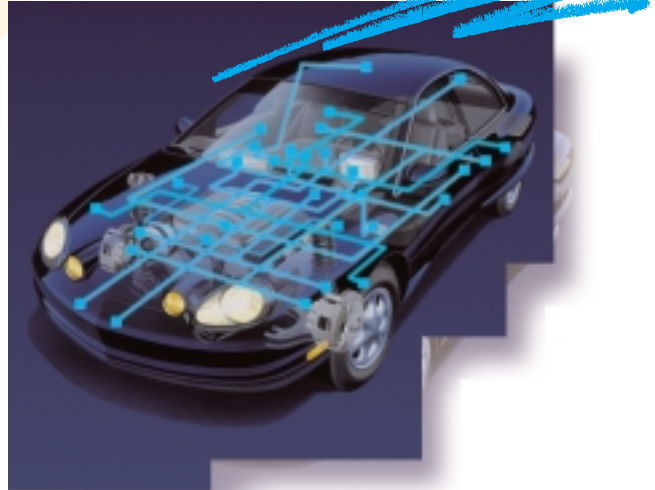
Safety

Security

► Security

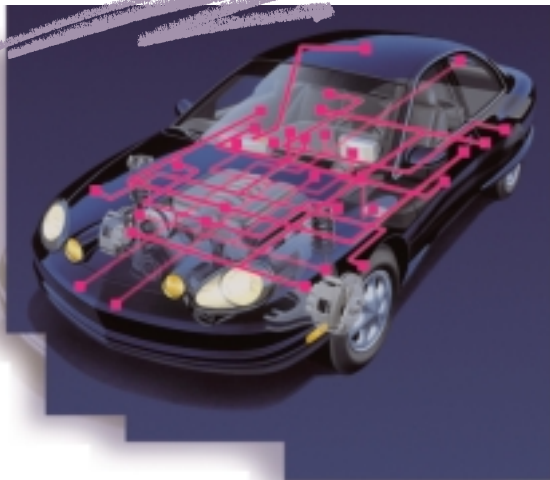
Crime is a serious problem all over the world and vehicle theft occurs not only in large cities but also in small areas. Therefore break-in and theft warning systems will receive more attention in the automotive industry. Now already an immobilizer is included in almost any new car.

The Tyco Electronics-Products are most suitable for both systems. In addition Tyco Electronics also offers solutions in the field of wireless technology (Radar applications). Tyco Electronics is the reliable partner for safe technologies.



► Body

In a world wide co-operation with various producers and suppliers, Tyco Electronics develops and produces innovative solutions for body applications. This enabled for example the current introduction of a new generation of headlights in the market: HID (High Intensity Discharge) headlights enable driving at night with a light similar to daylight without blinding oncoming traffic. This because the angle of the light beam is automatically adapted to the actual weight distribution in the vehicle. Despite the high voltage required on HID headlight connectors are extremely compact and are available in shield versions or with integrated electronic components.



Body

► Driver Information

Many high-tech electronic systems, that improve comfort, increase the active and passive safety and facilitate communication and navigation, are currently fitted into cars.

Examples of these systems are

- Automatic climate control,
- Airbags,
- Seatbelt pre-tensioning systems,
- Anti-lock brake systems,
- Traction control,
- Collision warning systems and
- (Satellite-)Navigation systems.

Now these systems are becoming increasingly common and the demands of the driver concerning the performance and easy access to the status information of these systems is also increasing. Therefore more electronic displays will be used.

These displays will offer more information than the standard information of normal dashboards.

They will show the status of the safety and comfort systems mentioned, the information provided by the navigation, communication and maintenance systems.

Connector systems for the auto cockpit of the future must be increasingly advanced in order to meet the requirements for faster signal transfer, reduced mass and reduced cost.

Tyco Electronics already plays a key role in the connector technology for dashboards and in the development of contact systems for the cockpit of the future.



THE 7 APPLICATION AREAS



► Convenience

For some people their car is just a means of transport. For others it is a mobile communication center.

With the help of the Tyco Electronics-Technologies you can get comfortable in that environment, for example by programming driver specific settings for the seat, mirror and air conditioning.

Digital technology offers the basis for revolutionary developments in car phones and car entertainment systems. The use of radio data and traffic management systems, linked to the current digital telephones and CD-players, is just an example of this.

Digital electronics will simplify the integration of various functions. The data transfer via plastic fibre-optics and high-performance multiplexer connections will play an important role in this field.

Telephone, Radio and GPS-Navigation instruments and the related electronics fittings will require more refined connector systems. The technology of speech recognition will help drivers to concentrate on critical tasks and they will no longer need to be distracted by operating the telephone or functions of the dashboard. Emergency services are automatically called via the car phone when sensors detect an accident.

TYCO ELECTRONICS TECHNOLOGY PORTFOLIO



- Connector Systems / Electromechanical Components
- Circuit Protection Devices
- Magnetics
- Resistors and Inductors
- Sealing Systems
- Thermal Management / Cooling Systems
- Relays
- Switches
- Fiber Optics (passive / active)

- Wireless Components
- Antennas, GPS Antennas, Integrated Antenna Systems
- Printed Circuit Board Technologies
- Electronic Modules
- Power Systems
- Heat Shrink Tubing
- Wire & Cable
- Identification & Labeling Products
- Racks and Panels

- Touch Screens
- Smart Cards / Leadframes
- Application Tooling
- Sensors
- Clock Springs
- TDI – Battery Assemblies
- Networking Installation and Services
- Crompton Small Motors (20–1500 W)

INNOVATIVE TECHNOLOGIES THAT HELP YOU INNOVATE

Tyco Electronics is one of the major business units of Tyco International Ltd, headquartered in Harrisburg, Pennsylvania, USA. Tyco Electronics is the world's largest passive electronic components manufacturer; a world leader in cutting-edge wireless, active fiber optic and complete power systems technologies; and is also rapidly developing extensive networking and building technology installation services. The company has facilities located in 51 countries serving customers in the aerospace, automotive, computer, communications, consumer electronics, industrial and power industries.

Tyco Electronics provides advanced technology products from over forty well-known and respected brands, including Agastat, Alcoswitch, AMP, AMP NETCONNECT, Buchanan, CII, CoEv, Critchley, Elcon, Elo TouchSystems, M/A-COM, Madison Cable, OEG, OneSource Building Technologies, Potter & Brumfield, Raychem, Schrack, Simel and TDI Batteries.

And with a strong R&D program, our Engineering teams continue to introduce new products that further strengthen our component and systems capabilities, from connectors, wire and cable, fiber optics and wireless; to circuit protection devices, sensors, touchscreens and electronic modules.

A significant result of our continued growth – and a real benefit to our customers – is that Tyco Electronics' technology leadership becomes even stronger. The synergies of our expertise in materials science, product design and process engineering, coupled with our network of knowledgeable application engineers, sales representatives and customer service personnel, will enable you to make your next generation of products successful. Call us; we're ready to help.

Product Information Center (PIC)

You can rely on our PIC Team's support. Our experienced staff is an additional information source, and the team has been particularly trained to answer your technical questions.

To reach our PIC, please contact your local Tyco Electronics organisation.



Product and Machine Literature

For more information about Tyco Electronics' Global Automotive Division and its wide range of products we offer you a variety of literature such as product databooks and a lot of product specific brochures.

For databooks, the CD-ROMs and product brochures please contact your local Tyco Electronics organisation.

Tyco Electronics @line



Internet Homepage:
www.tycoelectronics.com

Electronic Internet Catalog:
<http://catalog.tycoelectronics.com>

The Tyco Electronics Website is more than merely an Internet-guide. It is an innovative and interactive source for application tips, product update and technical information.

This Website is available in eight languages.
With our StepSearch-Software you can easily surf through all of our product lines.



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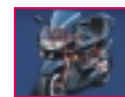
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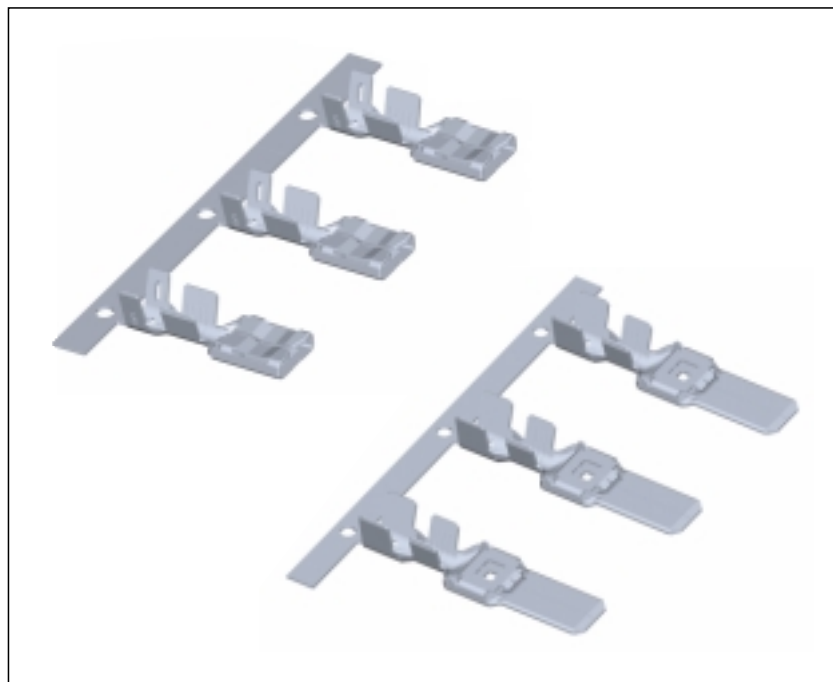
~~Convenience~~

Application

- 3, 4 and 5 ways connectors
- Cockpit harness

Technical Features

- Low insertion force
- Reversible in housing cavity
- Contact resistance: < 1 mΩ
- Current capacity for 40 °C rise in T°:
2.5 mm² = 32 A
6.0 mm² = 51 A
- Insertion force: < 15 N
- Withdrawal force: < 15 N



~~Car
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Low Insertion Force 6.35 mm – Flag Terminals



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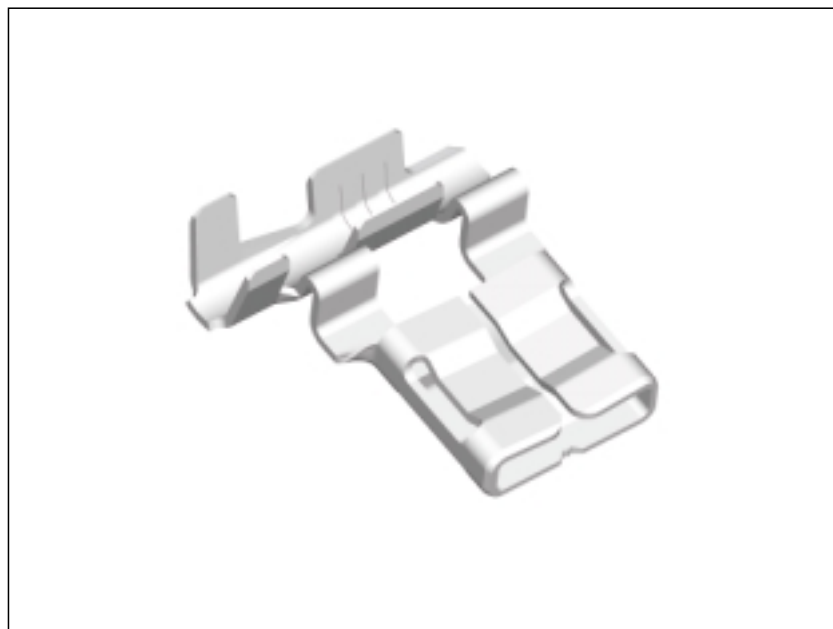
~~Convenience~~

Application

- 1 and 2 ways connectors
- Car H1 & H7 lamps

Technical Features

- Low insertion force
- Low profile
- Initial contact resistance:
< 3 mΩ
- Raw material: German silver
- Current capacity for 40 °C rise in T°:
1.0 mm² = 11 A
3.0 mm² = 14 A
- Insertion force: < 20 N
- Withdrawal force: > 27 N



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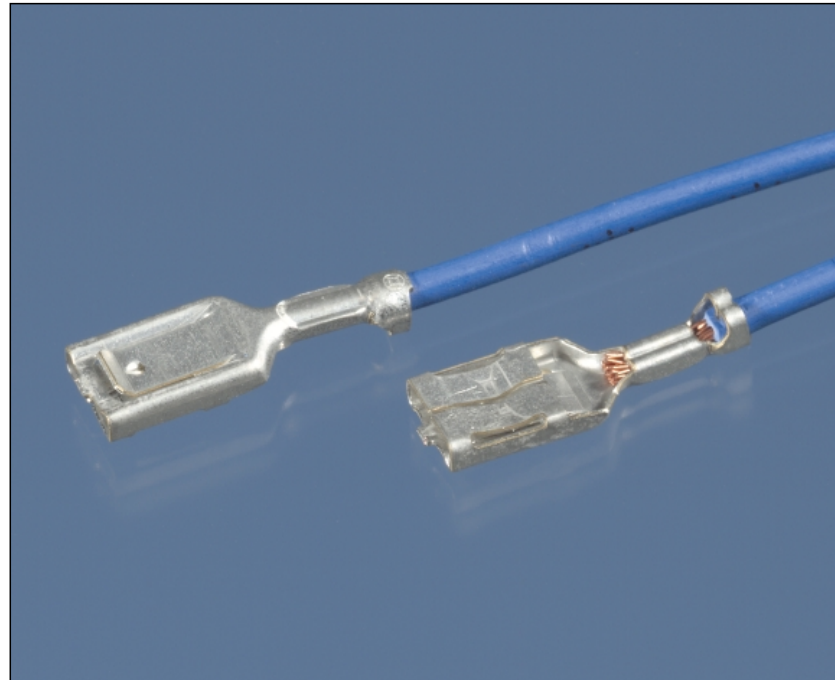
~~Convenience~~

Application

- Cockpit harness
- Engine harness
- Fuse box, relay holder

Technical Features

- Low insertion force
- Contact resistance: < 1 mΩ
- Current capacity for 40 °C rise in T° for micro alloy copper receptacle:
1.0 mm² = 21 A
2.5 mm² = 32 A
4.0 mm² = 50 A
- Insertion force: < 15 N



~~Car
Industry~~



~~Truck
Industry~~



~~Other
Industry~~

Wire Size Range	Insulation Diameter		Material and Finish	Part Numbers				Applicator	Hand Tool with Die Set
	FLK	FLR		Strip Form	Packaging Unit	Loose- Piece	Packaging Unit		
mm ² (AWG)	mm (Inch)	mm (Inch)							
NG1 Receptacles									
0.35–0.75 (22–19)	–	1.25–1.8 (.050–.071)	UZ 15 tin plated, Sn	1544615-1	–	–	–	–	–
2.5–6.0 (14–10)	3.2–4.4 (.126–.173)	2.8–4.1 (.111–.161)	Micro alloy copper, Sn	1544133-1	5,400	–	–	–	–
NG1 Tabs									
2.5–6.0 (14–10)	3.2–4.4 (.126–.173)	2.8–4.1 (.111–.161)	Micro alloy copper, Sn	1544218-1	5,400	–	–	–	–
Flag Terminal Receptacles									
0.35–1.00 (22–17)	1.3–2.0 (.052–.079)	–	German Silver, Sn	1544113-4	8,000	–	–	–	–
1.4–3.0 (16–12)	2.4–3.5 (.095–.138)	–	German Silver, Sn	1544114-4	6,000	–	–	–	–
Microlock Receptacles									
0.35–1.0 (22–17)	1.3–2.6 (.052–.102)	–	Brass, Sn	1544132-2	15,000	–	–	–	–
0.35–1.0 (22–17)	1.3–2.6 (.052–.102)	–	Micro alloy copper, Sn	1544132-1	15,000	–	–	–	–
1.0–2.5 (17–14)	2.2–3.35 (.087–.132)	–	Brass, Sn	1544275-2	12,000	–	–	–	–
1.0–2.5 (17–14)	2.2–3.35 (.087–.132)	–	Micro alloy copper, Sn	1544275-1	12,000	–	–	–	–
2.5–4.0 (14–12)	2.7–3.6 (.107–.142)	–	Brass, Sn	1544454-1	10,000	–	–	–	–

Low Insertion Force 8.0 mm – NG1 Receptacles and NG1 Tabs

Application

- Sealed power connectors
- Engine harness
- Cockpit harness
- Fuse box

Technical Features

- High current capacity
- Compatible with single wire sealing
- Reversible in housing cavity
- Contact resistance: $< 1 \text{ m}\Omega$
- Current capacity for 40 °C rise in T° for micro alloy copper receptacle:
 - 3.0 mm² = 32 A
 - 6.0 mm² = 43 A
 - 10.0 mm² = 57 A
- Insertion force: $< 20 \text{ N}$
- Withdrawal force: $< 15 \text{ N}$



~~Powertrain Systems~~



Chassis Systems



~~Safety Systems~~



~~Security~~



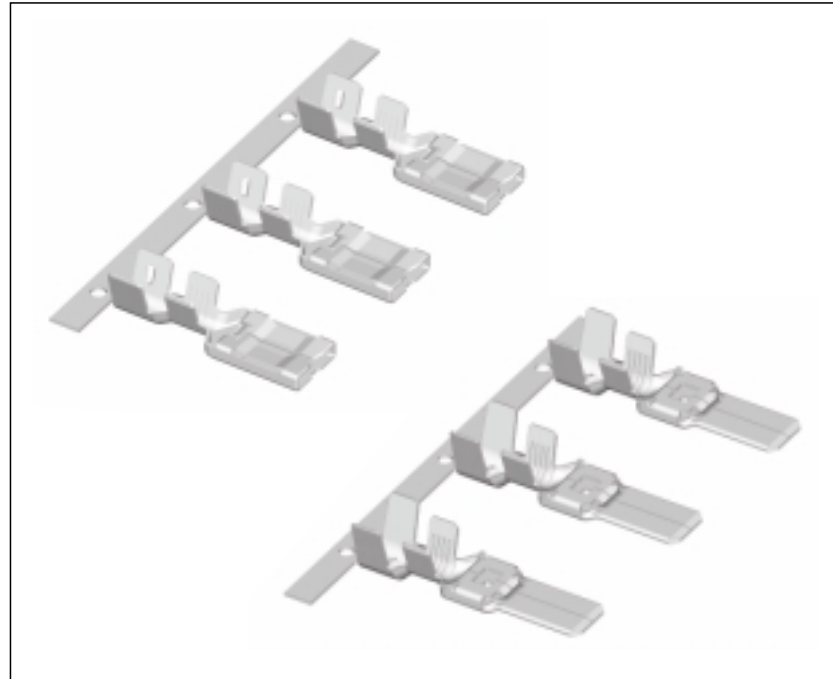
~~Body~~



Driver Information



~~Convenience~~



~~Car Industry~~



~~Truck Industry~~



~~Other Industry~~

Low Insertion Force 8.0 mm – Flag Terminals

Application

- 2 ways sealed connector

Technical Features

- Low insertion force
- Low profile
- Contact resistance: $< 1 \text{ m}\Omega$
- Current capacity for 40 °C rise in T°:
 - 3.0 mm² = 26 A
 - 6.0 mm² = 38 A
- Insertion force: $< 20 \text{ N}$



~~Powertrain Systems~~



Chassis Systems



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~~Body~~



Driver Information



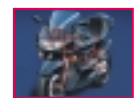
~~Convenience~~



~~Car Industry~~



~~Truck Industry~~



~~Other Industry~~

Low Insertion Force 8.0 mm – NG1 Receptacles, NG1 Tabs and Flag Terminals

Wire Size Range	Insulation Diameter		Material and Finish	Part Numbers					Hand Tool with Die Set
	FLK	FLR		Strip Form	Packaging Unit	Loose-Piece	Packaging Unit	Applicator	
mm ² (AWG)	mm (Inch)	mm (Inch)							
NG1 Receptacles									
3.0–6.0 (12–10)	3.2–4.4 (.126–.173)	–	Micro alloy copper, Sn	1544107-1 *	4,200	–	–	–	–
3.0–6.0 (12–10)	3.2–4.4 (.126–.173)	–	Micro alloy copper, Sn	1544227-1	4,200	–	–	–	–
7.0–10.0 (9–7)	4.9–6.0 (.193–.237)	–	Micro alloy copper, Sn	1544106-1 *	2,700	–	–	–	–
7.0–10.0 (9–7)	4.9–6.0 (.193–.237)	–	Micro alloy copper, Sn	1544228-1	2,700	–	–	–	–
NG1 Tabs									
3.0–6.0 (12–10)	–	3.35–4.1 (.132–.161)	Micro alloy copper, Sn	1544332-1	3,600	–	–	–	–
7.0–10.0 (9–7)	–	4.9–5.9 (.193–.232)	Micro alloy copper, Sn	1544333-1	2,700	–	–	–	–
NG1 Seals									
3.0–6.0 (12–10)	–	–	Silicon, Green	1544316-1	3,000	–	–	–	–
7.0–10.0 (9–7)	–	–	Silicon, Orange	1544316-2	18,000	–	–	–	–
NG1 Cavity Plug									
–	–	–	Silicon, White	1544316-3	3,000	–	–	–	–
Flag Terminals									
3.0–6.0 (12–10)	–	3.8–4.0 (.150–.158)	CuSn, Sn	1544517-1	4,000	–	–	–	–

Note:

For all Part Numbers Standard Tab Dimension = 8 × 1.0 mm

* Tab Dimension = 8 × 0.8 mm

Low Insertion Force 8.0 mm – Microlock Receptacles



~~Powertrain
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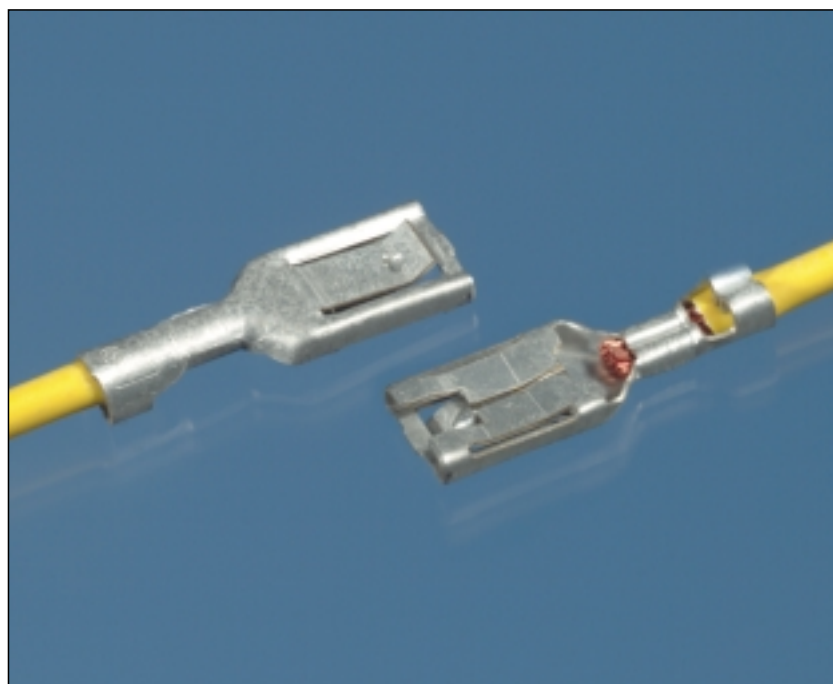
~~Convenience~~

Application

- Cockpit harness
- Engine harness
- Fuse box, relay holder

Technical Features

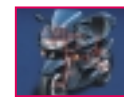
- High current capacity
- Contact resistance: < 1 mΩ
- Current capacity for 40 °C rise in T° for micro alloy copper receptacle:
3.0 mm² = 32 A
6.0 mm² = 43 A
10.0 mm² = 57 A
- Insertion force: < 20 N



~~Car
Industry~~



~~Truck
Industry~~



~~Other
Industry~~

Wire Size Range	Insulation Diameter		Material and Finish	Part Numbers				Applicator	Hand Tool with Die Set
	FLK	FLR		Strip Form	Packaging Unit	Loose- Piece	Packaging Unit		
mm ² (AWG)	mm (Inch)	mm (Inch)							
Microlock Receptacles									
1.0–3.0 (17–12)	2.15–3.45 (.085–.136)	–	Brass, Sn	1544455-1	6,000	–	–	–	–
3.0–6.0 (12–10)	3.2–5.16 (.126–.203)	–	Brass, Sn	1544141-1	4,000	–	–	–	–
3.0–6.0 (12–10)	3.04–4.7 (.120–.185)	–	Micro alloy copper, Sn	1544129-1	4,000	–	–	–	–
6.0–10.0 (10–7)	3.9–6.3 (.154–.248)	–	Brass, Sn	1544142-1	3,000	–	–	–	–
6.0–10.0 (10–7)	3.87–6.22 (.152–.244)	–	Micro alloy copper, Sn	1544128-1	3,000	–	–	–	–

2.8 NGP

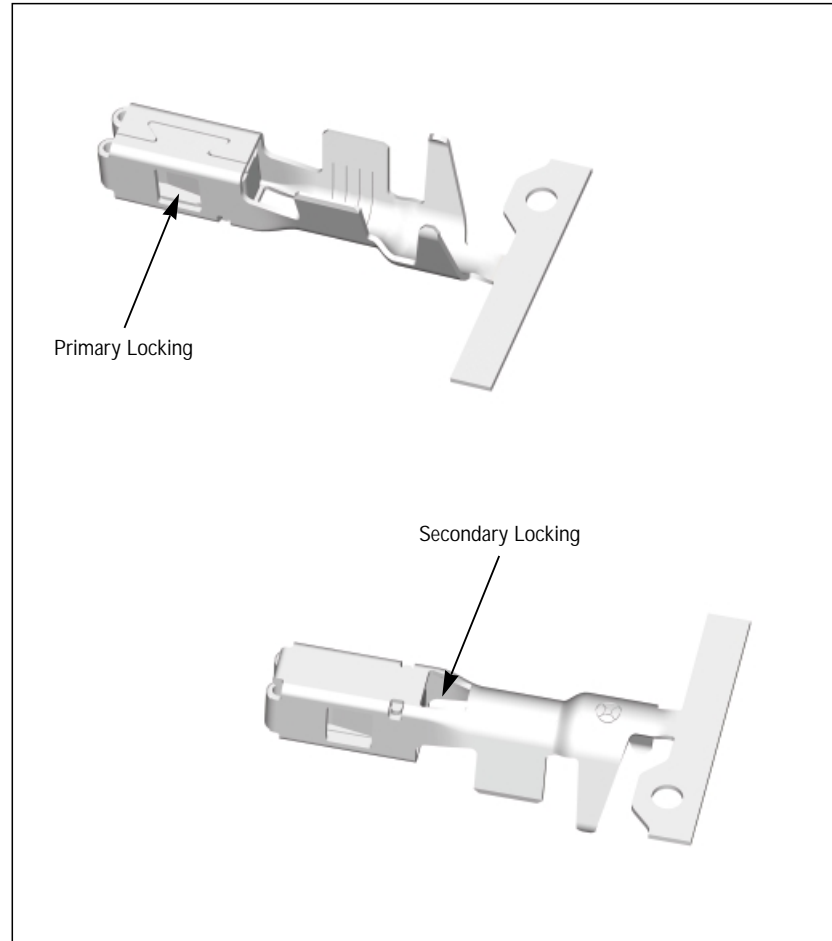


Application

- Cockpit harness
- Engine harness
- Fuse box and relay holder
- Sealed power connector (in progress)

Technical Features

- Low insertion force
- Developed for high current capacity 57 A at 23 °C
- Reversible at 180 °C in the housing cavity
- High performances material (copper alloy)
- Usable from 2.5 to 6.0 mm² wire
- Crimping with seal possible by adding seal
- Other wire size range possible (0.35–2.5 mm²)



Wire Size Range	Insulation Diameter		Material and Finish	Part Numbers					
	FLK	FLR		Strip Form	Packaging Unit	Loose-Piece	Packaging Unit	Applicator	Hand Tool with Die Set
mm ² (AWG)	mm (Inch)	mm (Inch)							
NGP 2.8 Unsealed									
2.5–6.0 (14–10)	–	2.8–4.2 (.111–.165)	Micro alloy copper, Sn Ag	1544555-1	NA	–	–	–	–
NGP 2.8 Sealed									
2.5–4.0 (14–12)	–	2.8–3.5 (.111–.138)	Micro alloy copper, Sn Ag	1544555-1*	NA	–	–	–	–
Seal						967608-1	3,000		

*) For sealed version also order Part No. **967608-1**
NA = New Product; Packaging unit not yet available

HPC (15.0 mm)



~~Powertrain Systems~~



~~Chassis Systems~~



Safety Systems



Security



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Driver Information



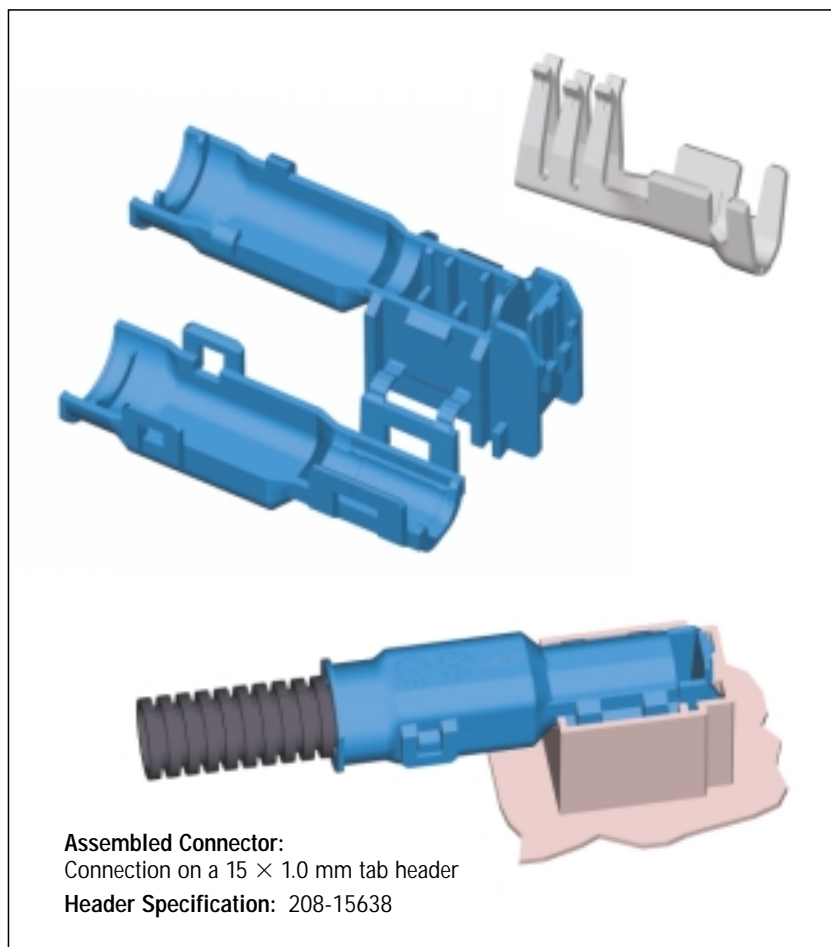
Convenience

Application

- ECU box
- Fuse box and relay holder

Technical Features

- High current capacity:
Up to 150 A at 23 °C with maximum wire section
- Housings:
 - Locking lance for positive mating
 - No tool needed for disconnection
- Terminals:
 - High performance material (copper alloy)
 - Multiple contact points
 - Robust design (material thickness: 1.5 mm)
 - Large possibility of crimping range (7 to 27 mm²)
- Positive mating connector
- Color and mechanical coding
- Terminal material: copper alloy
- Housing material: PBT
- 90° exit connector



~~Car Industry~~



~~Truck Industry~~



Other Industry

Terminals

Wire Size Range	Insulation Diameter		Material and Finish	Part Numbers				Applicator	Hand Tool with Die Set
	FLK	FLR		Strip Form	Packaging Unit	Loose-Piece	Packaging Unit		
mm ² (AWG)	mm (Inch)	mm (Inch)							
7.0–13.0 (9–6)	4.9–5.9 (.193–.232)	–	Copper alloy, pre-tin plated	1544616-1	NA	–	–	–	–
14.0–27.0 (6–3)	6.9–8.1 (.272–.319)	–	Copper alloy, pre-tin plated	1544613-1	NA	–	–	–	–

Housings

No. of Positions	Material and Coding	Part Number	Packaging Unit
1	PBT, Black coding	1544614-1	NA
1	PBT, Blue coding	1544614-2	NA
1	PBT, Grey coding	1544614-3	NA

NA = New Product; Packaging unit not yet available

Ring Terminals



Application

- ECU box
- Power applications

Technical Features

- Several holes possible
- Low cost product
- Several designs available



Ring Terminals

Terminal Version	Wire Size Range mm ² (AWG)	Material Thickness mm (Inch)	Hole Diameter mm (Inch)	Part Numbers			
				Strip Form	Packaging Unit	Loose-Piece	Packaging Unit
	14.0–41.0 (6–1)	2.0 (.079)	6.5 (.256)	1544112-1	1,000	–	–
			8.5 (.335)	1544112-2	1,000	–	–
	14.0–41.0 (6–1)	2.0 (.079)	8.5 (.335)	1544100-1	1,000	–	–
	14.0–41.0 (6–1)	2.0 (.079)	8.5 (.335)	1544390-1	350	–	–
	14.0–41.0 (6–1)	2.0 (.079)	8.5 (.335)	1544204-1	600	–	–
	14.0–41.0 (6–1)	2.0 (.079)	6.5 (.256)	1544384-1	600	–	–
			8.5 (.335)	1544383-1	700	–	–
	5.0–13.0 (10–6)	1.5 (.059)	10.5 (.414)	1544355-1	600	–	–
	14.0–41.0 (6–1)	2.0 (.079)	8.5 (.335)	1544298-1	500	–	–
	7.0–10.0 (8–7)	1.0 (.040)	6.25 (.246)	1544115-1	1,600	–	–

Lamp Housings

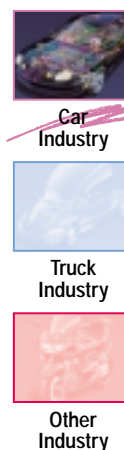
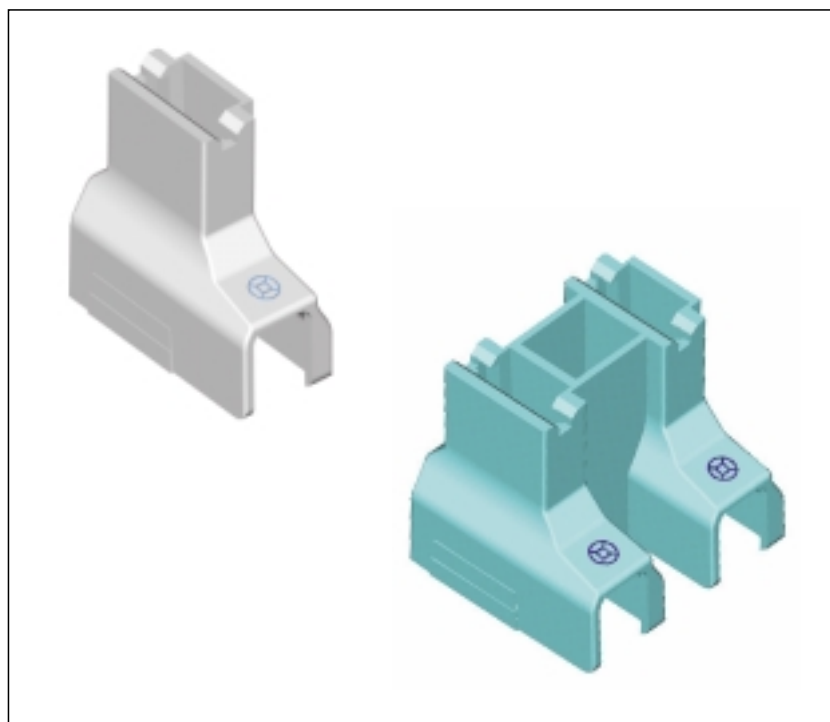


Application

- Lamp

Technical Features

- Low insertion force
- Low profile
- Initial contact resistance:
< 3 mΩ
- Raw material: German silver
- Current capacity
for 40 °C rise in T°:
1.0 mm² = 11 A
3.0 mm² = 14 A



1 Way H1 Lamp Housing

Part Numbers		Material	Color	Mating Contacts
Strip Form	Packaging Unit			
1544351-1	19,000	PCT, UL 94 V-0 rated	Black	6.35 mm Flag Terminals: • 1544113-4 (see page 12) • 1544114-4 (see page 12)

2 Ways H7 Lamp Housing

Part Numbers		Material	Color	Mating Contacts
Strip Form	Packaging Unit			
1544352-1	6,000	PA 6.6, UL 94 HB rated	Black	6.35 mm Flag Terminals: • 1544113-4 (see page 12) • 1544114-4 (see page 12)

1 Way 8.0 mm NG1 Receptacle and Tab – Sealed and Unsealed Connectors

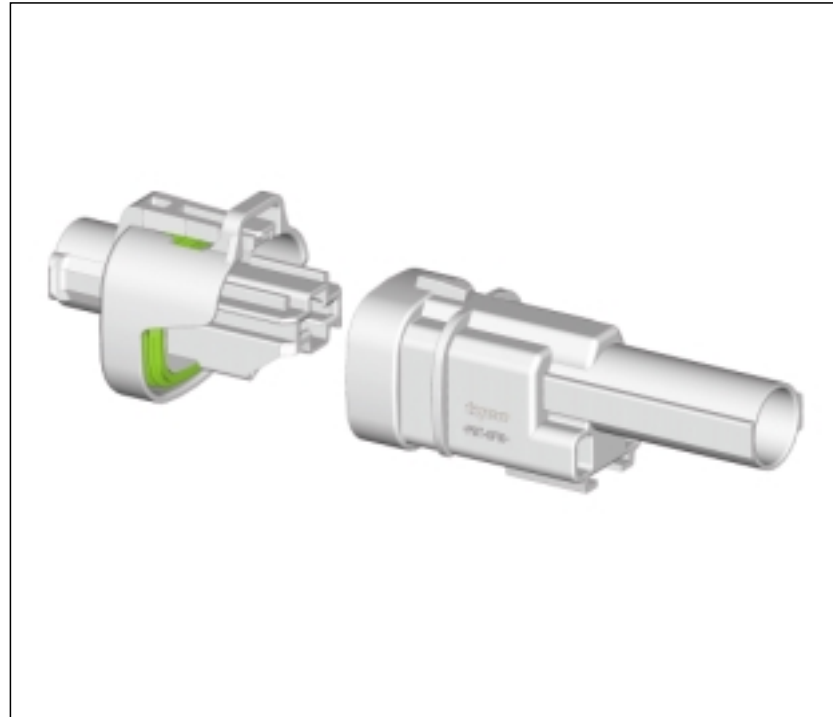


Application

- Power electrical functions
e.g. electrical pump,
engine cooling fan etc.

Technical Features

- Primary and secondary receptacle/tab latch
- Detection of a partially-inserted receptacle/tab
- Swallow effect
- High extraction force between terminal and connector
- IP 68 connector
- Color coded mechanical polarization
- Secondary locking is an integral part of the rec. housing
- Crimping with seal
- Holder material: PBT



Part Numbers				Material	Color	Mating Contacts
Strip Form	Packaging Unit	Loose-Piece	Packaging Unit			
1 Way 8.0 mm NG1 Receptacle Sealed Connectors						
1544603-1	NA	–	–	PBT	Black	8.0 mm NG1 Receptacles: • 1544227-1 (see page 14) • 1544228-1 (see page 14) 8.0 mm NG1 Seals: • 1544316-1 (see page 14) • 1544316-2 (see page 14)
1544603-2	NA	–	–	PBT	Blue	
1544603-3	NA	–	–	PBT	Grey	
1 Way 8.0 mm NG1 Receptacle Unsealed Connectors						
1544603-4	NA	–	–	PBT	Green	8.0 mm NG1 Receptacles: • 1544227-1 (see page 14) • 1544228-1 (see page 14)
1544603-5	NA	–	–	PBT	Brown	
1544603-6	NA	–	–	PBT	White	
1 Way 8.0 mm NG1 Tab Sealed Connectors						
1544606-1	NA	–	–	PBT	Black	8.0 mm NG1 Tabs: • 1544332-1 (see page 14) • 1544333-1 (see page 14) 8.0 mm NG1 Seals: • 1544316-1 (see page 14) • 1544316-2 (see page 14)
1544606-2	NA	–	–	PBT	Blue	
1544606-3	NA	–	–	PBT	Grey	
1 Way 8.0 mm NG1 Tab Unsealed Connectors						
1544606-4	NA	–	–	PBT	Green	8.0 mm NG1 Tabs: • 1544332-1 (see page 14) • 1544333-1 (see page 14)
1544606-5	NA	–	–	PBT	Brown	
1544606-6	NA	–	–	PBT	White	

NA = New Product; Packaging unit not yet available

Although the products on this page are customized, we offer our engineering capabilities for your specific requirements.

2 Ways 8.0 mm NG1 Receptacle and Tab – Sealed Connectors



~~Powertrain Systems~~



~~Chassis Systems~~



~~Safety Systems~~



Security



Body



Driver Information



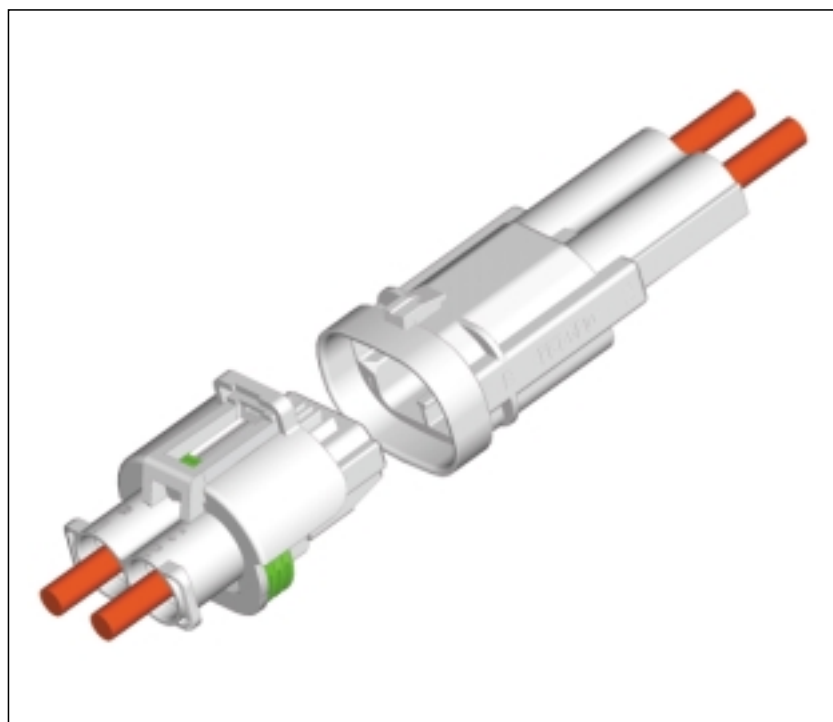
Convenience

Application

- Power electrical functions
e.g. electrical pump,
engine cooling fan etc.

Technical Features

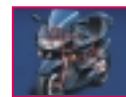
- Primary and secondary receptacle/tab latch
- Detection of a partially-inserted receptacle/tab
- Swallow effect
- High extraction force between terminal and connector
- IP 68 connector
- Color coded mechanical polarization
- Secondary locking is an integral part of the rec. housing
- Crimping with seal
- Holder material: PBT



~~Car Industry~~



Truck Industry



~~Other Industry~~

2 Ways 8.0 mm NG1 Receptacle Sealed Connectors

Part Numbers				Material	Color	Mating Contacts
Strip Form	Packaging Unit	Loose-Piece	Packaging Unit			
1544317-1	1,200	–	–	PBT	Black	8.0 mm NG1 Receptacles: • 1544227-1 (see page 14) • 1544228-1 (see page 14)
1544317-2	1,200	–	–	PBT	Blue	
1544317-3	1,200	–	–	PBT	Grey	

2 Ways 8.0 mm NG1 Tab Sealed Connectors

Part Numbers				Material	Color	Mating Contacts
Strip Form	Packaging Unit	Loose-Piece	Packaging Unit			
1544334-1	1,000	–	–	PBT	Black	8.0 mm NG1 Tabs: • 1544332-1 (see page 14) • 1544333-1 (see page 14)
1544334-2	1,000	–	–	PBT	Blue	
1544334-3	1,000	–	–	PBT	Grey	

Although the products on this page are customized, we offer our engineering capabilities for your specific requirements.

2 Ways 8.0 mm NG1 Receptacle Connectors

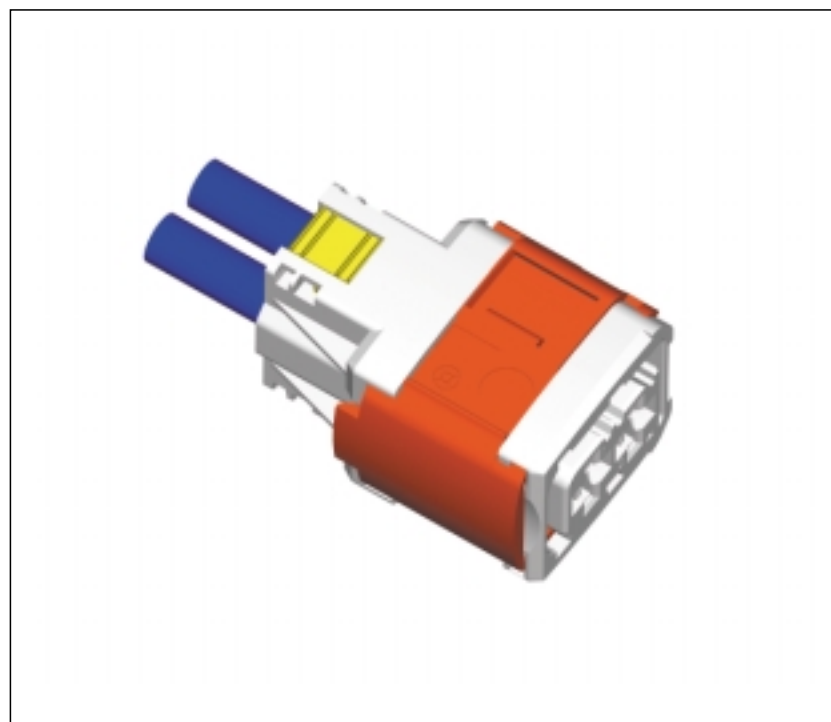


Application

- Fuse box and relay holder

Technical Features

- Primary and secondary receptacle latch
- Detection of a partially-inserted receptacle
- Cam locking system
- High extraction force between terminal and connector
- Color coded mechanical polarization
- Housing material: PBT



2 Ways 8.0 mm NG1 Receptacle Connectors

Part Numbers				Material	Color	Mating Contacts
Strip Form	Packaging Unit	Loose-Piece	Packaging Unit			
1544261-1	756	–	–	PBT	Black	8.0 mm NG1 Receptacles: • 1544227-1 (see page 14) • 1544228-1 (see page 14)
1544261-2	756	–	–	PBT	Blue	
1544261-3	756	–	–	PBT	Grey	

Although the products on this page are customized, we offer our engineering capabilities for your specific requirements.

3 Ways 6.35 mm NG1 Receptacle and Tab Connectors

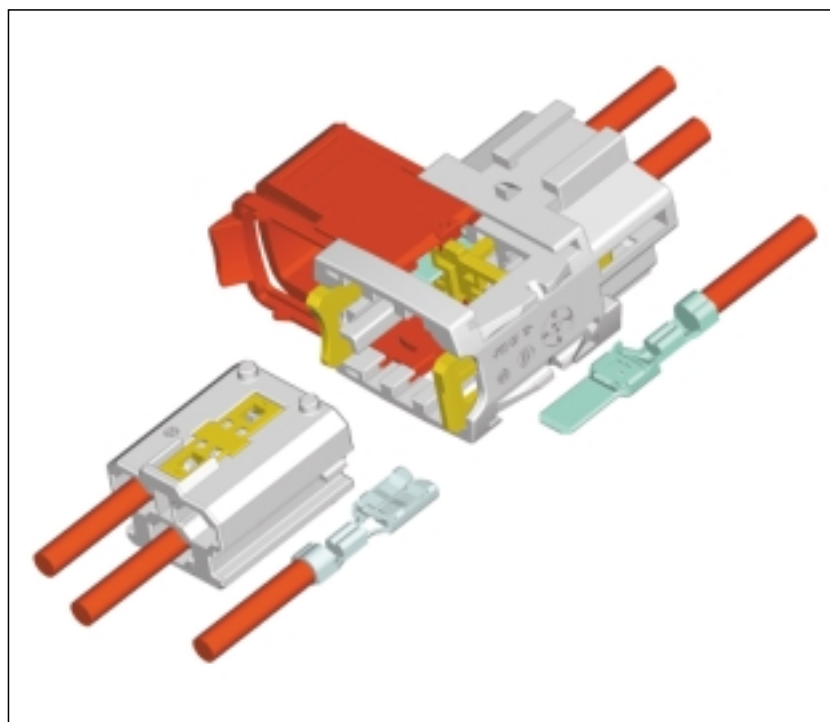


Application

- Locking steering column
- Fuse box and relay holder

Technical Features

- Primary and secondary receptacle/tab latch
- Detection of a partially-inserted receptacle/tab
- Cam locking system
- High extraction force between terminal and connector
- Color coded mechanical polarization
- Pre-assembled front grids protect the contact and guide the tab during entry into receptacle
- Holder material: PBT



3 Ways 6.35 mm NG1 Receptacle Connectors

Part Numbers				Material	Color	Mating Contacts
Strip Form	Packaging Unit	Loose-Piece	Packaging Unit			
1544225-1	1,980	–	–	PBT	Black	6.35 mm NG1 Receptacle: • 1544133-1 (see page 12)
1544225-2	1,980	–	–	PBT	Blue	
1544225-3	1,980	–	–	PBT	Green	

3 Ways 6.35 mm NG1 Tab Connectors

Part Numbers				Material	Color	Mating Contacts
Strip Form	Packaging Unit	Loose-Piece	Packaging Unit			
1544226-1	600	–	–	PBT	Black	6.35 mm NG1 Tab: • 1544218-1 (see page 12)
1544226-2	600	–	–	PBT	Blue	
1544226-3	600	–	–	PBT	Green	

Although the products on this page are customized, we offer our engineering capabilities for your specific requirements.

4 Ways 6.35 mm NG1 Receptacle and Tab Connectors

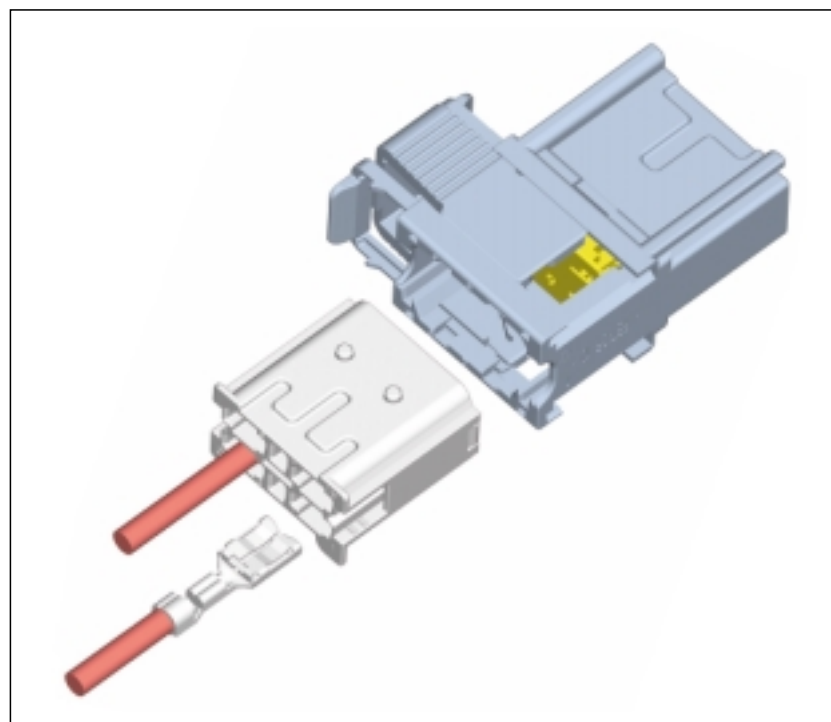


Application

- Locking steering column
- Fuse box and relay holder

Technical Features

- Primary and secondary receptacle/tab latch
- Detection of a partially-inserted receptacle/tab
- Cam locking system
- High extraction force between terminal and connector
- Color coded mechanical polarization
- Pre-assembled front grids protect the contact and guide the tab during entry into receptacle
- Holder material: PBT



4 Ways 6.35 mm NG1 Receptacle Connector

Part Numbers				Material	Color	Mating Contacts
Strip Form	Packaging Unit	Loose-Piece	Packaging Unit			
1544147-1	1,785	–	–	PBT	Black	6.35 mm NG1 Receptacle: • 1544133-1 (see page 12)

4 Ways 6.35 mm NG1 Tab Connector – Right Slide

Part Numbers				Material	Color	Mating Contacts
Strip Form	Packaging Unit	Loose-Piece	Packaging Unit			
1544148-1	805	–	–	PBT	Black	6.35 mm NG1 Tab: • 1544218-1 (see page 12)

4 Ways 6.35 mm NG1 Tab Connector – Left Slide

Part Numbers				Material	Color	Mating Contacts
Strip Form	Packaging Unit	Loose-Piece	Packaging Unit			
1544149-1	805	–	–	PBT	Red	6.35 mm NG1 Tab: • 1544218-1 (see page 12)

Although the products on this page are customized, we offer our engineering capabilities for your specific requirements.

5 Ways 6.35 mm NG1 Receptacle Connectors

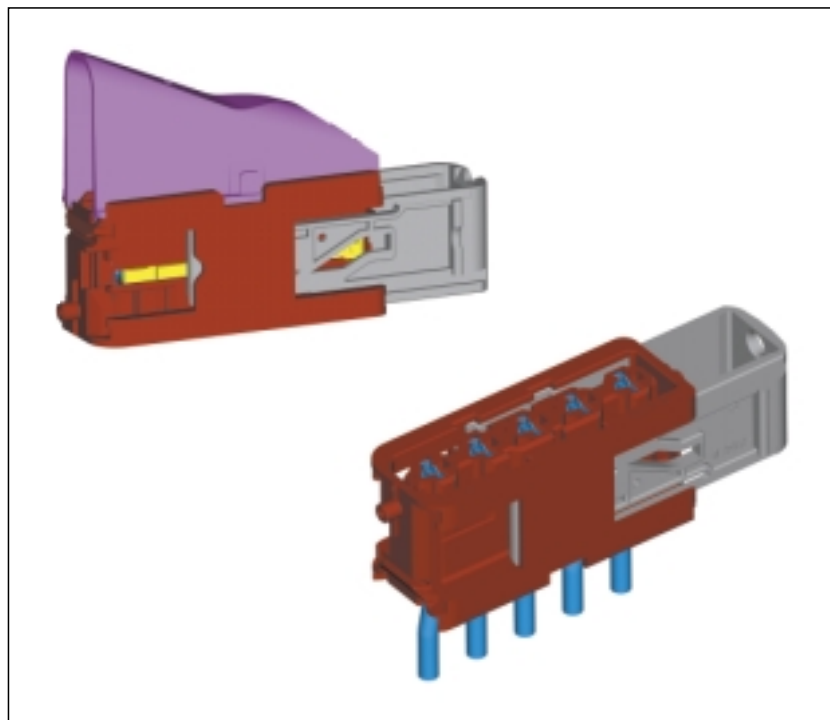


Application

- Additional heating resistance

Technical Features

- Primary and secondary receptacle latch
- Detection of a partially-inserted receptacle/tab
- Cover available
- Cam locking system
- High extraction force between terminal and connector
- Color coded mechanical polarization
- Pre-assembled front grids protect the contact and guide the tab during entry into receptacle
- Holder material: PBT



5 Ways 6.35 mm NG1 Receptacle Connector – Right Slide

Part Numbers				Material	Color	Mating Contacts
Strip Form	Packaging Unit	Loose-Piece	Packaging Unit			
1544551-1	400	–	–	PBT	Black	6.35 mm NG1 Receptacle: • 1544133-1 (see page 12)

5 Ways 6.35 mm NG1 Receptacle Connector – Left Slide

Part Numbers				Material	Color	Mating Contacts
Strip Form	Packaging Unit	Loose-Piece	Packaging Unit			
1544551-2	400	–	–	PBT	Black	6.35 mm NG1 Receptacle: • 1544133-1 (see page 12)

5 Ways 6.35 mm NG1 Cover

Part Numbers				Material	Color	Mating Contacts
Strip Form	Packaging Unit	Loose-Piece	Packaging Unit			
1544552-1	1,600	–	–	PBT	Black	

Although the products on this page are customized, we offer our engineering capabilities for your specific requirements.

12 Ways Auto Fuse Boxes

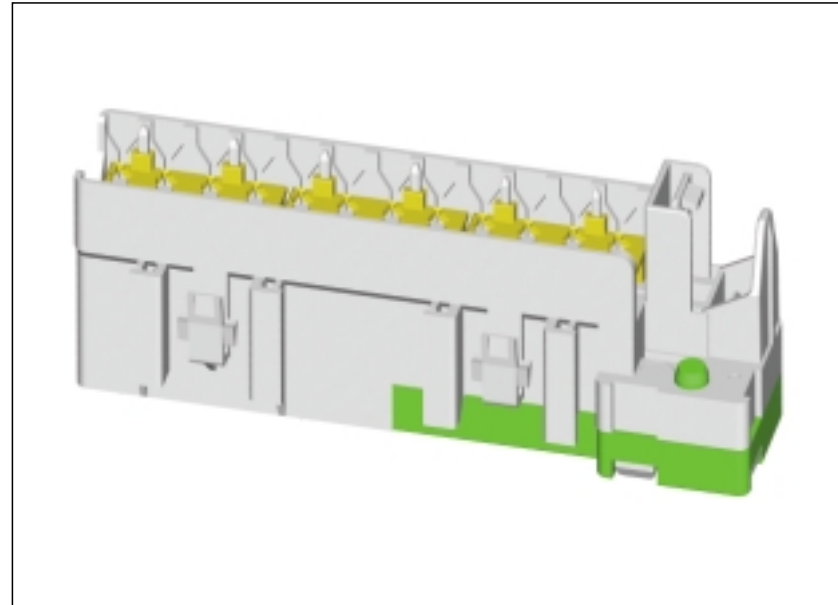


Application

- Body harness

Technical Features

- Bus bar technology
- Compact design
- Primary and secondary receptacle latch
- Detection of a partially inserted receptacle
- Material: PBT
- Usable with or without 28 ways Auto Fuse Box
- Part No. **1544266-1**



28 Ways Auto Fuse Boxes

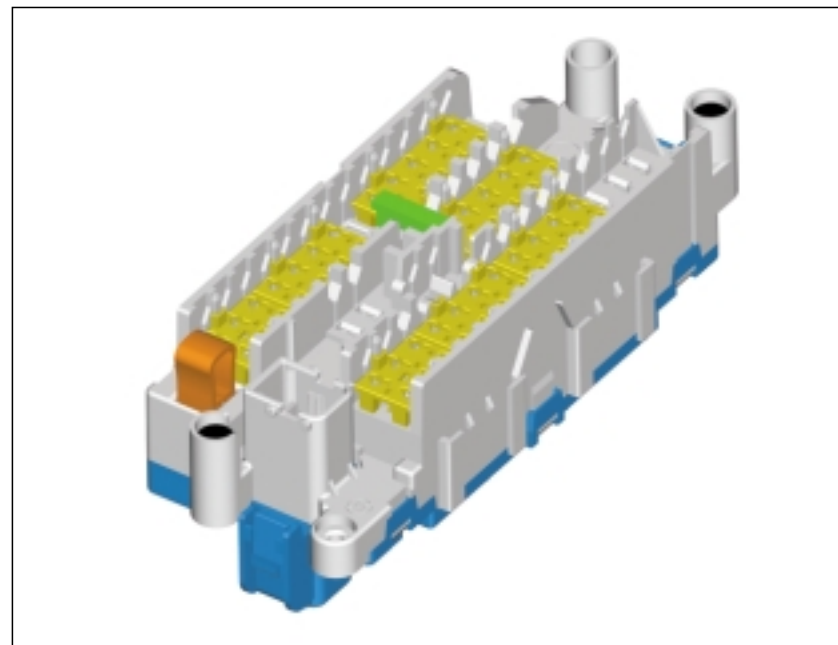


Application

- Body harness

Technical Features

- Bus bar technology
- Compact design
- Primary and secondary receptacle latch
- Detection of a partially inserted receptacle
- Safety guaranteed by a cam locking system with a 2 ways connector
- Usable with or without 12 ways Auto Fuse Box
- Part Nos. **1544264-1, 1544264-2 and 1544265-1**



Although the products on this page are customized, we offer our engineering capabilities for your specific requirements.

8 Ways Maxi Fuse Boxes

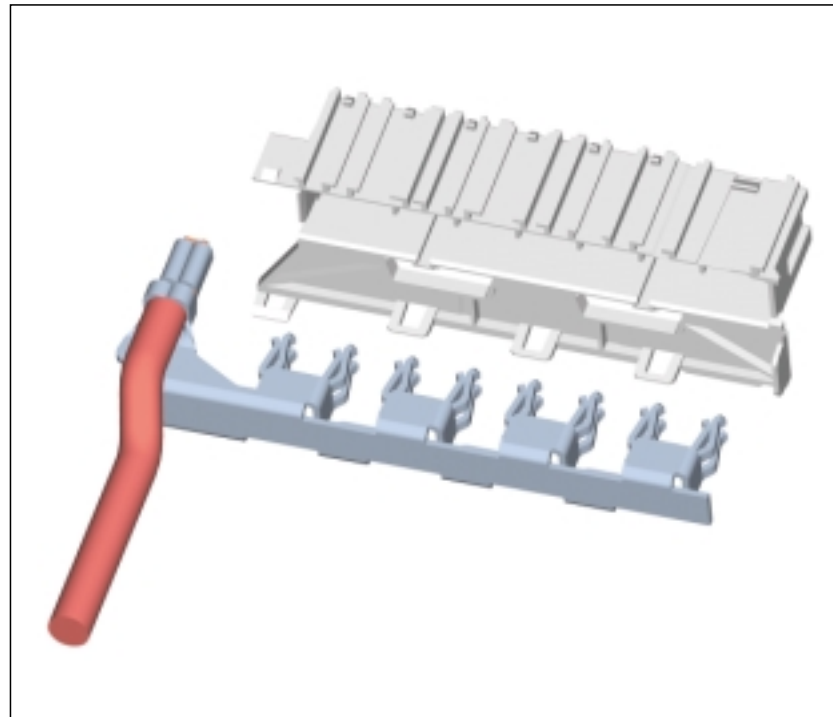


Application

- Engine harness

Technical Features

- The master harness is connected onto the box by direct crimping on the bus bar. This technology eliminates the use of costly interconnection rings and improves the reliability of the system.
- Wire Size: 16 mm² at 130 A
- Material: PBT, tin plated, copper alloy
- Usable with max. 80 A Maxi Fuse
- Part No. **1544375-1**



Although the products on this page are customized, we offer our engineering capabilities for your specific requirements.

Single Sealed Maxi Fuse Connectors

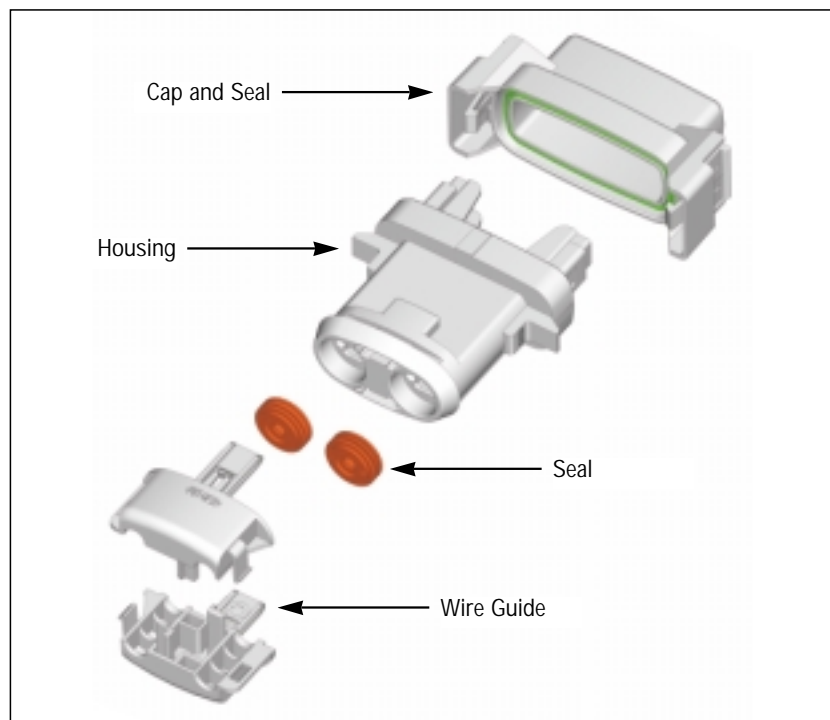


Application

- Body and engine harness

Technical Features

- Designed for use in heavy duty vehicles (trucks, tractors, etc.) and for specific features in cars (police, ambulance, etc.)
- IP 68 sealed connector
- Primary and secondary receptacle latch
- Detection of a partially inserted receptacle
- Material: PBT
- Usable with max. 80 A Maxi Fuse



Part Number	Packaging Unit	Color	Mating Contacts
Cap (Seal included)			
1544108-1	600	Black	
Housing with Receptacle Latches			
1544109-1	256	Black	8.0 mm NG1 Receptacles: • 1544227-1 (see page 14) • 1544228-1 (see page 14)
Seals			
1544103-1	20,000	Green	Diameter 3.2–3.9 mm
1544104-1	20,000	Orange	Diameter 4.9–5.9 mm
Wire Guide (2 ×)			
1544102-1	3,000	Black	
Amperage Identification Caps			
1544105-1	20,000	Red	50 A
1544105-2	20,000	Blue	60 A
1544105-3	20,000	Yellow	20 A
1544105-4	20,000	Green	30 A
1544105-5	20,000	Orange	40 A

Each component has to be ordered separately and assembled.

Mini Fuse Holders

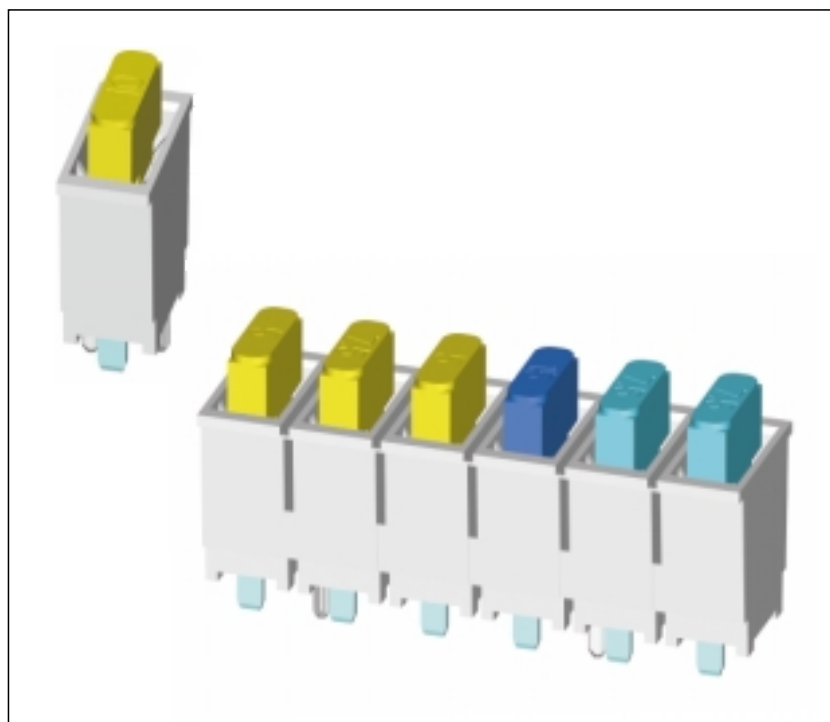


Application

- Designed for use on PCB in electronic boxes

Technical Features

- Modular design: from 1 to 7 ways with different current rating fuses
- Delivered with mounted fuses
- Mechanical polarisation
- Contact material: CuFe 2p
- Post plated
- Holder material: PBT 10% GF HB
- Stick packaging



Description	Part Number		Amperage Identification
	Mini Fuse Holders	Packaging Unit	
1 Way	1544548-1	2,655	10 A
	1544548-2	2,655	20 A
	1544548-3	2,655	15 A
2 Ways	1544548-4	1,260	10 A – 10 A
	1544548-5	1,260	10 A – 15 A
	1544548-6	1,260	15 A – 15 A
4 Ways	1544548-8	630	10 A – 15 A – 10 A – 10 A
	1-1544548-4	630	15 A – 7.5 A – 7.5 A – 15 A
5 Ways	1544548-9	495	10 A – 10 A – 10 A – 10 A – 20 A
	1-1544548-0	495	10 A – 10 A – 10 A – 10 A – NL *
6 Ways	1-1544548-1	405	5 A – 10 A – 10 A – 10 A – 10 A – 20 A
	1-1544548-2	405	7.5 A – 7.5 A – 15 A – 5 A – 7.5 A – 5 A
	1-1544548-3	405	NL – NL – 10 A – NL – NL *
	1-1544548-5	405	7.5 A – 7.5 A – 7.5 A – 20 A – 10 A – 15 A
	1-1544548-6	405	10 A – 15 A – 25 A – 15 A – 15 A – 7.5 A
7 Ways	1-1544548-7	315	7.5 A – 15 A – 7.5 A – 7.5 A – 7.5 A – 7.5 A – 15 A

* NL = Not Loaded

For any fuse equipment, please contact your sales engineer.

Auto Fuse Holders

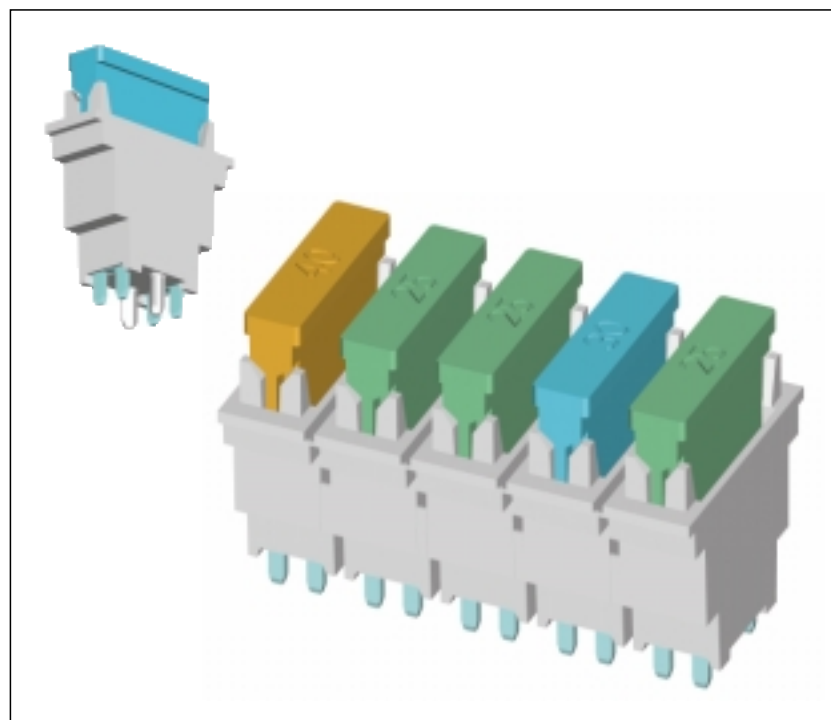


Application

- Designed for use on PCB in electronic boxes

Technical Features

- Modular design: from 1 to 7 ways with different current rating fuses
- Delivered with mounted fuses
- Mechanical polarisation
- Contact material: CuFe 2p
- Post plated
- Holder material: PBT 10% GF HB
- Stick packaging



Description	Part Number		Amperage Identification
	Auto Fuse Holders	Packaging Unit	
1 Way	1544550-1	1,829	30 A
	1544550-2	1,829	40 A
3 Ways	1544550-4	527	30 A – 40 A – 30 A
4 Ways	1544550-5	434	25 A – 20 A – 20 A – 30 A
5 Ways	1544550-3	341	25 A – 25 A – 30 A – 25 A – 40 A

For any fuse equipment, please contact your sales engineer.

11+3 Ways and 11+4 Ways Electronic Connectors

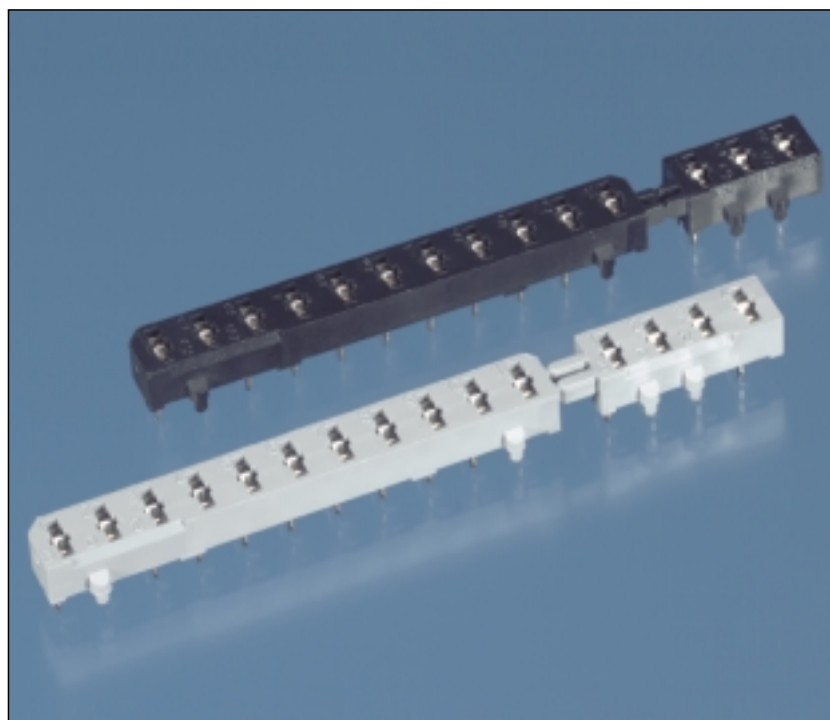


Application

- Connection from PCB (wave soldering) to molded frames (insertion)

Technical Features

- Current capacity: 25 A at 23 °C
- Insertion force: < 7 N per contact
- Housing material: PBT
- Contact material: micro alloy copper
- PCB interface: Thickness 1.6 mm and Pitch 5.0 mm



Description	Color	Part Number	Packaging Unit
11 + 3 Ways	Black	1544388-1	2,610
11 + 4 Ways	Grey	1544388-2	2,610

4 Ways 2.8 x 0.8 mm Headers / 9 Ways IDC Header



Application

- Designed for use on PCB in electronic boxes

Technical Features

- Contact material: Brass
- Post plated
- Holder material: PBT 10% GF HB
- Color: Black
- Tray packaging
- Codings: Black or Grey
- Mechanical polarisation



Application

- Designed for use on PCB in electronic boxes

Technical Features

- Mechanical polarisation
- Contact material: Brass
- Post plated
- Holder material: PBT 10% GF HB
- Color: Black
- Tray packaging
- Codings: Black or Grey



Description	Coding	Tab Quantity	Part Number	Packaging Unit
4 Ways Header	Black	4	1544575-1	330
	Grey	4	1544575-2	330
9 Ways IDC Header	Black	7	1544573-1	to be defined

Although the products on this page are customized, we offer our engineering capabilities for your specific requirements.

8 Ways / 10 Ways (4 + 6 Ways) and 12 Ways Headers

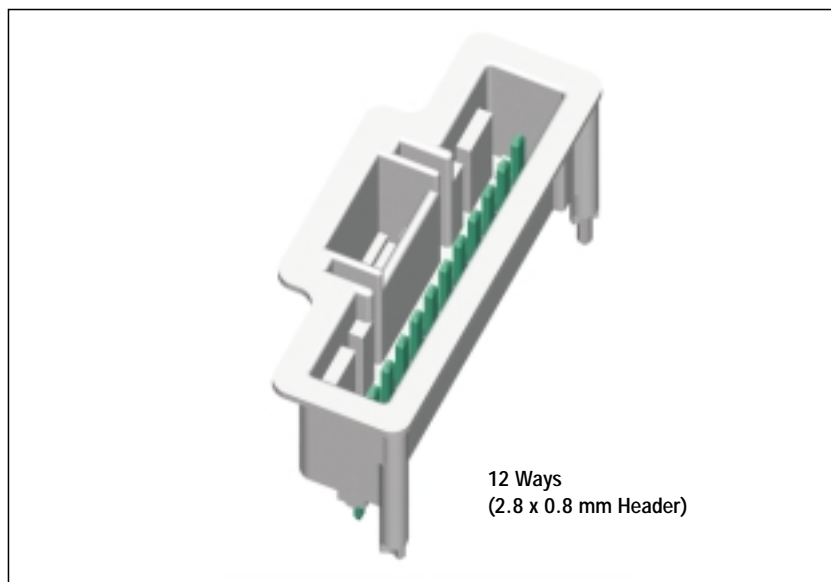
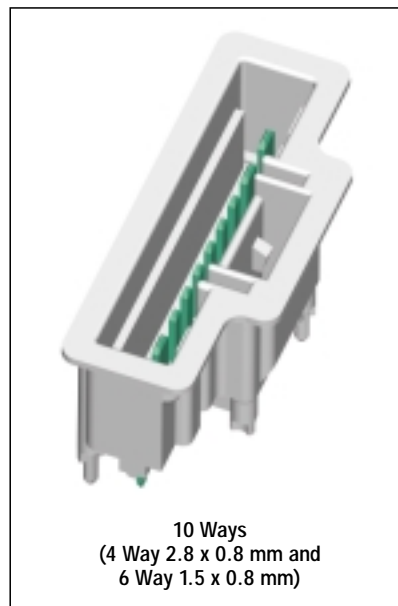
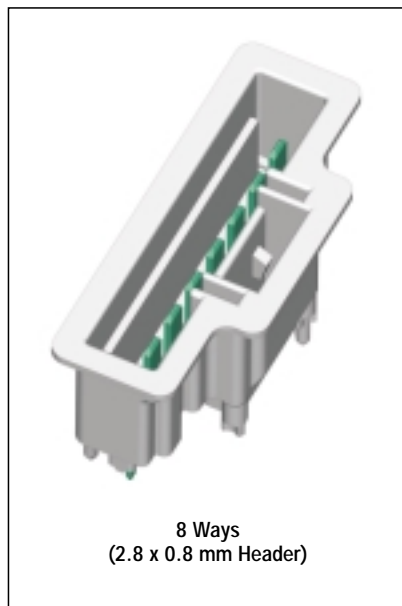


Application

- Designed for use on PCB in electronic boxes

Technical Features

- Mechanical polarisation
- Contact material: Brass
- Post plated
- Holder material: PBT 10 % GF HB
- Color: Black
- Tray packaging
- Codings: See table below



Description	Coding	Tab Quantity	Part Number	Packaging Unit
8 Ways Header	Black	8	1544579-1	288
	Grey	8	1544579-2	
	Brown	8	1544579-3	
10 Ways Header	Grey	10	1544580-1	to be defined
	Brown	10	1544580-2	
12 Ways Header	Black	8	1544571-1	288
	Black	11	1544571-2	
	Grey	10	1544571-3	
	Brown	11	1544571-4	

Although the products on this page are customized, we offer our engineering capabilities for your specific requirements.

1 Way 8.0 mm Headers

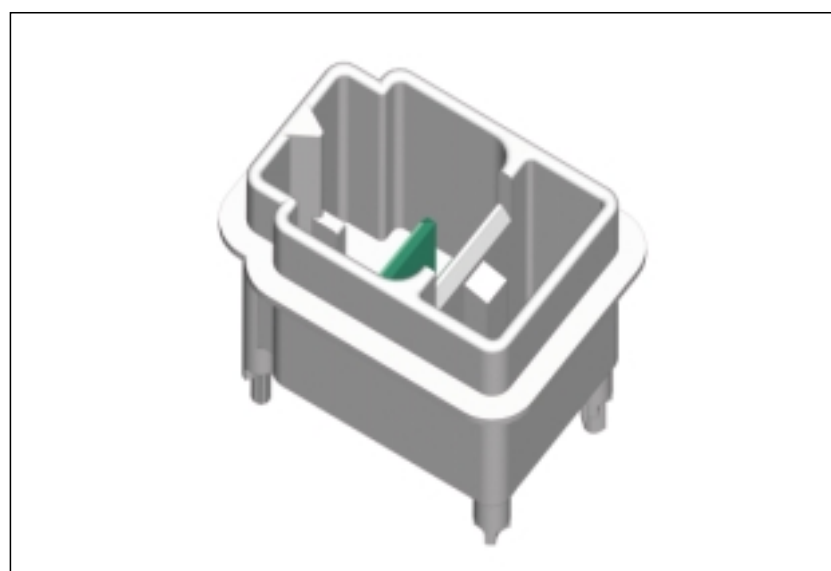
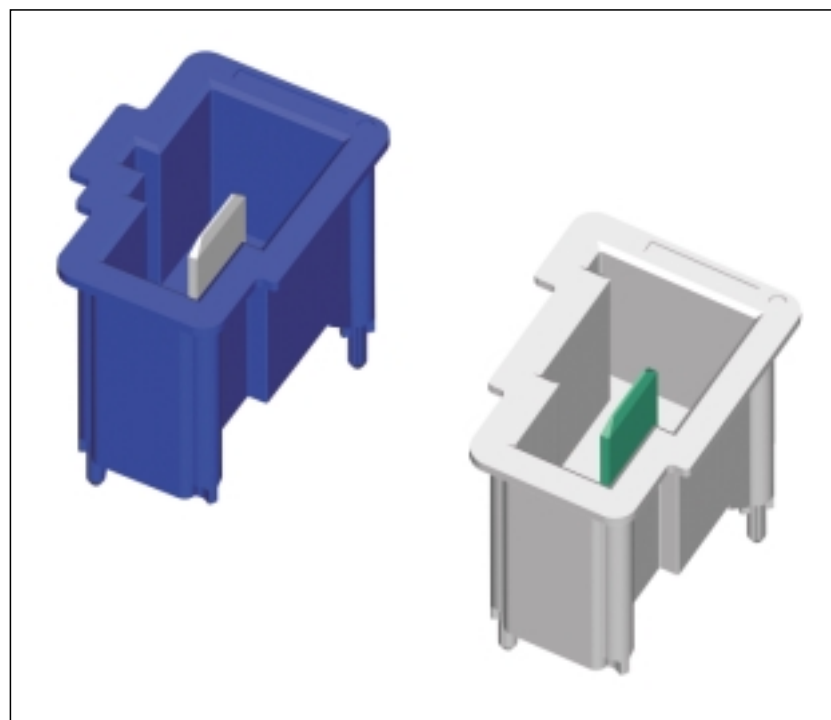


Application

- Designed for use on PCB in electronic boxes
- Mechanical polarisation

Technical Features

- Contact material: Brass
- Post plated
- Holder material: PBT 10 % GF HB
- Color: Black
- Tray packaging
- Codings: See table below



Description	Coding	Part Number	Packaging Unit
1 Way 8.0 mm Header	Blue	1544585-1	384
	Crystal	1544585-2	384
	Universal	1544588-1	to be defined

Although the products on this page are customized, we offer our engineering capabilities for your specific requirements.

SMT 2.54 mm Pitch – Top and Bottom Entry (3 and 5 Ways)

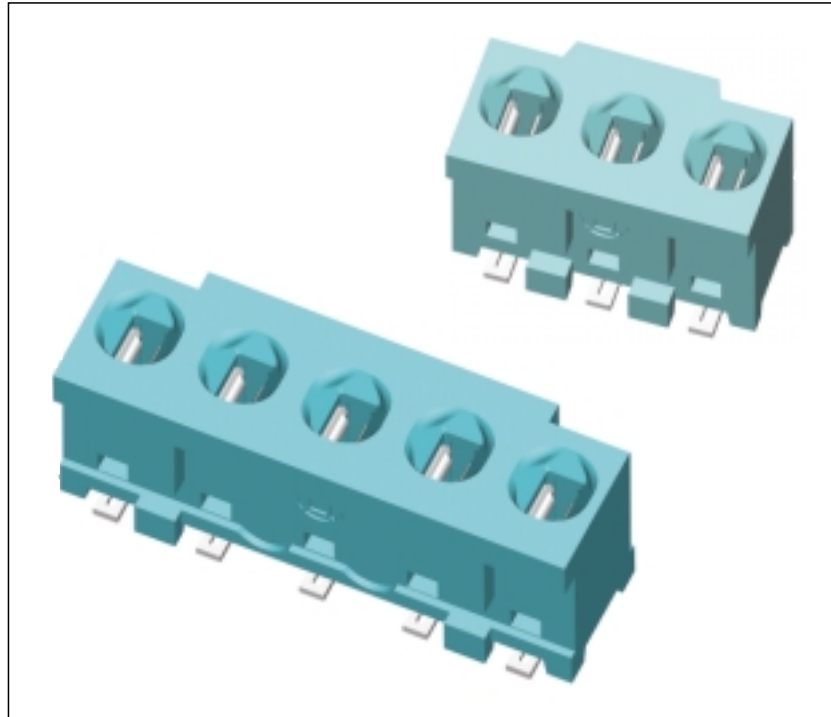


Application

- Designed for use on PCB in electronic boxes (cockpit)

Technical Features

- Current capacity:
>1 A at 23 °C
Rc < 10 mΩ
- Insertion force:
< 3.5 N per contact
- Contact: CuSn 6P
Plating: SnPb 90/10
Plastic: PPS



Description	Color / Coding	Part Number	Packaging Unit
3 Ways	Natural	1544311-1	31,000
5 Ways	Natural	1544310-1	21,700

2 Ways Electronic Connectors

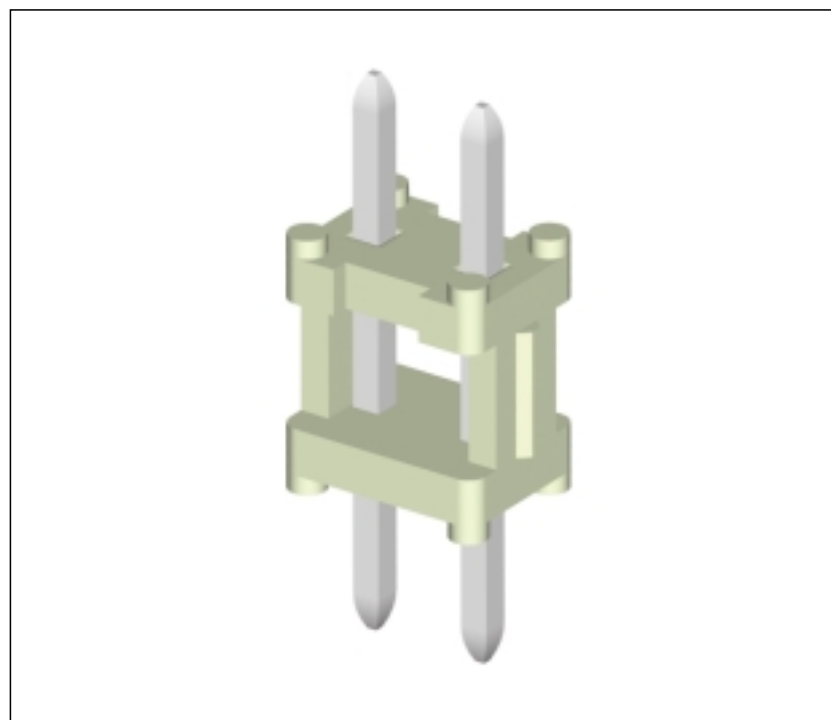


Application

- Designed for use on PCB in electronic boxes (cockpit)

Technical Features

- Pin In Hole Reflow Design
- Soldering connector
- Pitch 2.54 mm
- Pin extraction: > 15 N
- Pins: tin plated, CuSn 6P
Plastic: PA 4.6, UL 94 V-0



Description	Color / Coding	Part Number	Packaging Unit
2 Ways	Natural	1544360-2	300 Sticks of 100 Parts per Box
2 Ways	Natural	1544360-3	120 Sticks of 100 Parts per Box

Although the products on this page are customized, we offer our engineering capabilities for your specific requirements.

PCB-to-PCB Through-Hole Connector



Powertrain
Systems



Chassis
Systems



Safety
Systems



Security



Body



Driver
Information



Convenience

Application

- Designed for use on PCB in electronic boxes (cockpit and engine)

Technical Features

- Lock in feature
- Over-molded
- Stand alone design: kinked pins
- Current carrying capacity: 1.7 A at 85 °C
- Temperature range: -40 °C up to +100 °C
- Contacts: tin plated, CuSn 6P
Plastic: PBT, per UL 94 V-0



Car
Industry



Truck
Industry



Other
Industry

Description	Color / Coding	Part Number	Packaging Unit
22 Ways	Black	1544353-1	4,320

Although the products on this page are customized, we offer our engineering capabilities for your specific requirements.



Application

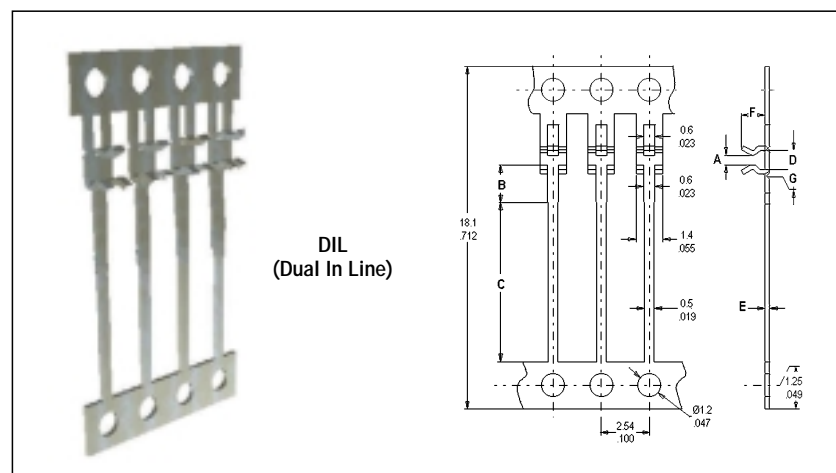
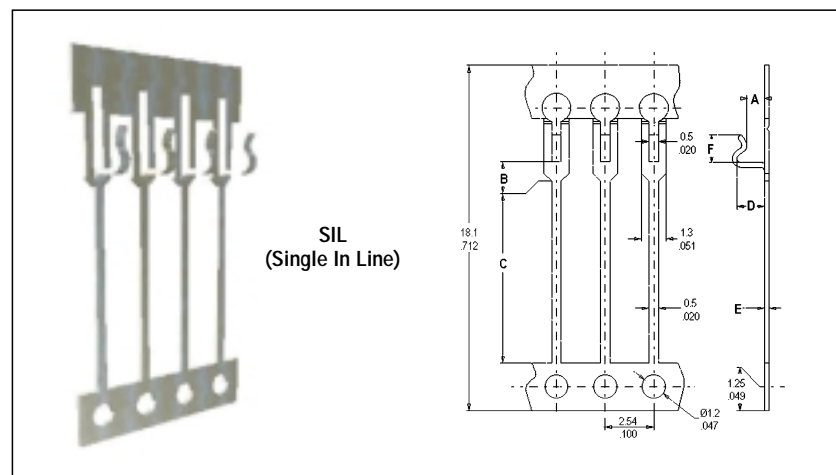
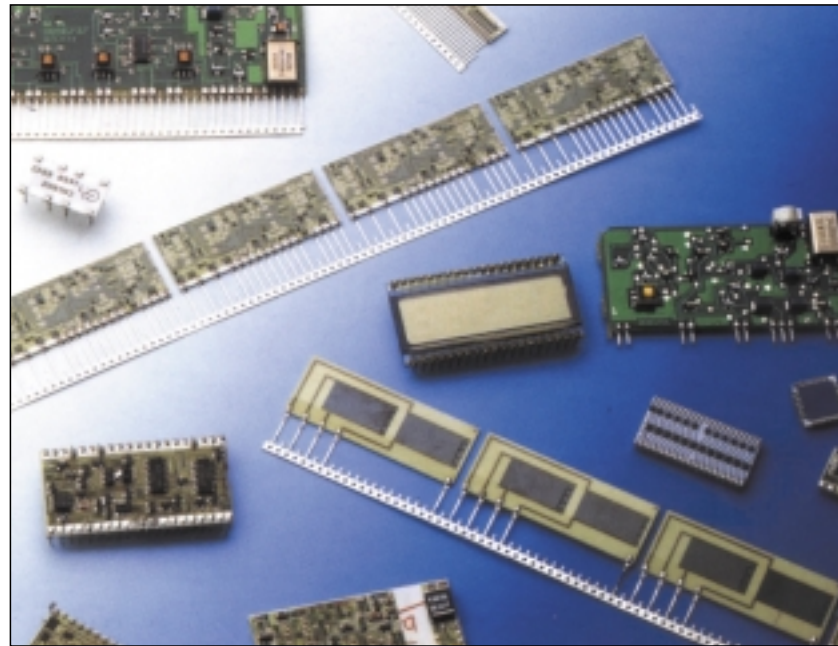
- Engine controllers
- Doors / windows controllers
- Alternator regulator
- Air conditioning controller
- Sensors
- GPS modules
- DC/DC converter

Main Advantages

- Inlay / toplay technology
- High design flexibility
- Benefits:
wave or reflow soldering reliability for electrical/electronic interconnections
- Lead insertion equipment available

Technical Features

- Base material:
CuSn (phosphor bronze)
- Plating:
Electrolytic tin plating
(before or after stamping)
- Two main pitches:
1.27 mm / 2.54 mm
- Reel packaging



Applications

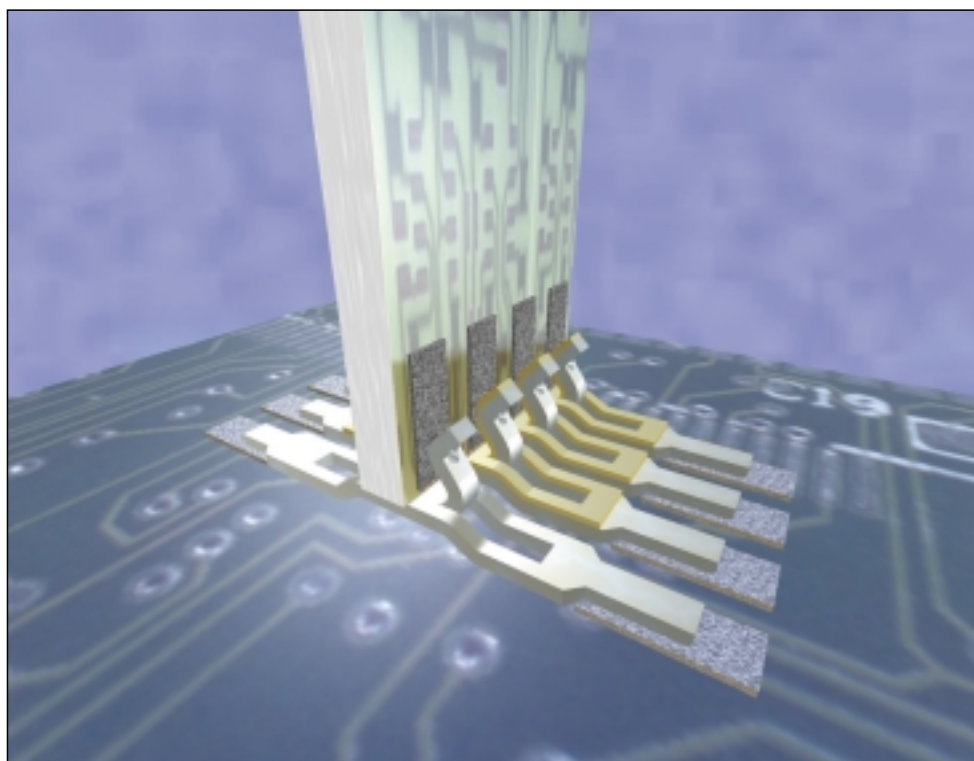
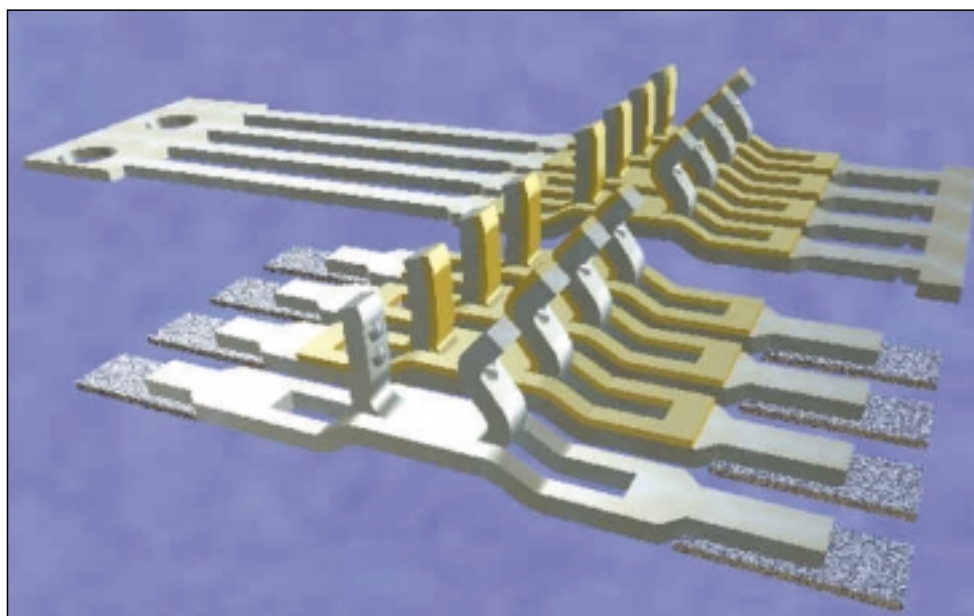
Application

The solder is accurately positioned in the clip area. The solder is reflowed to the material, thus ensuring solderability before the lead frame is stamped; even mishandling will not cause the solder to come free.

The solder inlay is composed of 62% Sn, 36% Pb and 2% Ag on standard versions.

Any other alloy such as 10% Sn, 88% Pb, 2% Ag or 96% Sn, 4% Ag can be used on request.

The Solder InLay feature is available in a large range of Lead Frames: SIL – DIL – SMT.



SMT Example

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