



Supplying a Comprehensive Assortment of 12V Parts



We offer standard and custom 12 volt parts including plugs, sockets, cable sets, and fuse holders. All of our products are available standard in amperages from milliamps up to 20 amp. If your company needs parts with a higher amperage rating, we can custom manufacture those as well.

Our plugs are available in the color of your choice, with or without a red or green LED. Parts are manufactured to fit any make of automobile including those from Europe, America and Asia. They are made of the finest materials having undergone extreme durability testing including dragging and crushing. The thick and rugged plastic is engineered to withstand the worst abuse.

Equally as tough, our sockets are precisely sized to make an easy, yet snug, connection every time. Weather-resistant and marine versions are available for the harshest conditions. We also carry an assortment of safety cover accessories.

If your company needs a custom cord set, we offer a complete line of wire and connector options. Our coiled or straight cables can be made to a specified wire gauge and can include inline reset-able fuses and EMI shield coils. For cable assemblies we have twenty one plugs for every price point available and a complete line of connector options for the other end as well. If we don't stock the connector you need, we can manufacture it to your specifications. And, we can even do splits in the cable if needed!

We also carry blade and inline fuse holders, as well as, fuse clips. They are PC-mountable and have low-profiles, so they are ready to be integrated into your project. All of our parts are made to the same strict quality standards, so you can be assured that your customers' safety is guaranteed when using our fuse holders.

Because we produce parts in high volumes, we can pass on the best prices and great service. In addition, for custom parts we can suggest design or manufacturability improvements to aid reliability and reduce costs. We have ISO 9001 certification, a sign of the commitment we have made to demand high quality as much as our customers do.

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MPD

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# Automotive 12V Technology

In today's world, a wide array of automotive 12 volt plug-in cord sets, 12v-plugs and 12v-sockets are presented to designers of electronic systems and products. Some are hardly up to the challenges presented by the everincreasing multitude of electronic devices like cell phones, iPods and portable navigation devices that have become as commonplace as tires on a vehicle.

*Market Outlook:* Automotive 12 volt cord sets are normally made with twin copper wires and in lengths typically from three to fifteen feet. Some use heavy gage copper wire in longer lengths and are greatly affected by changes in copper's pricing. Long lengths of heavy gage wires sometimes suffer twice because of higher freight costs with rising petroleum and labor costs.

*Vibration. Heat. Shock. Humidity. Corrosion. Pressure.* These real-world conditions cause device failures and higher support costs for suppliers. Without a reliable and continuous supply of current, an electronic device's operation will be interrupted and the system might be damaged. Repeated, forceful insertions and removals by consumers could cause stress fractures of plastic or metal components and wires.

Automotive plug-in cord set designs are traditionally full of trade-offs: size and weight constraints versus durability, ease of insertion and removal versus ability to retain the plug under rigorous conditions, and durability of materials versus component cost, to name a few. The increasing demand for ruggedness of portable devices has made the balancing act of 12v-plug design even trickier.

**Retention:** An automotive 12v-plug needs to be able to retain itself into the socket even under significant vibration, shock, and torque. Failure to properly hold the connection, even for a matter of microseconds, can result in an interruption of power and device malfunction. A well-designed 12v-plug will resist shock and vibration, while remaining easy to remove without tools.

**Durability:** Depending on the use, a device could have its 12v-plug inserted hundreds or even thousands of times throughout its lifespan. Because of the retention issues described above, an automotive plug must hold its connection securely. However, this results in extra wear upon the contacts as the same high grip which secured the 12v-plug causes increased wear under the stresses of removal and insertion. Thus, it is important to insure that 12v-plug materials be durable enough to withstand stresses that could cause dangerous fractures.

**Corrosion Resistance:** When components are exposed to humidity, airborne pollutants, extreme temperatures, and other environmental conditions, corrosion can result. Over time, this corrosive build-up can cause loss of electrical contact. The use of corrosion resistant contacts is particularly necessary for portable devices, where protection from the elements cannot be guaranteed.

**Contact Conductivity:** The choice of metals in 12v-plug sets determine how easily electricity will flow from the automobile to the device. Some types of platings are subject to oxidation and thus the resulting increase in electrical resistance. More conductive metals that resist oxidation, such as gold, allow high conductivity, meaning lower resistance, which allows for slightly quicker charging during short trips.

**Fuses:** A safety item that every automotive cord set should have but frequently do not. Many assume that the current in automobiles is not subject to voltage changes. An automobiles electrical system can have very high voltage spikes, for instance when the starter stops a minus 200 volt spike can occur, and large positive spikes can also occur. The battery does a good job as a filter because it acts like a large capacitor to absorb these spikes, but a fuse is an inexpensive insurance, especially in a product having worldwide distribution and use.



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ZA5073-2.5	APP-001 w/5 amp fuse, 6' cord, 2.5 x 5.5 mm DC plug
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ZA5073-BAPP-001 w/5 amp fuse, 6' cord with tinned endsZA5075APP-001 w/3 amp fuse, 5' cord + 2 pin connector

**ZA5077** APP-001 w/3 amp fuse, 6' cord, 2.1 x 5.5 mm DC plug

# MPD

12V Coiled Cord Sets



#### 12V Extension Assemblies

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12V Cigaret	te Plug Splitters
ZA5018	One plug and two cigarette sockets, LED, 2 amp fuse
ZA5072	APP-001 with 10 amp fuse, 8" cord & twin cigarette sockets

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Auto Cable Assembly Options



Tinned/Stripped

Wires and Cords

Terminals, Spades and Lugs







DC Plugs- Right Angle

2-Pin Auto Connector

Contact our factory for details on how to place an order and to specify assembly options.

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Auto Cigarette Socket

Specialized Auto Cigarette Plugs



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Auto Cigarette Plugs



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High Amperage Auto Cigarette Plugs



**MPD** 





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APP-001-20 amp

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#### Vibration-Resistant Assembly

Weather resistant



## Auto Cigarette Plugs

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AP-120	Cigarette plug, adjustable head, on-off switch, green LED, 5 amp fuse
AP-121	Cigarette plug, weather-vibration resistant, twist & lock, green LED, 3 amp
AP-124	Cigarette plug, 5 amp fuse, high impact body
AP-125	12V auto plug, car battery analyzer
AP-129	12V auto plug, European style, CE listed
AP-130	12V auto plug, led, switch and fuse, CE listed
AP-131	12V auto plug, mini style with fuse, CE listed
AP-132	12V auto plug, adapter to aircraft plug
AP-133	12V auto plug, with USB outlet
APP-001	Black auto cigarette plug, red LED, 3 amp fuse
APP-001-10AMP	same as APP-001 but with 10 amp fuse
APP-001-GRN	same as APP-001 but with Green LED and 10 amp fuse
APP-001-15AMP	same as APP-001 but with 15 amp fuse
APP-001-20AMP	same as APP-001 but with 20 amp fuse
APP-002	Gray auto cigarette plug, red LED, 3 amp fuse
APP-003	Black auto cigarette plug, no LED, 3 amp fuse
APP-004	Gray auto cigarette plug, no LED, 3 amp fuse
BK-6139	Cigarette plug for 21 or 22.2 mm diameter socket, 10 amp
BK-6142	Cigarette plug, 10 amp fuse
BK-6153	Cigarette plug, with 6' wire with 2.1 x 5.5 x 11.40mm DC plug and auto plug
ZA1010	Cigarette plug, bakelite with 3 amp fuse
ZA1030	Cigarette plug, bakelite
ZA1060	Cigarette plug, plastic
ZA1080	Cigarette plug, plastic with thumb grips
ZA1093	Cigarette plug, Bakelite with 3 amp fuse and dual contacts







AS-234A-A

MPD
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### Auto Cigarette Sockets

AS-203B	12V auto socket with safety cap
AS-210	Dust-proof spring-loaded cover, 15 amps, quick connect terminals
AS-212	Weather & vibration resistant, 15 amps
AS-212B	Weather & vibration resistant, 15 amps, with quick-mount ring
AS-212C	12V socket, weather & vibration resistant
AS-212D	Weather & vib. resistant, 15 amps, mounting bracket, quick-mount ring
AS-212E-A	Weather & vibration resistant, 20 amps
AS-212L	Weather & vibration resistant, 15 amps, with mounting bracket
AS-213	DIN, 12mm standard socket with cap, panel type with flat terminals
AS-214	DIN, 12mm standard socket with protective cap, cable type
AS-215	12V auto socket with cover
AS234-A-A	Smart phone compatible dbl. port USB charger with power indicator
ZA2010	Cigarette socket, 12V plastic inline socket, unscrews for easy wiring
ZA2050	Cigarette socket, bakelite insulator, insert lock, panel mounting
ZA2060	Cigarette socket, bakelite insulator, screwlock, panel mounting
ZA2070	Cigarette socket, porcelain insulator, insert lock, panel mounting

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2AG and 5mm Fuse Clips



Low-profile, snap-in design, PC retention for wave soldering, available with legs for critical alignment during PC installation, available with or without stops. Rated 6.3 to 30 Amps.

## 3AG (.250") Fuse Clips and PC Fuse Holders









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BK-6004 w. 3AG Fuse

Low-profile, snap-in design, PC retention for wave soldering, available with legs for critical alignment during PC installation, available with or without stops. Rated 6.3 to 30 Amps.

#### PC Automotive Blade Fuse Clips



Low-profile, snap-in design, PC retention for wave soldering, available with legs for critical alignment during PC installation, available with or without stops. Rated 6.3 to 30 Amps.

### 15 Amp PC Automotive Blade Fuse Holders



BK-6010



Thru hole PC mountable, maintains position during wave soldering. Holder design prevents solder wicking. Shock and vibration resistant. Durable grip, even after multiple uses.



#### Inline Fuse Holders



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BF301	In-line fuse holder, add your own 6.35 x 30mm fuses
BF302	In-line fuse holder, add your own 5 x 20mm fuses
BF303	In-line fuse holder, add your own 5 x 20mm fuses
BF309	In-line fuse holder, 20A-14AWG wire, AGC/JMC fuses
BF310	10A-18AWG wire- JMC fuses
BF351	25A-12AWG wire- water resistant- ATP/ATC/ATO fuses
BF352	15A-16AWG wire- ATP/ATC/ATO fuses
BF353	15A-16AWG wire- water resistant- ATP/ATC/ATO fuses
BF353L	60A-8AWG wire- water resistant- MAXI/ATX fuses
BF353S	15A-16AWG wire- water resistant- ATM/ASP fuses
BF354	15A-16AWG wire- water resistant- ATP/ATC/ATO fuses
BF355	15A-16AWG wire- ATP/ATC/ATO fuses
BF356	15A-16AWG wire- ATP/ATC/ATO fuses
BF356S	15A-16AWG wire- ATM/ASP fuses

Fuse Clips	and Fuse Holders
BK-6001	Snap-in 3AG, PC clip for 1/4" diameter fuse
BK-6002	Snap-in 2AG, PC clip for 5 mm diameter fuse
BK-6003	Traditional 3AG, PC clip for 1/4" diameter fuse
BK-6004	3AG, PC fuse holder
BK-6005	Traditional 2AG, PC clip for 5 mm diameter fuse
BK-6006	Auto fuse clip for .205" x .025" std. blade fuses
BK-6007	Traditional 3AG, PC clip for 1/4" diameter fuse
BK-6008	Auto fuse clip for .110 x .032 mini blade fuses
BK-6009	PC clip for 5 mm diameter fuse
BK-6010	Auto fuse holder for .205 x .025 std .blade fuses
BK-6011	Auto fuse vert. holder for .10" x .032" mini vert. blade
BK-6012	Auto fuse clip for .205" x .025" std. blade fuses
BK-6013	Auto fuse holder for .110" x" 032" mini blade fuses





# PCB Fuse Clips and Holders

MPD consistently delivers superior quality fuse clips and holders carefully engineered to meet the strictest electronic application requirements. Our safety components are known for their reliability and are designed to meet the ever increasing needs of a wide range of industrial and consumer product applications where circuit protection is essential to the delivery of uninterrupted power.

As a recognized industry leader in the manufacture of circuit protection, MPD carries an elaborate line of 2A and 5mm fuse clips, 3AG fuse clips and fuse holders, PC blade fuse clips, 15 Amp PC automotive blade fuse holders, and inline fuse holders. We also offer a variety of mounting configurations.

Our clips are manufactured from brass and tin plated to assure low contact resistance, and superior shelf life. They are engineered to mount easily and retain a stable position during wave soldering. Our low profile space saving clips also feature orientation tabs and end stops to insure safety and design integrity.

Special finishes can be requested as a custom order. Call MPD's engineering services to special order fuse clips and holders that are not standard sizes. Our engineers can design parts to meet your exact specifications.

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