



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.

## Index

<b>12V Power Cord Sets</b> . . . . .	<b>3</b>
<b>12V Coiled Cord Sets</b> . . . . .	<b>4</b>
<b>12V Extension Assemblies</b> . . . . .	<b>4</b>
<b>12V Cigarette Plug Splitters</b> . . . . .	<b>5</b>
<b>Auto Cable Assembly Options</b> . . . . .	<b>5</b>
<b>Specialized Auto Cigarette Plugs</b> . . . . .	<b>5</b>
<b>Auto Cigarette Plugs</b> . . . . .	<b>6</b>
<b>High Amperage Auto Cigarette Plugs</b> . . . . .	<b>6</b>
<b>Vibration-Resistant Assembly</b> . . . . .	<b>7</b>
<b>Covered Cigarette Plugs</b> . . . . .	<b>8</b>
<b>Marine Plugs</b> . . . . .	<b>8</b>
<b>Auto Antenna Plugs &amp; Sockets</b> . . . . .	<b>8</b>
<b>Auto Cigarette Sockets</b> . . . . .	<b>9</b>
<b>Automotive Fuse Clips</b> . . . . .	<b>10</b>
<b>Automotive Fuse Holders</b> . . . . .	<b>10</b>



# 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 ever-increasing 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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ZA5035



ZA5036



ZA5053



ZA5054



ZA5073



ZA5073-B



ZA5073-2.5



ZA5075



ZA5077

### 12V Power Cord Sets

<b>ZA5036</b>	ZA1030 w/400 mm cord, 1.3 x 3.5 mm R/A plug
<b>ZA5053</b>	ZA1060 w/5' cord, 3 amp fuseholder 3 pin connector
<b>ZA5054</b>	ZA1060 w/10' cord, 2.5 x 5.5 mm DC plug
<b>ZA5073</b>	APP-001 w/5 amp fuse, 6' cord, 2.1 x 5.5 mm DC plug
<b>ZA5073-2.5</b>	APP-001 w/5 amp fuse, 6' cord, 2.5 x 5.5 mm DC plug
<b>ZA5073-B</b>	APP-001 w/5 amp fuse, 6' cord with tinned ends
<b>ZA5075</b>	APP-001 w/3 amp fuse, 5' cord + 2 pin connector
<b>ZA5077</b>	APP-001 w/3 amp fuse, 6' cord, 2.1 x 5.5 mm DC plug
<b>ZA5077-R</b>	APP-001 w/3 amp fuse, 6' cord, 2.1 x 5.5 mm DC plug, center Negative



## 12V Coiled Cord Sets



ZA5070



ZA5074



ZA5074-2.5



ZA5074-B

### 12V Coiled Cord Sets

<b>ZA5070</b>	APP-001 with 5 amp fuse, 12' coil cord, cigarette socket
<b>ZA5074</b>	APP-001 with 5 amp fuse, 12' coil cord, 2.1 x 5.5 mm
<b>ZA5074-2.5</b>	APP-001 with 5 amp fuse, 12' coil cord, 2.5 x 5.5 mm
<b>ZA5074-B</b>	APP-001 with 5 amp fuse, 12' coil cord, tinned leads

## 12V Extension Assemblies



ZA5070



ZA5071

### 12V Extension Assemblies

<b>ZA5070</b>	APP-001 with 5 amp fuse, 12' coil cord, cigarette socket
<b>ZA5071</b>	APP-001 with 10 amp fuse, 12' cord, cigarette socket



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## 12V Cigarette Plug Splitters



ZA5072

ZA5018

### 12V Cigarette 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

## Auto Cable Assembly Options



Tinned/Stripped  
Wires and Cords



Terminals, Spades  
and Lugs



DC Plugs- Straight



DC Plugs- Right Angle



2-Pin Auto Connector

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



2-Pin Plug Connector



Lead Acid Clip



ZA2010

Auto Cigarette Socket

## Specialized Auto Cigarette Plugs



Voltage Meter

AP-125



USB Adapter

AP-133



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Auto Cigarette Plugs



APP-001



APP-002



APP-003



APP-004



ZA1010



ZA1030



ZA1060



ZA1080



ZA1090



ZA1091



ZA1093



AP-104-NT



AP-120



AP-121



AP-124



AP-129



AP-130



AP-131



AP-132

High Amperage Auto Cigarette Plugs



APP-001-10 amp



APP-001-15 amp



APP-001-20 amp



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## Vibration-Resistant Assembly

Weather resistant



### Auto Cigarette Plugs

<b>AP-104-NT</b>	“ZA1094-NT” 12V plug, transformer, empty case
<b>AP-120</b>	Cigarette plug, adjustable head, on-off switch, green LED, 5 amp fuse
<b>AP-121</b>	Cigarette plug, weather-vibration resistant, twist & lock, green LED, 3 amp
<b>AP-124</b>	Cigarette plug, 5 amp fuse, high impact body
<b>AP-129</b>	12V auto plug, European style, CE listed
<b>AP-130</b>	12V auto plug, led, switch and fuse, CE listed
<b>AP-131</b>	12V auto plug, mini style with fuse, CE listed
<b>AP-132</b>	12V auto plug, adapter to aircraft plug
<b>AP-125</b>	12V auto plug, car battery analyzer
<b>AP-133</b>	12V auto plug, with USB outlet
<b>APP-001</b>	Black auto cigarette plug, red LED, 3 amp fuse
<b>APP-001-10AMP</b>	same as APP-001 but with 10 amp fuse
<b>APP-001-15AMP</b>	same as APP-001 but with 15 amp fuse
<b>APP-001-20AMP</b>	same as APP-001 but with 20 amp fuse
<b>APP-002</b>	Gray auto cigarette plug, red LED, 3 amp fuse
<b>APP-003</b>	Black auto cigarette plug, no LED, 3 amp fuse
<b>APP-004</b>	Gray auto cigarette plug, no LED, 3 amp fuse
<b>ZA1010</b>	Cigarette plug, bakelite with 3 amp fuse
<b>ZA1030</b>	Cigarette plug, bakelite
<b>ZA1060</b>	Cigarette plug, plastic
<b>ZA1080</b>	Cigarette plug, plastic with thumb grips
<b>ZA1090</b>	Cigarette plug, illuminated body, 3 amp fuse
<b>ZA1091</b>	Cigarette plug, Bakelite with 3 amp fuse
<b>ZA1093</b>	Cigarette plug, Bakelite with 3 amp fuse and dual contacts



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Covered Cigarette Sockets



AS-213



AS-215



AS-214



AS-203B

Marine Plugs

Panel Mounting Sockets



AS-212A



AS-212B



AS-212C



Top Mounting Sockets



AS-212L



AS-212D



Auto Antenna Plugs & Sockets



AP102



ZA2090



ZA2092



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## Auto Cigarette Sockets

Weather Resistant Socket



AS-212

(available with and without markings)



ZA2030



ZA2040



ZA2010



ZA2050



ZA2060



ZA2070



ZA2080



ZA2081-R



ZA2081-B

### Auto Cigarette Sockets

<b>AS-203B</b>	12V auto socket with safety cap
<b>AS-212</b>	Weather & vibration resistant, 15 amps
<b>AS-212B</b>	Weather & vibration resistant, 15 amps, with quick-mount ring
<b>AS-212C</b>	12V socket, weather & vibration resistant
<b>AS-212D</b>	Weather & vib. resistant, 15 amps, mounting bracket, quick-mount ring
<b>AS-212L</b>	Weather & vibration resistant, 15 amps, with mounting bracket
<b>AS-213</b>	DIN, 12mm standard socket with cap, panel type with flat terminals
<b>AS-214</b>	DIN, 12mm standard socket with protective cap, cable type
<b>AS-215</b>	12V auto socket with cover
<b>ZA2010</b>	Cigarette socket, 12V plastic inline socket, unscrews for easy wiring
<b>ZA2030</b>	Cigarette socket, large panel, porcelain, screwlock, wall mounting plate
<b>ZA2040</b>	Cigarette socket, panel mounting with small plate, porcelain, screwlock
<b>ZA2050</b>	Cigarette socket, bakelite insulator, insert lock, panel mounting
<b>ZA2060</b>	Cigarette socket, bakelite insulator, screwlock, panel mounting
<b>ZA2070</b>	Cigarette socket, porcelain insulator, insert lock, panel mounting
<b>ZA2080</b>	Plastic ringlet, amber ring
<b>ZA2081-R</b>	Rubber cover for cigarette socket, red
<b>ZA2081-B</b>	PVC cover for cigarette socket, black



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## 2AG and 5mm Fuse Clips



BK-6002



BK-6005



BK-6009

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



BK-6001



BK-6003



BK-6007



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



BK-6006



BK-6008



BK-6011



BK-6012

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



BK-6013

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



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### Fuse Clips and Fuse Holders

<b>BF301</b>	In-line fuse holder, add your own 6.35 x 30mm fuses
<b>BF302</b>	In-line fuse holder, add your own 5 x 20mm fuses
<b>BK-6001</b>	Snap-in 3AG, PC clip for 1/4" diameter fuse
<b>BK-6002</b>	Snap-in 2AG, PC clip for 5 mm diameter fuse
<b>BK-6003</b>	Traditional 3AG, PC clip for 1/4" diameter fuse
<b>BK-6004</b>	3AG, PC fuse holder
<b>BK-6005</b>	Traditional 2AG, PC clip for 5 mm diameter fuse
<b>BK-6006</b>	Auto fuse clip for .205" x .025" standard blade fuses
<b>BK-6007</b>	Traditional 3AG, PC clip for 1/4" diameter fuse
<b>BK-6008</b>	Auto fuse clip for .110 x .032 mini blade fuses
<b>BK-6009</b>	PC clip for 5 mm diameter fuse
<b>BK-6010</b>	Auto fuse holder for .205 x .025 standard blade fuses
<b>BK-6011</b>	Auto fuse vertical holder for .10" x .032" mini vertical blade
<b>BK-6012</b>	Auto fuse clip for .205" x .025" standard blade fuses
<b>BK-6013</b>	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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