

# USB Smart Charge Modules



Molex USB smart-charge modules lead the market by combining automotive-grade durability and off-the-shelf availability through distribution.

## Features and Benefits

### Single Port Charger

#### Modern Features

Easy to read lettering and display.  
Blue LED backlighting.  
Panel Thickness: 3.4 mm to 3.8 mm.



#### Electric Performance

1A output current.  
Battery Operating Voltage: 9V to 16V.  
Operating temperature: -40°C to 85°C.



#### Easy to Design-In

Plastic housing designed to fit existing rocker panel switch cut out.

#### Quality Connector Styles

Automotive-grade USB Type A on the front. 10K cycle life.  
MicroFit on the rear.

### Charging Profiles Supported:

USB Battery Charging Specification BC1.2 compliant.  
YD/T 1591-2009 (China Telecom Specification).  
Apple MFI compliant.  
1.2 V Mode.

### Single Port USB Smart Charger



#### Electric Performance

2.4A output current.  
Battery Operating Voltage: 9V to 16V.  
Operating temperature: -40°C to 85°C.



#### Safety Protection Features

Over voltage, Reverse battery and over current protection.  
ESD and short circuit protection

#### Modern Features

Easy to read lettering and display.  
LED backlight.  
Painted and laser etched housing.  
Panel Thickness: 2.35- 2.65 mm.

#### Quality Connector Styles

Automotive-grade USB Type A on the front. 10K cycle life.  
Molex Mini50 on the rear

### Safety Protection Features

Over voltage, Reverse battery and over current protection.  
ESD and short circuit protection.  
Optional tethered dust caps.

### Dual Port USB Smart Charger



#### Electric Performance

2.4A output current.  
Battery Operating Voltage: 9V to 16V.  
Operating temperature: -40°C to 85°C.



### Charging Profiles Supported:

USB Battery Charging Specification BC1.2 compliant.  
YD/T 1591-2009 (China Telecom Specification).  
Apple MFI compliant.  
1.2 V Mode.

#### Modern Features

Easy to read lettering and display.  
Halo Lighting (Light Pipe).  
Cosmetic Molding and Pad Printed Icon.  
Panel Thickness: 2.5- 3.5 mm

#### Quality Connector Styles

Automotive-grade USB Type A on the front. 10K cycle life.  
Molex Mini50 on the rear

# USB Smart Charge Modules

**molex**

## Applications

### Commercial Vehicle

Construction equipment  
Farm equipment  
Trains  
Airplanes

### Automotive

Cars  
Pickup trucks  
SUVs



Automotive



Commercial Vehicle

## Specifications

### Single Port USB Charger Module

#### REFERENCE INFORMATION

Packaging: Individual  
Mates With: Micro-Fit 3.0™ Receptacle (Series No. 43645) and Micro-Fit 3.0™ Female Crimp (Series 43030, 45773)  
Use With:  
USB A Type Connector  
Designed In: Millimeters  
RoHS: Yes (with exemption)  
Halogen Free: No  
Glow Wire Compliant: No

#### ELECTRICAL

Voltage (max.): 16V DC  
Input: 9 to 16V DC  
Output (max.): 5V DC +/-5% 1.0A  
Backlight: Blue LED, 12V DC

#### PHYSICAL

Operating Temperature:  
-40 to +85°C (automotive grade)  
Dimensions (mm): 48.00 H x 26.00 W x 37.05 D  
Mating cycles: 5,000

#### MATERIALS

Housing: Polycarbonate/Acrylonitrile Butadiene Styrene (PC+ABS), Black

### Single Port USB Smart Charger Module

#### REFERENCE INFORMATION

Packaging: Per PK-68532-4510  
Mates With: Mini50 and MicroFit  
Use With: Mini50 and MicroFit  
Designed In: Millimeters  
RoHS: Yes (with exemption)  
Halogen Free: No  
Glow Wire Compliant: No  
Supported charging schemes:  
D+ and D- Divider Mode 2.7V and 2.7V  
D+ and D- 1.2V Mode  
D+ and D- Shorted Mode per USB Battery Charging Specification 1.2 (BC1.2).

#### ELECTRICAL

Input voltage range: 9VDC – 16VDC  
Output voltage range: 5VDC +/- 10% USB output  
Maximum output charging current: 2.4 A DC, limited to 2.9 A  
Maximum input current at maximum load: 1.5A DC  
Maximum input current for illumination line: 12mA DC

#### MATERIALS

PCB: FR4, UL 94V-0  
Plastic Housings: PC,  
Color: black for rear housing  
white for front housing  
Color finish: black over white material  
(on front housing)

#### USB Type A:

Housing material: high temp thermoplastic, UL-94v-0, color: black.  
Terminal: phosphor bronze, plating: gold 0.75µm  
Shield: stainless steel, NI 0.75µm min.

#### Mini50 connector:

Housing material: polyester alloy, color: black  
Terminal: brass, plating: tin

#### PHYSICAL

Industrial Operating Range: -40°C to +85°C  
Non-operating: -55°C to +85°C USB Module  
Envelope Dimensions:  
49.0 X 22.8 X 40.58 mm  
Insertion: 35n max  
Extraction: 10n min  
Durability: 10,000 cycles  
Pull out force for docking module measured on metal plate cut out/fixture (with recommended opening): 100n min.  
Module weight: 0.028 kg

## Specifications

### Dual Port USB Smart Charger Module

#### REFERENCE INFORMATION

Packaging: Per PK-68532-4460  
 Packaging for module 685324466 according to:  
 rpk\_68532\_001/2  
 Mates With: Mini50 and MicroFit  
 Use With: Mini50 and MicroFit  
 Designed In: Millimeters  
 RoHS: Yes (with exemption)  
 Halogen Free: No  
 Glow Wire Compliant: No  
 Supported charging schemes:  
 D+ and D- Divider Mode 2.7V and 2.7V  
 D+ and D- 1.2V Mode  
 D+ and D- Shorted Mode per USB Battery Charging  
 Specification 1.2 (BC1.2).

#### ELECTRICAL

Input voltage range: 9VDC – 16VDC  
 Output voltage range: 5VDC +/- 0.25V @ 2.4A  
 Maximum output charging current: 2.4 A DC,  
 limited to 2.9 A  
 Maximum input current at no load: 26mA

#### MATERIALS

Front housing: pc+abs, pg05 black  
 Surface finish (faceplate): Light Texture  
 Light pipes: PC  
 Rear housing: pc+abs, pg05 black  
 Rubber cover: TPE  
 Printing circuit board: fr4  
 Input power conn.: 2usb ports type a  
 Terminal: phosphor bronze, plating: gold 0.75µm  
 Shield: stainless steel, NI 0.75µm min.  
 Mini50 connector:  
 Housing material: polyester alloy, color: black  
 Terminal: brass, plating: tin

#### PHYSICAL

Industrial Operating Range: -40°C to +85°C  
 Non-operating: -55°C to +85°C USB Module  
 Color for illuminated USB halo is white.  
 Insertion: 49n max  
 Extraction: 68.8n min  
 Durability: 10,000 cycles

## Ordering Information

Series No.	Ports	Output Current	Charging Profiles Supported
68532-4461	Dual	2.4 Amps	USB Battery Charging Specification BC1.2 compliant. YD/T 1591-2009 (China Telecom Specification) Apple MFI Compatible.
68532-4462			USB Battery Charging Specification BC1.2 compliant. YD/T 1591-2009 (China Telecom Specification) Apple MFI compliant. 1.2 V Mode
68532-4510	Single	1 Amp	-----
79540-5015			-----

[www.molex.com/link/invehiclesmartcharging.html](http://www.molex.com/link/invehiclesmartcharging.html)