

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 Advantages

Modern Features

Easy to read lettering and display.
Blue LED backlighting.
Panel Thickness:
3.40 to 3.80mm



Charging Profiles Supported:

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

Single-Port Charger

Electric Performance

1.0A output current.
Battery operating voltage: 9 to 16V
Operating temperature: -40 to +85°C

Quality Connector Styles

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



Easy to Design-In

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

Single-Port USB Smart Charger

Modern Features

Easy-to-read lettering and display.
LED backlight.
Painted and laser-etched housing.
Panel Thickness: 2.25 to 2.65mm



Electric Performance

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

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

Charging Profiles Supported:

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

Dual-Port USB-A Smart Charger

Safety Protection Features

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



Modern Features

Easy to read lettering and display.
Halo lighting (light pipe).
Cosmetic Molding and Pad Printed Icon.
Panel Thickness: 2.50 to 3.50mm

Electric Performance

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

Quality Connector Styles

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



Charging Profiles Supported

USB battery charging specification
BC1.2 compliant. YD/T 1591-2009
(China Telecom Specification)
Apple MFI compliant. 1.2V mode

Dual-Port USB-A and USB-C Smart Charger

Safety Protection Features

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



Modern Features

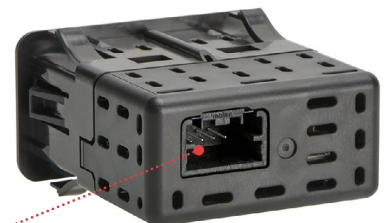
Easy-to-read lettering and display. Halo lighting
(light-pipe). Cosmetic molding and pad printed
icon. Panel thickness: 2.50 to 3.50mm

Electric Performance

USB-C output current: 3.0A
USB-A output current: 2.4A
Battery operating voltage: 9 to 16V
Operating temperature: -40 to +85°C

Quality Connector Styles

Automotive-grade USB-A and USB-C ports on the front.
10K cycle life. Molex Mini50 Connector on the rear



USB Smart Charge Modules

molex

Applications

Commercial Vehicle

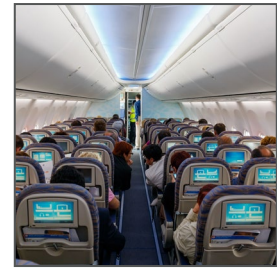
Construction equipment
Farm equipment
Trains
Airplanes

Automotive

Cars
Pickup trucks
SUVs



Automotive



Airplanes

Specifications

Single-Port USB Charger Module

REFERENCE INFORMATION

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

Single-Port USB Charger Module

REFERENCE INFORMATION

Packaging: Per PK-68532-4510
Mates With: Mini50
Use With: Mini50
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).
PV Test Report: Test Data Restricted
Molex PPAP: In-Process

ELECTRICAL

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

MATERIALS

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

PHYSICAL

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

ELECTRICAL

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

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° to +85°C
Non-operating: -55° to +85°C USB Module
Envelope Dimensions:
49.00 by 22.80 by 40.58mm
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-A Smart Charger

REFERENCE INFORMATION

Packaging: Per PK-68532-4460
 Mates With: Mini50
 Use With: Mini50
 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).
 PV Test Report: Test Data Restricted
 Molex PPAP: In-Process

ELECTRICAL

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

MATERIALS

Front housing: pc+abs, pg05 black
 Surface finish (faceplate): Light Texture
 Light pipes: PC
 Rear housing: pc+abs, pg05 black
 Rubber cover: TPE
 Printed circuit board: fr4

Input power conn.: 2 USB-A ports
 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 to +85°C
 Non-operating: -55 to +85°C USB Module
 Color for illuminated USB halo is white.
 Insertion: 49N max
 Extraction: 68.8N min
 Durability: 10,000 cycles

Dual-Port USB-A and USB-C Smart Charger

REFERENCE INFORMATION

Packaging: Per PK-68532-4460
 Mates With: Mini50
 Use With: Mini50
 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)
 PV Test Report: Test Data Restricted
 Molex PPAP: In-Process

ELECTRICAL

Input voltage range: 9 to 16V DC
 Output voltage range: 5V DC +/- 2.5V @ 2.4A/3.0A
 Maximum output charging current:
 USB-A: 3.0A DC, limited to 3.6A
 USB-C: 2.4A DC, limited to 2.9A
 Maximum input current at no load: 26mA

MATERIALS

Front housing: pc+abs, cycloloy lg9000, pg05 black
 Surface finish (faceplate): nissan#424
 Light pipes: sc-28876 rtp 0300 2405 lt diff.
 Rear housing: pc+abs, cycloloy lg9000, pg05 black
 Rubber cover: empilon ha65s4
 Printed circuit board: fr4, thickness 1.6 mm
 Input power conn.: 1 USB-A port, 1 USB-C port

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 to +85°C
 Non-operating: -55 to +85°C USB Module
 Color for illuminated USB halo is white
 candles per illuminated USB halo: ordinary switch
 2cd/m2
 Insertion (max.): 49N
 Extraction (min.): 68.8N
 Durability: 10,000 cycles

Ordering Information:

| Series No. | Ports | Output Current | Charging Profiles Supported |
|------------|--------|----------------------------|---|
| 68532-4461 | Dual | 2.4A | 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 | 1.0A | ----- |
| 79540-5015 | | | ----- |
| 79540-5067 | Dual | USB-A: 2.4A USB-C: 3.0A | USB Battery Charging Specification BC1.2 compliant. YD/T 1591-2009 (China Telecom Specification) |

www.molex.com/link/invehiclesmartcharging.html