

LED Reading Lights



right attitude / right approach / right alongside
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It's time to change

Passenger Reading Lights with LEDs offer a lot of advantages to halogen lamp Reading Lights:

- Long lifetime
- Low power consumption
- Low maintenance effort
- High resistance to shock and vibration
- Room temperature at touchable parts

Experience

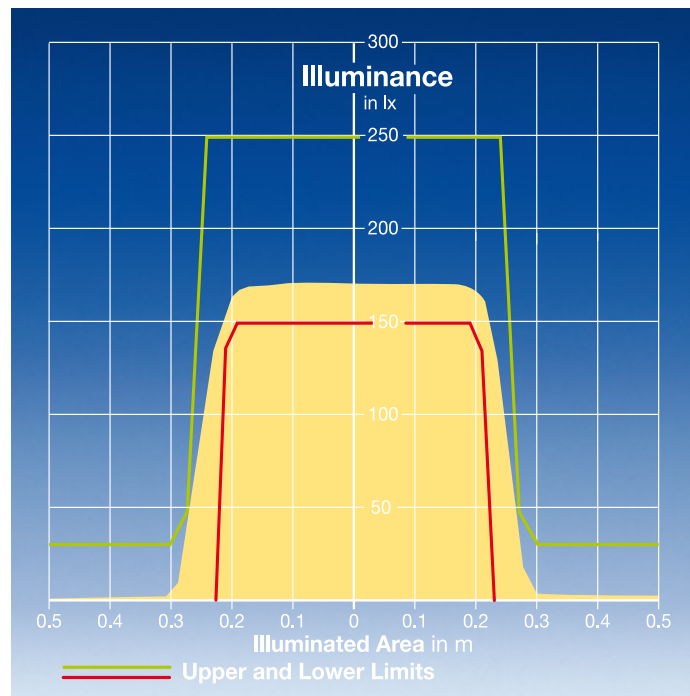
Goodrich Lighting Systems has more than 20 years of experience in the use of LED technology and was the first to develop an LED reading light for series production in aircraft. Since then, the company has produced more than 500,000 lights – always focusing research into providing lighting systems that promote the highest levels of passenger comfort.



High-End Generation: LED array and optical lens system

The patented design of Goodrich Lighting Systems' High-End Generation LED Reading Lights (see pages 4 and 6) features an LED array which appears as one single light source thanks to a purpose-made lens. If a single or multiple LEDs fail it is not noticeable. This advantage lowers maintenance efforts significantly. Furthermore these reading lights provide a very homogeneous light and color distribution within a defined area in front of the passengers' seats and an extremely sharp light-dark borderline. Available as integrated and stand alone versions, these reading lights can be mounted either in the passenger supply channel or in a panel or any other surface. Some of the stand alone reading lights even provide adjustability for the passenger. A choice of a wide range of housing colors, two dissimilar lenses and two different angles of light beam allows greater design freedom.

Typical Light Distribution: Uniform illumination, sharp edged spot



Thanks to an integrated highly sophisticated optical lens system, this LED Reading Light optimally focuses its sharp edged illuminated spot at a defined area in front of the passenger's seat. Within the clearly specified radius it provides a uniform light color and brightness.

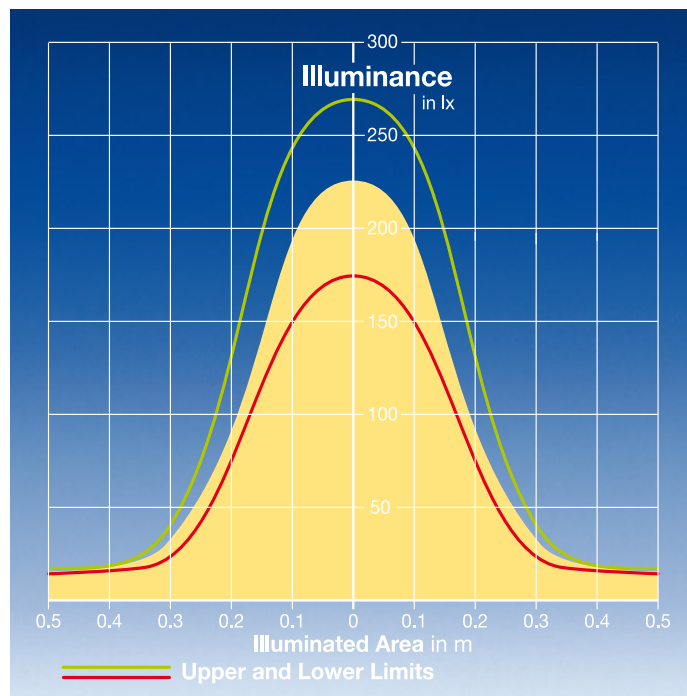
LED Reading Lights

Economical Generation: High power LED and reflector system

Goodrich Lighting Systems' Economical Generation LED Reading Lights (see pages 5 and 7) feature a modern design that will add an aesthetic new look to the cabin equipment. Each light uses one single high power LED featuring a remarkable performance in combination with a low power consumption of 3.2 W. Together with a specially designed reflector it provides a homogeneous illumination within a defined area. Available as integrated and stand alone versions, these reading lights allow an installation either in the passenger supply channel or in a panel or any other surface. If adjustability for the passenger is required, the stand alone reading lights provide the ideal solution thanks to a special mechanism. The lights of this generation are extremely versatile for various configurations, including different installation heights, a wide range of housing colors and different light colors. They may or may not incorporate integrated lenses that allow for individual preferences and design flexibility.



Typical Light Distribution: Homogenous light, smooth borderline



The interaction between one single high power LED and the purpose-made reflector system focuses the light spot at the ideal level for reading within a specified area in front of the passengers seat, providing homogeneous light distribution and a smooth light-dark borderline.

Stand alone versions – High-End Generation:

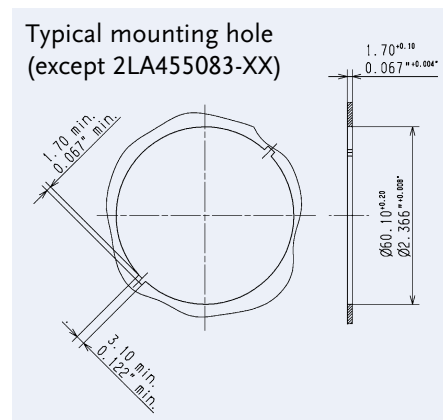
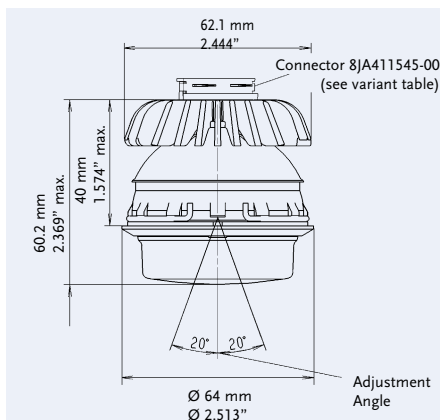
2LA455083-XX, 2LA455163-XX, 2LA455425-XX, 2LA455563-XX, 2LA455625-XX

These stand alone versions are intended for a standard mounting in a panel or any other surface of 1.7 mm thickness (2.3 mm for 2LA455083-XX). Therefore, this LED Reading Light can easily replace an existing halogen lamp reading light. To create an individual look of the light emitting area, the inner parts may be painted in the airline's color. As a small portion of the light is used to illuminate the background of the reading light, this feature will provide a special customized appearance.



Technical Data:

- Operating current:
for Beam Angle 13°: 80 mA ± 5 % max.
for Beam Angle 10°: 120 mA ± 5 % max.
for 2LA455563-XX: 240 mA ± 5 % max.
- Power consumption:
for Beam Angle 13°: 2 W max.
for Beam Angle 10°: 2.6 W max.
for 2LA455563-XX: 6 W max.
- Typical illuminance in a circle of Ø 460 mm (18"):
150 to 250 lux @ 1,150 mm (45.276") and 1,700 mm (66.929")
- Lifetime: 50,000 operating hours
- Color Temperature:
between 5,000 and 6,500°K
- Color Rendering Index: 80
- Weight: 0.110kg (0.243 lbs) max.



Assembly Parts:

Connector 8JA411029-00 and 2 contacts 9MK411516-00 or Adapter 8JA411545-00 for AMP FASTON contacts 4.8 mm (see variant table)

Further Related Equipment:

- Adjustment-Tool 8PE455160-10 for lights not adjustable by passenger
- 2LA455563-XX to be operated with Current Regulation 8ES455406-XX if constant current is not available

Part-Number	Housing Color	Beam Angle	Lens	Remarks
2LA455163-00	Light Grey	13°	Fresnel	–
2LA455163-01	White	13°	Fresnel	–
2LA455163-02	Stone Grey	13°	Fresnel	–
2LA455163-03	Fog	13°	Fresnel	–
2LA455163-04	Porcelain	13°	Fresnel	–
2LA455163-06	Chrome plated	13°	Fresnel	–
2LA455163-10	Light Grey	10°	Fresnel	–
2LA455163-11	White	10°	Fresnel	–
2LA455163-12	Stone Grey	10°	Fresnel	–
2LA455163-13	Fog	10°	Fresnel	–
2LA455163-14	Porcelain	10°	Fresnel	–
2LA455163-20	Fog	13°	Biconvex	Adj.
2LA455163-26	Chrome plated	13°	Biconvex	–
2LA455163-53	Chrome plated	10°	Fresnel	–
2LA455163-60	Gold plated	13°	Fresnel	–
2LA455163-61	Gold plated	10°	Fresnel	–

Part-Number	Housing Color	Beam Angle	Lens	Remarks
2LA455425-00	Light Grey	13°	Fresnel	Adapt.
2LA455425-03	Fog	13°	Fresnel	Adapt.
2LA455425-12	Stone Grey	10°	Fresnel	Adapt.
2LA455425-13	Fog	10°	Fresnel	Adapt.
2LA455563-03	Fog	13°	Fresnel	Adj.
2LA455563-05	Dark Grey	13°	Fresnel	Adj.
2LA455625-03	Fog	13°	Fresnel	Adj./Adapt.
2LA455083-05	Dark Grey	13°	Fresnel	Adj.
2LA455083-15	Dark Grey	10°	Fresnel	Adj.

Part-Number	Hous. Col.	B. Ang.	Lens	Remarks
2LA455570-03	Fog	15°	Fresnel	smooth light-dark borderline 135 cd peak

Adj. = Adjustable by passenger
Adapt. = With Adapter 8JA411545-00

Further variants are available on request.

LED Reading Lights

Stand alone versions – Economical Generation: 2LA455953-XX, 2LA455961-XX, 2LA455980-XX

These stand alone LED Reading Lights can be mounted in a panel or any other surface of 3.2 mm thickness. They can easily replace existing halogen reading lights. A special mechanism allows the customer to decide whether the installed lights shall be adjustable by the passengers or not. Using current high power LEDs, these lights feature a significantly low power consumption. The different light colors available are listed in the variant table. For optimal light distribution the standard version has an integrated lens.

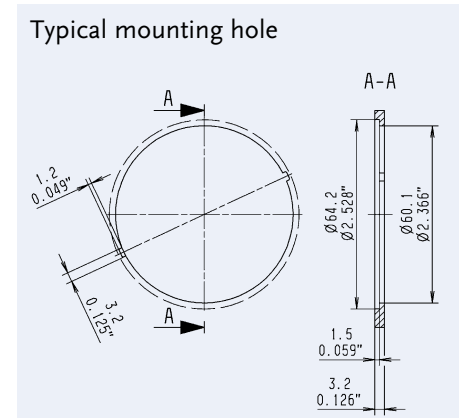
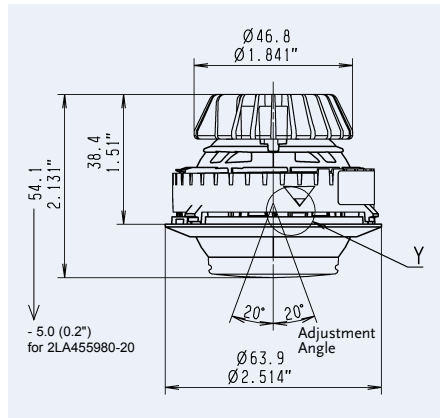


Technical Data:

- Operating Current: 700 mA max.
- Power Consumption: 3.2 W max.
- Lifetime: 50,000 operating hours
- Color Temperature: see variant table
- Color Rendering Index: 68
- Light Color: see variant table
- Adjustability: adjustable/not adjustable by passenger
- Weight: 0.085 kg / 0.187 lbs max.

Assembly Parts:

- Connector for AMP Faston contacts 6.3 + 4.8 mm (not part of delivery)
- Lens 9EL619303-00 (convex) or 9EL620604-10 (plane) for optimal light distribution of 2LA455980-20 (not part of delivery)



Further Related Equipment:

- Adjustment Tool 8PE455885-00 for 2LA455953-XX and 2LA455961-XX
- Adjustment Tool 8PE455838-00 for 2LA455980-XX

Part-Number	Housing Color	Light Color	Beam Angle	Lens
2LA455953-00	Light Grey	Warm White	15°	with
2LA455953-01	White	Warm White	15°	with
2LA455953-02	Stone Grey	Warm White	15°	with
2LA455953-03	Fog	Warm White	15°	with
2LA455953-04	Porcelain	Warm White	15°	with
2LA455953-08	Cloud Grey	Warm White	15°	with
2LA455953-10	Light Grey	Warm White	11°	with
2LA455953-11	White	Warm White	11°	with
2LA455953-22	Stone Grey	Neutral White	15°	with
2LA455953-23	Fog	Neutral White	15°	with
2LA455953-34	Porcelain	Neutral White	11°	with
2LA455953-38	Cloud Grey	Neutral White	11°	with
2LA455953-40	Light Grey	Pale Apricot	15°	with
2LA455953-50	Light Grey	Pale Apricot	11°	with

Part-Number	Housing Color	Light Color	Beam Angle	Lens
2LA455961-00	Light Grey	Cold White	15°	with
2LA455961-01	White	Cold White	15°	with
2LA455961-02	Stone Grey	Cold White	15°	with
2LA455961-03	Fog	Cold White	15°	with
2LA455961-04	Porcelain	Cold White	15°	with
2LA455961-08	Cloud Grey	Cold White	15°	with
2LA455961-10	Light Grey	Cold White	11°	with
2LA455961-11	White	Cold White	11°	with
2LA455961-12	Stone Grey	Cold White	11°	with
2LA455961-13	Fog	Cold White	11°	with
2LA455961-14	Porcelain	Cold White	11°	with
2LA455961-18	Cloud Grey	Cold White	11°	with
2LA455980-20	Light Grey	Cold White	25°	without

Further variants are available on request.

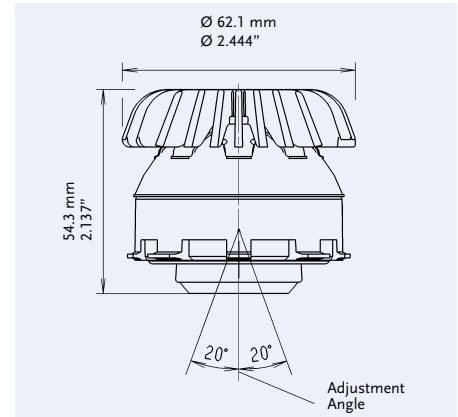
Color Temperature: Warm White/Pale Apricot: 4,000°K
Neutral White: 5,000°K
Cold White: 6,000°K

LED Reading Lights



Integrated versions – High-End Generation: 2LA455162-XX, 2LA455436-XX, 2LA455560-XX

These LED Reading Lights were designed for integration in the Passenger Service Units (PSU). This allows a smooth surface with two remarkable advantages: It features a new modern aspect of interior design for the cabin. Furthermore, cleaning and maintenance become easier. To create an individual look, the inner parts may be painted in the airline's color. As a small portion of the light is used to illuminate the background of the reading light, this may provide a special customized appearance.



Technical Data:

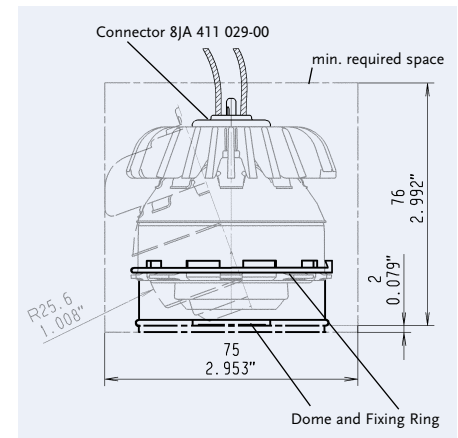
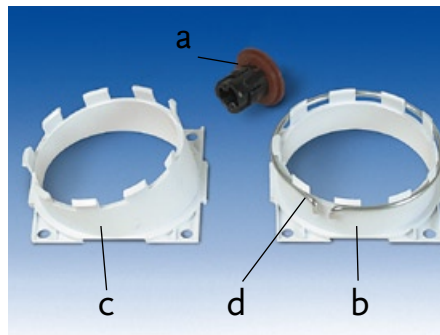
- Operating current:
for Beam Angle 13°: 80 mA ± 5 % max.
for Beam Angle 10°: 120 mA ± 5 % max.
- Power consumption:
for Beam Angle 13°: 2 W max.
for Beam Angle 10°: 2.6 W max.
- Typical illuminance in a circle of Ø 460 mm (18"):
150 to 250 lux @ 1,150 mm (45.276")
and 1,700 mm (66.929")
- Lifetime: 50,000 operating hours
- Color Temperature: between 5,000 and 6,500°K
- Color Rendering Index: 80
- Weight: 0.110kg (0.243 lbs) max.

Part-Number	Housing Color	Beam Angle	Lens	Remarks
2LA455162-00	Light Grey	13°	Fresnel	
2LA455162-01	White	13°	Fresnel	
2LA455162-02	Grey	13°	Fresnel	
2LA455162-05	Cloud Grey	13°	Fresnel	
2LA455162-10	Light Grey	10°	Fresnel	
2LA455162-11	White	10°	Fresnel	
2LA455162-12	Grey	10°	Fresnel	
2LA455162-15	Cloud Grey	10°	Fresnel	
2LA455162-20	Light Grey	13°	Biconvex	
2LA455436-01	White	13°	Fresnel	With Adapter 8JA411545-00
2LA455436-11	White	10°	Fresnel	With Adapter 8JA411545-00
2LA455560-00	Light Grey	13°	Fresnel	
2LA455560-01	White	13°	Fresnel	
2LA455560-02	Light Grey	13°	Fresnel	
2LA455560-05	Cloud Grey	13°	Fresnel	

Further variants are available on request.

Assembly Parts:

- Connector 8JA411029-00 and 2 contacts 9MK411516-00 or Adapter 8JA411545-00 for AMP FASTON contacts 4.8 mm (a)
- Dome (not part of delivery):
9XD620703-00 straight (b)
- 9XD620703-10 angular 24° (c)
- Fixing ring 9NU402129-00 (part of delivery) (d)



Further Related Equipment:

- Adjustment-Tool 8PE455160-10

LED Reading Lights

Integrated versions – Economical Generation: 2LA455952-XX, 2LA455962-XX, 2LA456121-XX, 2LA456274-XX

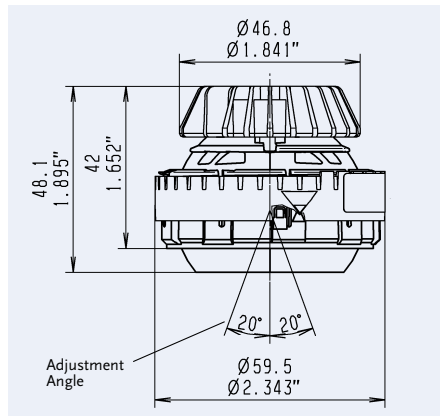
Ideally these LED Reading Lights should be integrated in the Passenger Service Units (PSU). Using current high power LEDs these lights feature a significantly low power consumption. The different light colors available are listed in the variant table.

For optimal light distribution of the integrated reading light the PSU should have a lens. Another option is to install the reading light 2LA456121-XX which offers an integrated lens.



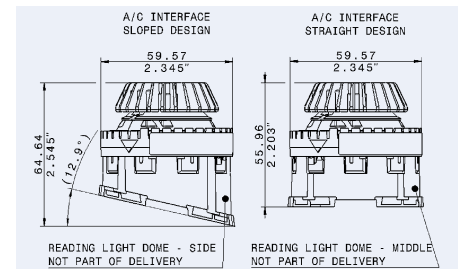
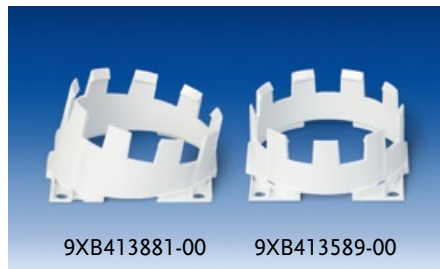
Technical Data:

- Operating Current: 700 mA max.
- Power Consumption: 3.2 W max.
- Lifetime: 50,000 operating hours
- Color Temperature: see variant table
- Color Rendering Index: 68
- LED Light Color: see variant table
- Weight: 0.075 kg / 0.165 lbs max.



Assembly Parts:

- Connector for AMP Faston contacts 6.3 + 4.8 mm (not part of delivery)
- Dome (not part of delivery):
9XB413589-XX straight
9XB413881-XX angular



Further Related Equipment:

Adjustment Tool 8PE455838-00
(except 2LA456121-XX)

Part-Number	Housing Color	LED Light Color	Beam Angle
2LA455952-00	Light Grey	Warm White	15°
2LA455952-01	White	Warm White	15°
2LA455952-06	Grey	Warm White	15°
2LA455952-07	Cloud Grey	Warm White	15°
2LA455952-10	Light Grey	Warm White	11°
2LA455952-11	White	Warm White	11°
2LA455952-26	Grey	Neutral White	15°
2LA455952-27	Cloud Grey	Neutral White	15°
2LA455952-38	Cloud Grey	Neutral White	11°
2LA455952-40	White	Pale Apricot	15°
2LA455952-50	Light Grey	Pale Apricot	11°

Part-Number	Housing Color	Light Color	Beam Angle	Remarks
2LA455962-00	Light Grey	Cold White	15°	
2LA455962-01	White	Cold White	15°	
2LA455962-06	Grey	Cold White	15°	
2LA455962-07	Cloud Grey	Cold White	15°	
2LA455962-10	Light Grey	Cold White	11°	
2LA455962-11	White	Cold White	11°	
2LA455962-16	Grey	Cold White	11°	
2LA455962-17	Cloud Grey	Cold White	11°	
2LA456121-00	Light Grey	Cold White	15°	with lens
2LA456121-01	White	Cold White	15°	with lens
2LA456274-00	Dark Silver	Cold White	25°	

Color Temperature: Warm White/Pale Apricot: 4,000°K
Neutral White: 5,000°K
Cold White: 6,000°K

Further variants are available on request.

LED Reading Lights

Operating the LED Reading Lights

Generally, LEDs must be operated by a certain current, not by a certain voltage like incandescent lamps. Accordingly, they cannot be connected directly to the aircraft's 28 V power system.

Modern Passenger Supply Units provide a power regulation which is able to detect the coding resistor inside the LED Reading Light and to supply it with the required nominal current. The precondition for both the Economical Generation (pages 5 and 7) and the High-End Generation (pages 4 and 6) is that the existing Passenger Supply Unit's power system is compatible with the respective LED Reading Light.

Goodrich Lighting Systems can offer assistance concerning the compatibility check. If required, a customized adaption of the reading light may be developed according to the existing electrical conditions. Please contact us for individual inquiries.

Additional Equipment

In addition, Goodrich Lighting Systems can provide some special current regulation equipment which allows to connect the High-End Generation LED Reading Lights 2LA455563-XX (page 4) with an operating current of 240 mA to

the aircraft's 28 V power system. This guarantees a constant light output in spite of voltage variations in the power supply system, a lower heat generation and a longer lifetime of the LED.



Current Regulations:

8ES455406-00

- Operating voltage: 28 V DC
- Operating current: 250 mA max.
- Power consumption: 7 W max.
- Output current: 240 mA
- Input connector: 2 x AMP FASTON contacts 4.8 mm
- Output connector: 8JA411029-00
- Fault polarity protection
- Inrush current limiting
- Mass: 0.030 kg (0.07 lbs) max.

8ES455406-02

- Operating voltage: 28 V AC, 400 Hz

8ES455406-11

- Operating voltage: 28 V DC, dimmable

Power Unit (for 4 Lights):

5XA455386-00

- Operating voltage: 28 V DC
- Operating current: 1.5 A max.
- Power consumption: 42 W max.
- Output current: 4 x 240 mA
- Input and output connector: MIL-DTL-24308E
- Fault polarity protection
- Inrush current limiting
- Mass: 0.350 kg (0.770 lbs) max.



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