

## Description

The ESR20 solid state relay is suitable for all applications where mechanical ISO MINI relays reach their technological limits. The range of product versions covers both positive and negative control levels. In addition, the 4 A version is also available as low side switch.

It features a high continuous current and switching frequency as well as a long life-span noiseless switching operations. In addition, it is extremely resistant to environmental influences.

## Applications

The ESR20 solid state relay is suitable for all applications in DC 12 V and DC 24 V on-board electrical systems.

### Scope of applications:

- Road vehicles (passenger cars, bicycles, trucks, buses, working vehicles and emergency cars, special vehicles)
- Agricultural vehicles and construction machinery
- Watercraft (ships, motor yachts etc.)

### Typical applications:

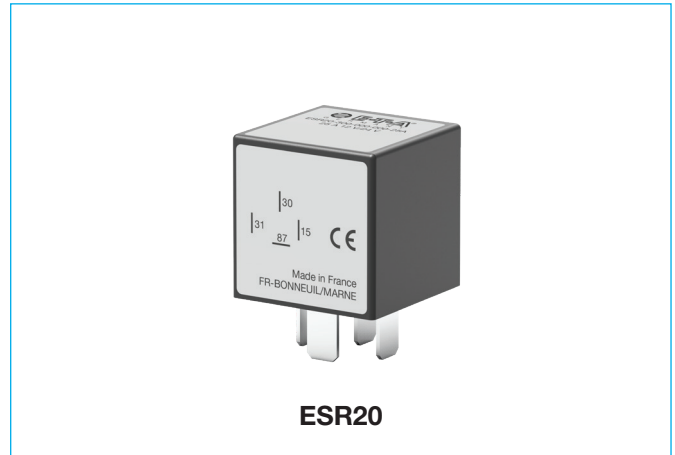
- Any application where loads need to be switched such as controllers of pumps, valves, lighting or fans
- Positive and negative control levels and also high side switch and low side switch

## Benefits

- The solid state relay's electronic circuitry ensures wear-free operation and thus full operational readiness over the vehicle's entire life span. Costly complaints or service works are eliminated.
- Silent switching enhances convenience in the driver's cab. The driver is not distracted by switching noises he cannot associate with anything.
- The solid state relay is extremely resistant to vibration.

## Qualifications

<b>Degree of protection</b>	IP50
<b>Noise immunity</b>	95/54 EG & DIN 40839
<b>E1 number</b>	upon request



ESR20

## Technical data (25 °C)

ESR20 - 3 0 0 - 0 0 0 - 0 0 0 - 4  
 ESR20 - 3 1 0 - 0 0 0 - 0 0 0 - 4  
 ESR20 - 3 2 0 - 0 0 0 - 0 0 0 - 4  
 ESR20 - 3 3 0 - 0 0 0 - 0 0 0 - 4

	High side switch	Low side switch
Input	Positive or negative control level (see ordering number code)	
Continuous current	4 A	4 A
Voltage ratings	12 V / 24 V	12 V / 24 V
Operating voltage	9 V...30 V	9 V...30 V
Closed current	< 100 µA	< 100 µA
Max. switching current	15 A	9.8 A
Max. current	40 A	25 A
Contact voltage drop	40 MOhm at 25 °C	31 MOhm at 25 °C
Switching time ON	30 µs	40-100 µs
Switching time OFF	30 µs	70-170 µs
PWM frequency	500 Hz	500 Hz
Operating temperature	-40 °C...+85 °C	-40 °C...+85 °C
Mass	16 g	16 g
<b>Materials</b>		
blade terminals	A6.3 x 0.8 DIN 46 244 CuZn 37 F37	
Housing material	PA6GF	
<b>Output</b>	semi-conductor	
<b>Power output at 12 V</b>	96 W	96 W

## Technical data - ESR20-300-000-000-10A

	High Side Switch
Continuous current	10 A
Input	Positive voltage
Voltage ratings	12 V/ 24 V
Operating voltage	9 V...30 V
Closed current	< 100 µA
Max. switching current	30 A
Max. current	60 A
Contact voltage drop	25 MOhm
Switching time ON	30 µs
Switching time OFF	30 µs
PWM frequency	500 Hz
Operating temperature	-40 °C ...+85 °C
Mass	25 g
<b>Materials</b>	
blade terminals	A6.3 x 0.8 DIN 46 244 CuZn 37 F37
Housing material	PA6GF
<b>Output</b>	semi-conductor switch
<b>Power output at 12 V</b>	240 W
Degree of protection	IP50

## Technical data - ESR20-310-000-000-10A

	High Side Switch
Continuous current	10 A
Input	Negative voltage
Voltage ratings	12 V/ 24 V
Operating voltage	9 V...30 V
Closed current	< 300 µA
Max. switching current	30 A
Max. current	60 A
Contact voltage drop	25 MOhm
Switching time ON	30 µs
Switching time OFF	30 µs
PWM frequency	500 Hz
Operating temperature	-40 °C...+85 °C
Mass	25 g
<b>Materials</b>	
blade terminals	A6.3 x 0.8 DIN 46 244 CuZn 37 F37
Housing material	PA6GF
<b>Output</b>	semi-conductor switch
<b>Power output at 12 V</b>	240 W
Degree of protection	IP50

## Technical data - ESR20-300-000-000-15A

	High Side Switch
Continuous current	15 A
Input	Positive voltage
Voltage ratings	12 V and 24 V
Operating voltage	9 V ...30 V
Closed current	< 100 µA
Max. switching current	50 A
Max. current	60 A
Contact voltage drop	9 MOhm
Switching time ON	200-350 µs
Switching time OFF	200-350 µs
PWM frequency	500 Hz
Operating temperature	-40 °C...+85 °C
Mass	25 g
<b>Materials</b>	
blade terminals	A6.3 x 0.8 DIN 46 244 CuZn 37 F37
Housing material	PA6GF
<b>Output</b>	semi-conductor switch
<b>Power output at 12 V</b>	360 W
Degree of protection	IP50

## Technical data - ESR20-310-000-000-15A

	High Side Switch
Continuous current	15 A
Input	Negative voltage
Voltage ratings	12 V/ 24 V
Operating voltage	9 V...30 V
Closed current	< 100 µA
Max. switching current	50 A
Max. current	100 A
Contact voltage drop	9 MOhm
Switching time ON	200-350 µs
Switching time OFF	200-350 µs
PWM frequency	500 Hz
Operating temperature	-40 °C...+85 °C
Mass	25 g
<b>Materials</b>	
blade terminals	A6.3 x 0.8 DIN 46 244 CuZn 37 F37
Housing material	PA6GF
<b>Output</b>	semi-conductor switch
<b>Power output at 12 V</b>	360 W
Degree of protection	IP50

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## Technical data - ESR20-300-000-000-25A

High Side Switch	
Continuous current	25 A
Input	Positive voltage
Voltage ratings	12 V/ 24 V
Operating voltage	9 V ... 30 V
Closed current	< 100 µA
Max. switching current	100 A
Max. current	200 A
Contact voltage drop	5 MOhm
Switching time ON	200-350 µs
Switching time OFF	200-350 µs
PWM frequency	500 Hz
Operating temperature	-40 °C...+85 °C
Mass	25 g
<b>Materials</b>	
blade terminals	A6.3 x 0.8 DIN 46 244 CuZn 37 F37
Housing material	PA6GF
<b>Output</b>	semi-conductor switch
<b>Power output at 12 V</b>	360 W
Degree of protection	IP50

## Technical data - ESR20-310-000-000-25A

High Side Switch	
Continuous current	25 A
Input	Negative voltage
Voltage ratings	12 V/ 24 V
Operating voltage	9 V ... 30 V
Closed current	< 200 µA
Max. switching current	100 A
Max. current	200 A
Contact voltage drop	5 MOhm
Switching time ON	200-350 µs
Switching time OFF	200-350 µs
PWM frequency	500 Hz
Operating temperature	-40 °C...+85 °C
Mass	25 g
<b>Materials</b>	
blade terminals	A6.3 x 0.8 DIN 46 244 CuZn 37 F37
Housing material	PA6GF
<b>Output</b>	semi-conductor switch
<b>Power output at 12 V</b>	600 W
Degree of protection	IP50

## Technical data - ESR20-300-000-000-35A

High Side Switch	
Continuous current	35 A
Input	Positive voltage
Voltage ratings	12 V/ 24 V
Operating voltage	9 V ... 30 V
Closed current	< 300 µA
Max. switching current	115 A
Max. current	220 A
Contact voltage drop	3 MOhm
Switching time ON	200-350 µs
Switching time OFF	200-350 µs
PWM frequency	500 Hz
Operating temperature	-40 °C...+85 °C
Mass	70 g
<b>Materials</b>	
blade terminals	A6.3 x 0.8 DIN 46 244 CuZn 37 F37 A9.5 x 1.2 DIN 46244
Housing material	PA6GF
<b>Output</b>	semi-conductor switch
<b>Power output at 12 V</b>	840 W
Degree of protection	IP67

## Technical data - ESR20-310-000-000-35A

High Side Switch	
Continuous current	35 A
Input	Negative voltage
Voltage ratings	12 V/ 24 V
Operating voltage	9 V ... 30 V
Closed current	< 300 µA
Max. switching current	115 A
Max. current	220 A
Contact voltage drop	3 MOhm
Switching time ON	200-350 µs
Switching time OFF	200-350 µs
PWM frequency	500 Hz
Operating temperature	-40 °C...+85 °C
Mass	70 g
<b>Materials</b>	
blade terminals	A6.3 x 0.8 DIN 46 244 CuZn 37 F37 A9.5 x 1.2 DIN 46244
Housing material	PA6GF
<b>Output</b>	semi-conductor switch
<b>Power output at 12 V</b>	840 W
Degree of protection	IP67

## Ordering information

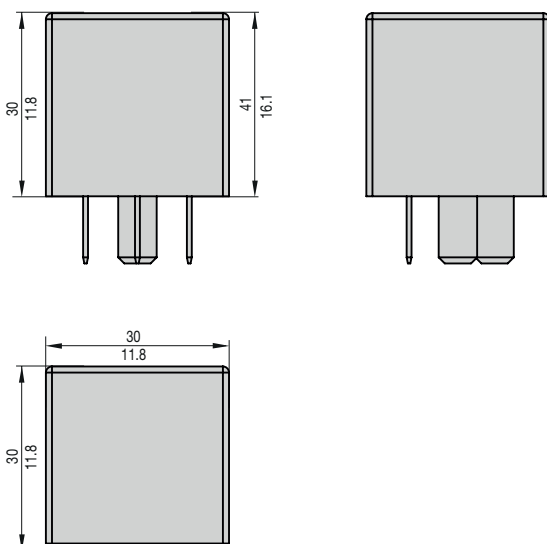
Type no.	ESR20 solid state relay		
Operating voltage	3 12 V/24 V		
Control	0 positive control - high side switch 1 negative control - high side switch 2 positive control - low side switch 3 negative control - low side switch		
Options	0-000-000 none		
Rated current	4 A		
ESR20 - 3 0 0-000-000 - 4 A ordering example			

## Order numbering code

Type no.	ESR20 solid state relay		
Operating voltage	2 24 V 3 12 V/24 V		
Control	0 positive control - high side switch 1 negative control - high side switch		
Options	0-000-000 none		
Rated current	10 A 15 A 25 A 35 A		
ESR20 - 3 0 0-000-000 - 10 A ordering example			

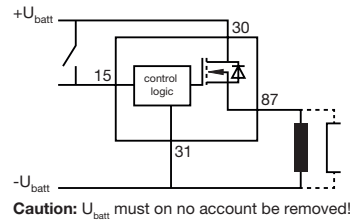
## Dimensions

### 4 PIN

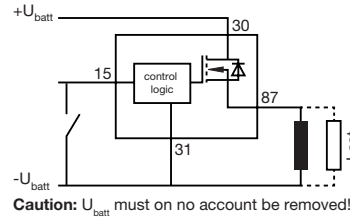


## Schematic diagram / pin assignment

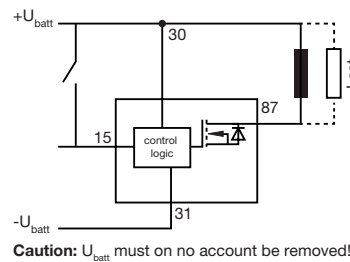
### ESR20-300



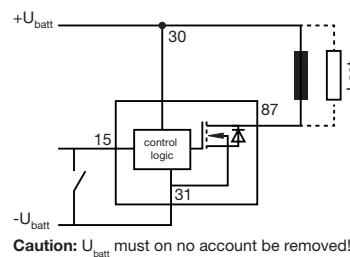
### ESR20-310



### ESR20-320



### ESR20-330



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