

Product Environmental Profile

Solid State Relay SSL1





General information

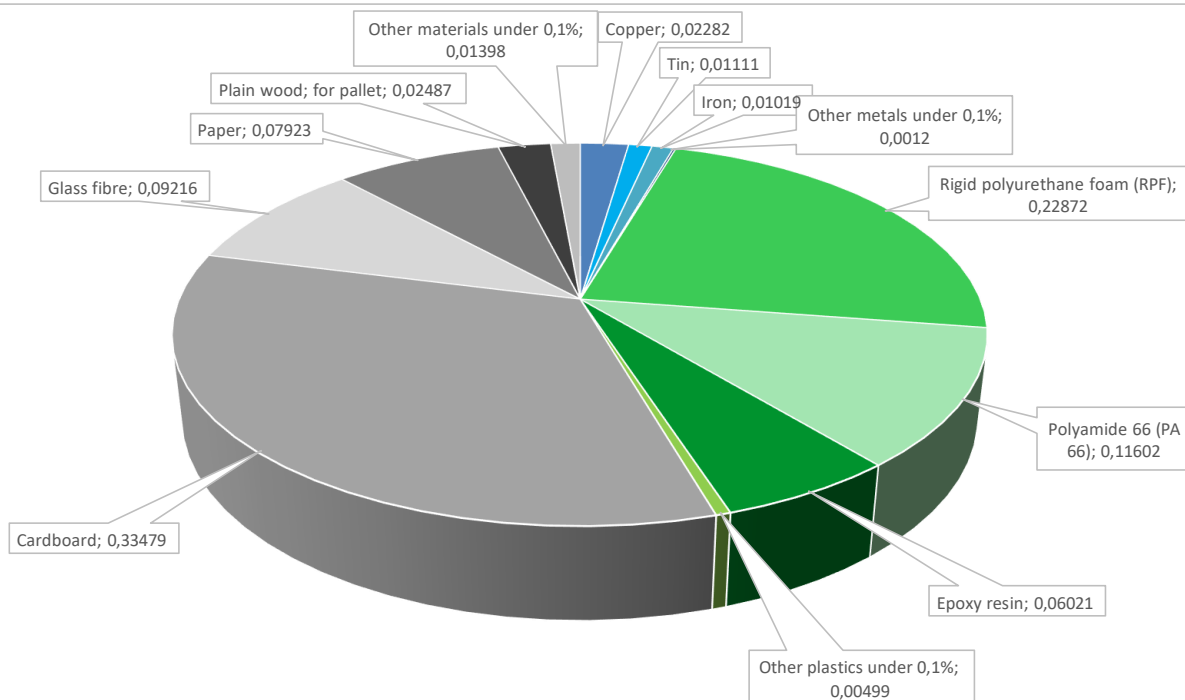
Reference product	Solid State Relay SSL1 - SSL1A12JD
Description of the product	A relay protects electronic devices by switching the current from one path to another one. The 5 mm SSR series offers options for both AC and DC output switching. The AC output variants offer both zero-cross and random switching whilst the DC output variants provide switching frequencies of up to 500 Hz.
Description of the range	<p>All the product under the reference of SSL1 are included. DC and AC switching are included with different rated output voltages, control voltages, max rated currents.</p> <p>According to the manufacturer, the reference product SSL1A12JD is the most impacting with SSL1A12JDR. They are the most powerful and heaviest products. There's no difference except the switching mode. We chose the first one as reference.</p>
Functional unit	<p>1 product</p> <p>Description: Protect during 10 years against overvoltage electrical equipment by switching the current on and off; with the rated operational current: up to 6 ADC and 2 AAC, rated operation voltage: up to 48 VDC and 280 VAC and control voltage ranges: 3 - 12 VDC / 15 - 30 VDC.</p>
Product's final assembly site	China

Characteristics of covered products		
	Total power dissipation	Weight
Products Names	in W	In kg
SSL1D03JD	2.03	0,00598
SSL1D03BD	2.01	0,00598
SSL1D101JD	0.22	0,00598
SSL1D101BD	0.30	0,00598
SSL1A12JD	3.23	0,00598
SSL1A12BD	3.21	0,00598
SSL1A12JDR	3.23	0,00598
SSL1A12BDR	3.21	0,00598



Constituent materials

Reference product mass (in kg)	0,006	including the product, its packaging, additional elements and accessories
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Plastics	41,00%
Metals	4,50%
Others	54,50%



Substance assessment

Details of ROHS and REACH substances information are available on the Schneider-Electric website

<https://www.se.com>

**Additional environmental information**

End Of Life	Recyclability potential:	27%	The recyclability rate was calculated using EIME tool based on the Eco'DEE method (2008) and the CODDE database (including recyclability potential data)
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**Environmental impacts**

Reference service lifetime	10 years		
Product category	Other equipment's - Active product		
Life cycle of the product	The manufacturing, the distribution, the installation, the use and the end of life were taken into consideration in this study		
Electricity consumption	The electricity consumed during manufacturing processes is considered for each part of the product individually, the final assembly generates also consumption that is take into account separately.		
Installation elements	No special components needed		
Use scenario	Active Product: Energy Consumption Active 20% and Off 80%		
Time representativeness	The collected data are representative of the year 2024		
Technological representativeness	The Modules of Technologies such as material production, manufacturing processes and transport technology used in the PEP analysis (LCA EIME in the case) are similar and representative of the actual type of technologies used to make the product.		
Geographical representativeness	[A1 - A3]	[A5]	[B6]
	China	Global	Global
Energy model used	[A1 - A3]	[A5]	[B6]
	Electricity Mix; Low voltage; 2020; China, CN	Global: only European modules available	No primary energy model used

Detailed results of the optional indicators mentioned in PCRed4 are available in the LCA report and on demand in a digital format - Country Customer Care Center - <http://www.se.com/contact>

Mandatory Indicators		Solid state relay SSL1 - SSL1A12JD						
Impact indicators	Unit	Total (without Module D)	[A1 - A3] - Manufacturing	[A4] - Distribution	[A5] - Installation	[B1 - B7] - Use	[C1 - C4] - End of life	[D] - Benefits and loads
Contribution to climate change	kg CO2 eq	3,68E+01	5,06E-01	0*	4,56E-03	3,63E+01	4,21E-03	-8,36E-04
Contribution to climate change-fossil	kg CO2 eq	3,68E+01	5,11E-01	0*	0*	3,62E+01	4,20E-03	-8,21E-04
Contribution to climate change-biogenic	kg CO2 eq	2,74E-02	0*	0*	3,73E-03	2,86E-02	1,11E-05	-1,50E-05
Contribution to climate change-land use and land use change	kg CO2 eq	2,47E-09	1,29E-09	5,47E-10	3,25E-11	0*	5,93E-10	0,00E+00
Contribution to ozone depletion	kg CFC-11 eq	1,79E-07	7,98E-09	0*	2,97E-11	1,71E-07	1,83E-10	-8,25E-11
Contribution to acidification	mol H+ eq	2,30E-01	3,74E-03	6,12E-05	0*	2,26E-01	0*	-1,76E-05
Contribution to eutrophication, freshwater	kg (PO4) ³⁻ eq	2,76E-05	8,39E-07	0*	0*	2,62E-05	5,32E-07	-2,82E-09
Contribution to eutrophication marine	kg N eq	2,58E-02	4,12E-04	1,40E-05	0*	2,54E-02	0*	-9,06E-07
Contribution to eutrophication, terrestrial	mol N eq	3,09E-01	4,62E-03	1,53E-04	0*	3,04E-01	0*	-1,01E-05
Contribution to photochemical ozone formation - human health	kg COVNM eq	8,55E-02	1,39E-03	3,95E-05	0*	8,41E-02	0*	-3,69E-06
Contribution to resource use, minerals and metals	kg Sb eq	1,24E-05	7,37E-06	0*	0*	5,00E-06	1,79E-08	-2,22E-06
Contribution to resource use, fossils	MJ	6,67E+02	1,06E+01	0*	0*	6,56E+02	0*	-1,25E-02
Contribution to water use	m3 eq	2,19E+00	1,91E-01	0*	0*	2,00E+00	4,14E-04	-6,68E-04

Inventory flows Indicators		Solid state relay SSL1 - SSL1A12JD						
Inventory flows	Unit	Total (without Module D)	[A1 - A3] - Manufacturing	[A4] - Distribution	[A5] - Installation	[B1 - B7] - Use	[C1 - C4] - End of life	[D] - Benefits and loads
Contribution to use of renewable primary energy excluding renewable primary energy used as raw material	MJ	8,31E+01	7,36E-01	0*	0*	8,24E+01	0*	-5,49E-04
Contribution to use of renewable primary energy resources used as raw material	MJ	4,60E-02	4,60E-02	0*	0*	0*	0*	0,00E+00
Contribution to total use of renewable primary energy resources	MJ	8,32E+01	7,82E-01	0*	0*	8,24E+01	0*	-5,49E-04

Contribution to use of non renewable primary energy excluding non renewable primary energy used as raw material	MJ	6,67E+02	1,05E+01	0*	0*	6,56E+02	0*	-1,25E-02
Contribution to use of non renewable primary energy resources used as raw material	MJ	7,28E-02	7,28E-02	0*	0*	0*	0*	0,00E+00
Contribution to total use of non-renewable primary energy resources	MJ	6,67E+02	1,06E+01	0*	0*	6,56E+02	0*	-1,25E-02
Contribution to use of secondary material	kg	4,72E-07	4,72E-07	0*	0*	0*	0*	0,00E+00
Contribution to use of renewable secondary fuels	MJ	0,00E+00	0*	0*	0*	0*	0*	0,00E+00
Contribution to use of non renewable secondary fuels	MJ	0,00E+00	0*	0*	0*	0*	0*	0,00E+00
Contribution to net use of freshwater	m³	5,09E-02	4,38E-03	0*	0*	4,65E-02	1,00E-05	-1,56E-05
Contribution to hazardous waste disposed	kg	9,68E-01	5,12E-02	0*	8,80E-04	9,09E-01	7,14E-03	-1,63E-02
Contribution to non hazardous waste disposed	kg	6,26E+00	9,58E-02	0*	0*	6,16E+00	1,16E-03	-5,90E-05
Contribution to radioactive waste disposed	kg	7,62E-04	1,16E-05	0*	0*	7,50E-04	3,91E-07	-4,22E-08
Contribution to components for reuse	kg	0,00E+00	0*	0*	0*	0*	0*	0,00E+00
Contribution to materials for recycling	kg	2,12E-04	6,85E-05	0*	0*	0*	1,44E-04	-4,02E-12
Contribution to materials for energy recovery	kg	0,00E+00	0*	0*	0*	0*	0*	0,00E+00
Contribution to exported energy	MJ	0,00E+00	0*	0*	0*	0*	0*	0,00E+00

* represents less than 0.01% of the total life cycle of the reference flow

Contribution to biogenic carbon content of the product	kg of C	0,00E+00
Contribution to biogenic carbon content of the associated packaging	kg of C	1,02E-03

* The calculation of the biogenic carbon is made with EIME v6.2

Mandatory Indicators		Solid state relay SSL1 - SSL1A12JD							
Impact indicators	Unit	[B1 - B7] - Use	[B1]	[B2]	[B3]	[B4]	[B5]	[B6]	[B7]
Contribution to climate change	kg CO2 eq	3,63E+01	0*	0*	0*	0*	0*	3,63E+01	0*
Contribution to climate change-fossil	kg CO2 eq	3,62E+01	0*	0*	0*	0*	0*	3,62E+01	0*
Contribution to climate change-biogenic	kg CO2 eq	2,86E-02	0*	0*	0*	0*	0*	2,86E-02	0*
Contribution to climate change-land use and land use change	kg CO2 eq	0*	0*	0*	0*	0*	0*	0*	0*
Contribution to ozone depletion	kg CFC-11 eq	1,71E-07	0*	0*	0*	0*	0*	1,71E-07	0*
Contribution to acidification	mol H+ eq	2,26E-01	0*	0*	0*	0*	0*	2,26E-01	0*
Contribution to eutrophication, freshwater	kg (PO4) ³⁻ eq	2,62E-05	0*	0*	0*	0*	0*	2,62E-05	0*
Contribution to eutrophication marine	kg N eq	2,54E-02	0*	0*	0*	0*	0*	2,54E-02	0*
Contribution to eutrophication, terrestrial	mol N eq	3,04E-01	0*	0*	0*	0*	0*	3,04E-01	0*
Contribution to photochemical ozone formation - human health	kg COVNM eq	8,41E-02	0*	0*	0*	0*	0*	8,41E-02	0*
Contribution to resource use, minerals and metals	kg Sb eq	5,00E-06	0*	0*	0*	0*	0*	5,00E-06	0*
Contribution to resource use, fossils	MJ	6,56E+02	0*	0*	0*	0*	0*	6,56E+02	0*
Contribution to water use	m3 eq	2,00E+00	0*	0*	0*	0*	0*	2,00E+00	0*

Inventory flows Indicators		Solid state relay SSL1 - SSL1A12JD							
Inventory flows	Unit	[B1 - B7] - Use	[B1]	[B2]	[B3]	[B4]	[B5]	[B6]	[B7]
Contribution to use of renewable primary energy excluding renewable primary energy used as raw material	MJ	8,24E+01	0*	0*	0*	0*	0*	8,24E+01	0*
Contribution to use of renewable primary energy resources used as raw material	MJ	0*	0*	0*	0*	0*	0*	0*	0*
Contribution to total use of renewable primary energy resources	MJ	8,24E+01	0*	0*	0*	0*	0*	8,24E+01	0*
Contribution to use of non-renewable primary energy excluding non-renewable primary energy used as raw material	MJ	6,56E+02	0*	0*	0*	0*	0*	6,56E+02	0*
Contribution to use of non-renewable primary energy resources used as raw material	MJ	0*	0*	0*	0*	0*	0*	0*	0*
Contribution to total use of non-renewable primary energy resources	MJ	6,56E+02	0*	0*	0*	0*	0*	6,56E+02	0*
Contribution to use of secondary material	kg	0*	0*	0*	0*	0*	0*	0*	0*
Contribution to use of renewable secondary fuels	MJ	0*	0*	0*	0*	0*	0*	0*	0*
Contribution to use of non renewable secondary fuels	MJ	0*	0*	0*	0*	0*	0*	0*	0*
Contribution to net use of freshwater	m³	4,65E-02	0*	0*	0*	0*	0*	4,65E-02	0*
Contribution to hazardous waste disposed	kg	9,09E-01	0*	0*	0*	0*	0*	9,09E-01	0*
Contribution to non hazardous waste disposed	kg	6,16E+00	0*	0*	0*	0*	0*	6,16E+00	0*
Contribution to radioactive waste disposed	kg	7,50E-04	0*	0*	0*	0*	0*	7,50E-04	0*
Contribution to components for reuse	kg	0*	0*	0*	0*	0*	0*	0*	0*
Contribution to materials for recycling	kg	0*	0*	0*	0*	0*	0*	0*	0*
Contribution to materials for energy recovery	kg	0*	0*	0*	0*	0*	0*	0*	0*
Contribution to exported energy	MJ	0*	0*	0*	0*	0*	0*	0*	0*

* represents less than 0.01% of the total life cycle of the reference flow

Life cycle assessment performed with EIME version v6.2.2, database version 2024-01 in compliance with ISO14044, EF3.1 method is applied, for biogenic carbon storage, assessment methodology -1/+1 is used

According to this environmental analysis, proportionality rules may be used to evaluate the impacts of other products of this range, ratios to apply can be provided upon request

Please note that the values given above are only valid within the context specified and cannot be used directly to draw up the environmental assessment of an installation.

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		Supplemented by	PSR-0005-ed3.1-EN-2023 12 08
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Date of issue	03-2025	Validity period	5 years
Independent verification of the declaration and data, in compliance with ISO 14025 : 2006			
Internal External X			
The PCR review was conducted by a panel of experts chaired by Julie Orgelet (DDemain) PEPs are compliant with XP C08-100-1:2016 and EN 50693:2019 or NF E38-500 :2022 The components of the present PEP may not be compared with components from any other program. Document complies with ISO 14025:2006 "Environmental labels and declarations. Type III environmental declarations"			



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