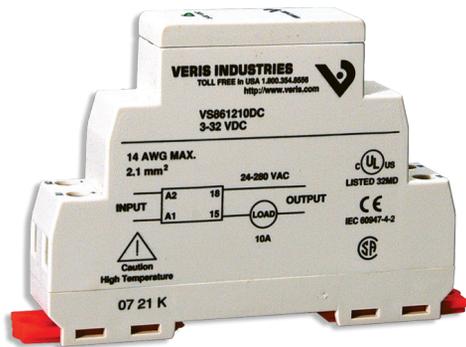


Solid State Relays

VS861 Series



VS861210DC

**Higher Reliability Than
Electromagnetic Relays**

FEATURES

- No moving parts to wear or fail
- No contact bounce or arcing contacts
- Reduced EMI
- Longer life than electromechanical relays
- Superior performance where fast response time or high frequency of on/off cycling are required

DESCRIPTION

The DIN-Mountable **VS861 Series** Solid State Relay with an internal heat sink is the first complete solid state relay with no moving parts available in a modular package.

A SSR (solid state relay) can perform many of the same tasks as an EMR (electromechanical relay). The SSR differs in that it contains no moving mechanical parts. It is essentially an electronic device that relies on the electrical, magnetic, and optical properties of semiconductors and electrical components to achieve its isolation and relay switching function.

APPLICATIONS

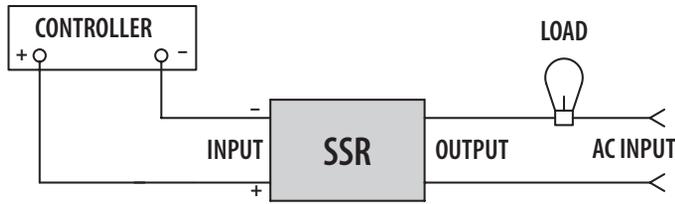
- Lighting
- Traffic control
- Instrumentation systems and alarm systems
- Industrial automation

SPECIFICATIONS

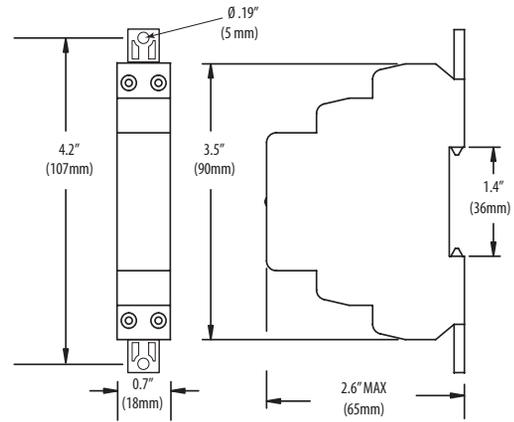
**5 Year
Warranty**

OUTPUT CHARACTERISTICS	
Switching Voltage	VS861210DC(AC) & VS861208DC(AC): 24...280VAC, VS861208DD: 3...150VDC
Maximum Zero Turn-on Voltage (Vpk)	VS861210DC(AC) & VS861208DC(AC): 35V
Maximum Rate of Rise off State Voltage (dv/dt)	VS861210DC(AC): 500V/μS, VS861208DC: 475V/μS, VS861208AC: 350V/μS
Incandescent Lamp Ampere Rating (RMS)	VS861210DC(AC): 8A, VS861208DC(AC): 5A
Motor Load Rating (RMS)	VS861210DC(AC): 4.5A, VS861208DC(AC): 3A
Min. Load Current to Maintain On	VS861210DC(AC): 50mA, VS861208DC(AC): 150mA, VS861208DD: 20mA
Non-Repetitive Surge Current (1 cycle)	VS861210DC(AC): 500A, VS861208DC(AC): 200A, VS861208DD: 35A
Max. RMS Overload Current (1 sec.)	VS861210DC(AC) & VS861208DC: 24A, VS861208(DD): 17A
Max. Off State Leakage Current (RMS)	10mA
Typical On State Voltage Drop (RMS)	1.25VAC
Max. On State Voltage Drop (RMS)	VS861210DC(AC) & VS861208DC(AC): 1.6VAC, VS861208DD: 1.6VDC
INPUT CHARACTERISTICS	
Must Release Voltage	VS861210DC, VS861208DC, & VS-861208DD: 1VDC, VS861210AC & VS861208AC: 10VAC
SP (Nominal) Input Impedance	VS861210DC, VS861208DC, & VS861208DD: Current Regulator; VS861210AC & VS861208AC: 16...25kΩ
Typical Input Current @ 5VDC or 240VAC	VS861210DC: 16mA, VS861210AC, VS861208DC(AC), & VS861208DD: 12mA
Reverse Polarity Protection	VS861210DC, VS861208DC, & VS861208DD: Yes
OTHER CHARACTERISTICS	
Operating Time (Response Time)	VS861210DC & VS861208DC: 8.3msec; VS861210AC & VS861208AC: 40msec; VS861208DD: 5msec
Release Time	VS861210DC & VS861208DC: 8.3msec; VS861210AC & VS861208AC: 80msec; VS861208DD: 5msec
Rated Insulation Voltage/ Dielectric Strength	2500VAC
Operating Temp Range	-30° to +80°C (-22° to 176°F)
Thermal Resistance (Junction to Case)	VS861210DC(AC): 0.66°C/W, VS861208DC(AC): 2.0°C/W, VS861208DD: 0.5°C/W
Integral Heat Sink	4.0°C/W

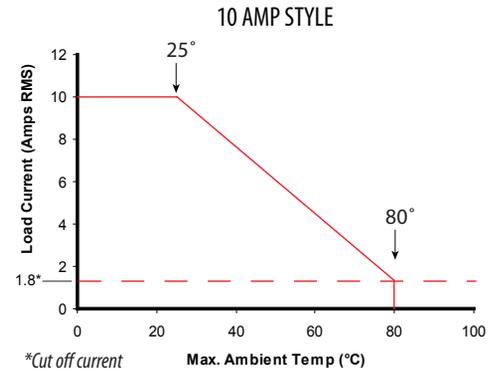
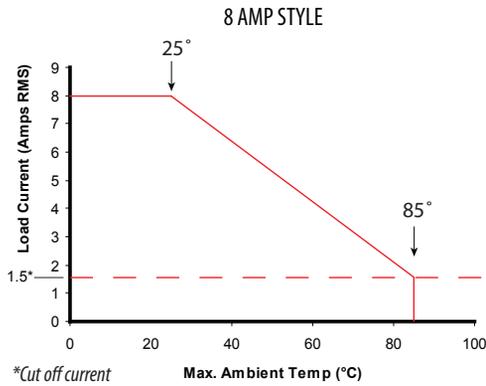
WIRING DIAGRAM



DIMENSIONAL DRAWING



AMPERAGE DERATING FOR TEMPERATURE



LOAD CONSIDERATIONS

The primary concern when using SSRs is improper heat sinking. The type of load current should be evaluated when considering an SSR as a switching option. SSRs alone are not compatible with high inrush currents, but cautionary measures can be taken in high inrush applications to increase the SSR's versatility, see table at right.

LOAD TYPE	CAUTIONARY ACTION
All load types	Verify that the inrush current does not exceed the surge specifications of the SSR.
Steady-state resistance	Consider thermal management. Assure device temperature will remain in safe operating area.
DC (inductive)	Place a diode across the load to absorb surges during turnoff.
Incandescent lamp	Use a zero voltage turn-on type.
Capacitive	Verify that the rate of current rise capabilities are not exceeded. Zero voltage turn-on is an effective method for limiting this rate.
Motors and Solenoids	Use a current shunt and oscilloscope to examine the duration of the inrush current. Verify that back EMF does not create an overvoltage situation during turn-off.
Transformers	Use a zero cross turn-on device; verify that the half cycle surge capability is not exceeded. Rule of thumb: select an SSR with a half cycle current surge rating greater than the maximum applied line voltage divided by the transformer primary resistance.

ORDERING INFORMATION



MODEL	Relay	Amperage Rating	Input Voltage	Switching Device	Switching Voltage	Switching Type	UL	CE
VS861210DC	SPST, N.O.	10A	3-32VDC	SCR	24-280VAC	Zero Cross	●	●
VS861210AC		10A	90-280VAC, 80-140VDC	SCR	24-280VAC	Zero Cross	●	●
VS861208DC		8A	3-32VDC	Triac	24-280VAC	Zero Cross	●	●
VS861208AC		8A	90-280VAC, 80-140VDC	Triac	24-280VAC	Zero Cross	●	●
VS861208DD		8A	3.5-32VDC	MOSFET	3-150VDC	DC Switching	●	●