

AD Series Class 6 Solid State Relays

Overview

The Class 6 solid state relays offer an energy-efficient alternative to standard electromechanical relays.

Switching types include DC switching for low-voltage DC loads and Zero Cross for resistive AC loads where the output energizes/de-energizes when control voltage is near zero.

Switching devices include: MOSFET for DC loads, Triac and SCR for AC loads.

Features

- Finger-safe "Hockey Puck" housing
- Solid-state circuitry
- High load ratings up to 75 amps
- Input indicating LED
- Optically coupled circuits
- Panel mount
- Thermal pad included with each relay



AD-SSR610-AC-280A

Class 6 Solid State Relays								
Part Number	Price	Drawing Links	Type	Input Voltage	Load Voltage	Configuration	Contact Rating	
AD-SSR610-AC-280A		PDF	N.O. SCR	90 to 280 VAC	24 to 280 VAC	SPST	10A	
AD-SSR610-DC-280A		PDF	N.O. SCR	3 to 32 VDC				
AD-SSR6T10-DC-280A		PDF	N.O. TRIAC	3 to 32 VDC				
AD-SSR625-AC-280A		PDF	N.O. SCR	90 to 280 VAC			25A	
AD-SSR625-DC-280A		PDF	N.O. SCR	3 to 32 VDC				
AD-SSR6T25-DC-280A		PDF	N.O. TRIAC	3 to 32 VDC				
AD-SSR640-AC-280A		PDF	N.O. SCR	90 to 280 VAC				40A
AD-SSR640-DC-280A		PDF	N.O. SCR	3 to 32 VDC				
AD-SSR6T40-DC-280A		PDF	N.O. TRIAC	3 to 32 VDC				
AD-SSR650-AC-280A		PDF	N.O. SCR	90 to 280 VAC			50A	
AD-SSR650-DC-280A		PDF	N.O. SCR	3 to 32 VDC				
AD-SSR675-AC-280A		PDF	N.O. SCR	90 to 280 VAC				75A
AD-SSR675-DC-280A		PDF	N.O. SCR	3 to 32 VDC				
AD-SSR6M12-DC-200D		PDF	N.O. MOSFET	3.5 to 32 VDC	3 to 200 VDC	12A		
AD-SSR6M25-DC-200D		PDF	N.O. MOSFET	3.5 to 32 VDC		25A		
AD-SSR6M40-DC-200D		PDF	N.O. MOSFET	3.5 to 32 VDC		40A		
AD-SSR610-AC-480A		PDF	N.O. SCR	90 to 280 VAC	48 to 480 VAC	10A		
AD-SSR610-DC-480A		PDF	N.O. SCR	3 to 32 VDC				
AD-SSR6T10-DC-480A		PDF	N.O. TRIAC	3 to 32 VDC				
AD-SSR625-AC-480A		PDF	N.O. SCR	90 to 280 VAC		25A		
AD-SSR625-DC-480A		PDF	N.O. SCR	3 to 32 VDC				
AD-SSR6T25-DC-480A		PDF	N.O. TRIAC	3 to 32 VDC				
AD-SSR640-AC-480A		PDF	N.O. SCR	90 to 280 VAC		40A		
AD-SSR640-DC-480A		PDF	N.O. SCR	3 to 32 VDC				
AD-SSR6T40-DC-480A		PDF	N.O. TRIAC	3 to 32 VDC				

Note: Thermal pad included with each relay.

AD Series Class 6 Solid State Relays

Specifications						
Part Number	AD-SSR610-AC-280A	AD-SSR610-DC-280A	AD-SSR6T10-DC-280A	AD-SSR625-AC-280A	AD-SSR625-DC-280A	AD-SSR6T25-DC-280A
Input Characteristics						
Control Voltage Range	90 to 280 VAC	3 to 32 VDC		90 to 280 VAC	3 to 32 VDC	
Typical Input Current	20 mA @240 VAC 11 mA @120 VAC	16 mA	2 mA	20 mA @240 VAC 11 mA @120 VAC	16 mA	2 mA
Must Release Voltage	10 VAC	1 VDC		10 VAC	1 VDC	
Reverse Polarity Protection	-	yes	yes	-	yes	yes
Switching Type	Zero Cross					
Power Indicator	Green LED status lamp					
Output Characteristics						
Load Voltage Range	24 to 280 VAC					
Rated Load Current	10A			25A		
Maximum Off-State Voltage dv/dt	200 V/μs	200 V/μs	250 V/μs	500 V/μs	500 V/μs	250 V/μs
Minimum Load Current	50 mA	50 mA	50 mA	120 mA	120 mA	120 mA
Maximum Non-Repetitive Surge Current (1 Cycle, 16.6 ms), peak	83A	83A	100A	250A		
Maximum Off State Leakage current (RMS)	8 mA	10 mA	10 mA	8 mA	10 mA	10 mA
Maximum On-State Voltage Drop (RMS)	1.6 V rms					
Maximum I2T for Fusing (A2Sec)	72	83	52	312	250	300
Operating Frequency Range	50 to 60 Hz					
Maximum Turn-On Time	1/2 cycle					
Maximum Turn-Off Time	1/2 cycle					
General Characteristics						
Dielectric Strength (Input-to-Output Isolation)	4000 VAC (rms)					
Thermal Resistance (Junction to Base)	3.5°C/W (6.3°F/W)		2.1°C/W (3.78°F/W)	1.02°C/W (1.836°F/W)		1.45°C/W (2.61°F/W)
Minimum Insulation Resistance @ 500 VDC	1 ^E + 10Ω					
Operating Temperature Range	-40 to +80°C [-40 to +176°F] derating applies					
Storage Temperature Range	-40 to +125°C [-40 to +257°F]					
Weight	100g [3.53 oz]					
Terminal Screw Size	Input: M3.5 Output: M4					
Terminal Torque	Input terminals: 10 lb·in Output terminals: 20 lb·in					
Terminal Wire Capacity	Inputs up to 12 AWG / Outputs up to 10 AWG. For anything larger, fork or ring terminals are recommended.					
Agency Approvals	UL file # E222847 CE, CSA, RoHS					

AD Series Class 6 Solid State Relays

Specifications							
Part Number	AD-SSR640-AC-280A	AD-SSR640-DC-280A	AD-SSR6740-DC-280A	AD-SSR650-AC-280A	AD-SSR650-DC-280A	AD-SSR675-AC-280A	AD-SSR675-DC-280A
Input Characteristics							
Control Voltage Range	90 to 280 VAC	3 to 32 VDC		90 to 280 VAC	3 to 32 VDC	90 to 280 VAC	3 to 32 VDC
Typical Input Current	20 mA @240 VAC 11 mA @120 VAC	16 mA	2 mA	4 mA @240 VAC 2 mA @120 VAC	10 mA	4 mA @240 VAC 2 mA @120 VAC	10 mA
Must Release Voltage	10 VAC	1 VDC		10 VAC	1 VDC	10 VAC	1 VDC
Reverse Polarity Protection	-	yes	yes	-	yes	-	yes
Switching Type	Zero Cross						
Power Indicator	Green LED status lamp						
Output Characteristics							
Load Voltage Range	24 to 280 VAC						
Rated Load Current	40A		50A		75A		
Maximum Off-State Voltage dv/dt	500 V/μs	500 V/μs	250 V/μs	500 V/μs	500 V/μs	500 V/μs	500 V/μs
Minimum Load Current	250 mA	250 mA	50 mA	40 mA	150 mA	40 mA	250 mA
Maximum Non-Repetitive Surge Current (1 Cycle, 16.6 ms), peak	625A	625A	250A	625A	625A	1000A	1000A
Maximum Off State Leakage current (RMS)	10 mA	10 mA	10 mA	10 mA	1 mA	10 mA	1 mA
Maximum On-State Voltage Drop (RMS)	1.6V rms						
Maximum I²T for Fusing (A²Sec)	1250	625	488	1620	1620	4150	4150
Operating Frequency Range	50 to 60 Hz						
Maximum Turn-On Time	1/2 cycle		10 ms		1/2 cycle	10 ms	1/2 cycle
Maximum Turn-Off Time	1/2 cycle		40 ms		1/2 cycle	40 ms	1/2 cycle
General Characteristics							
Dielectric Strength (Input-to-Output Isolation)	4000 VAC (rms)						
Thermal Resistance (Junction to Base)	0.9°C/W (1.62°F/W)		0.95°C/W (1.71°F/W)	0.63°C/W (1.134°F/W)		0.31°C/W (0.558°F)	
Minimum Insulation Resistance @ 500 VDC	1 ^E + 10Ω			1 ^E + 9Ω			
Operating Temperature Range	-40 to +80°C [-40 to +176°F] derating applies						
Storage Temperature Range	-40 to +125°C [-40 to +257°F]						
Weight	100g [3.53 oz]						
Terminal Screw Size	Input: M3.5 Output: M4						
Terminal Torque	Input terminals: 10 lb-in Output terminals: 20 lb-in						
Terminal Wire Capacity	Inputs up to 12 AWG / Outputs up to 10 AWG. For anything larger, fork or ring terminals are recommended.						
Agency Approvals	UL file # E222847 CE, CSA, RoHS						

AD Series Class 6 Solid State Relays

Specifications						
Part Number	AD-SSR6M12-DC-200D	AD-SSR6M25-DC-200D	AD-SSR6M40-DC-200D	AD-SSR610-AC-480A	AD-SSR610-DC-480A	AD-SSR6T10-DC-480A
Input Characteristics						
Control Voltage Range	3.5 to 32 VDC			90 to 280 VAC	3 to 32 VDC	
Typical Input Current	10 mA			20 mA @240VAC 11 mA @120VAC	16 mA	
Must Release Voltage	1 VDC			10 VAC	1 VDC	
Reverse Polarity Protection	no			-	no	
Switching Type	DC			Zero Cross		
Power Indicator	Green LED status lamp					
Output Characteristics						
Load Voltage Range	3 to 200 VDC			48 to 480 VAC		
Rated Load Current	12A	25A	40A	10A		
Maximum Off-State Voltage dv/dt	-			200 V/μs		
Minimum Load Current	20 mA			50 mA	150 mA	50 mA
Maximum Non-Repetitive Surge Current (1 Cycle, 16.6 ms), peak	27A	50A	90A	83A	83A	100A
Maximum Off State Leakage current (RMS)	8 mA			10 mA	8 mA	8 mA
Typical On-State Voltage Drop (RMS)	2.8 VDC (@ 40A load)			1.7 V rms	1.6 V rms	1.6 V rms
Maximum I ² T for Fusing (A ² Sec)	-			72	72	35
Operating Frequency Range	-			50 to 60 Hz		
Maximum Turn-On Time	300 μs	600 μs	600 μs	1/2 cycle	8.3 ms	1/2 cycle
Maximum Turn-Off Time	1 ms			1/2 cycle	8.3 ms	1/2 cycle
General Characteristics						
Dielectric Strength (Input-to-Output Isolation)	2500 VAC (rms)			4000 VAC (rms)		
Thermal Resistance (Junction to Base)	1.03°C/W (1.854°F/W)	1.06°C/W (1.908°F/W)		3°C/W (5.4°F/W)		2.9°C/W (5.22°F/W)
Minimum Insulation Resistance @ 500 VDC	1 ^E + 10Ω					
Operating Temperature Range	-40 to +80°C [-40 to +76°F] (derating applies)					
Storage Temperature Range	-40 to +100°C [-40 to +212°F]			-40 to +100°C [-40 to +212°F]		
Weight	110g [3.88 oz]	135g [4.76 oz]	135g [4.76 oz]	100g [3.53 oz]		
Terminal Screw Size	Input: M3.5 Output: M4					
Terminal Torque	Input terminals: 10 lb-in. Output terminals: 20 lb-in					
Terminal Wire Capacity	Inputs up to 12 AWG / Outputs up to 10 AWG. For anything larger, fork or ring terminals are recommended.					
Agency Approvals	UL file # E222847, CE, CSA, RoHS					

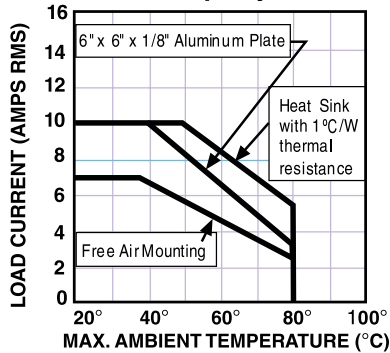
AD Series Class 6 Solid State Relays

Specifications						
Part Number	AD-SSR625-AC-480A	AD-SSR625-DC-480A	AD-SSR625-DC-480A	AD-SSR640-AC-480A	AD-SSR640-DC-480A	AD-SSR640-DC-480A
Input Characteristics						
Control Voltage Range	90 to 280 VAC	3 to 32 VDC		90 to 280 VAC	3 to 32 VDC	
Typical Input Current	20 mA @240 VAC 11 mA @120 VAC	16 mA		20 mA @240 VAC 11 mA @120 VAC	16 mA	
Must Release Voltage	10 VAC	1 VDC		10 VAC	1 VDC	
Reverse Polarity Protection	-	no		-	no	
Switching Type	Zero Cross					
Power Indicator	Green LED status lamp					
Output Characteristics						
Load Voltage Range	48 to 480 VAC					
Rated Load Current	25A			40A		
Maximum Off-State Voltage dv/dt	300 V/μs	500 V/μs	250 V/μs	500 V/μs	500 V/μs	250 V/μs
Minimum Load Current	120 mA	120 mA	20 mA	250 mA	250 mA	250 mA
Maximum Non-Repetitive Surge Current (1 Cycle, 16.6 ms), peak	250A	250A	250A	625A	625A	300A
Maximum Off State Leakage current (RMS)	10 mA	8 mA	8 mA	10 mA	8 mA	8 mA
Typical On-State Voltage Drop (RMS)	1.7V rms	1.6V rms	1.6V rms	1.7V rms	1.6V rms	1.6V rms
Maximum I2T for Fusing (A2Sec)	312	312	200	1250	1250	250
Operating Frequency Range	50/60 Hz					
Maximum Turn-On Time	8.3 ms	1/2 cycle	1/2 cycle	1/2 cycle	1/2 cycle	1/2 cycle
Maximum Turn-Off Time	8.3 ms	1/2 cycle	1/2 cycle	1/2 cycle	1/2 cycle	1/2 cycle
General Characteristics						
Dielectric Strength (Input-to-Output Isolation)	4000 VAC (rms)					
Thermal Resistance (Junction to Base)	1.02°C/W (1.836°F/W)		1.2°C/W (2.16°F/W)	0.9°C/W (1.62°F/W)		0.95°C/W (1.71°F/W)
Minimum Insulation Resistance @ 500 VDC	1 ^E + 10Ω					
Operating Temperature Range	-40 to +80°C [-40 to +176°F] (derating applies)					
Storage Temperature Range	-40 to +100°C [-40 to +212°F]					
Weight	100g [3.53 oz]					
Terminal Screw Size	Input: M3.5 Output: M4					
Terminal Torque	Input terminals: 10 lb-in. Output terminals: 20 lb-in					
Terminal Wire Capacity	Inputs up to 12 AWG / Outputs up to 10 AWG. For anything larger, fork or ring terminals are recommended.					
Agency Approvals	UL file # E222847, CE, CSA, RoHS					

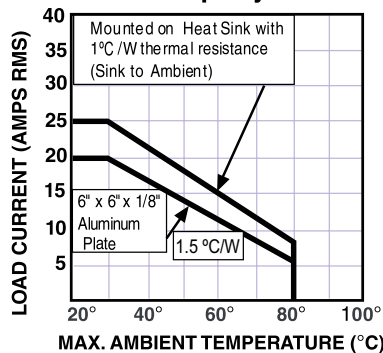
AD Series Class 6 Solid State Relays Derating Charts

Derating Charts

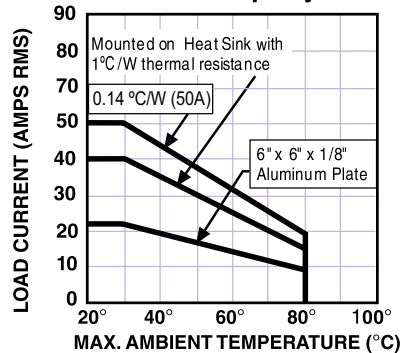
10 Amp Styles



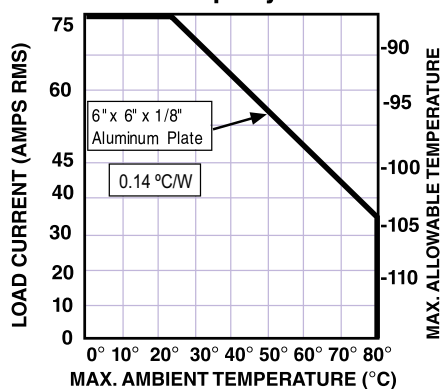
25 Amp Styles



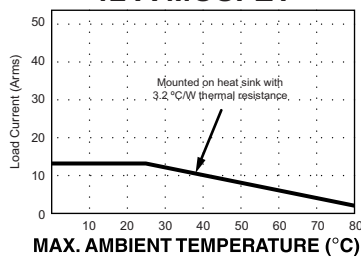
40 & 50 Amp Styles



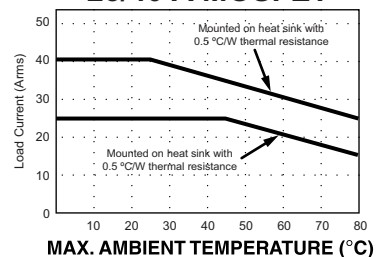
75 Amp Styles



12 A MOSFET



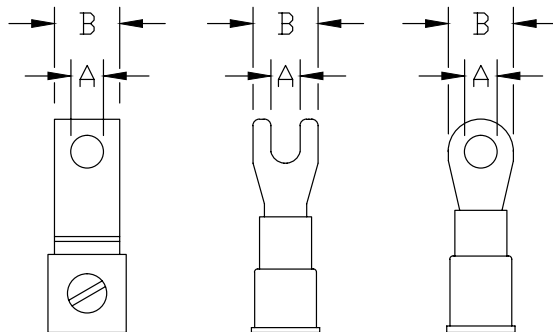
25/40 A MOSFET



Note: Charts are based on using a thermal transfer medium such as the included thermal pad

AD Series Class 6 Solid State Relays Accessory

Accessory for SSR6 Solid State Relay			
Part Number	Price	Description	Drawing Link
AD-SSR-THERM-PAD		AutomationDirect thermal mounting pad, package of 10. For use with solid state relays starting with AD-SSR6.	PDF



FORK/SPADE SIZES			
RELAY TERMINAL	A		B
	MIN.	MAX.	MAX.
INPUT SIDE	3.5 [0.14]	5.0 [0.20]	10.0 [0.39]
OUTPUT SIDE	4.2 [0.16]	6.4 [0.25]	10.0 [0.39]