

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	Retired	PDF	N.O. SCR	90 to 280 VAC	24 to 280 VAC	SPST	10A
AD-SSR610-DC-280A	Retired	PDF	N.O. SCR	3 to 32 VDC			
AD-SSR6T10-DC-280A	Retired	PDF	N.O. TRIAC	3 to 32 VDC			
AD-SSR625-AC-280A	Retired	PDF	N.O. SCR	90 to 280 VAC			25A
AD-SSR625-DC-280A	Retired	PDF	N.O. SCR	3 to 32 VDC			
AD-SSR6T25-DC-280A	Retired	PDF	N.O. TRIAC	3 to 32 VDC			
AD-SSR640-AC-280A	Retired	PDF	N.O. SCR	90 to 280 VAC			40A
AD-SSR640-DC-280A	Retired	PDF	N.O. SCR	3 to 32 VDC			
AD-SSR6T40-DC-280A	Retired	PDF	N.O. TRIAC	3 to 32 VDC			
AD-SSR650-AC-280A	\$;0b]u:	PDF	N.O. SCR	90 to 280 VAC			50A
AD-SSR650-DC-280A	\$;0b]v:	PDF	N.O. SCR	3 to 32 VDC			
AD-SSR675-AC-280A	\$;0b]x:	PDF	N.O. SCR	90 to 280 VAC			75A
AD-SSR675-DC-280A	\$;0b]y:	PDF	N.O. SCR	3 to 32 VDC			
AD-SSR6M12-DC-200D	Retired	PDF	N.O. MOSFET	3.5 to 32 VDC	3 to 200 VDC		12A
AD-SSR6M25-DC-200D	Retired	PDF	N.O. MOSFET	3.5 to 32 VDC			25A
AD-SSR6M40-DC-200D	Retired	PDF	N.O. MOSFET	3.5 to 32 VDC			40A
AD-SSR610-AC-480A	Retired	PDF	N.O. SCR	90 to 280 VAC	48 to 480 VAC	SPST	10A
AD-SSR610-DC-480A	Retired	PDF	N.O. SCR	3 to 32 VDC			
AD-SSR6T10-DC-480A	Retired	PDF	N.O. TRIAC	3 to 32 VDC			
AD-SSR625-AC-480A	\$;-0b]l:	PDF	N.O. SCR	90 to 280 VAC			25A
AD-SSR625-DC-480A	\$;0b]o:	PDF	N.O. SCR	3 to 32 VDC			
AD-SSR6T25-DC-480A	Retired	PDF	N.O. TRIAC	3 to 32 VDC			
AD-SSR640-AC-480A	Retired	PDF	N.O. SCR	90 to 280 VAC			40A
AD-SSR640-DC-480A	Retired	PDF	N.O. SCR	3 to 32 VDC			
AD-SSR6T40-DC-480A	Retired	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	20mA @240VAC 11mA @120VAC	16mA	2mA	20mA @240VAC 11mA @120VAC	16mA	2mA
Must Release Voltage	10VAC	1VDC		10VAC	1VDC	
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	200V/μs	200V/μs	250V/μs	500V/μs	500V/μs	250V/μs
Minimum Load Current	50mA	50mA	50mA	120mA	120mA	120mA
Maximum Non-Repetitive Surge Current (1 Cycle, 16.6 ms), peak	83A	83A	100A	250A		
Maximum Off State Leakage current (RMS)	8mA	10mA	10mA	8mA	10mA	10mA
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)	4000VAC (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 12AWG / Outputs up to 10AWG. 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	20mA @240VAC 11mA @120VAC	16mA	2mA	4mA @240VAC 2mA @120VAC	10mA	4mA @240VAC 2mA @120VAC	10mA
Must Release Voltage	10VAC	1VDC		10VAC	1VDC	10VAC	1VDC
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	500V/μs	500V/μs	250V/μs	500V/μs	500V/μs	500V/μs	500V/μs
Minimum Load Current	250mA	250mA	50mA	40mA	150mA	40mA	250mA
Maximum Non-Repetitive Surge Current (1 Cycle, 16.6 ms), peak	625A	625A	250A	625A	625A	1000A	1000A
Maximum Off State Leakage current (RMS)	10mA	10mA	10mA	10mA	1mA	10mA	1mA
Maximum On-State Voltage Drop (RMS)	1.6 V 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			10ms	1/2 cycle	10ms	1/2 cycle
Maximum Turn-Off Time	1/2 cycle			40ms	1/2 cycle	40ms	1/2 cycle
General Characteristics							
Dielectric Strength (Input-to-Output Isolation)	4000VAC (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	1E + 10Ω			1E + 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 12AWG / Outputs up to 10AWG. 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	10mA			20mA @240VAC 11mA @120VAC	16mA	
Must Release Voltage	1VDC			10VAC	1VDC	
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	–			200V/μs		
Minimum Load Current	20mA			50mA	150mA	50mA
Maximum Non-Repetitive Surge Current (1 Cycle, 16.6 ms), peak	27A	50A	90A	83A	83A	100A
Maximum Off State Leakage current (RMS)	8mA			10mA	8mA	8mA
Typical On-State Voltage Drop (RMS)	2.8 VDC (@ 40A load)			1.7 V rms	1.6 V rms	1.6 V rms
Maximum I2T for Fusing (A2Sec)	–			72	72	35
Operating Frequency Range	–			50 to 60 Hz		
Maximum Turn-On Time	300μs	600μs	600μs	1/2 cycle	8.3 ms	1/2 cycle
Maximum Turn-Off Time	1ms			1/2 cycle	8.3 ms	1/2 cycle
General Characteristics						
Dielectric Strength (Input-to-Output Isolation)	2500VAC (rms)			4000VAC (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	1E + 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]			-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 12AWG / Outputs up to 10AWG. For anything larger, fork or ring terminals are recommended.					
Agency Approvals	UL file # E222847, CE, CSA, RoHS					

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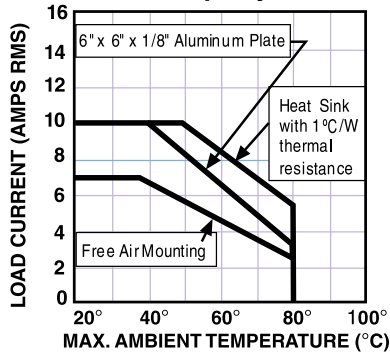
Specifications						
Part Number	AD-SSR625-AC-480A	AD-SSR625-DC-480A	AD-SSR6T25-DC-480A	AD-SSR640-AC-480A	AD-SSR640-DC-480A	AD-SSR6T40-DC-480A
Input Characteristics						
Control Voltage Range	90 to 280 VAC	3 to 32 VDC		90 to 280 VAC	3 to 32 VDC	
Typical Input Current	20mA @240VAC 11mA @120VAC	16mA		20mA @240VAC 11mA @120VAC	16mA	
Must Release Voltage	10VAC	1VDC		10VAC	1VDC	
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	300V/μs	500V/μs	250V/μs	500V/μs	500V/μs	250V/μs
Minimum Load Current	120mA	120mA	20mA	250mA	250mA	250mA
Maximum Non-Repetitive Surge Current (1 Cycle, 16.6 ms), peak	250A	250A	250A	625A	625A	300A
Maximum Off State Leakage current (RMS)	10mA	8mA	8mA	10mA	8mA	8mA
Typical On-State Voltage Drop (RMS)	1.7 V rms	1.6 V rms	1.6 V rms	1.7 V rms	1.6 V rms	1.6 V 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)	4000VAC (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 12AWG / Outputs up to 10AWG. For anything larger, fork or ring terminals are recommended.					
Agency Approvals	UL file # E222847, CE, CSA, RoHS					

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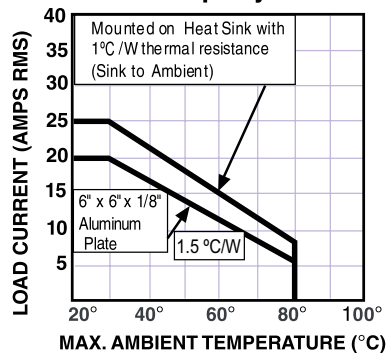
Derating Charts

Derating Charts

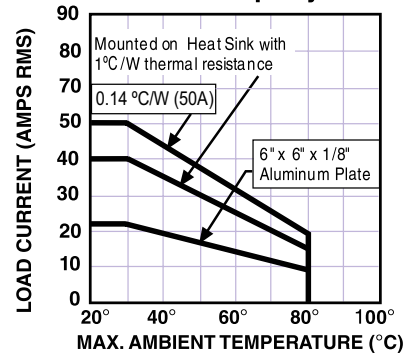
10 Amp Styles



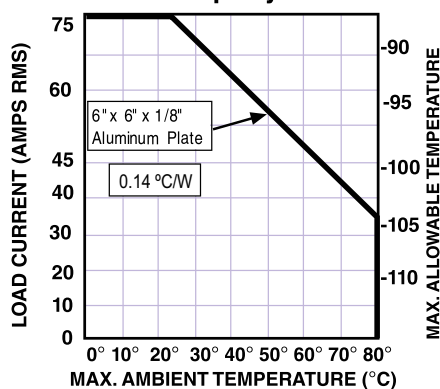
25 Amp Styles



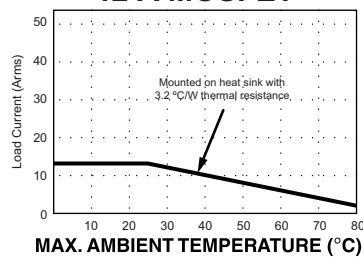
40 & 50 Amp Styles



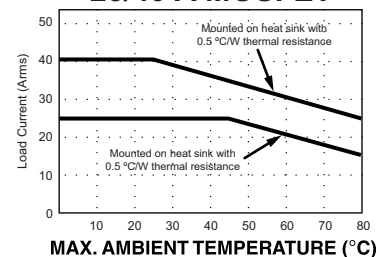
75 Amp Styles



12 A MOSFET



25/40 A MOSFET

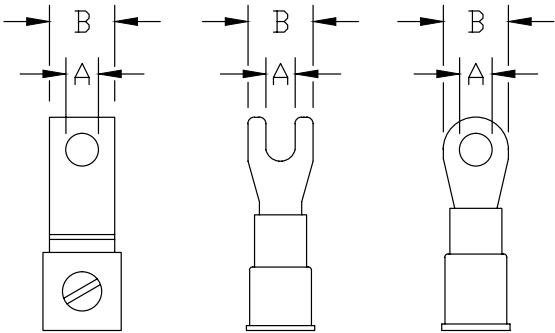


Note: Charts are based on using a thermal transfer medium such as the included thermal pad

AD Series Class 6 Solid State Relays

Accessory

Accessory for SSR6 Solid State Relay			
Part Number	Price	Description	Drawing Link
AD-SSR-THERM-PAD	Retired	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]