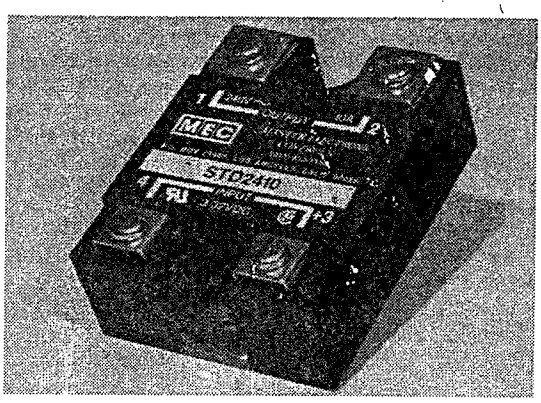
Solid State Relays

SS AND ST SERIES

The SS & ST Solid State Relays have been developed to satisfy the demand for low input power while controlling high inrush circuits such as lamps, motors, solenoids, and heaters with maximum input—output isolation.

The SS & ST relays feature SCR'S back-to-back or TRIAC outputs with zero voltage turn-on and zero current turn-off. They are ideally suited for loads such as transformer switching, plastic molding machines, computer peripheral and many others.

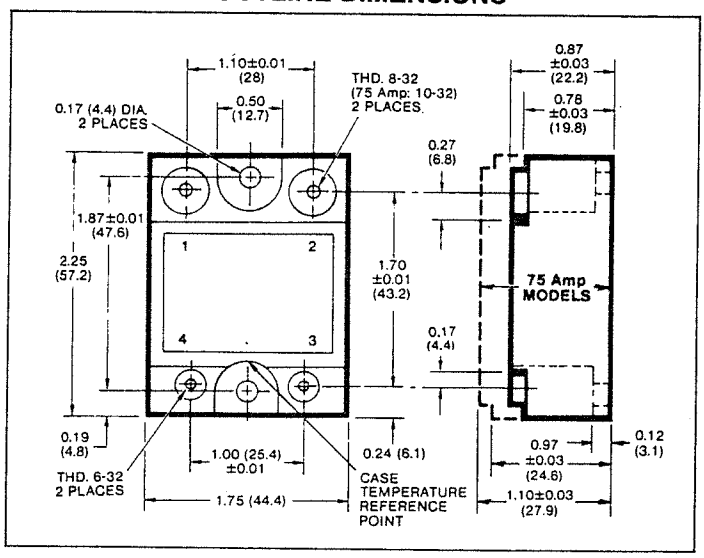


SPECIFICATIONS

GENERAL

1. Series:
   a. SSA – SCR'S back to back with A.C. control.
   b. SSD – SCR'S back to back with D.C. control.
   c. STA – TRIAC with A.C. control.
   d. STD – TRIAC with D.C. control.
2. Current Rating: 2.5 to 75 Amps.
3. Minimum load current: 50 ma.
4. Temperature Range:
   a. Operating: −30°c to +80°c
   b. Storage: −28°c to +100°c
5. Duty: Continuous
6. Contacts: 1 Form A (SPNO)
7. Input control: A.C. Models
   a. Control voltage range 90 – 280 V.A.C.
   b. Must operate voltage 90 V.A.C. Max.
   c. Must release voltage 10 V.A.C. Min.
   d. Input impedance 40,000 OHMS Min.
8. Input control: D.C. Models
   a. Control voltage range 3-32 V.D.C.
   b. Must operate voltage 3 V.D.C. Max.
   c. Must release voltage 1 V.D.C. Min.
   d. Input Impedance 1,500 OHMS Min.
9. Standard: Zero voltage turn on.
10. Optional: Non-Zero Random phase turn on. Available only with SSD (DC Input), 10 thru 75 Amp only. Add suffix R to end of part number. Price Adder $1.50 per Unit.
11. UL listed and CSA certified.

OUTLINE DIMENSIONS



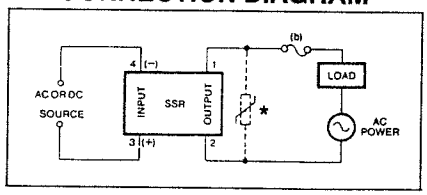
SCR OUTPUT - SS SERIES

AC Input Models	DC Input Models	Line V ac (47-63 Hz)	Max. Load Current, Amps (RMS)	One-Cycle Surge, Amps (PK)	Power Diss. At Max. Amps	Thermal Impedance Junction to Case	Max I^2T For Fusing (8 1/3 US)
SSA1202	SSD1202	24-140	2.5	22.5	6.3	8.5	2.1
SSA1210	SSD1210	24-140	10	120	12	1.48	60
SSA1225	SSD1225	24-140	25	250	29	1.02	260
SSA1240	SSD1240	24-140	40	625	46	.63	1620
SSA2402	SSD2402	48-280	2.5	22.5	6.3	8.5	2.1
SSA2410	SSD2410	48-280	10	120	12	1.48	60
SSA2425	SSD2425	48-280	25	250	29	1.02	260
SSA2440	SSD2440	48-280	40	625	46	.63	1620
	SSD2475	48-280	75	1000	82	.18	4150
SSA4808	SSD4808	80-530	8	72	9.3	1.48	22
SSA4812	SSD4812	80-530	12	140	14	1.48	81
SSA4825	SSD4825	80-530	25	250	34	1.02	260
	SSD4840	80-530	40	400	60	.63	660
	SSD4875	80-530	75	1000	90	.18	4150

TRIAC OUTPUT - ST SERIES

STA1210	STD1210	24-140	10	100	14	2.1	42
STA1225	STD1225	24-140	25	250	31	1.3	260
STA2410	STD2410	48-280	10	100	14	2.1	42
STA2425	STD2425	48-280	25	250	31	1.3	260

CONNECTION DIAGRAM



*TRANSIENT PROTECTION

All units include an internal snubber for transient and dv/dt protection. If required, additional transient protection can be provided by connecting a metal oxide varistor (mov) across terminals 1 and 2.

Part Number	A.C. Voltage	Joules
N-280	120	30
N-281	120	50
N-282	240	30
N-284	480	70

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P.O. BOX 25905 ● LOS ANGELES, CALIFORNIA 90025 ● TELEPHONE (213) 452-1336 ● TELEX 182041 MASTER SNM

To insure reliable operation of a Solid State Relay the heat generated in operation must be dissipated. Mounting the relay to a metal panel may work in low level applications. When higher currents are switched use of a heatsink becomes necessary.

Example 1: If a SSD1225 is mounted on a heatsink with a thermal resistance of 1°C/W (including Recs) and must operate in an ambient of 60°C, the allowable current of 23A may be determined by following the route, A, B, C, D (Figure 1). For a SSD4825, following the route, A, B, E, F will yield a current of 21A. Additional information of power dissipation and maximum allowable case temperature can be found by extending line E, C, B to points G and H where the values of 26W and 89°C are read.

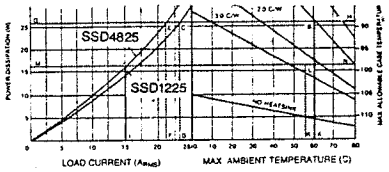


Figure 1. Use of Thermal Derating Curves

Example 2: If a current of 15A is required for a SSD4825 in an ambient of 55°C, the necessary heatsink, plus interface, thermal resistance of 2.7° C/W may be determined by following the route I, J, K, L (Figure 1). Additional information of power dissipation and case temperature can be found by extending line J, L to points M and N where the values of 16W and 99° are read.

This information can be used in heatsink selection from manufacturer's dissipation versus thermal resistance curves such as those shown in figure 2. The thermal resistance of curve (a) at 16 watts is 2.5°C/W. This is better than the required 2.7°C/W in example 2, allowing 0.2°C/W for Recs, and is therefore suitable for this application.

Alternatively, heatsink (b) at 16 watts is 1.9°C/W. Adding 0.1°C/W for Recs and returning to figure 1, it would allow operation at a maximum ambient of 65°C instead of 55°C.

As a point of information, if the SSR is firmly mounted on a smooth heatsink surface using thermally conductive grease, the value of Recs (case-to-heatsink interface) will typically be 0.1°C/W or less.

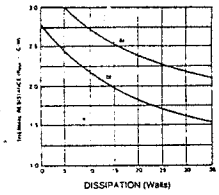
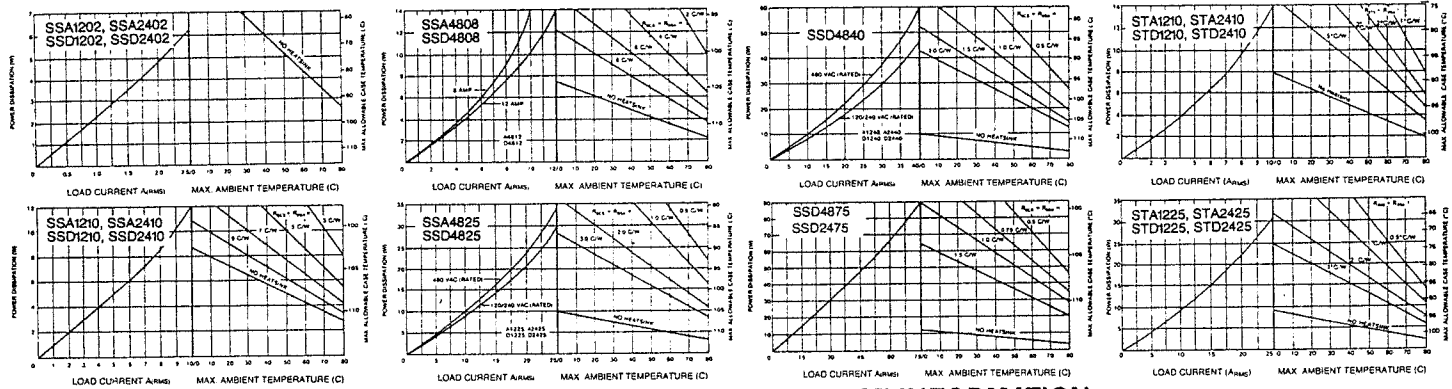
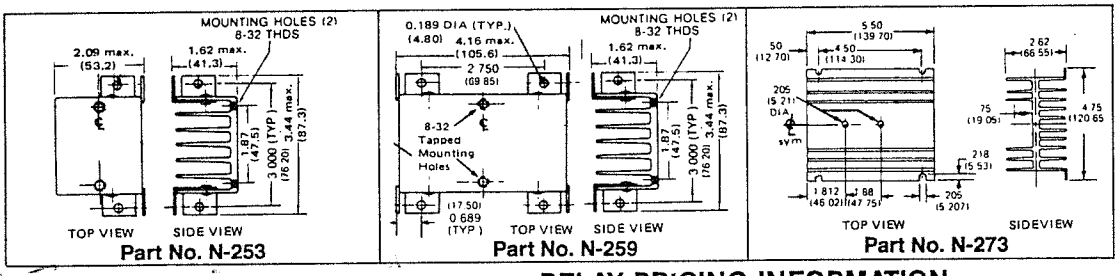


Figure 2. Typical Heat Sink Characteristics

TO USE THESE CHARTS FIND PART NUMBER IN GRAPH AREA AND FOLLOW STEPS OUTLINED IN EXAMPLES ABOVE.



HEAT SINK AND THERMAL GREASE INFORMATION



Thermal grease
(Silicon Grease) must be used whenever a relay is mounted to a metal panel or to a heat sink.
2 oz. tube Part No. N-224

HEAT SINK THERMAL RESISTANCE

Part No.	Degrees C. Per Watt
N-253	4
N-259	2
N-273	1

RELAY PRICING INFORMATION

PART NUMBER	1-9	10-24	25-49	50-99	100-249
SSA1202 SSA1210 SSA1225 SSA1240 SSA2402 SSA2410					
SSD1202 SSD1210 SSD1225 SSD1240 SSD2402 SSD2410 SSD2425					
STA1210 STA1225					
STD1210 STD1225					

PART NUMBER	1-9	10-24	25-49	50-99	100-249
SSA2425 SSA2440 SSA4808 SSA4812 SSA4825					
SSD2440 SSD2475 SSD4808 SSD4812 SSD4825 SSD4840 SSD4875					
STA2410 STA2425					
STD2410 SSD2425					

HEAT SINK AND ACCESSORY PRICING

Part No.	1-9	10-24	25-Up	Part No.	1-9	10-24	25-Up	Part No.	1-9	10-24	25-Up	Part No.	1-9	10-24	25-Up
N-224 N-253															

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