

**Part Numbers**

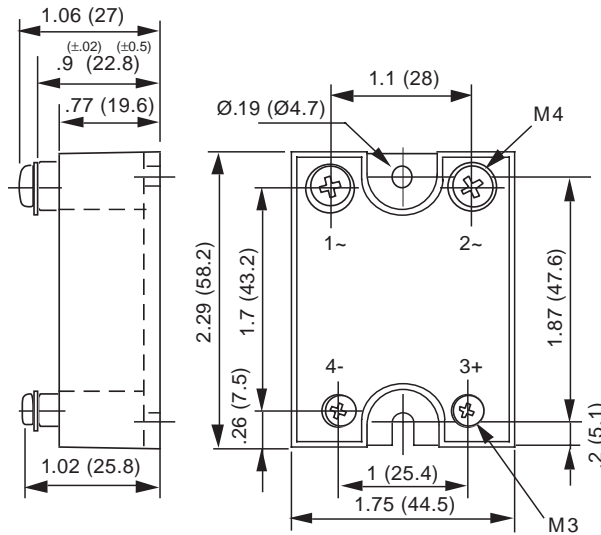
Package & Chip Type	Line Voltage <sup>1</sup>	Switch Type <sup>2</sup>	Output Current	Feature <sup>3</sup>
S	24	R	12	-22
		D	25	
		A	40	
S	48	R	25	-22
		D	50	
		A	75	
			95	
			125	
S	60	D	50	
			75	
			95	
			125	

Part Number Example: **S48A25-22**

**NOTES**

- 1) Line Voltage (nominal): 24 = 240 Vac; 48 = 480 Vac; 60 = 600 Vac
- 2) Switch Type: R = Random turn-on; D = Zero-cross turn-on;  
A = AC control, Zero-cross turn-on
- 3) Feature: -22 = 24 Vac control. Available on A type 240 Vac, 25 and 40A models and A type 480 Vac, 25, 50, 125A models

**MECHANICAL SPECIFICATION**



TOLERANCES: ±.01 (0.3)      WEIGHT: 3.18 oz. (90g)

Figure 1 — S relays, 12–95 A;  
dimensions in inches (mm)  
125A model uses larger M5 output screw terminals



**FEATURES/BENEFITS**

- Industry standard package
- Internal snubber (except S60 models)
- Designed for all types of loads
- AC or DC control available
- Excellent thermal performance
- Tight zero-cross window for low EMI
- High immunity to surges

**DESCRIPTION**

The Series S single-phase relays are designed for all types of loads. The design incorporates an SCR or triac output. The relays utilize optical isolation to protect the control from load transients. All contain an internal snubber for output protection. High-current models are excellent for motor and phase angle control.

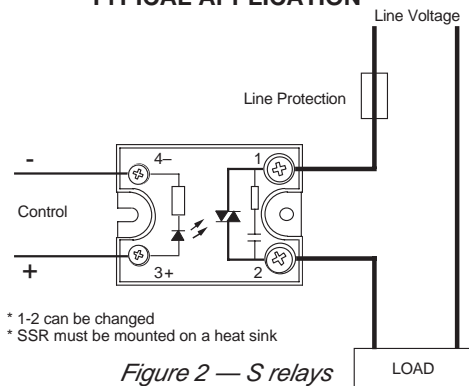
**APPLICATIONS**

- Heating control
- Motor control
- Uninterruptible power supplies
- Light dimmers
- Industrial and process control
- On/Off controls of AC equipment

**APPROVALS**

S24 and S48 models are UL recognized.  
UL File Number: E128555.

**TYPICAL APPLICATION**



\* 1-2 can be changed  
\* SSR must be mounted on a heat sink

Figure 2 — S relays

**INPUT (CONTROL) SPECIFICATION**

	Input Type	Min	Max	Units
<b>Control Range</b>				
S24	R	3	30	Vdc
	D	4	30	Vdc
S48	R	4	30	Vdc
	D	5	30	Vdc
S60	D	5	30	Vdc
SxxA	A	90	240	Vac/Vdc
Sxxxx-22	A	17	80	Vac/Vdc

**Input Current Range**

S	R/D	3	30	mA
S	A	3	8	mA
Sxxxx-22	A	5.6	26	mA

**Must Turn-Off Voltage**

S	R/D	1	Vdc
S24	A	15	Vac
S48	A	1	Vac
Sxxxx-22		3	Vac

**Input Resistance (Typical)**

S	R/D	1000	Ohms
S	A	30,000	Ohms
Sxxxx-22		3000	Ohms

**Reverse Voltage Protection**

S	R/D	30	V
S	A	NA	

**CONTROL CHARACTERISTICS**

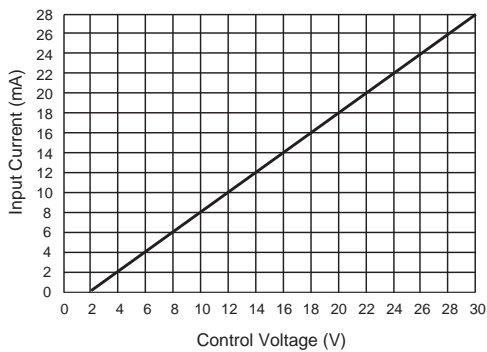


Figure 3a — S48R, S48D and S60D relays

**CONTROL CHARACTERISTICS**

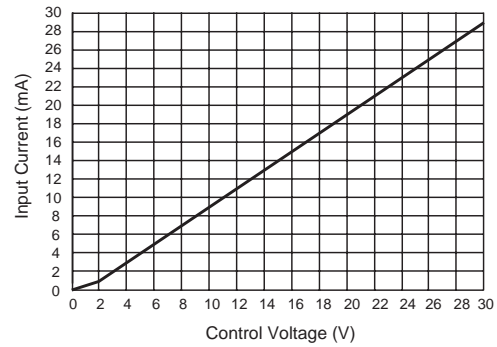


Figure 3b — S24D/R relays

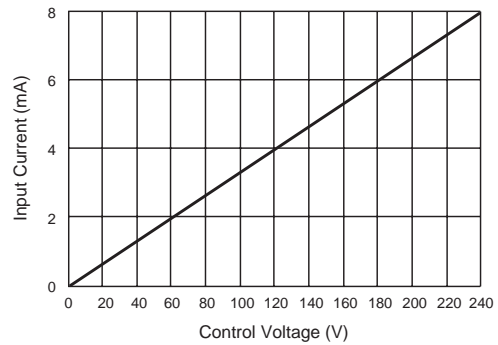


Figure 3c — S24A and S48A relays

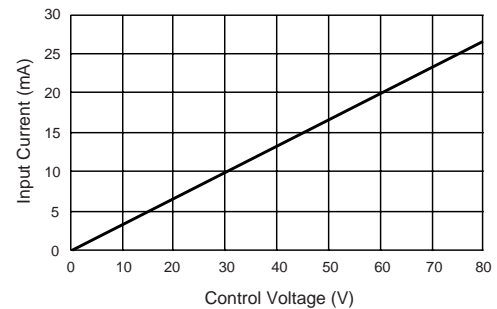


Figure 3d — Sxxxx-22 relays

**OUTPUT (LOAD) SPECIFICATION**

Input Type	Min	Max	Units
<b>Operating Range</b>			
S24	12	280	Vrms
S48	24	520	Vrms
S60	24	660	Vrms
<b>Peak Voltage</b>			
S24		600	Vpeak
S48		1200	Vpeak
S60		1600	Vpeak
<b>Load Current Range (Resistive)</b>			
12A output current	.005	12	Arms
25A output current	.005	25	Arms
40A output current	.005	40	Arms
50A output current	.005	50	Arms
75A output current	.005	75	Arms
95A output current	.005	95	Arms
125A output current	.005	125	Arms
<b>Inductive Load Current</b>			
12A output current		2.5	Arms
25A output current		5	Arms
40A output current		9	Arms
50A output current		12	Arms
75A output current		16	Arms
95A output current		20	Arms
125A output current		30	Arms
<b>Capacitive Load Current</b>			
S60D50		13	Arms
S60D75		24	Arms
S60D90		36	Arms
S60D125		48	Arms
<b>Maximum Surge Current Rating (Non-Repetitive)</b>			
12A output current		120	A
S24, 25A output current		240	A
S24R25		250	A
S48, 25A output current		230	A
40A output current		350	A
50A output current		550	A
75A output current		1000	A
95A output current		1500	A

**OUTPUT (LOAD) SPECIFICATION (Continued)**

Input Type	Min	Max	Units
<b>Maximum Surge Current Rating (Non-Repetitive) (Continued)</b>			
125A output current		2000	A
<b>On-State Voltage Drop</b>			
12A output current		1.3	V
25A output current		1.2	V
40A output current		1.4	V
50A output current		1.4	V
75A output current		1.35	V
S60D75		1.3	V
95A output current		1.3	V
S60D90		1.15	V
125A output current		1.3	V
S60D125		1.1	V
<b>Zero-Cross Window (Typical)</b>			
S	R	NA	
S	D/A	±12	Vac
<b>Off-State Leakage Current (60Hz)</b>			
S24		3	mA
S48	D/A	3	mA
S48	R	2.5	mA
S60	A	1	mA
<b>Turn-On Time (60 Hz)</b>			
S	R	0.1	ms
S	D	8.3	ms
S	A	24.9	ms
<b>Turn-Off Time (60 Hz)</b>			
S	R/D	8.3	ms
S	A	24.9	ms
<b>Off-State dv/dt</b>			
All relays		500	V/μs
<b>Maximum di/dt (Non-Repetitive)</b>			
All relays		50	A/μs



**THERMAL CHARACTERISTICS**

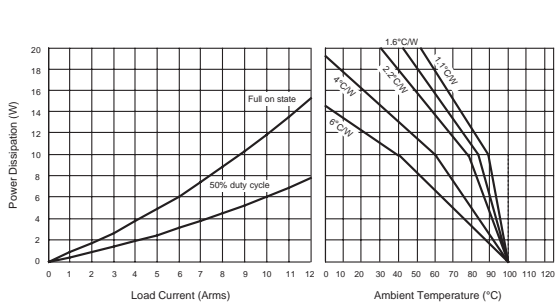


Figure 5a — 12A output current

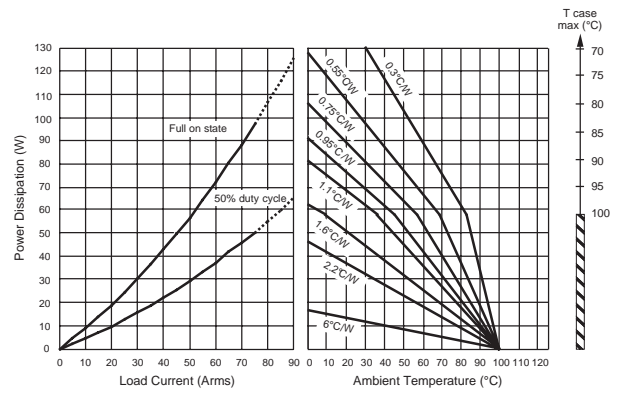


Figure 5e — 75A output current

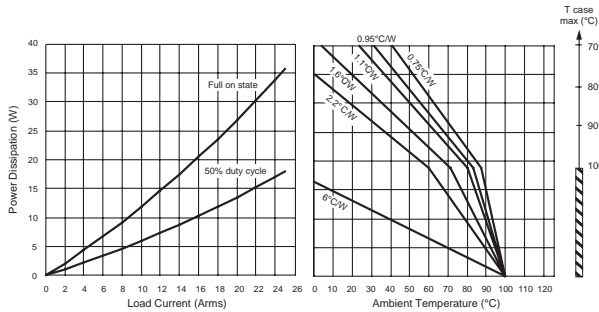


Figure 5b — 25A output current

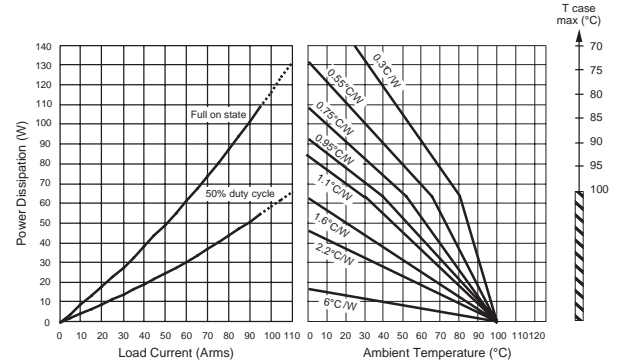


Figure 5f — 95A output current

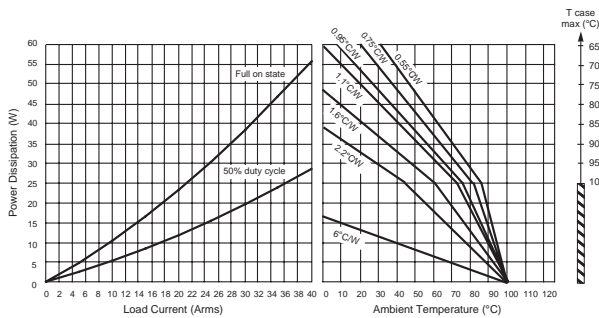


Figure 5c — 40A output current

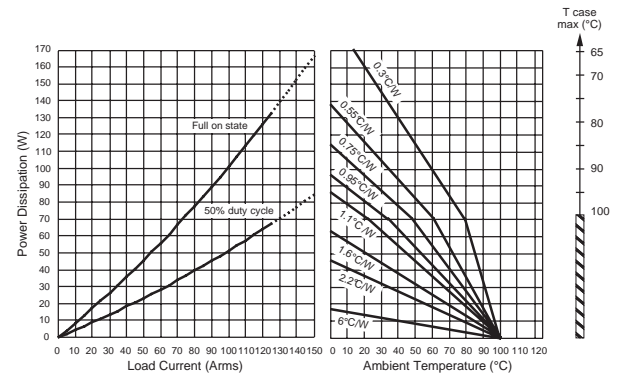


Figure 5g — 125A output current

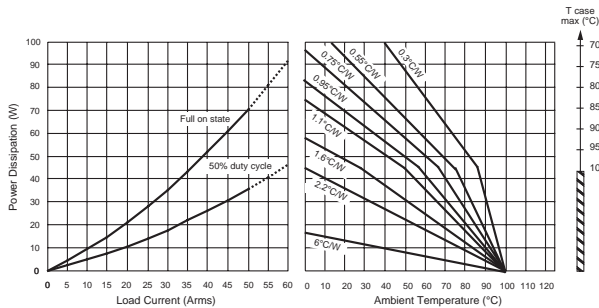


Figure 5d — 50A output current

- NOTES:**
1. Electrical specifications measured at 25°C unless otherwise specified.
  2. For 800Hz applications, contact factory.
  3. For additional/custom options, contact factory.

**OPTIONAL ADD-ONS**

- Please order add-ons separately:
- -12 — Thermal pad installed.
  - -14 — Plastic touch-proof cover.