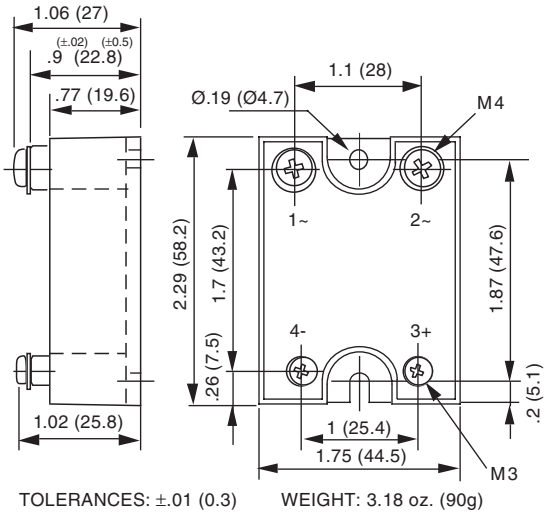
TELEDYNE RELAYS
Everywhereyoulook™

Series S
Single Output to 660 Vac AC/DC Control

Part No.	Load Voltage	Load Current	Control Voltage	Switch Type
S24D40	12–280 Vrms	40A	4–30 Vdc	Zero Cross
S48R50	24–520 Vrms	50A	4–30 Vdc	Random
S48D50	24–520 Vrms	50A	5–30 Vdc	Zero Cross
S48A50	24–520 Vrms	50A	90–240 Vac/dc	Zero Cross
S48R75	24–520 Vrms	75A	4–30 Vdc	Random
S48A125	24–520 Vrms	125A	90–240 Vac/dc	Zero Cross
S60D125	24–660 Vrms	125A	7–30 Vdc	Zero Cross

RoHS Compliant

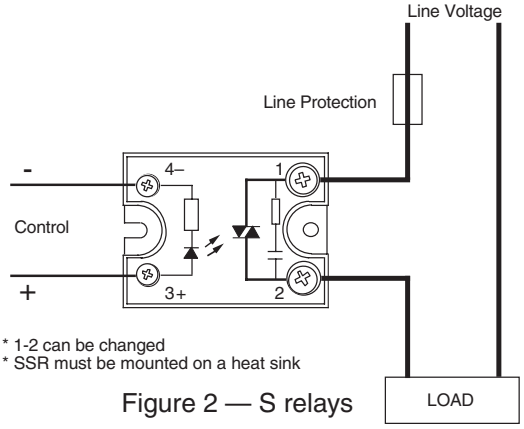
MECHANICAL SPECIFICATION



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

TYPICAL APPLICATION



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

Figure 2 — S relays

Part Numbering System

S 48 A 50

- Series
- Line Voltage[1]
- Switch Type[2]
- Output Current[3]

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/DC control, Zero-cross turn-on

3) Output Current: 40 = 40Amps, 50 = 50Amps, 75 = 75Amps, 125 = 125Amps

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.

INPUT (CONTROL) SPECIFICATION

		Min	Max	Units
Control Range				
S24	D	4	30	Vdc
S48	R	4	30	Vdc
	D	5	30	Vdc
	A	90	240	Vac/dc
S60	D	5	30	Vdc
Input Current Range				
S	R/D	3	30	mA
S	A	3	8	mA
Must Turn-Off Voltage				
S	R/D		1	Vdc
S48	A		1	Vac
Input Resistance (Typical)				
S	R/D		1000	Ohms
S	A		30,000	Ohms
Reverse Voltage Protection				
S	R/D		30	V
S	A			NA

CONTROL CHARACTERISTICS

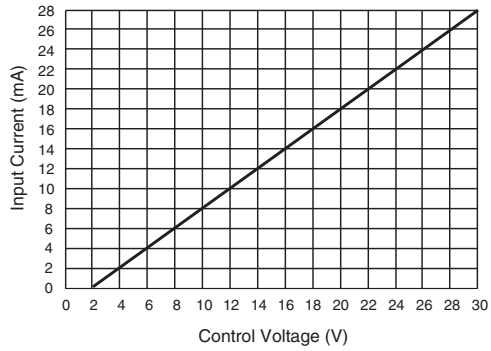


Figure 3a — S48R, S48D and S60D relays

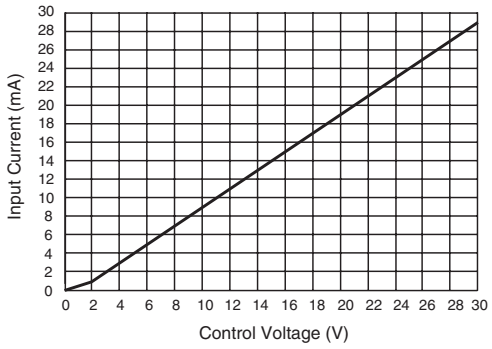


Figure 3b — S24D40 relay

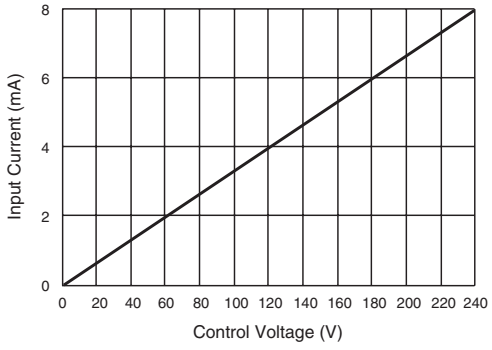


Figure 3c — S48A50 & S48A125 relays

OUTPUT (LOAD) SPECIFICATION

	Min	Max	Units
Operating Range			
S24	12	280	Vrms
S48	24	520	Vrms
S60	24	660	Vrms
Peak Voltage			
S24		600	Vpeak
S48		1200	Vpeak
S60		1600	Vpeak
Load Current Range (Resistive)			
40A output current	.005	40	Arms
50A output current	.005	50	Arms
75A output current	.005	75	Arms
125A output current	.005	125	Arms
Inductive Load Current			
40A output current		9	Arms
50A output current		12	Arms
75A output current		16	Arms
125A output current		30	Arms
Capacitive Load Current			
S60D125		48	Arms
Maximum Surge Current Rating (Non-Repetitive)			
40A output current		350	A
50A output current		550	A
75A output current		1000	A
125A output current		2000	A

OUTPUT (LOAD) SPECIFICATION (cont.)

		Min	Max	Units
On-State Voltage Drop				
40A output current			1.4	V
50A output current			1.4	V
75A output current			1.35	V
125A output current			1.3	V
S60D125			1.1	V
Zero-Cross Window (Typical)				
S	R		NA	V
S	D/A		±12	Vac
Off-State Leakage Current (60Hz)				
S24			3	mA
S48	D/A		3	mA
S48	R		2.5	mA
S60	D		3	mA
Turn-On Time (60Hz)				
S	R		0.1	ms
S	D		8.3	ms
S	A		24.9	ms
Turn-Off Time (60Hz)				
S	R/D		8.3	ms
S	A		24.9	ms
Off-State dv/dt				
All Relays			500	V/µs
Maximum di/dt (Non-repetitive)				
All Relays			50	A/µs

OUTPUT (LOAD) SPECIFICATION (cont.)

	Min	Max	Units
Operating Frequency	0.1	440	Hz
I²T for match fusing (<8.3ms)			
40A output current		612	A²S
50A output current		1500	A²S
75A output current		5000	A²S
125A output current		20000	A²S

ENVIRONMENTAL SPECIFICATION

	Min	Max	Units
Operating Temperature			
S48D50	-55	100	°C
All other P/Ns	-40	100	°C
Storage Temperature			
All Relays	-40	+100	°C
Input-Output Isolation			
All Relays		4000	Vrms
Output-Case Isolation			
40A output current	3300		Vrms
50A output current	3300		Vrms
75A output current	3300		Vrms
125A output current	3300		Vrms

SURGE CURRENT

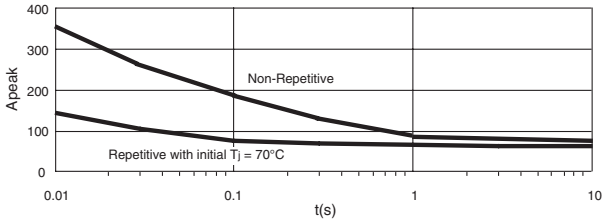


Figure 4a: 40A Output Current

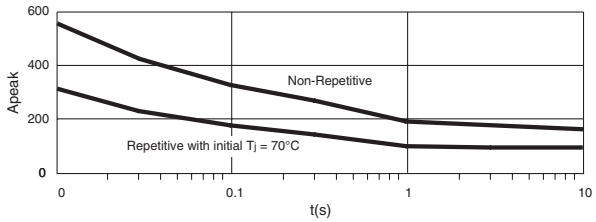


Figure 4b: 50A Output Current

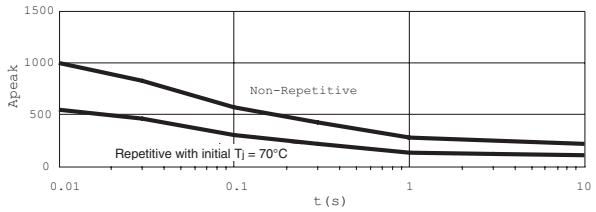


Figure 4c: 75A Output Current

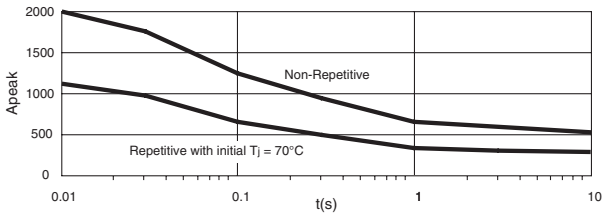


Figure 4d: 125A Output Current

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

OPTIONAL ADD-ONS
- -12 : Thermal pad can be purchased seperately or with /F part number
- -14 : Plastic touch proof cover

THERMAL CHARACTERISTICS

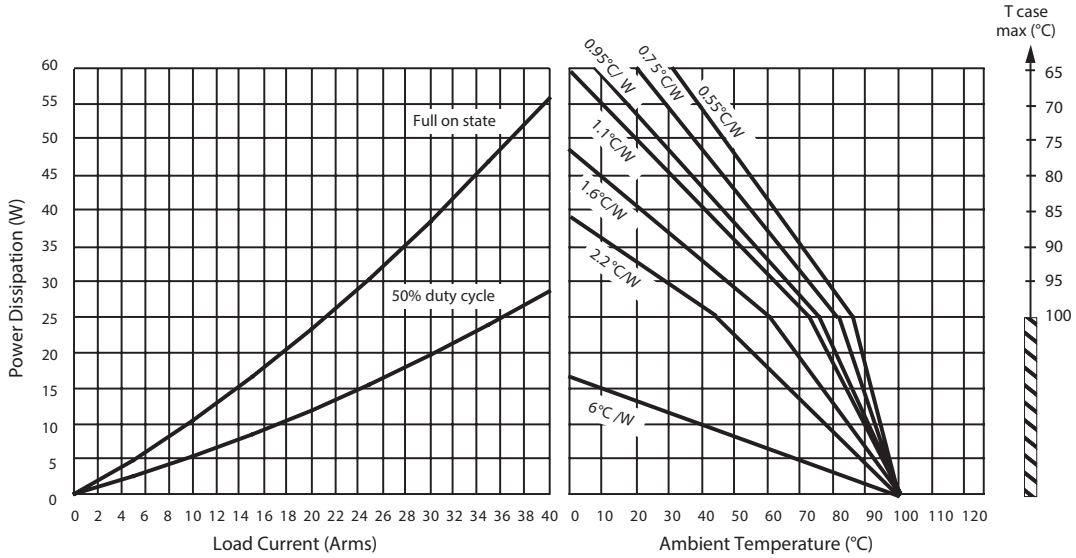


Figure 5a: 40A Output Current

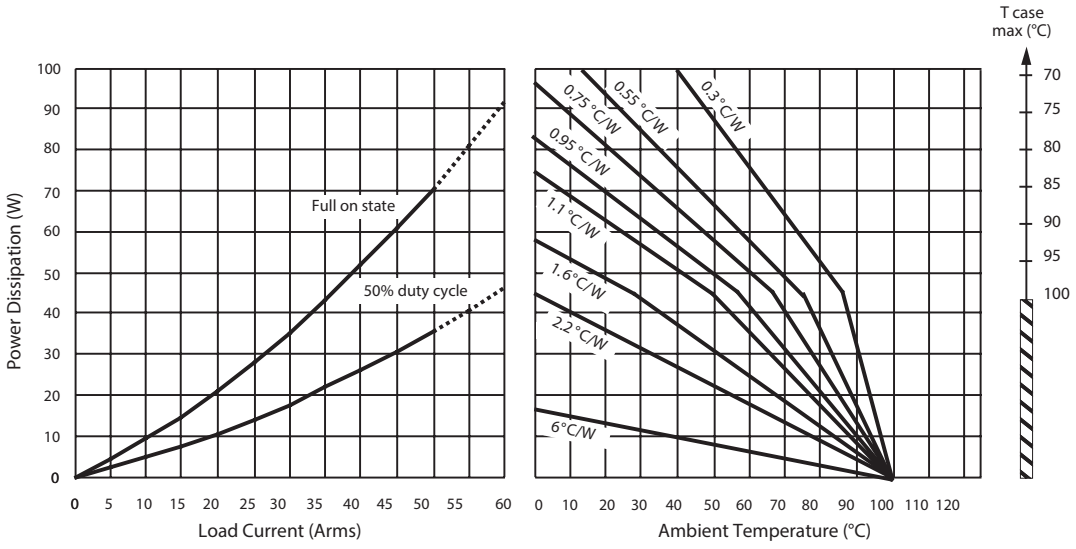


Figure 5b: 50A Output Current

THERMAL CHARACTERISTICS

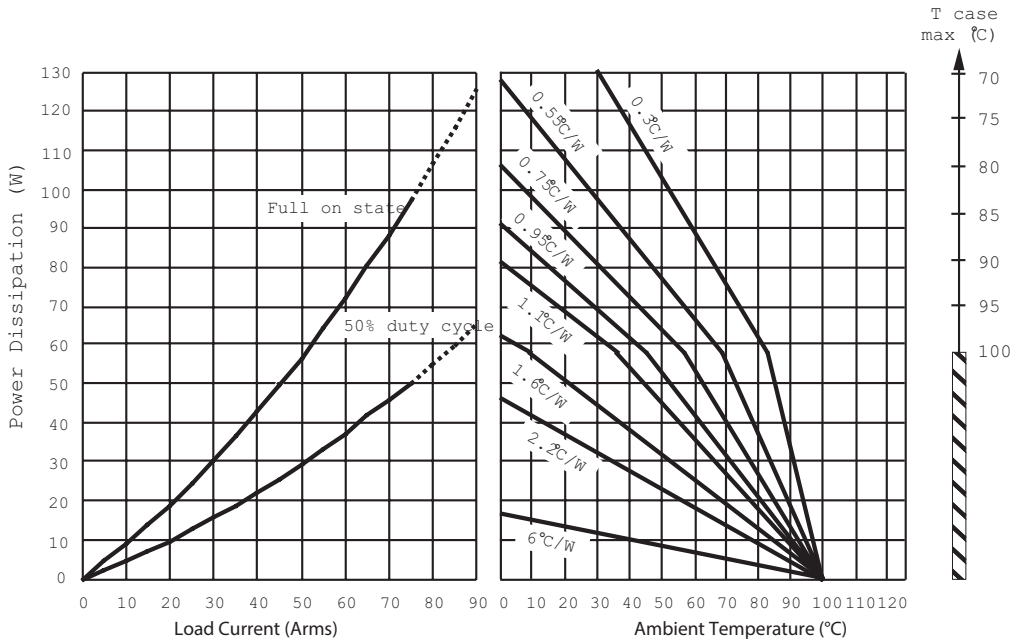


Figure 5c: 75A Output Current

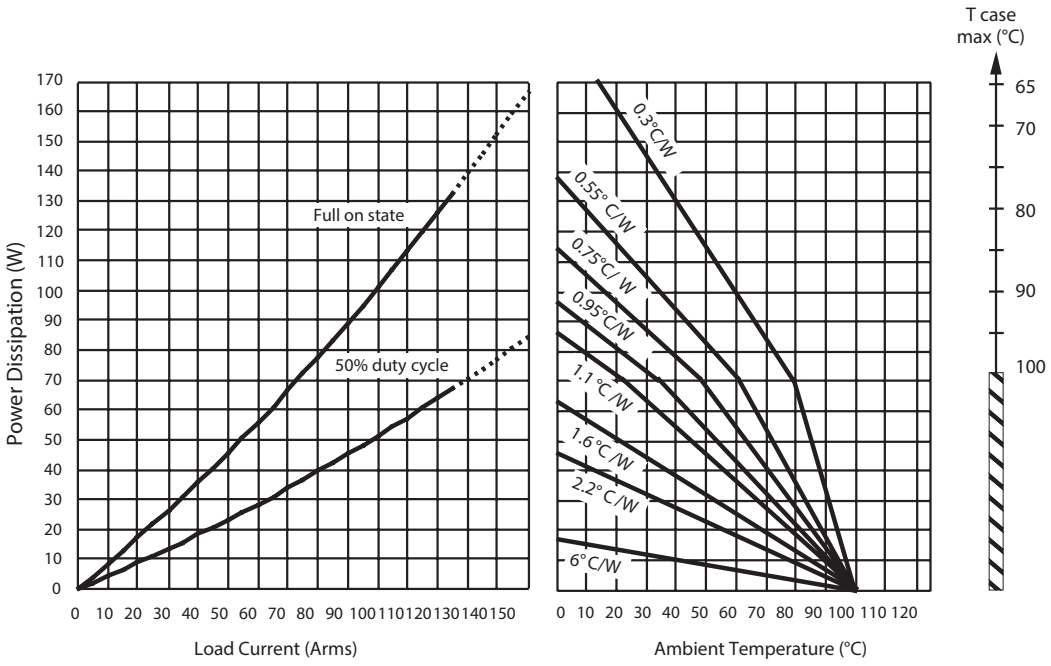


Figure 5d: 125A Output Current