TELEDYNE RELAYS
A Unit of Teledyne Electronics and Communications

Series ST

Single Output to 75A 600 Vac AC/DC Control

Part Numbers

Package & Chip Type	Line Voltage[1]	Switch Type[2]	Output Current	Feature[3]
ST	24	D	12	-02
	48		25	-16
			40	
			50	
			75	
ST	24	A	25	
			50	
ST	48	A	25	-22

Part Number Example: **ST48A25-22**

NOTES
1) Line Voltage (nominal): 24 = 240 Vac; 48 = 480 Vac
2) Switch Type: D = Zero-cross turn-on; A = AC control, Zero-cross turn-on
3) Feature: -02 = Control LED: Standard on all ST48D
Only available on ST24D 12A and 40A (standard)
-16 = Internal MOV: Available only on ST24D 25A and 50A
-22 = 24 Vac Control

MECHANICAL SPECIFICATION

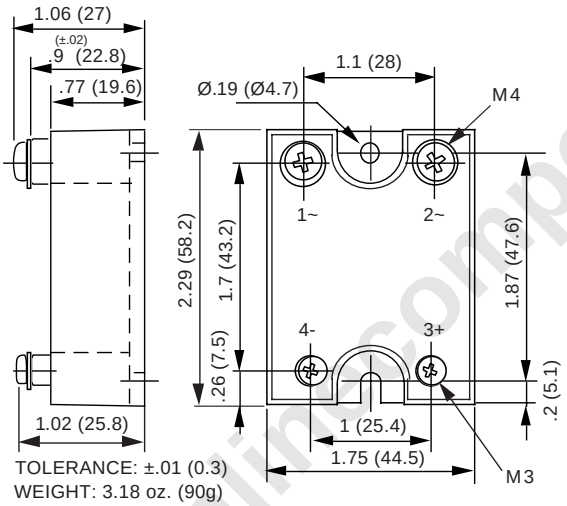

Figure 1 — ST relays, dimensions in inches (mm)

FEATURES/BENEFITS

- Industry standard package
- Internal MOV (certain models)
- Control LED (certain models)
- AC or DC control available
- Excellent thermal performance
- Tight zero-cross window for low EMI
- High immunity to surges

DESCRIPTION

The Series ST single-phase relays are designed for high-power applications. The design incorporates an SCR or triac output. The Series ST relays utilize optical isolation to protect the control from load transients. Control LED is available on certain models. All Series ST relays are zero crossing. Internal MOV is also available on ST24D 25A and 50A models.

APPLICATIONS

- Heating control
- Industrial and process control
- On/Off controls of AC equipment

APPROVALS

All models are UL recognized.
UL File Number: E128555.

TYPICAL APPLICATION

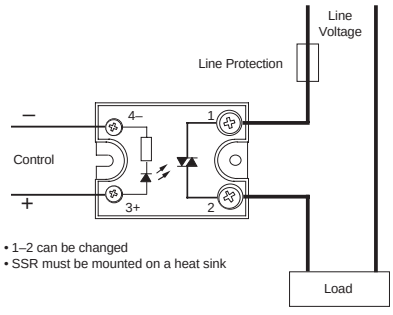

Figure 2a — ST relays

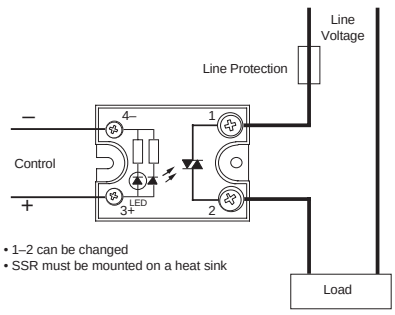

Figure 2b — ST -02 option relays

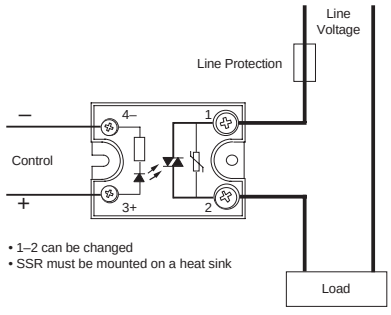

Figure 2c — ST -16 option relays

INPUT (CONTROL) SPECIFICATION

	Input Type	Min	Max	Units
Control Range				
ST24	D	4	30	Vdc
	A	90	240	Vac/Vdc
ST48	D	5	30	Vdc
	A	17	80	Vac/Vdc
Input Current Range				
ST24D		3	30	mA
ST24DXX-02		4	48	mA
ST24A		3	8	mA
ST48D		5	46	mA
ST48A25-22		5.6	26	mA
Must Turn-Off Voltage				
ST	D		1	Vdc
ST24	A		15	Vac
ST48	A		3	Vac
Input Resistance (Typical)				
ST	D		1000	Ohms
ST	D-02		600	Ohms
ST	A		3000	Ohms
Reverse Voltage Protection				
S	D		30	V
S	A			NA

OUTPUT (LOAD) SPECIFICATION

	Input Type	Min	Max	Units
Operating Range				
ST24		12	280	Vrms
ST48		24	600	Vrms
Peak Voltage				
ST24			600	Vpeak
ST48			1200	Vpeak
Load Current Range (Resistive)				
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

CONTROL CHARACTERISTICS

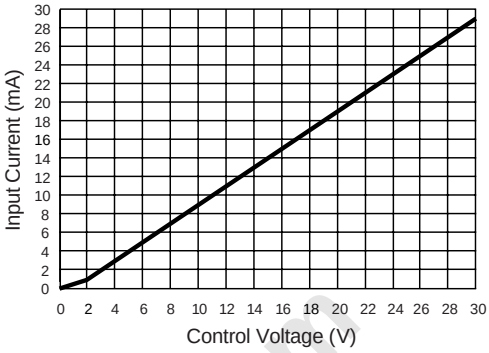

Figure 3a — ST24D relays

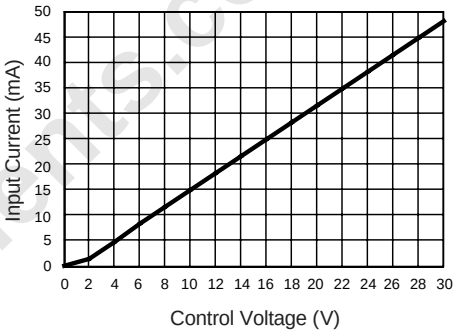

Figure 3b — ST -02 relays

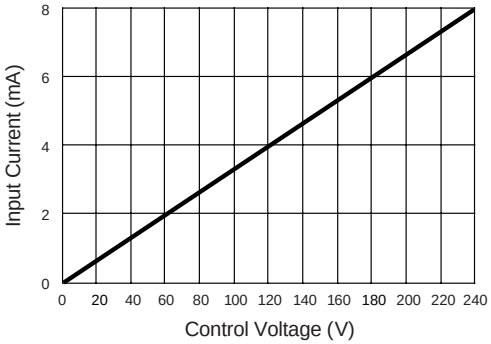

Figure 3c — ST24A relays

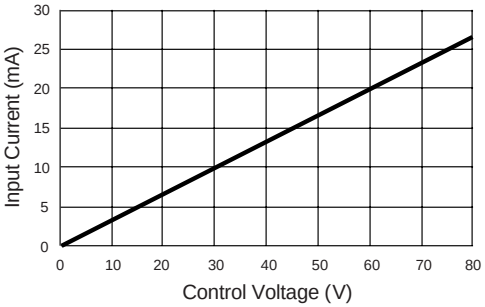

Figure 3d — ST24A25-22

OUTPUT (LOAD) SPECIFICATION (continued)

	Input Type	Min	Max	Units
Maximum Surge Current Rating (Non-Repetitive)				
12A output current			120	A
25A output current			240	A
40A output current			350	A
50A output current			550	A
75A output current			1000	A
On-State Voltage Drop				
12A output current			1.3	V
25A output current			1.2	V
40A output current			1.4	V
50A output current			1.45	V
ST48D50-02			1.4	V
75A output current			1.4	V
Zero-Cross Window (Typical)				
S	D/A		±12	Vac
Off-State Leakage Current (60Hz)				
All relays			3	mA
Turn-On Time (60 Hz)				
ST	D		8.3	ms
ST	A		24.9	ms
Turn-Off Time (60 Hz)				
ST	D		8.3	ms
ST	A		24.9	ms
Off-State dv/dt				
All relays			500	V/µs
Maximum di/dt (Non-Repetitive)				
All relays			50	A/µs
Operating Frequency Range				
All relays		0.1	440	Hz

SURGE CURRENT

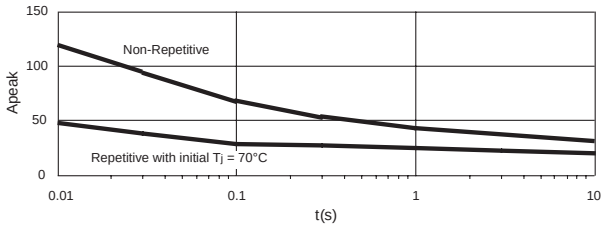

Figure 4a — 12A output current

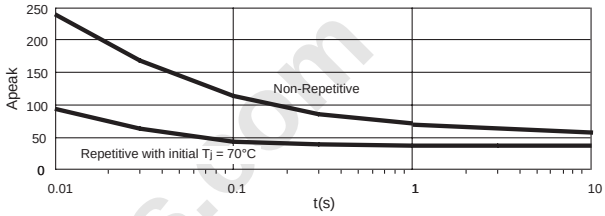

Figure 4b — 25A output current

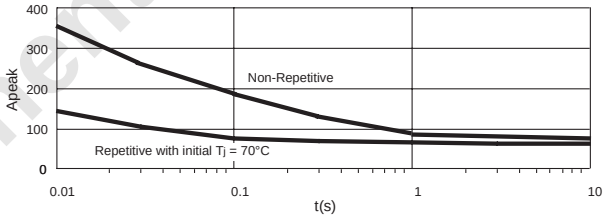

Figure 4c — ST24D40-02

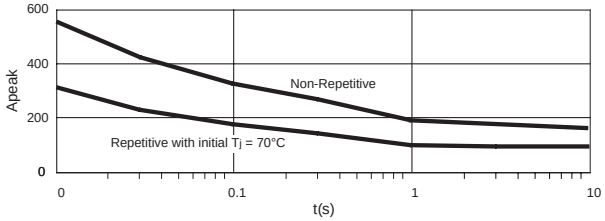

Figure 4d — 50A output current and ST48D40-02

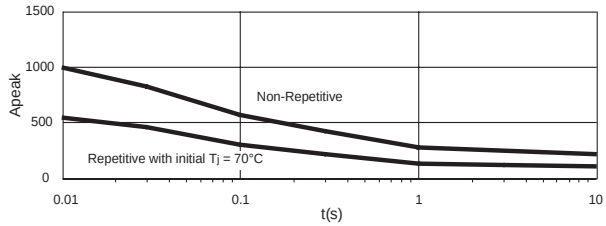

Figure 4e — 75A output current

NOTES:
1. Electrical specifications 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.

OUTPUT (LOAD) SPECIFICATION (continued)

Input Type	Min	Max	Units
I^2t for Match Fusing (<8.3ms)			
12A output current		72	A^2S
ST24 25A output current		288	A^2S
ST48 25A output current		265	A^2S
40A output current		612	A^2S
50A output current		1500	A^2S
75A output current		5000	A^2S

ENVIRONMENTAL SPECIFICATION

	Min	Max	Units
Storage Temperature	–40	100	°C
Operating Temperature	–40	100	°C
Input-Output Isolation	4000		Vrms
Output-Case Isolation			
12A output current	2500		Vrms
25A output current	2500		Vrms
ST24D40-02	2500		Vrms
ST48D40-02	3300		Vrms
50A output current	3300		Vrms
75A output current	3300		Vrms

THERMAL CHARACTERISTICS

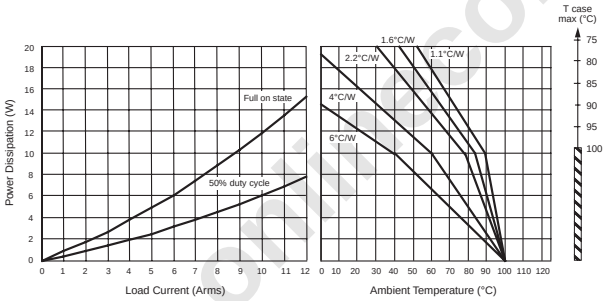

Figure 5a — 12A output current

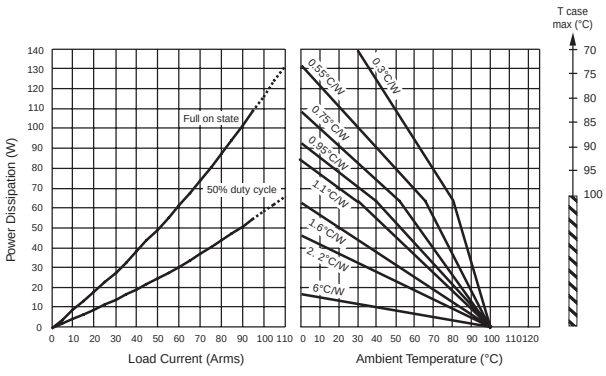

Figure 5b — ST48D12-02

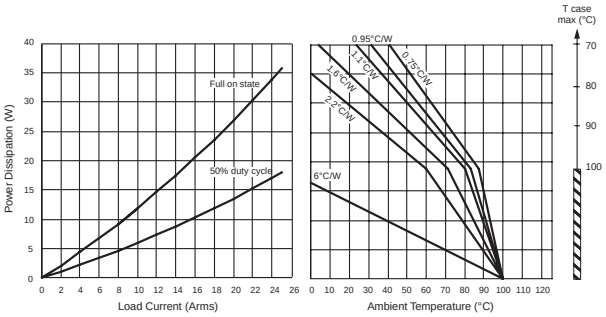

Figure 5c — 25A output current

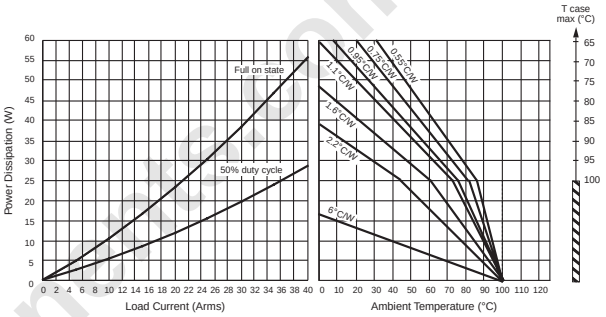

Figure 5d — ST24D40-02

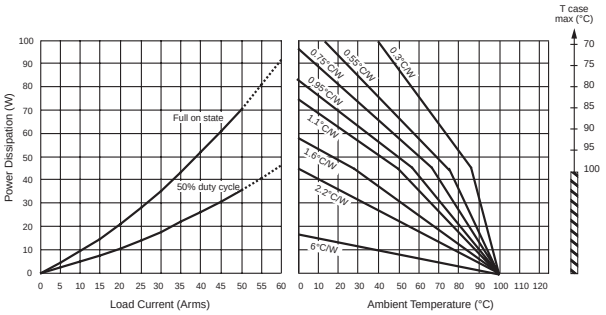

Figure 5e— 50A output current and ST48D40-02

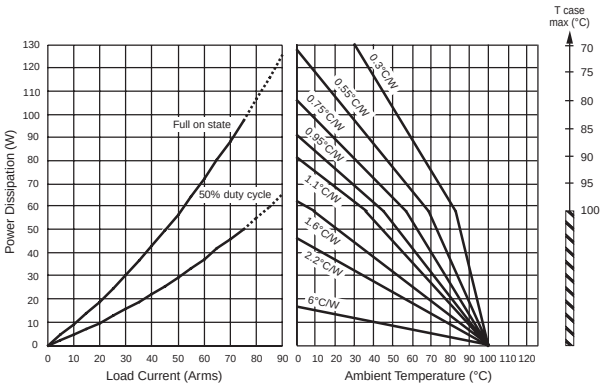

Figure 5f — 75A output current