

FEATURES/BENEFITS

- Random and zero-cross models available for all applications
- Low zero-cross turn-on voltage
- Input protection and control LED standard
- Connectors for power wiring and heat sinks available
- Designed in conformity with EN60947-4-3 (IEC947-4-3)



Part No.	Load Voltage	Load Current	Control Voltage	Switch Type
SF24D25	12-280 Vac	25A	3-32 Vdc	Zero Cross
SF24R50HE	12-275 Vac	50A	3-32 Vdc	Random
SF60D50HE	24-600 Vac	50A	3.5-32 Vdc	Zero Cross

NOTES

- 1) Line Voltage (nominal): 24 = 240 Vac; 60 = 600 Vac
- 2) Switch Type: R= Random Efficiency turn-on; D = Zero-cross turn-on
- 3) Feature: HE = High Efficiency Thyristors

$$I_{max} = 64A @ T_{case} = 85^{\circ}C$$

$$I_{max} = 44A @ T_{case} = 100^{\circ}C$$

ELECTRICAL SPECIFICATIONS
(+25°C ambient temperature unless otherwise specified)

INPUT (CONTROL) SPECIFICATIONS

	Min	Max	Units
Input Current Range			
All Relays	10	13	mA
Must Turn-Off Voltage	2.0		Vdc
Reverse Voltage Protection (D)		32	V
Clamping Voltage (D)		36	V
Input Immunity (EN61000-4-4)		2	kV
Input Immunity (EN61000-4-5)		2	kV

CONTROL CHARACTERISTICS

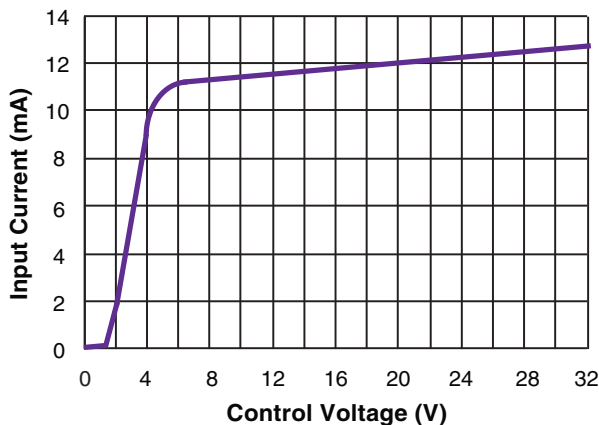
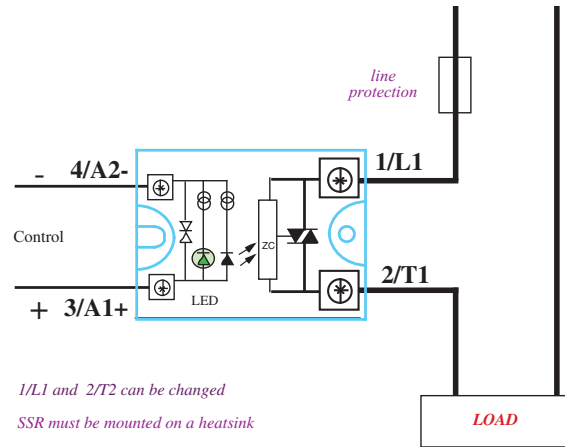


Figure 1

TYPICAL APPLICATION



Typical application:
5 kW resistor
(AC-51 load)
on 230 VAC

Figure 2a — SF24D25

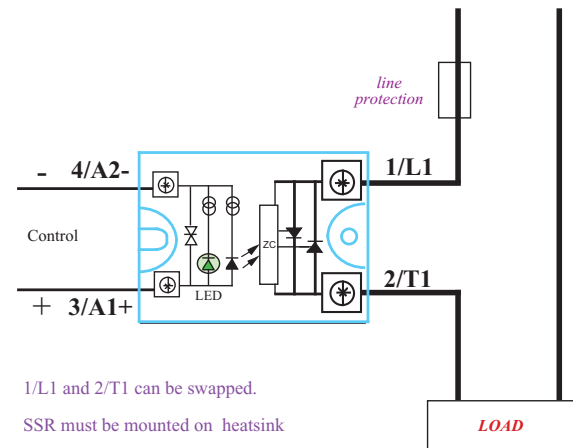


Figure 2a — SF48D50HE & SF24R50HE

ELECTRICAL SPECIFICATIONS
(+25°C ambient temperature unless otherwise specified)

OUTPUT (LOAD) SPECIFICATIONS

	Min	Max	Units
Operating Range			
SF24D25	12	280	Vac
SF24R50HE	12	275	Vac
SF48D50HE	24	600	Vac
Peak Voltage (VDR Clamping)			
SF24D25 & SF24R50		600	V _{peak}
SF48D50		1200	V _{peak}
Load Current Range (Resistive)			
25 output current	.005	25	Arms
50 output current	.005	60	Arms
Maximum Surge Current Rating (Non-Repetitive)			
25 output current		350	A
50 output current		580	A
On-State Voltage Drop			
		0.85	V
Output Power Dissipation (Max)			
25 output current	$0.9 \times 0.85 \times I + 0.016 \times I^2$		W
50 output current	$0.9 \times 0.85 \times I + 0.0075 \times I^2$		W
Zero-Cross Window (Typical)			
SFXXD		±17.5	Vac
Off-State Leakage Current			
All Relays		1	mA
Turn-On Time (60 Hz)			
SFXXD		10	ms
SFXXR		0.05	ms
Turn-Off Time (60 Hz)			
SFXXD		10	ms
Off-State dv/dt			
		500	V/μs
Maximum di/dt (Non-Repetitive)			
		50	A/μs

Operating Frequency

All Relays	0.1	800	Hz
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I²t for fuse matching (<10ms)

25 output current	600	A ² s
50 output current	1680	A ² s

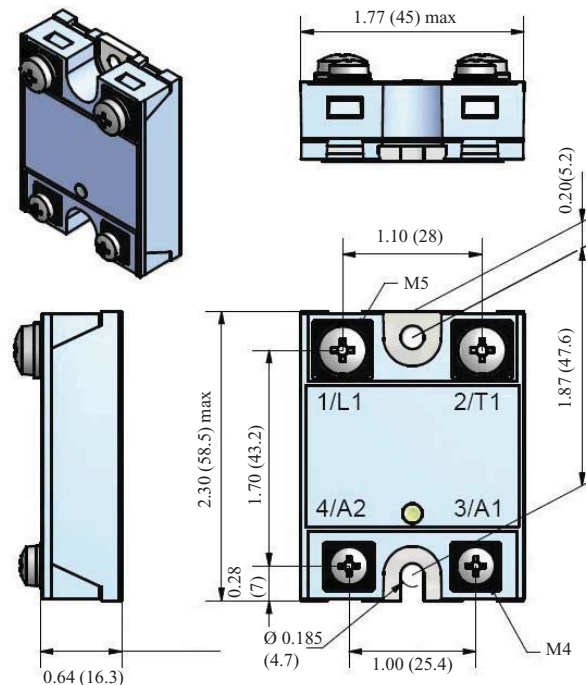
Junction-Case Thermal Resistance

25 output current	0.17	°C/W
50 output current	0.55	°C/W

Conducted Immunity Level

IEC/EN61000-4-4 (bursts)	
SF48	2kV criterion A
IEC/EN61000-4-5 (surge)	
SF48	2kV criterion A with external VDR

MECHANICAL SPECIFICATION



Dimensions in inches (mm)
Weight: 2.29 (65 g)

Figure 3

GENERAL SPECIFICATIONS
(+25°C ambient temperature unless otherwise specified)

ENVIRONMENTAL SPECIFICATIONS

	Min	Max	Units
Operating Temperature			
25A output current	-55	+100	°C
50A output current	-40	+100	°C
Storage Temperature			
25A output current	-55	+125	°C
50A output current	-40	+125	°C
Ambient Humidity	40 to 85		%

Input-Output Isolation	4000	Vrms
Output-Case Isolation		
25A output current	4000	Vrms
50A output current	4000	Vrms
Insulation Resistance @500Vdc	1000	MΩ
Rated Impulse Voltage	4000	V
Vibration (10-55 Hz according to CE168)	1.5	mm
Shock (according to CD168)	30/50	g
Housing Material	PA6 UL94VO	
Baseplate	Aluminum, nickel-plated	

SURGE CURRENT

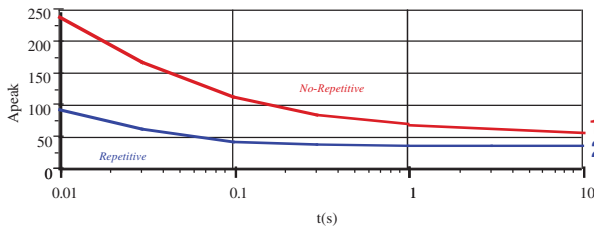


Figure 4a — 25A output current

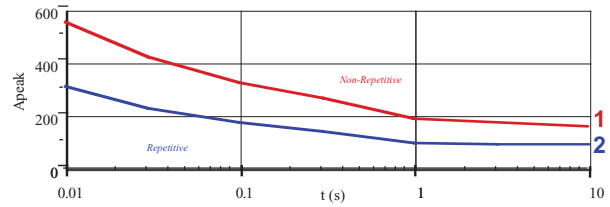


Figure 4b — 50A output current

THERMAL CURVES

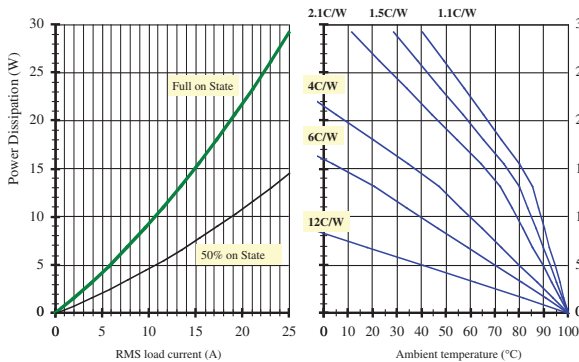


Figure 5a — 25A output power

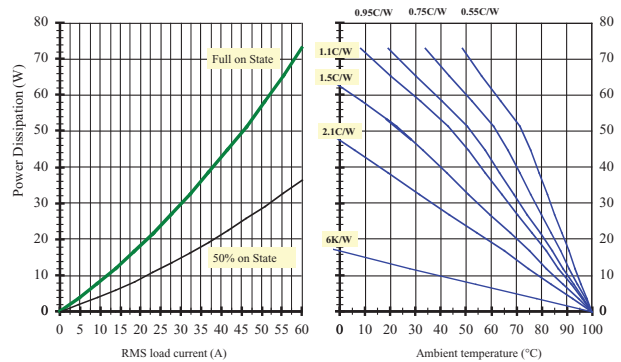


Figure 5b — 50A output power

12°C/W corresponds to a relay without heat sink
6°C/W corresponds to a relay mounted on a DIN-rail adaptor (Teledyne P/N DL12)



2-2.5°C/W
Teledyne P/N - FW151



1.1°C/W
Teledyne P/N - FW108

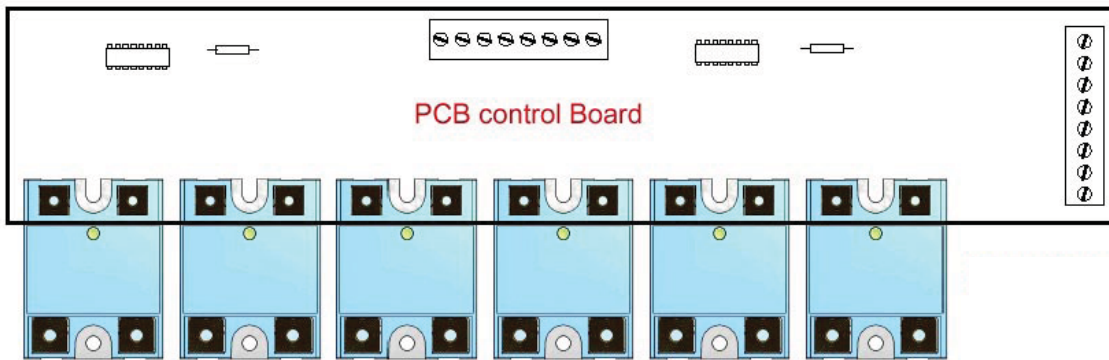


Thermal Pad
Teledyne P/N - 12

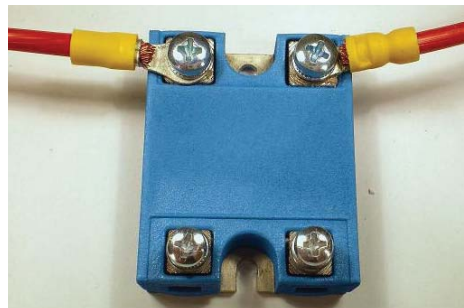


DIN Rail Adapter
Teledyne P/N - DL12

Applications



Teledyne's new Flatpac is designed to be used in applications where height is limited. Below is an example of 6 solid state relays in-line where controls are directly connected to a PCB.



Teledyne's new Flatpac can be used where power terminals must be in a 90° angle.