TELEDYNE RELAYS
A Unit of Teledyne Electronics and Communications

NEW Series SCH

Output to 24A, 510 Vac
High Industrial Performance (HIPpak) Solid-State Relays

FEATURES/BENEFITS

- Zero-cross models available for all applications
- Very low zero-cross turn-on voltage
- Input and output protection and control LED standard
- IP20 protection by flaps on terminals
- With double removable input connectors; spring terminals
- Designed in conformity with EN60947-4-3 (IEC947-4-3) and EN60950/VDE0805 (Reinforced Insulation)

Two removable input connectors

Part No.	Load Voltage	Load Current	Control Voltage	Switch Type
SCH24D25	12-275 Vac	25A	3-32 Vdc	Zero Cross
SCH48D35	24-510 Vac	35A	3.5-32 Vdc	Zero Cross
SCH48D50	24-510 Vac	50A	3.5-32 Vdc	Zero Cross
SCH48D75	24-510 Vac	75A	3.5-32 Vdc	Zero Cross

TYPICAL APPLICATION

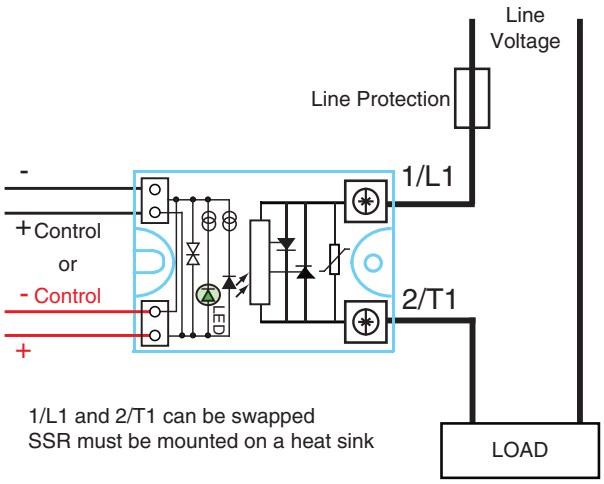


Figure 1 — SCH relays

MECHANICAL SPECIFICATION

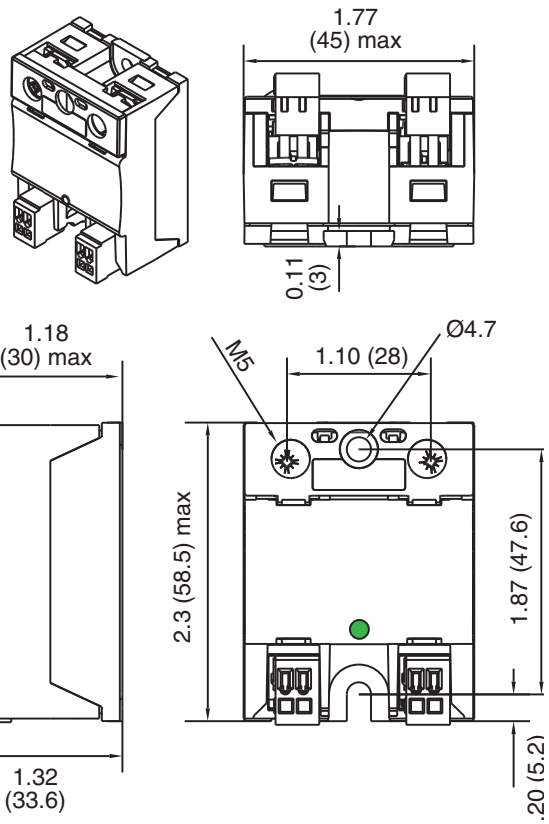


Figure 2

CONTROL CHARACTERISTICS

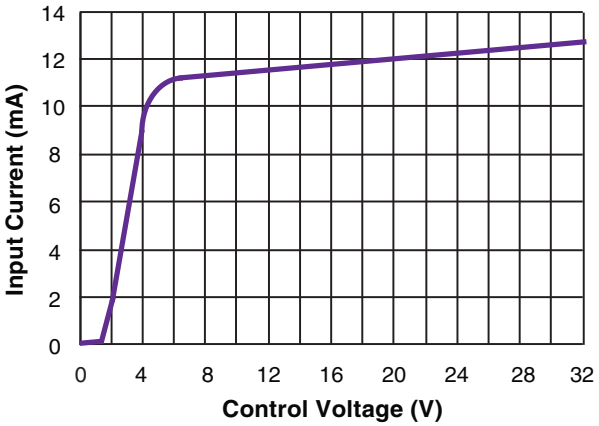


Figure 3 — SCH relays

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

INPUT (CONTROL) SPECIFICATIONS

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

OUTPUT (LOAD) SPECIFICATIONS

	Min	Max	Units
Peak Voltage (VDR Clamping)			
SCH24DXX		600 (450)	Vpeak
SCH48DXX		1200 (950)	Vpeak
Load Currrent Range (Resistive)			
25 output current	.005	25	Arms
35 output current	.005	40	Arms
50 output current	.005	60	Arms
75 output current	.005	90	Arms
Maximum Surge Current Rating (Non-Repetitive)			
25 output current		350	A
35 output current		500	A
50 output current		720	A
75 output current		1200	A
On-State Voltage Drop			
Up to 25 output current		0.85	V
Above 35 output current		0.9	V

Output Power Dissipation (Max)		
25 output current	$0.9x0.85xI + 0.016xI^2$	W
35 output current	$0.9x0.9xI + 0.015xI^2$	W
50 output current	$0.9x0.9xI + 0.012xI^2$	W
75 output current	$0.9x0.9xI + 0.0045xI^2$	W

Zero-Cross Window (Typical)	±12	Vac
Off-State Leakage Current	1	mA
Turn-On Time (60 Hz)	8.3	ms
Turn-Off Time (60 Hz)	8.3	ms
Off-State dv/dt	500	V/µs
Maximum di/dt (Non-Repetitive)	50	A/µs
Operating Frequency 0.1	800	Hz
I^2t for fuse matching (<10ms)		
25 output current	600	A^2s
35 output current	1250	A^2s
50 output current	2500	A^2s
75 output current	7200	A^2s

Junction-Case Thermal Resistance	
25 output current	1.7 °C/W
35 output current	0.6 °C/W
50 output current	0.45 °C/W
75 output current	0.4 °C/W
Conducted Immunity Level	
Up to 35 output current	
IEC/EN61000-4-4 (bursts)	2kV criterion A
IEC/EN61000-4-5 (bursts)	2kV criterion A
Above 50 output current	
IEC/EN61000-4-4 (bursts)	4kV criterion A
IEC/EN61000-4-5 (bursts)	4kV criterion A

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

ENVIRONMENTAL SPECIFICATIONS

	Min	Max	Units
Operating Temperature			
Up to 35 output current	–55	+80	°C
Above 50 output current	–40	+80	°C
Storage Temperature			
Up to 35 output current	–55	+125	°C
Above 50 output current	–40	+125	°C

Ambient Humidity		40 to 85	%
Input-Output Isolation	4000		Vrms
Output-Case Isolation	4000		Vrms
Insulation Resistance @500Vdc	1000		MΩ
Rated Impulse Voltage		4000	V
Protection Level (CEI529)		IP20	
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

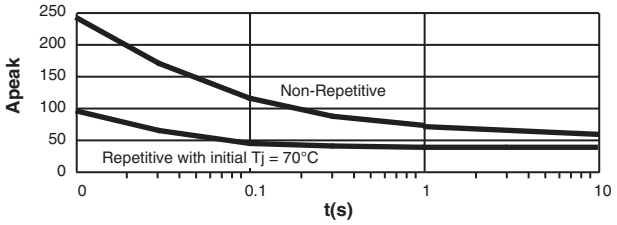


Figure 4a — 25A output current

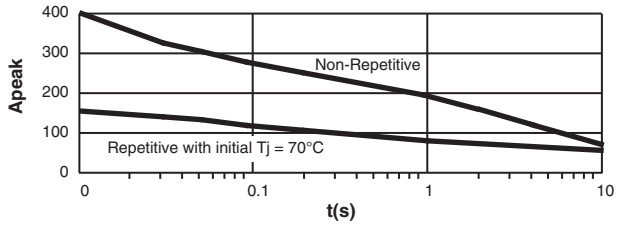


Figure 4b — 35A output current

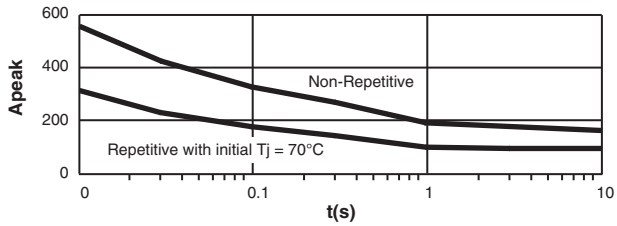


Figure 4c — 50A output current

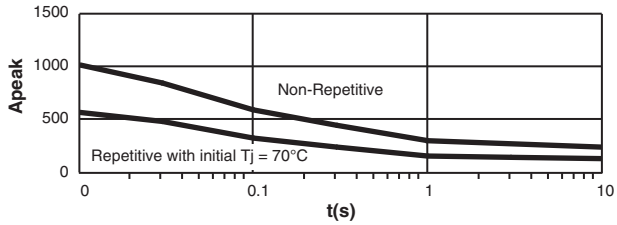


Figure 4d — 75A output current

THERMAL CURVES

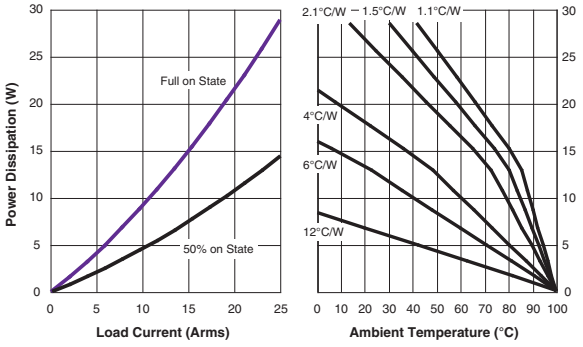


Figure 5a — 25A output power

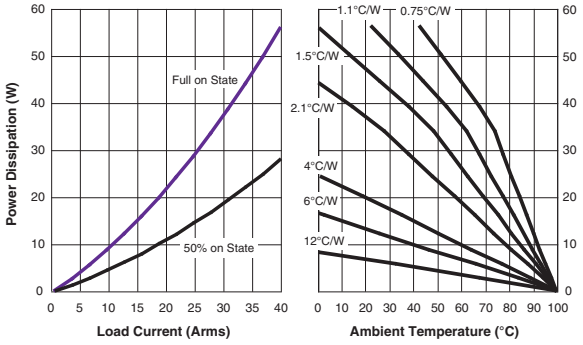


Figure 5b — 35A output power

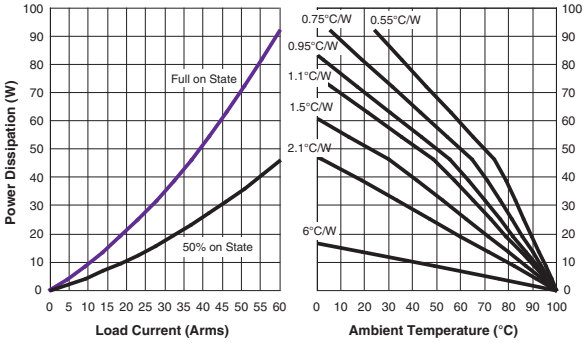


Figure 5c — 50A output power

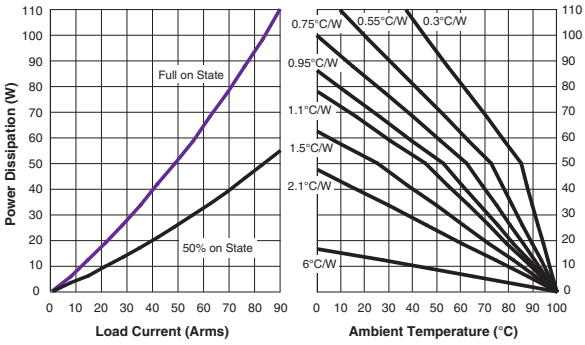


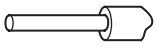
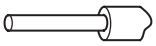
Figure 5d — 75A output power

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)

CONTROL WIRING

With double removeable input connector
Pluggable spring connector
Min AWG28
Max AWG14

POWER WIRING

Number of Wires				Screwdriver Type	Recommended Torque
1		2			
Solid (no ferrule)	Fine Stranded (with ferrule)	Solid (no ferrule)	Fine Stranded (with ferrule)		
					N.m
AWG16…AWG8	AWG16…AWG10	AWG16…AWG8	AWG16…AWG10	Pozidriv 2	1.2

OPTIONAL CONNECTIONS

Directly with wires,
with or without ferrules

With tips
(ring terminals)

Power with tips

AWG6
16mm²

AWG4
16mm²
W max = 13mm

AWG0
50mm²
for high current

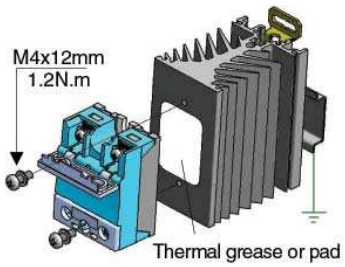
Options

Fastons: Call us 

2–2.5°C/W
Teledyne P/N FW151

1.1°C/W
Teledyne P/N FW108

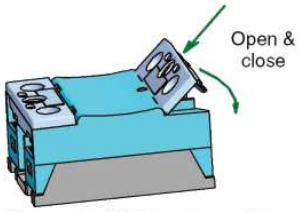
0.3°C/W
Teledyne P/N FW031



DIN Rail Adapter
Teledyne P/N DL12

Mounting
HIPpak SSRs must be mounted on heat sinks. A large range of heat sinks is available. For heat-sink mounting, use thermal grease or a thermal pad with high conductibility specified by Teledyne.

Thermal Pad
Teledyne P/N –12



Typical Loads
SCH relays with zero-cross turn-on are designed for most types of loads.
Our data sheet lists the AC-51 current value corresponding to resistive loads.
For other loads, check the inrush current at turn ON and possible overvoltages at turn OFF:
- AC-55b — Incandescent lamps. Inrush current is generally 10 times In during few 10ms.
- AC-55a — Electric discharge lamp. These loads often have overcurrent at turn ON and overvoltage at turn OFF, so use 400VAC SSR on 230VAC mains.
- AC-58 — One-pole motors. These loads often have overcurrent at turn ON and overvoltage at turn OFF, so use 400VAC SSR on 230VAC mains and adapt the SSR current to the starting current of the motor.
- AC-53 — Three-phase motors. 2 or 3 SH zero-cross relays can drive these motors, but generally use E3P/E3PT or other three-phase relays or SH random range.
- AC-56a — Transformer loads. Very high inrush current up to 100 times In. Use SH random relay or peak control SSR.
- AC-56b — Capacitor loads with very high current at turn ON and overvoltage at turn OFF. Our high-voltage relays are well adapted for high inrush current.

Protection
- To protect the SSR against a short-circuit of the load, use a fuse with a I^2t value = 1/2 I^2t value specified.

EMC
Immunity:
- Our data sheets list the immunity level of our SSRs according to the main standards for these of products: IEC/EN61000-4-4 and IEC/EN61000-4-5. You can compare the high immunity level with other products on the market.

Emission:
- Teledyne SSRs are designed in compliance with standards for class A equipment (Industry).
- Use of this product in domestic environments may cause radio interference. In this case the user may be required to employ additional devices to reduce noise. SSRs are complex devices that must be interconnected with other equipment (loads, cables, etc.) to form a system. Because the other equipment or interconnections may not be under Teledyne's control, it shall be the responsibility of the system integrator to ensure that systems containing SSRs comply with the requirement of any rules and regulations applicable at the system level.
- The very low zero-cross voltage of SCH relays (<12 volts) improved the conducted emission level in comparison with most SSRs on the market with zero-cross voltage often higher than 50 volts.