

**FEATURES/BENEFITS**

- Random and zero-cross models available for all applications
- Low zero-cross turn-on voltage
- Input and output protection and control LED standard
- IP20 touch-proof flaps
- Connectors for power wiring and heat sinks available
- Designed in conformity with EN60947-4-3 (IEC947-4-3) and EN60950/VDE0805 (Reinforced Insulation)



IP20 touch-proof flaps

Part No.	Load Voltage	Load Current	Control Voltage	Switch Type
SH24D25	12-275 Vac	25A	3-32 Vdc	Zero Cross
SH24A25	12-275 Vac	25A	20-265 Vac/dc	Zero Cross
SH24D35	12-275 Vac	35A	3-32 Vdc	Zero Cross
SH24A35	12-275 Vac	35A	20-265 Vac/dc	Zero Cross
SH24D50	12-275 Vac	50A	3-32 Vdc	Zero Cross
SH24R50	12-275 Vac	50A	3-32 Vdc	Random
SH24R75	12-275 Vac	75A	3-32 Vdc	Random
SH24D75	12-275 Vac	75A	3-32 Vdc	Zero Cross
SH24D95	12-275 Vac	95A	3-32 Vdc	Zero Cross
SH24D125	12-275 Vac	125A	3-32 Vdc	Zero Cross
SH48R35	24-510 Vac	35A	3.5-32 Vdc	Random
SH48D35	24-510 Vac	35A	3.5-32 Vdc	Zero Cross
SH48A35	24-510 Vac	35A	20-265 Vac/dc	Zero Cross
SH48R50	24-510 Vac	50A	3.5-32 Vdc	Random
SH48D50	24-510 Vac	50A	3.5-32 Vdc	Zero Cross
SH48A50	24-510 Vac	50A	20-265 Vac/dc	Zero Cross
SH48R75	24-510 Vac	75A	3.5-32 Vdc	Random
SH48D75	24-510 Vac	75A	3.5-32 Vdc	Zero Cross
SH48A75	24-510 Vac	75A	20-265 Vac/dc	Zero Cross
SH48R95	24-510 Vac	95A	3.5-32 Vdc	Random
SH48D95	24-510 Vac	95A	3.5-32 Vdc	Zero Cross
SH48A95	24-510 Vac	95A	20-265 Vac/dc	Zero Cross
SH48R125	24-510 Vac	125A	3.5-32 Vdc	Random
SH48D125	24-510 Vac	125A	3.5-32 Vdc	Zero Cross
SH48A125	24-510 Vac	125A	20-265 Vac/dc	Zero Cross
SH60D50	24-690 Vac	50A	3.5-32 Vdc	Zero Cross
SH60D75	24-690 Vac	75A	3.5-32 Vdc	Zero Cross
SH60D95	24-690 Vac	95A	3.5-32 Vdc	Zero Cross
SH60D125	24-690 Vac	125A	3.5-32 Vdc	Zero Cross

**TYPICAL APPLICATION**

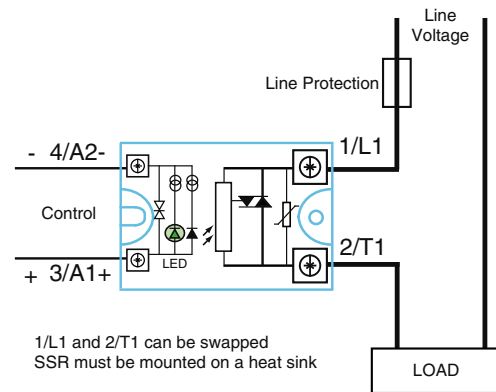


Figure 1a — SHXXDXX relays

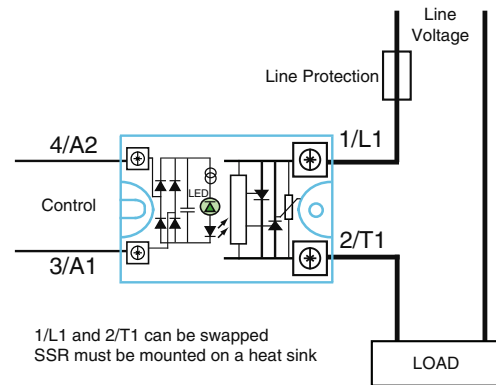


Figure 1b — SHXXAXX relays

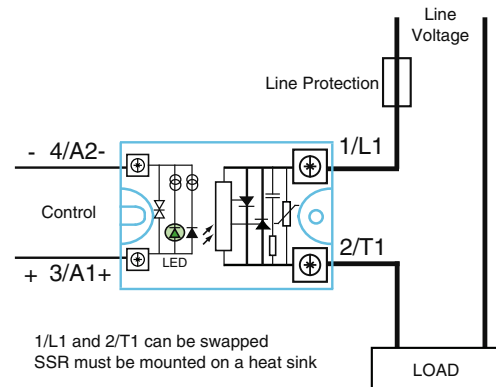


Figure 1c — SHXXRXX relays

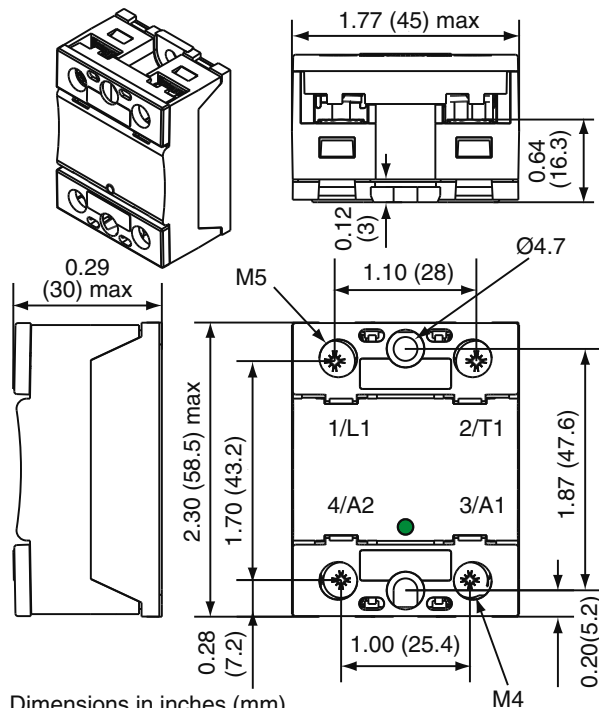
**ELECTRICAL SPECIFICATIONS**

(+25°C ambient temperature unless otherwise specified)

**INPUT (CONTROL) SPECIFICATIONS**

	Min	Max	Units
<b>Input Current Range</b>			
SHXXR/D (except SH60)	10	13	mA
SHXXA	5	10	mA
SH60		12	mA
<b>Must Turn-Off Voltage</b>			
SHXXR/D		2.0	Vdc
SHXXA		5.0	Vdc
<b>Reverse Voltage Protection (R/D)</b>			
		32	V
<b>Clamping Voltage (R/D)</b>			
		36	V
<b>Input Immunity (EN61000-4-4)</b>			
		2	kV
<b>Input Immunity (EN61000-4-5)</b>			
		2	kV

**MECHANICAL SPECIFICATION**



Dimensions in inches (mm)  
Weight: 2.82 oz. (80g)

Figure 2

**CONTROL CHARACTERISTICS**

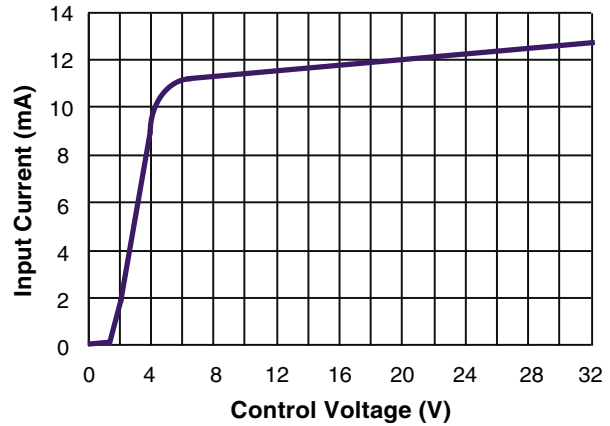


Figure 3a — SH24R/D, SH48R/D relays

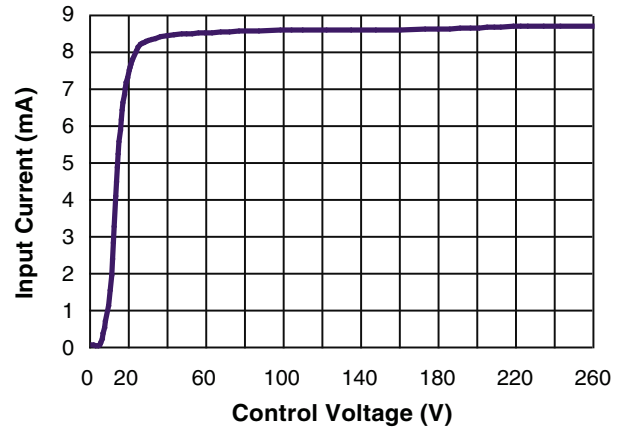


Figure 3b — SH24A, SH48A relays

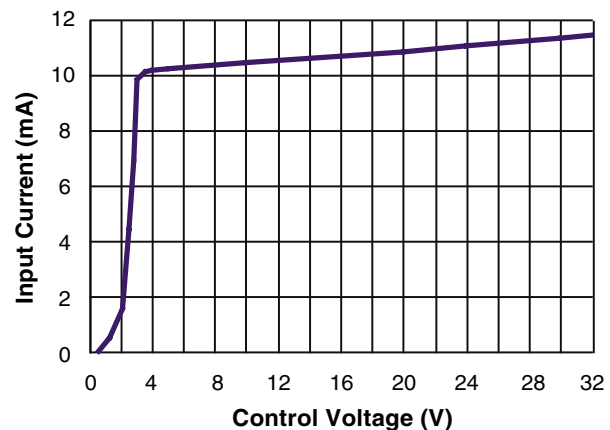


Figure 3c — SH60D relays

ELECTRICAL SPECIFICATIONS (+25°C ambient temperature unless otherwise specified)			
OUTPUT (LOAD) SPECIFICATIONS			
	Min	Max	Units
Peak Voltage (VDR Clamping)			
SH24	(450)	600	V <sub>peak</sub>
SH48	(950)	1200	V <sub>peak</sub>
SH60		1600	V <sub>peak</sub>
Load Current 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
95 output current	.005	110	Arms
125 output current	.005	150	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
95 output current		1700	A
125 output current		2200	A
On-State Voltage Drop		0.9	V
Output Power Dissipation (Max)			
25 output current	$0.9 \times 0.9 \times I + 0.016 \times I^2$		W
35 output current	$0.9 \times 0.9 \times I + 0.015 \times I^2$		W
50 output current	$0.9 \times 0.9 \times I + 0.012 \times I^2$		W
75 output current	$0.9 \times 0.9 \times I + 0.0045 \times I^2$		W
95 output current	$0.9 \times 0.9 \times I + 0.0035 \times I^2$		W
125 output current	$0.9 \times 0.9 \times I + 0.002 \times I^2$		W
Zero-Cross Window (Typical)			
SHXXR		NA	
SHXXD/A		±12	Vac
Off-State Leakage Current			
SHXXR		3	mA
SHXXD/A		1	mA
Turn-On Time (60 Hz)			
SHXXR		0.04	ms
SHXXD		8.3	ms
SHXXA		24.9	ms
Turn-Off Time (60 Hz)			
SHXXR/D		8.3	ms
SHXXA		24.9	ms
Off-State dv/dt			
		500	V/μs
Maximum di/dt (Non-Repetitive)			
		50	A/μs
Operating Frequency			
SHXXR	0.1	400	Hz
SHXXD/A	0.1	800	Hz
I <sup>2</sup> t for fuse matching (<10ms)			
25 output current		600	A <sup>2</sup> s
35 output current		1250	A <sup>2</sup> s
50 output current		2500	A <sup>2</sup> s
75 output current		7200	A <sup>2</sup> s
95 output current		14400	A <sup>2</sup> s
125 output current		24000	A <sup>2</sup> s
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
95 output current		0.3	°C/W
125 output current		0.25	°C/W
Conducted Immunity Level			
IEC/EN61000-4-4 (bursts)			
SH24		2kV criterion A	
SH48/SH60		4kV criterion A	
IEC/EN61000-4-5 (surge)			
SH24		2kV criterion A	
SH48		4kV criterion A	
SH60		4kV criterion A (with external VDR)	

**SURGE CURRENT**

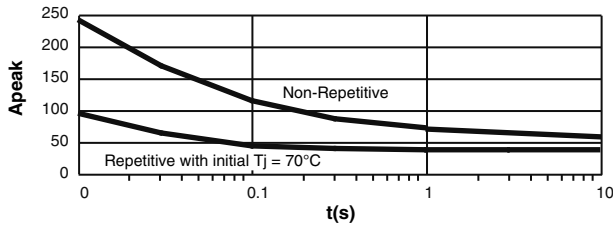


Figure 4a — 25A output current

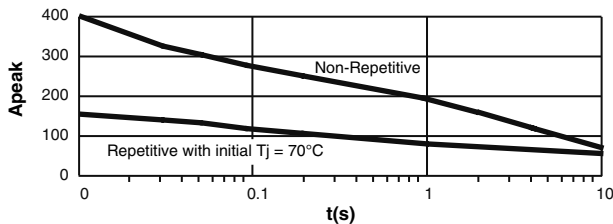


Figure 4b — 35A output current

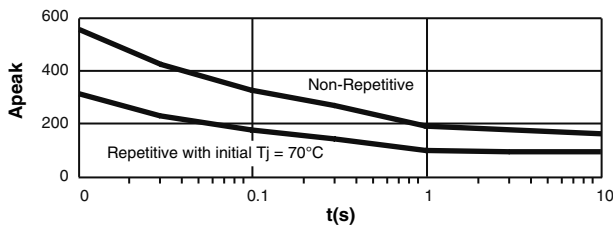


Figure 4c — 50A output current

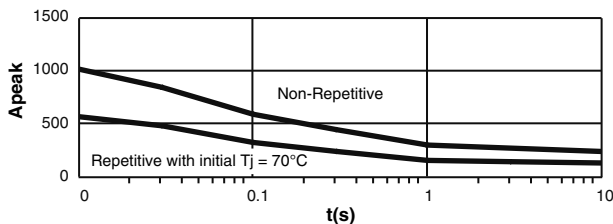


Figure 4d — 75A output current

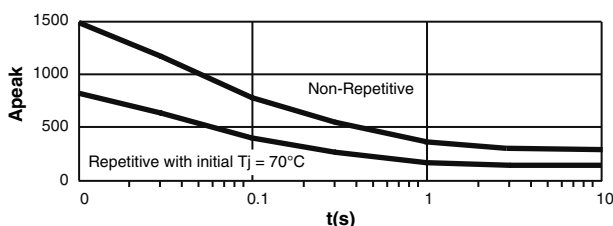


Figure 4e — 95A output current

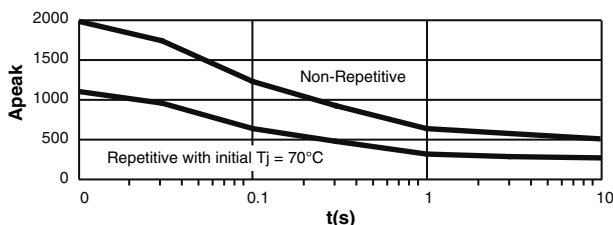


Figure 4f — 125A output current

**GENERAL SPECIFICATIONS**

(+25°C ambient temperature unless otherwise specified)

**ENVIRONMENTAL SPECIFICATIONS**

	Min	Max	Units
<b>Operating Temperature</b>			
Up to 35 output current	-55	+80	°C
Above 35 output current	-40	+80	°C
<b>Storage Temperature</b>			
Up to 35 output current	-55	+125	°C
Above 35 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		