

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

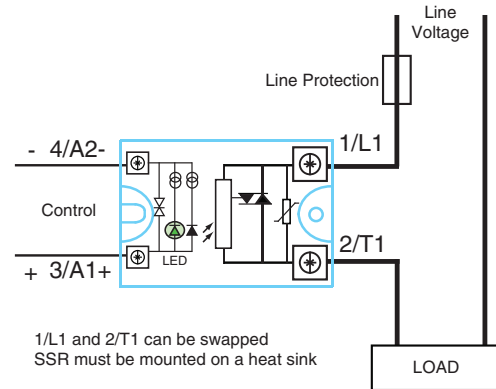


Figure 1a — SHXXDXX relays

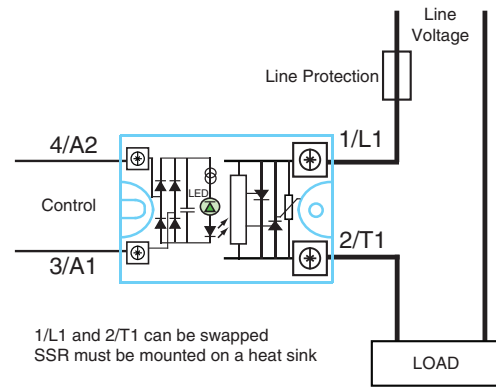


Figure 1b — SHXXAXX relays

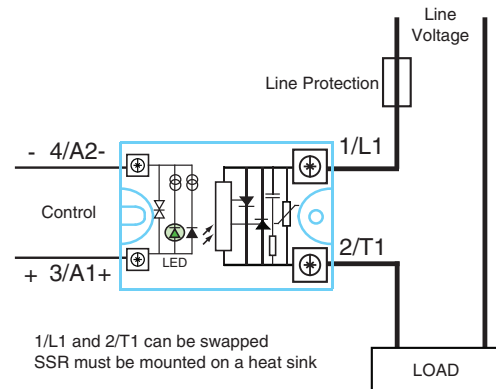


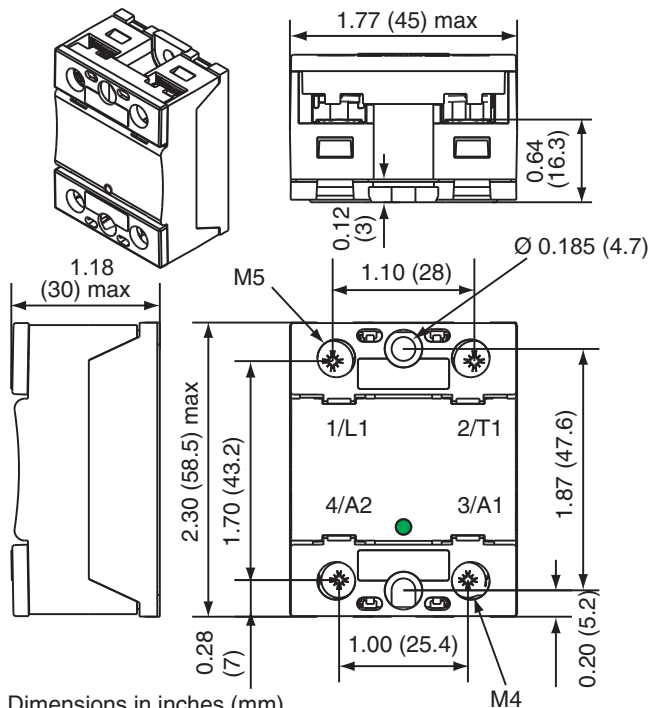
Figure 1c — SHXXRXX relays

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

INPUT (CONTROL) SPECIFICATIONS

| | Min | Max | Units |
|---|-----|-----|-------|
| Input Current Range | | | |
| SHXXR/D (except SH60) | 10 | 13 | mA |
| SHXXA | 5 | 10 | mA |
| SH60 | | 12 | mA |
| Must Turn-Off Voltage | | | |
| SHXXR/D | | 2.0 | Vdc |
| SHXXA | | 5.0 | 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 |

MECHANICAL SPECIFICATION



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

Figure 2

CONTROL CHARACTERISTICS

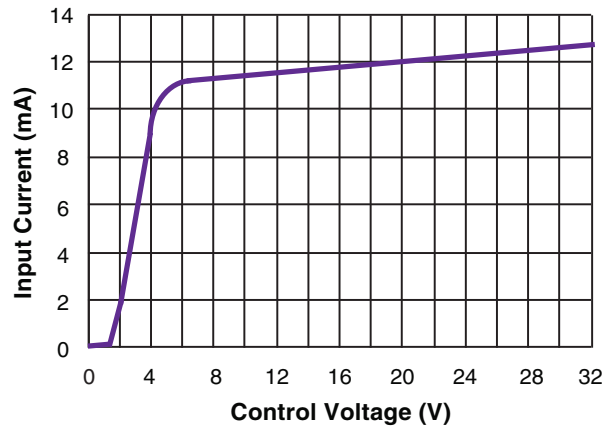


Figure 3a — SH24R/D, SH48R/D relays

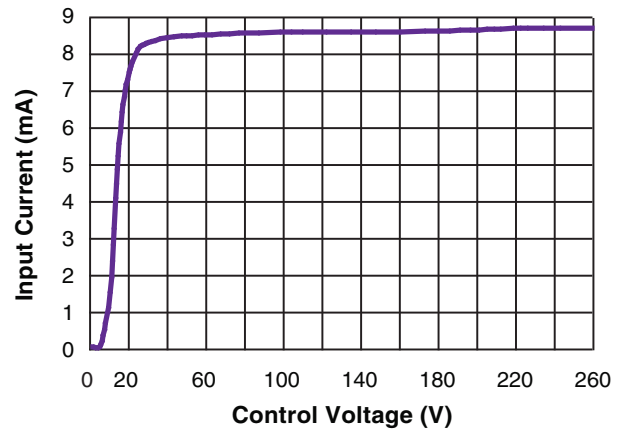


Figure 3b — SH24A, SH48A relays

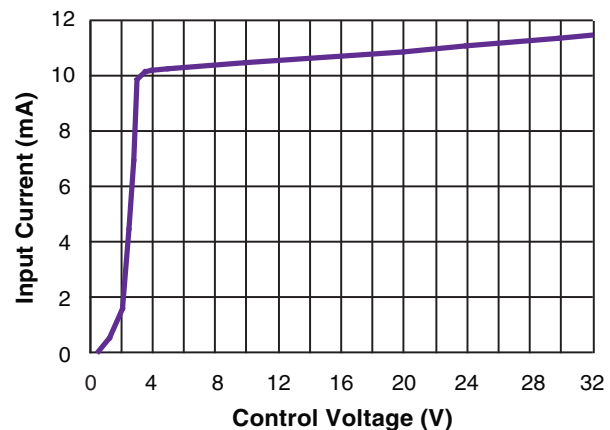


Figure 3c — SH60D relays

| ELECTRICAL SPECIFICATIONS (+25°C ambient temperature unless otherwise specified) | | | |
|---|------------------------------------|-------------------------------------|-------------------|
| OUTPUT (LOAD) SPECIFICATIONS | | | |
| | Min | Max | Units |
| Peak Voltage (VDR Clamping) | | | |
| SH24 | (450) | 600 | V _{peak} |
| SH48 | (950) | 1200 | V _{peak} |
| SH60 | | 1600 | V _{peak} |
| 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 | 0.9x0.9xI + 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 |
| 95 output current | 0.9x0.9xI + 0.0035xI ² | | W |
| 125 output current | 0.9x0.9xI + 0.002xI 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 |
| I²t for fuse matching (<10ms) | | | |
| 25 output current | | 600 | A ² s |
| 35 output current | | 1250 | A ² s |
| 50 output current | | 2500 | A ² s |
| 75 output current | | 7200 | A ² s |
| 95 output current | | 14400 | A ² s |
| 125 output current | | 24000 | A ² 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) | |

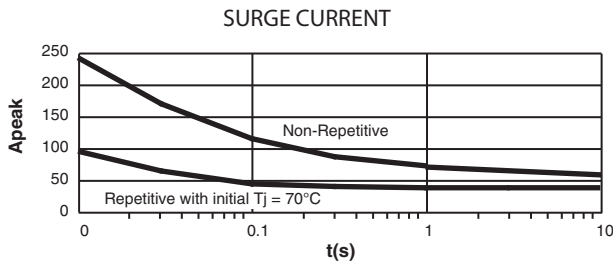


Figure 4a — 25A output current

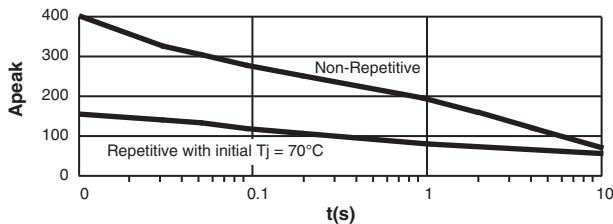


Figure 4b — 35A output current

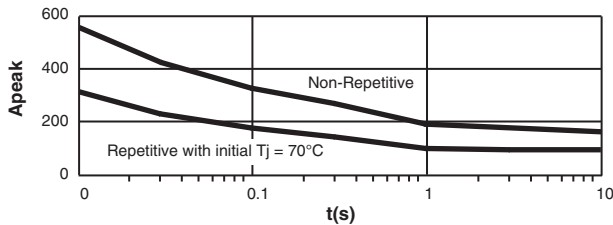


Figure 4c — 50A output current

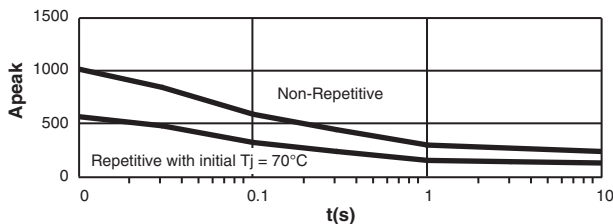


Figure 4d — 75A output current

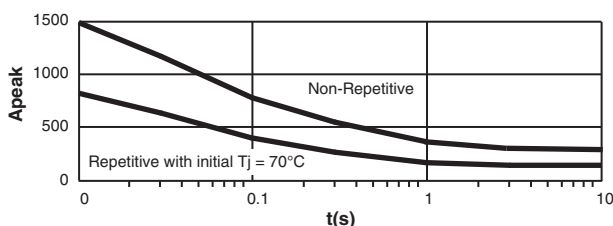


Figure 4e — 95A output current

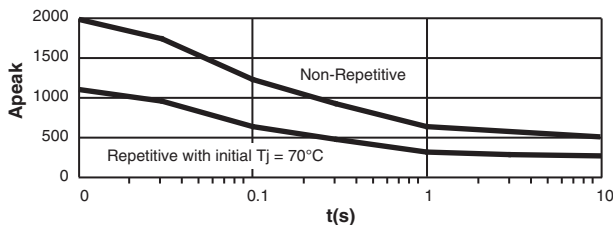


Figure 4f — 125A output current

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

ENVIRONMENTAL SPECIFICATIONS

| | Min | Max | Units |
|------------------------------|-----|-----|-------|
| Operating Temperature | | | |
| Up to 35 output current | -55 | +80 | °C |
| Above 35 output current | -40 | +80 | °C |

| | | | |
|----------------------------|-----|------|----|
| Storage Temperature | | | |
| 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 |
|-----------|-------------------------|

THERMAL CURVES

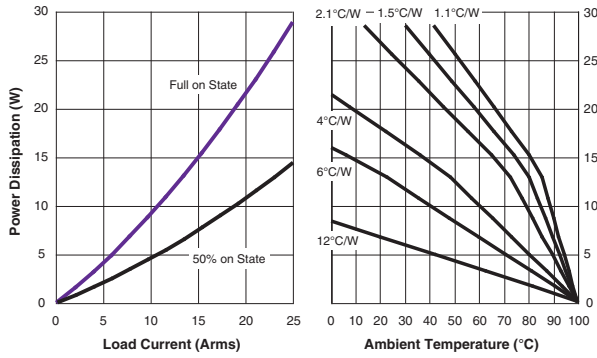


Figure 5a — 25A output power

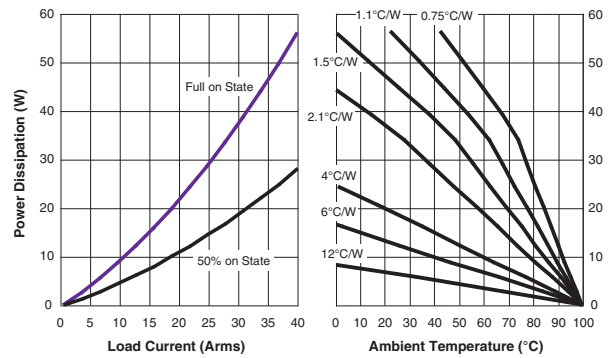


Figure 5b — 35A output power

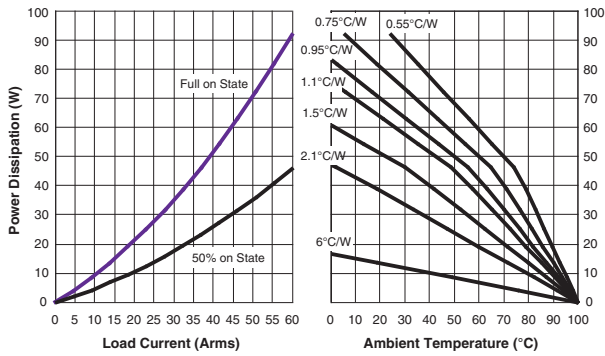


Figure 5c — 50A output power

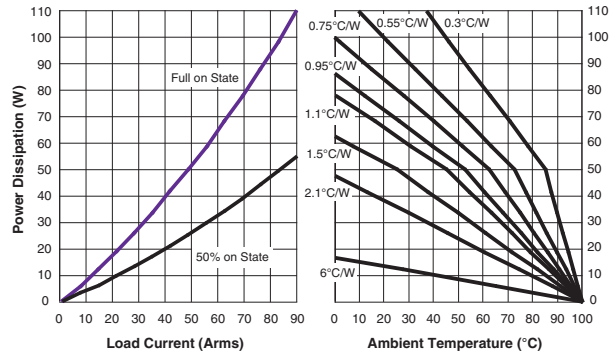


Figure 5d — 75A output power

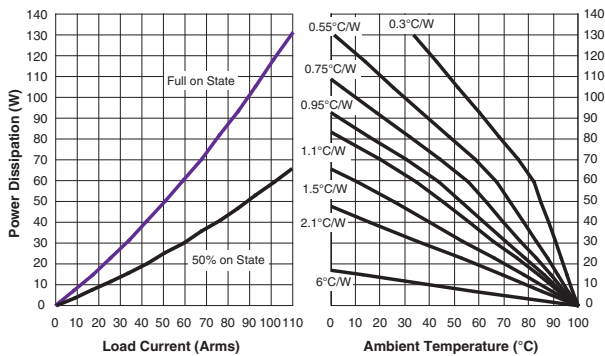


Figure 5e — 95A output power

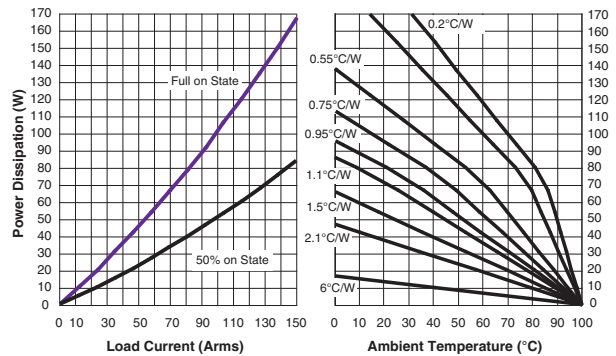


Figure 5f — 125A output power

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)

