

Part Number	Description
AS24D4E	4A, 275 Vac
AS24R4E	4A, 275 Vac
AS46D4E	4A, 460 Vac
AS46R4E	4A, 460 Vac
AS46R4F-02	4A, 460 Vac
AS60D4E	4A, 600 Vac

Part Number Explanation

AS	46	D	4	E	-XX
Series	Line Voltage ¹	Switch Type ²	Output Current - Amps	Control Range ³	Options ⁴

NOTES

- 1) Line Voltage (nominal): 24 = 240 Vac; 46 = 460 Vac; 60 = 600 Vac
- 2) Switch Type: D = Zero-cross turn-on; R = Random turn-on
- 3) Control Range: E = 4-30 Vdc (5-30 Vdc for AS60D4E); F = 7-30 Vdc
- 4) Options: 02 = Control LED (on AS46R4F-02 only)

MECHANICAL SPECIFICATION

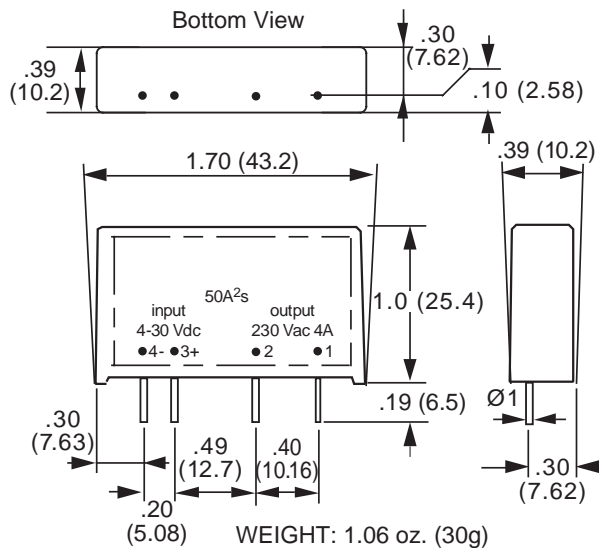
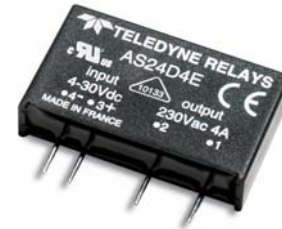


Figure 1 — AS relays; dimensions in inches (mm)
(See Figure 7 for DIN-rail)

ENVIRONMENTAL SPECIFICATION

	Min	Max	Unit
Operating Temperature	-40	80	°C
Storage Temperature	-40	120	°C
Input-Output Isolation	4000		Vrms
Input-Output Capacitance		3	pF



FEATURES/BENEFITS

- Industry standard package
- Control LED (AS46R4F-02 only)
- Tight zero-cross window for low EMI
- Low input current draw
- High dv/dt capability
- Integral transient voltage protection
- High immunity to surges

DESCRIPTION

The AS 4-amp solid-state single inline (SIP) four-pin relays are designed for mounting on a printed circuit board. The relays offer built-in voltage protection and can withstand very high current overloads. The Series AS4 relays have a low zero-cross window. The compact size and triac output make the AS relay the perfect retrofit for electromechanical relays.

APPLICATIONS

- Interface applications
- Vending machines
- Light/Lamp control
- Contactor driver
- Fan speed control
- HVAC controls

APPROVALS

All models except AS60D4E are UL recognized.
UL File Number: E128555.

BLOCK DIAGRAM

(Control LED available on AS46R4F-02 only.)

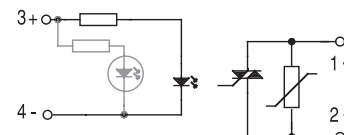


Figure 2a — All AS relays except AS60D4E

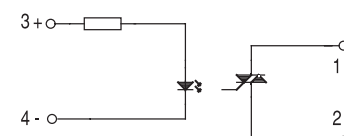


Figure 2b — AS60D4E relay

INPUT (CONTROL) SPECIFICATION

	Min	Max	Units
Control Range			
AS24D4E	4	30	Vdc
AS24R4E	4	30	Vdc
AS46D4E	4	30	Vdc
AS46R4E	4	30	Vdc
AS46R4F-02	7	30	Vdc
AS60D4E	5	30	Vdc

Input Current Range

AS24D4E	3	30	mA
AS24R4E	2	30	mA
AS46D4E	3	30	mA
AS46R4E	2	30	mA
AS46R4F-02	6	40	mA
AS60D4E	3	30	mA

Must Turn-Off Voltage

AS24D4E	0.8	Vdc
AS24R4E	0.8	Vdc
AS46D4E	0.8	Vdc
AS46R4E	0.8	Vdc
AS46R4F-02	0.8	Vdc
AS60D4E	1	Vdc

Input Resistance (Typical)

AS24D4E	1000	Ohms
AS24R4E	1000	Ohms
AS46D4E	1000	Ohms
AS46R4E	1000	Ohms
AS46R4F-02	750	Ohms
AS60D4E	1000	Ohms

OUTPUT (LOAD) SPECIFICATION

	Min	Max	Unit
Operating Range			
AS24D4E	12	275	Vrms
AS24R4E	12	275	Vrms
AS46D4E	12	460	Vrms
AS46R4E	12	460	Vrms
AS46R4F-02	12	460	Vrms
AS60D4E	24	600	Vrms

TYPICAL APPLICATIONS

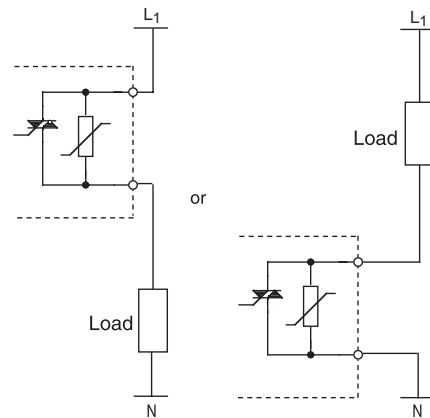


Figure 3a — All AS relays except AS60D4E

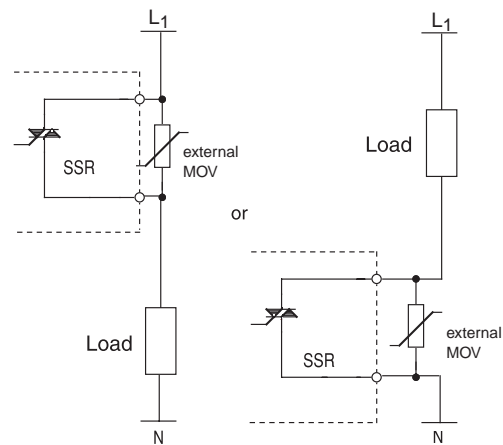


Figure 3b — AS60D4E relay

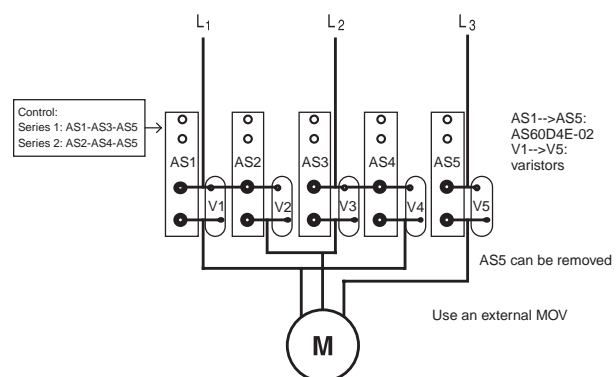


Figure 3c — AS60D4E in reverser for small motor

OUTPUT (LOAD) SPECIFICATION (continued)

	Min	Max	Unit
Peak Voltage (Clamping Voltage)			
AS24D4E		600 (450)	V _{peak}
AS24R4E		600 (450)	V _{peak}
AS46D4E		900 (720)	V _{peak}
AS46R4E		900 (720)	V _{peak}
AS46R4F-02		900 (720)	V _{peak}
AS60D4E		1200	V _{peak}

Load Current Range

All relays	.005	4	Arms
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Maximum Surge Current Rating (Non-Repetitive)

(See Figure 5a and Figure 5b)

AS24D4E	100	A _{peak}
AS24R4E	100	A _{peak}
AS46D4E	100	A _{peak}
AS46R4E	100	A _{peak}
AS46R4F-02	100	A _{peak}
AS60D4E	120	A _{peak}

On-State Voltage Drop

All relays	1.6	V
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Zero-Cross Window (Typical)

AS24D4E	±12	V
AS24R4E	NA	
AS46D4E	±12	V
AS46R4E	NA	
AS46R4F-02	NA	
AS60D4E	±12	V

Off-State Leakage Current (60Hz)

AS24D4E	0.3	mArms
AS24R4E	0.3	mArms
AS46D4E	0.3	mArms
AS46R4E	0.3	mArms
AS46R4F-02	0.3	mArms
AS60D4E	1	mArms

OUTPUT (LOAD) SPECIFICATION (continued)

	Min	Max	Unit
Turn-On Time (60Hz)			
AS24D4E		8.3	ms
AS24R4E		0.1	ms
AS46D4E		8.3	ms
AS46R4E		0.1	ms
AS46R4F-02		0.1	ms
AS60D4E		8.3	ms

Turn-Off Time (60Hz)

All relays	8.3	ms
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Off-State dv/dt

All relays	500	V/μs
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Operating Frequency

All relays	10	440	Hz
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I²t for Match Fusing (<8.3ms)

AS24D4E	50	A ² S
AS24R4E	50	A ² S
AS46D4E	50	A ² S
AS46R4E	50	A ² S
AS46R4F-02	50	A ² S
AS60D4E	72	A ² S

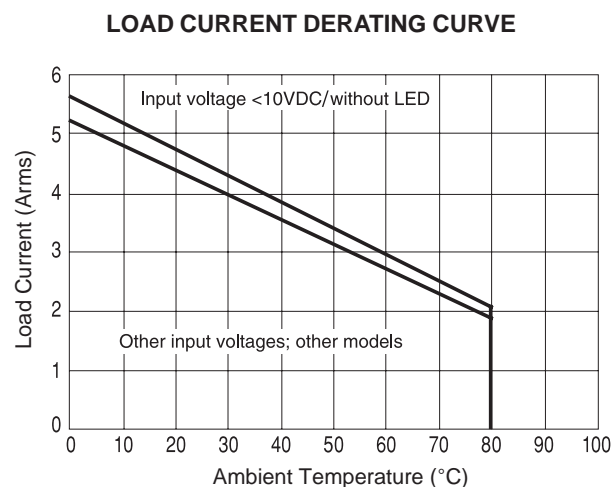
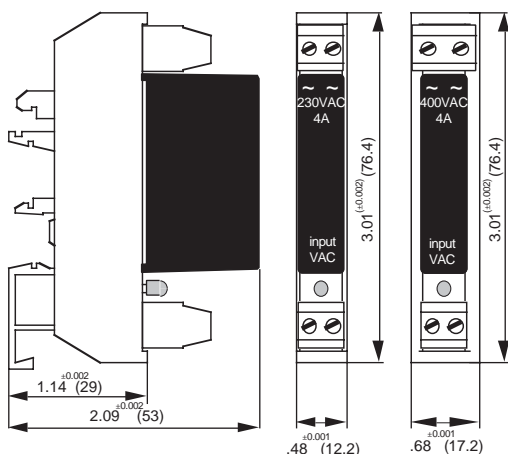


Figure 4 — Thermal curves

AS4 WITH X1 DIN-RAIL CLIP



Figure 6 — AS4 relays with X1 DIN-rail clip



WEIGHT: 1.06 oz (30g)

Figure 7 — AS4 relays with X1 DIN-rail clip, dimensions in inches (mm)

SURGE CURRENT RATING

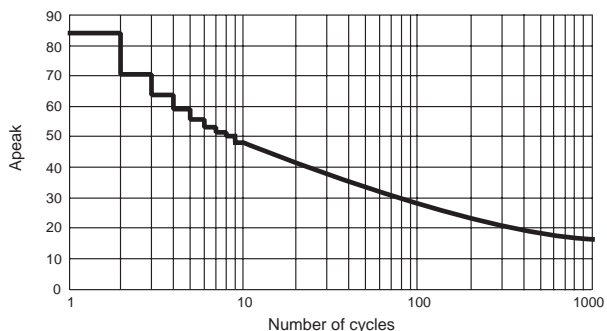


Figure 8 — AS4 relays with X1 DIN-rail clip

X1 DESCRIPTION

The X1 allows the AS4 relays to be mounted onto a DIN-rail clip. The X1 option offers the clip and a control LED for visual diagnostics.

INPUT (CONTROL) SPECIFICATION

	Min	Max	Unit
Control Range			
AS24D4E-X1	6	30	Vdc
AS46D4E-X1	15	30	Vdc/Vac

Input Current Range

AS24D4E-X1	3	30	mAdc
AS46D4E-X1	6.5	14	mAdc

Must Turn-Off Voltage

AS24D4E-X1	0.8	Vdc
AS46D4E-X1	2	Vdc

Input Resistance (Typical)

AS24D4E-X1	1000	Ohms
AS46D4E-X1	1800	Ohms

THERMAL CURVES

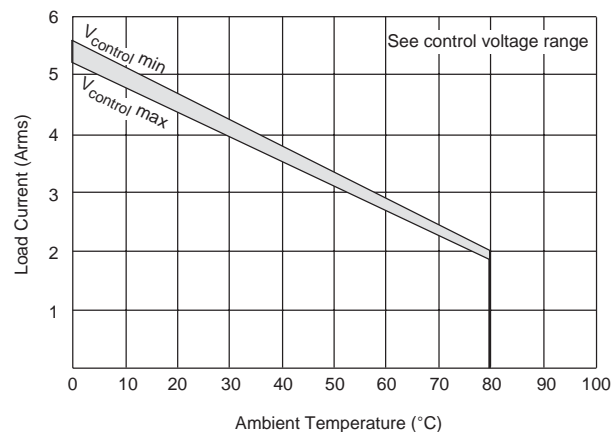


Figure 9 — AS4 relays with X1 DIN-rail clip

NOTES:

1. Electrical specifications at 25°C unless otherwise specified.
2. Note control voltage change on X1 option.
3. For additional/custom options, contact factory.