T9A series

Low Cost
30 Amp PC Board or
Panel Mount Relay

Ⓤ File E22575
Ⓢ File LR15734 ⓈⒶ

Features

• Up to 30 amp switching in SPST and 20 amp in SPDT arrangements.
• Immersion cleanable(6), plastic sealed case available.
• Meets UL 873 and UL 508 spacing – 1/8" through air, 1/4" over surface.
• Load connections made via 1/4" Q. C. terminals and safety wells accept insulated female Q. C. terminals (mounting codes 2 & 5).
• UL Class F insulation system standard.
• Well suited for various industrial, commercial and residential applications.

Contact Ratings @ 25°C with relay properly vented.
Remove vent nib after soldering and cleaning.

Arrangements: 1 Form A (SPST-NO), and 1 Form C (SPDT).
Material: Silver-cadmium oxide.
Mechanical Life: 10 million operations, typical.
Minimum Contact Load: 1A @ 5VDC or 12VAC.
Initial Contact Resistance: 75 milliohms, max., @ min. rated current (switched).

Typical Electrical Load & Life - 1 Watt Coil

Contact Arrangement	Contact Load	Type of Load	Operations
1	30A @ 240VAC	UL General Purpose	100,000
	25A @ 240VAC	Resistive Heater	100,000
5	20A/10A @ 240VAC	UL General Purpose	100,000
	20A/10A @ 240VAC	UL Resistive	100,000
	20A/10A @ 28VDC	Resistive	100,000

Typical Electrical Load & Life - 900mW Coil

Contact Arrangement	Contact Load	Type of Load	Operations
1	120VAC	50 LRA/16 FLA	100,000
	120VAC	30 LRA/11 FLA	200,000

UL 508/873 & CSA Contact Ratings - 1 Watt Coil

Voltage	Load Type	N.O. Contact	N.C. Contact
277VAC	Tungsten *	5.4A	–
277VAC	Ballast	10A	3A
240VAC	Motor	2 HP	1/2 HP
240VAC	Resistive *	30A	20A
240VAC	General Purpose†	30A	15A
240VAC	LRA/FLA **††	80A/30A	30A/12A
240VAC	Pilot Duty *	470VA	275VA
125VAC	Motor	1 HP	1/4 HP
120VAC	LRA/FLA	98A/22A	–
120VAC	Tungsten *	8.3A	–
120VAC	Pilot Duty	470VA	–
28VDC	Resistive	20A	10A

* Rated 6,000 operations.
** Higher UL & CSA ratings available.
† For Form C application, derate current to 20A (N.O.), 10A (N.C.).
†† For Form C application, derate current to 67%.

Note: Consult factory for other 900mW version contact ratings.

Initial Dielectric Strength

Between Open Contacts: 1,500V rms.
Between Contacts and Coil: 2,500V rms.
6 kV surge using 1.2μs/50μs Impulse Wave or .5μs – 100kHz Ring Wave

Initial Insulation Resistance

Between Mutually Insulated Elements: 10^9 ohms, min., @ 500VDC, 25°C and 50% R.H.

Coil Data @ 25°C

Voltage: 5 to 110VDC.
Nominal Coil Power: 1.0W, (approx.) and 900mW (approx.) versions.
Maximum Coil Power: 2.8 Watt.
Maximum Coil Temperature(5): Class F: 140°C.
Duty Cycle: Continuous.

Coil Data - 1 Watt

Nominal Voltage	DC Resistance ±10% (Ohms)	Nominal Current (mA)	Nominal Voltage	DC Resistance ±10% (Ohms)	Nominal Current (mA)
5	25	200	18	324	56
6	36	167	22	484	45
9	81	111	24	576	42
12	144	83	48	2,304	21
15	225	67	110	12,100	9

Coil Data - 900mW

Nominal Voltage	DC Resistance ±10% (Ohms)	Nominal Current (mA)	Nominal Voltage	DC Resistance ±10% (Ohms)	Nominal Current (mA)
5	27	185	22	545	40
6	40	150	24	660	36
9	97	93	28	890	31
12	155	77	36	1,450	25
15	256	59	48	2,560	19
18	380	47	110	13,450	8
20	450	44			

Operate Data @ 25°C

Must Operate Voltage: 75% of nominal voltage or less.
Must Release Voltage: 10% of nominal voltage or more.
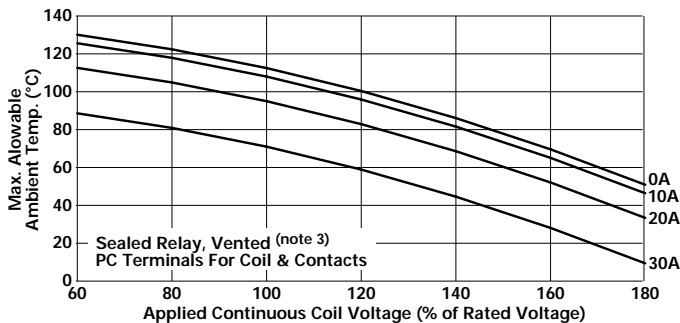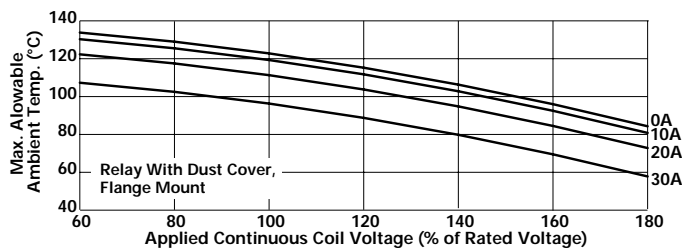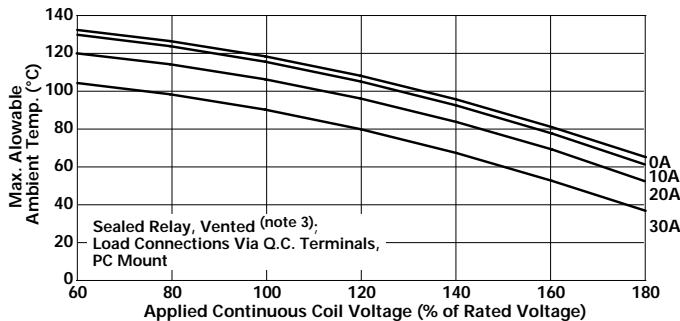**Operate Time (Including Bounce)§:** 15 ms, max.
Release Time (Including Bounce)§: 15 ms, max.
§ At or From Nominal Coil Voltage

Siemens Electromechanical Components

Ambient Temperature vs. Coil Voltage - 1 Watt Coil

Data below are average values and should be verified in application. Tests were conducted within a 2' (.6 m) cube (still air); at nominal coil power @ 25°C; with normally open contact loaded; and with 4' (1.22 m) long, #10 AWG load wires. P.C. board relays were mounted to a 30A, single side P.C. board [6].

Sealed Relay, Vented (note 3); Load Connections Via Q.C. Terminals, PC Mount

Relay With Dust Cover, Flange Mount

Sealed Relay, Vented (note 3) PC Terminals For Coil & Contacts

Environmental Data

Storage Temperature Range: -55°C to 130°C.
Operating Temperature Range[1]: -55°C to +85°C.
Vibration, Operational: 0.065" (1.65mm) max. excursions from 10-55 Hz. with no contact opening >100µs.
Shock, Operational: 10g for 11 ms with no contact opening >100µs.
Shock, Mechanical: 100g.

Mechanical Data

Termination: Printed circuit and quick connect terminals [4].
Enclosures (all have 94V-0 flammability rating):
  T9AP: Unsealed, plastic dust cover.
  T9AS: Immersion cleanable, sealed plastic case [2 & 3].
  T9AV: Vented, flux-tight, plastic cover.
Weight: Q.C. version: 1.2 oz. (33g) approx. (mounting code 2 & 5).
  Sealed Model T9AS: 0.9 oz. (26g) approx. (mounting code 1).

Notes

(1) Operating ambient temperature must consider "Must Operate Voltage Change Over Temperature," Contact Temperature Rise, Coil Temperature Rise (If coil is not allowed to cool) and Maximum Coil Temperature. Specification ambient considers 20A load with coil cooled to ambient.
(2) Sealed relay terminals should not be bent.
(3) Remove knock-off nib after cleaning process for optimum life of sealed relays.
(4) Maximum soldering temperature is 500°F for 4 seconds.
(5) Class F coils are UL systems approved for maximum coil temperature of 140°C, by change of resistance method.
(6) See application note 13C265 for proper relay mounting, termination, cleaning and PC board conductor width. Coil rise test performed with 30A PC board to maintain 20°C maximum rise @ 30A.

Ordering Information

Typical Part Number ▶	T9A	S	5	D	2	2	-12

1. Basic Series:
  T9A = Low cost, printed circuit board/panel power relay.

2. Enclosure:
  P = Unsealed, plastic dust cover (mounting code 5).
  S = Immersion cleanable, knock off nib, sealed plastic case (mounting codes 1 & 2).
  V = Vented, flux-tight (mounting code 1).

3. Contact Arrangement:
  1 = 1 Form A (SPST-NO).   5 = 1 Form C (SPDT).

4. Coil Input:
  D = DC voltage (1 Watt)   L = DC voltage (900mW)

5. Mounting & Termination:
  1 = Printed circuit board mounting; PC terminals for coil & contacts [a].
  2 = Printed circuit board mounting; PC terminals for coil & contacts, and .250" (6.35mm) quick connects for contacts [b].
  5 = Flanged mounting; .187" (4.75mm) quick connects for coil and .250" (6.35mm) quick connects for contacts [c].

6. Contact Material:
  2 = Silver-cadmium oxide.

7. Coil Voltage:

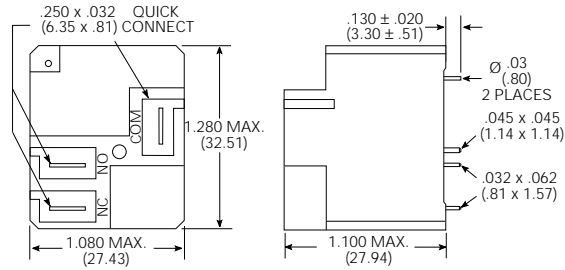|					
5 = 5VDC	9 = 9VDC	15 = 15VDC	20 = 20VDC	24 = 24VDC	48 = 48VDC
6 = 6VDC	12 = 12VDC	18 = 18VDC	22 = 22VDC	36 = 36VDC	110 = 110VDC

a) Only available with enclosure code "S" & "V".   b) Only available with enclosure code "S".   c) Only available with enclosure code "P".

Stock Items – The following items are normally maintained in stock for immediate delivery.
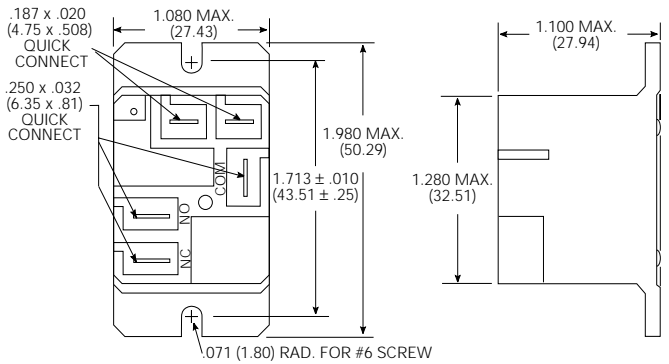
T9AP1D52-12	T9AS1D12-110	T9AS1D22-110	T9AS1L12-24	T9AS5D12-5	T9AS5L12-12
T9AP1D52-24	T9AS1D12-12	T9AS1D22-12	T9AS5D12-110	T9AS5D22-110	T9AS5L12-24
T9AP1D52-48	T9AS1D12-18	T9AS1D22-24	T9AS5D12-12	T9AS5D22-12	
T9AP5D52-12	T9AS1D12-24	T9AS1D22-48	T9AS5D12-18	T9AS5D22-24	
T9AP5D52-24	T9AS1D12-48	T9AS1D22-5	T9AS5D12-24	T9AS5D22-48	
T9AP5D52-48	T9AS1D12-5	T9AS1L12-12	T9AS5D12-48	T9AS5D22-5	

Outline Dimensions

T9AS – Mounting & Termination Code 2

.250 x .032 QUICK
(6.35 x .81) CONNECT

.130 ± .020
(3.30 ± .51)

Ø .03
(.80)
2 PLACES

.045 x .045
(1.14 x 1.14)

.032 x .062
(.81 x 1.57)

1.280 MAX.
(32.51)

1.080 MAX.
(27.43)

1.100 MAX.
(27.94)

T9AP – Mounting & Termination Code 5

.187 x .020
(4.75 .508)
QUICK
CONNECT

.250 x .032
(6.35 x .81)
QUICK
CONNECT

1.080 MAX.
(27.43)

1.980 MAX.
(50.29)

1.713 ± .010
(43.51 ± .25)

1.100 MAX.
(27.94)

1.280 MAX.
(32.51)

.071 (1.80) RAD. FOR #6 SCREW

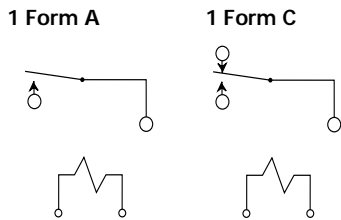**Note:** Recommended mounting screw torque is 4.0-5.0 lbs.in when #6 screw is used.

T9AS/V – Mounting & Termination Code 1

.805 MAX.
(20.4)
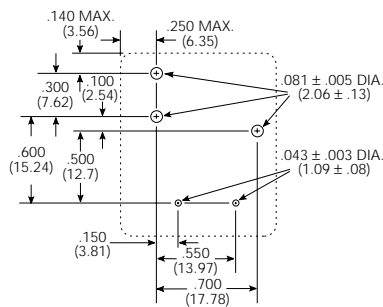
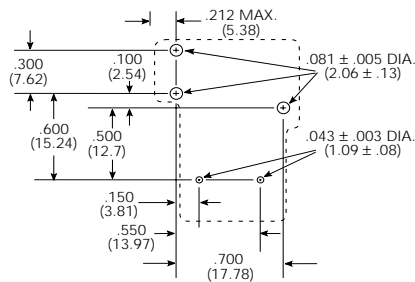.130 + .016
− .010
(3.30 + .41
− .25)

.212 MAX.
(5.38)

.032 x .062
(.8 x 1.6)
TERMINALS

.69
(17.6)

.50
(12.8)

.10 MAX.
(2.54)

1.280 MAX.
(32.51)

.045 x .045
(1.14 x 1.14)
TERMINAL

1.08 MAX.
(27.43)

.016
(.43)

Ø .03
(.80)
TERMINALS
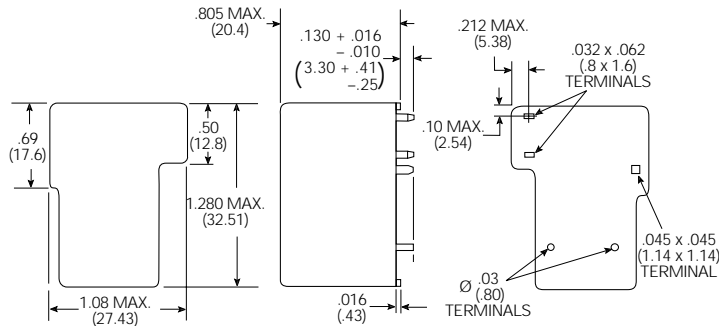
Wiring Diagrams (Bottom Views)

1 Form A   **1 Form C**

PC Board Layouts (Bottom Views)

T9AP/S – Mounting & Termination Code 2

.140 MAX.
(3.56)

.250 MAX.
(6.35)

.300
(7.62)

.100
(2.54)

.081 ± .005 DIA.
(2.06 ± .13)

.600
(15.24)

.500
(12.7)

.043 ± .003 DIA.
(1.09 ± .08)

.150
(3.81)

.550
(13.97)

.700
(17.78)

DIN Mount Adapter - 9T91A001

3 Holes for #6-32 Screw
0.011 Deep
(.27)

.50
(12.7)

.20
(5.08)

.50
(12.7)

1.67
(42.41)

.40
(10.16)

.79
(20.06)
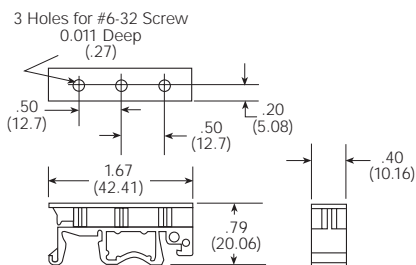
Note: Fits 35mm din track
Includes: 2 Din clips
2 Screws
Must be ordered in multiples of 50

T9AS/V – Mounting & Termination Code 1

.212 MAX.
(5.38)

.300
(7.62)

.100
(2.54)

.081 ± .005 DIA.
(2.06 ± .13)

.600
(15.24)

.500
(12.7)

.043 ± .003 DIA.
(1.09 ± .08)

.150
(3.81)

.550
(13.97)

.700
(17.78)