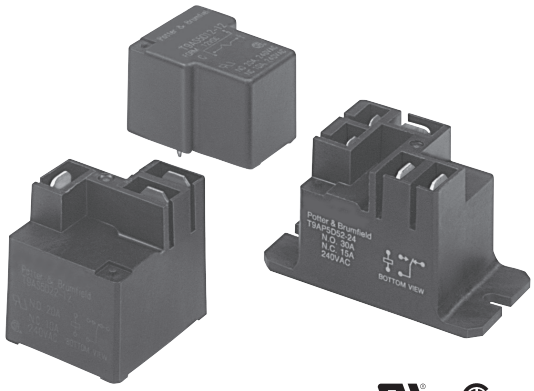
# T9A Series, DC Coil 30A PCB or Panel Mount Relay

- **30A switching in 1 form A (NO) and 20A in 1 form C (CO)**
- **Plastic sealed case available**
- **Meets UL 508 and 873 spacing - 3.18mm through air, 6.36mm over surface**
- **Option for load connections via 0.250"" (6.35mm) Q.C. terminals**
- **UL class F insulation system standard**



Typical applications
HVAC, Appliances, Industrial Controls

## Approvals

UL E58304; CSA LR48471
Technical data of approved types on request

## Contact Data

| | | | |
|---|---|---|---|
| Contact arrangement | 1 form A (NO), 1 form B (NC), 1 form C (CO) | | |
| Rated voltage | | 277VAC | |
| Max. switching voltage | | 277VAC | |
| Rated current | 30A | 15A | 20A/10A |
| Limiting continuous current | 30A | | |
| Contact material | AgSnOInO, AgCdO | | |
| Min. recommended contact load | 1A, 5VDC or 12VAC | | |
| Initial contact resistance | 75 mΩ at 1A at 5VDC or 12VAC | | |
| Frequency of operation, with/without load | 360/3600hr | | |
| Operate/release time max., including bounce | 15/15ms | | |

**Contact ratings** [1)]

| Type | Load | Cycles |
|---|---|---|
| **Factory** | | |
| AgCdO, 1W coil | | |
| NO | 30A, 240VAC, general purpose | $100x10^3$ |
| NO | 25A, 240VAC, resistive | $100x10^3$ |
| CO | 20A/10A, 240VAC, general purpose | $100x10^3$ |
| CO | 20A/10A, 240VAC, resistive | $100x10^3$ |
| CO | 20A/10A, 28VDC, resistive | $100x10^3$ |
| **UL 508/873** | | |
| AgCdO, 1W coil | | |
| NO | 30A, 240VAC, general purpose | $100x10^3$ |
| NC | 15A, 240VAC, general purpose | $100x10^3$ |
| CO | 20A/10A, 240VAC, general purpose | $100x10^3$ |
| NO | 25A, 240VAC, resistive | $6x10^3$ |
| NC | 20A, 240VAC, resistive | $6x10^3$ |
| CO | 16.75A/13.4A, 240VAC, resistive | $6x10^3$ |
| NO | 80LRA/30FLA, 240VAC | $30x10^3$ |
| NC | 30LRA/12FLA, 240VAC | $30x10^3$ |
| CO | 53.6LRA/20FLA / 20LRA/8FLA, 240VAC | $30x10^3$ |
| NO | 98LRA/22FLA, 120VAC | $100x10^3$ |
| NO | 2HP, 240VAC | $1x10^3$ |
| NC | 1/2HP, 240VAC | $1x10^3$ |
| NO | 1HP, 125VAC | $1x10^3$ |
| NC | 1/4HP, 125VAC | $1x10^3$ |
| NO | 10A, 277VAC, ballast | $6x10^3$ |
| NC | 3A, 277VAC, ballast | $6x10^3$ |
| NO | 8.3A, 120VAC, tungsten | $6x10^3$ |
| NO | 5.4A, 277VAC, tungsten | $6x10^3$ |
| NO | 470VA, 120VAC, pilot duty | $30x10^3$ |
| NO | 20A, 28VDC, resistive | $100x10^3$ |
| NC | 10A, 28VDC, resistive | $100x10^3$ |

1) Contact ratings at 25°C (unless otherwise noteed) with relay properly vented. Remove vent nib after soldering and cleaning.

**Contact ratings** [1)] (continued)

| Type | Load | Cycles |
|---|---|---|
| **UL 508/873** | | |
| AgSnOInO, 1W coil | | |
| NO | 30A, 240VAC, general purpose | $100x10^3$ |
| NO | 80LRA/30FLA, 240VAC | $30x10^3$ |
| NC | 10A, 250VAC, resistive | $50x10^3$ |
| AgCdO, 900mW coil | | |
| NO | 30A, 240VAC, general purpose | $100x10^3$ |
| NO | 18A, 240VAC, resistive, 105°C | $100x10^3$ |
| NC | 15A, 240VAC, resistive | $6x10^3$ |
| NO | 30LRA/15FLA, 240VAC | $100x10^3$ |
| NO | 50LRA/16FLA, 120VAC | $100x10^3$ |
| NO | 30LRA/11FLA, 120VAC | $200x10^3$ |

1) Contact ratings at 25°C (unless otherwise noteed) with relay properly vented. Remove vent nib after soldering and cleaning.

| | |
|---|---|
| Mechanical endurance | $10x10^6$ ops. |

## Coil Data

| | |
|---|---|
| Coil voltage range | 5 to 110VDC |
| Max. coil power | 110% of nominal |
| Max. coil temperature | 155°C |
| Coil insulation system according UL | Class F |

**Coil versions, DC coil**

| Coil code | Rated voltage VDC | Operate voltage VDC | Release voltage VDC | Coil resistance Ω±10% | Rated coil power W |
|---|---|---|---|---|---|
| Code D (1W) coil | | | | | |
| 5 | 5 | 3.75 | 0.5 | 25 | 1 |
| 6 | 6 | 4.5 | 0.6 | 36 | 1 |
| 9 | 9 | 6.75 | 0.9 | 81 | 1 |
| 12 | 12 | 9 | 1.2 | 144 | 1 |
| 15 | 15 | 11.25 | 1.5 | 225 | 1 |
| 18 | 18 | 13.5 | 1.8 | 324 | 1 |
| 24 | 24 | 18 | 2.4 | 576 | 1 |
| 48 | 48 | 36 | 4.8 | 2304 | 1 |
| 110 | 110 | 82.5 | 11 | 12100 | 1 |
| Code L (900mW) coil | | | | | |
| 5 | 5 | 3.75 | 0.5 | 27 | .9 |
| 6 | 6 | 4.5 | 0.6 | 40 | .9 |
| 9 | 9 | 6.75 | 0.9 | 97 | .9 |
| 12 | 12 | 9 | 1.2 | 155 | .9 |
| 15 | 15 | 11.25 | 1.5 | 256 | .9 |
| 18 | 18 | 13.5 | 1.8 | 380 | .9 |
| 24 | 24 | 18 | 2.4 | 660 | .9 |
| 48 | 48 | 36 | 4.8 | 2560 | .9 |
| 110 | 110 | 82.5 | 11 | 13450 | .9 |

All figures are given for coil without preenergization, at ambient temperature +23°C.



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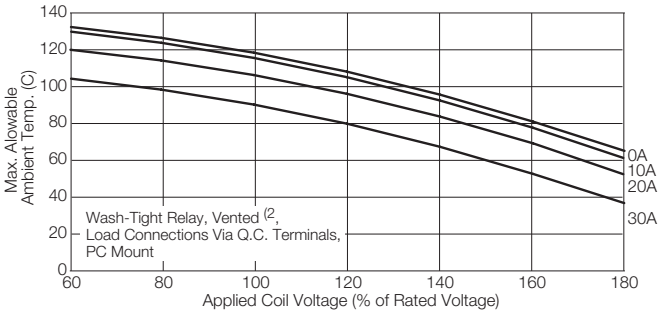
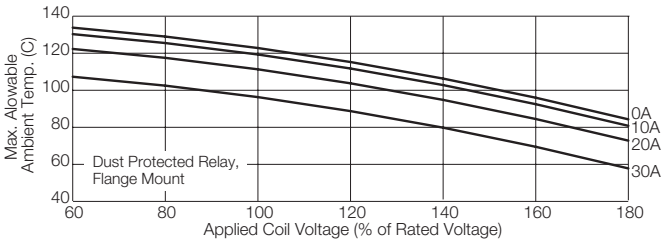
## T9A Series, DC Coil 30A PCB or Panel Mount Relay (Continued)

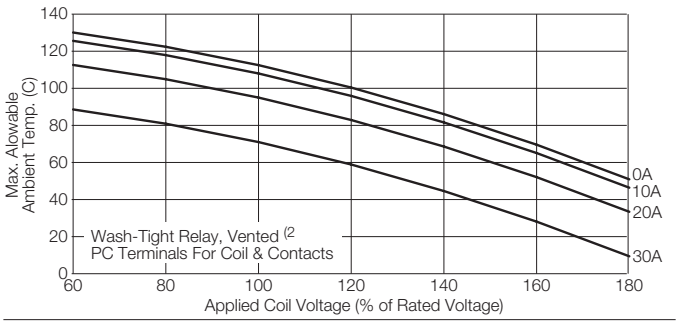
### Coil Data (continued)

**Ambient temperature vs. coil voltage – 1W 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. Coil rise test conducted with a 30A PC board to maintain 20°C max. rize at 30°C. The relay connections and wiring must be designed with an adequate cross section to ensure proper current flow and heat dissipation.




2) Remove knock-off nib after cleaning process for optimum life of wash-tight relays.

### Insulation Data

| | |
|---|---|
| Initial dielectric strength | |
| between open contacts | 1500V$_{rms}$ |
| between contact and coil | 2500V$_{rms}$ |
| Initial surge withstand voltage | |
| between contact and coil | 6kV |
| Initial insulation resistance | |
| between insulated elements | 1x10$^9$Ω |
| Clearance/creepage | |
| between contact and coil | 3.18mm clearance/6.3638mm |

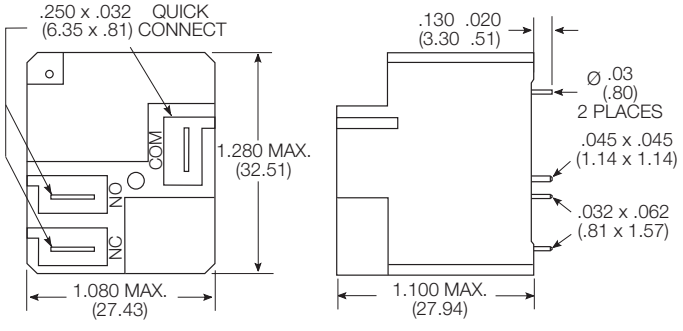
### Other Data

| | |
|---|---|
| Material compliance: | EU RoHS/ELV, China RoHS, REACH, Halogen content refer to the Product Compliance Support Center at www.te.com/customersupport/rohssupportcenter |
| Ambient temperature | |
| DC coil | -55ºC to 85ºC 3)<br>105°C models available |
| Category of environmental protection | |
| IEC 61810 | RT0 - open, RTI - dust protected, RTII - flux proof, RTIII - wash tight |
| Vibration resistance (functional) | 1.65mm max excursions, 10-55 Hz |
| Shock resistance (functional) | 10g for 11msec |
| Shock resistance (destructive) | 100g |
| Terminal type | pcb-tht and pcb-tht + quick connect |
| Weight | 26g mounting code 1<br>33g mounting codes 2 and 5 |
| Resistance to soldering heat THT | |
| IEC 60068-2-20 | 250°C |
| Packaging/unit | tray/50 pcs., bundle/250 pcs., box/500 pcs. |

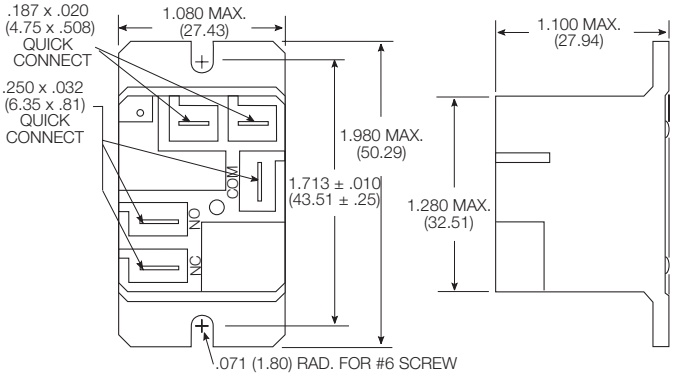
3) Operating ambient temperature must consider "Must Operate Voltage Change Over Temperature," Contact Temperature Rise, Coil Temperature Rise (If coil is not allowed to cool) and Maximum Coil Temperature. Specification ambient considers 20A load with coil cooled to ambient.

**Dimensions**

T9AS – Mounting and termination code 2




T9AP – Mounting and termination code 5




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



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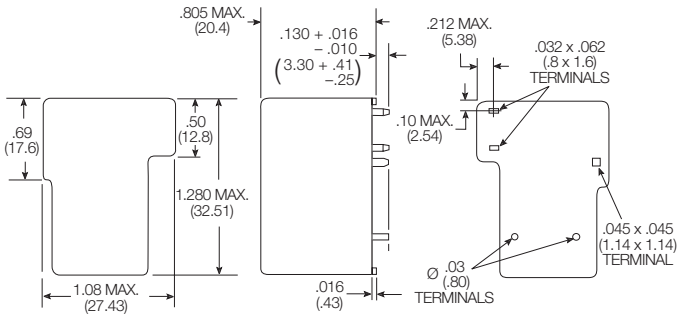
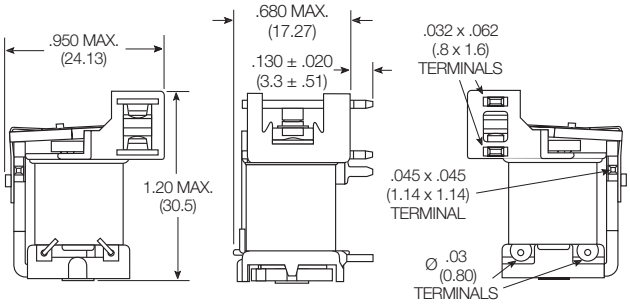
## T9A Series, DC Coil 30A PCB or Panel Mount Relay (Continued)

### Dimensions

Plain case



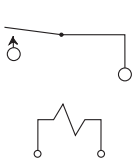

Bracket mount case



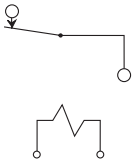

### Terminal assignment

Bottom view on pins

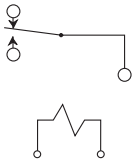
1 Form A



1 Form B



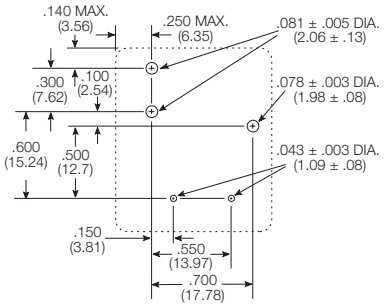
1 Form C



### PCB layout

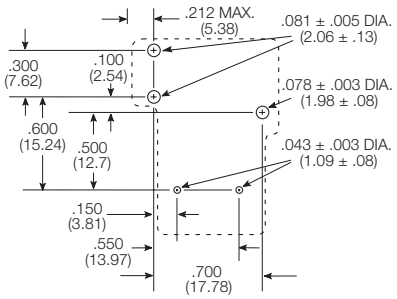
Bottom view on pins

T9AP/S - Mounting and termination code 2




Only necessary terminals are present on single throw models. Consequently, some holes will be unnecessary for single throw models.

T9AS/V - Mounting and termination code 1




Only necessary terminals are present on single throw models. Consequently, some holes will be unnecessary for single throw models.

### Product code structure

Typical product code: **T9A S 5 D 2 2 -12**

**Type**
- **T9A** Power PCB or panel mount relay T9A

**Enclosure**
- **N** Open, no enclosure (requires mounting code 1)
- **P** Dust protected plastic case (requires mounting code 5)
- **S** Wash-tight plastic case with knock off nib (requires mounting code 1 or 2)
- **V** Flux-proof plastic case (requires mounting code 1 or 2)

**Contact arrangement**
- **1** 1 form A (1 NO)
- **2** 1 form B (1 NC)
- **5** 1 form C (1 CO)

**Coil Input**
- **D** DC voltage, 1W
- **L** DC voltage, 900mW

**Mounting and termination**
- **1** PCB mounting; PCB terminals for coil and contacts (only available with enclosure code N, S or V)
- **2** PCB mounting; PCB term. for coil and contacts; 6.35mm (.250in) QC for contacts (only available with enclosure code S or V)
- **5** Flanged mounting; 4.75mm (.187) QC for coil; 6.35mm (.250in) QC for contacts (only available with enclosure code P)

**Contact material**
- **2** AgCdO
- **4** AgSnOInO

**Coil voltage**

Coil code: please refer to coil versions table

## T9A Series, DC Coil 30A PCB or Panel Mount Relay (Continued)

| Product Code | Enclosure | Contacts | Coil | Mounting | Contact Material | Coil | Part Number |
|---|---|---|---|---|---|---|---|
| T9AN1L22-24 | Open (no cover) | 1 form A, 1 NO | 900mW | pcb + QC | AgCdO | 24VDC | 1419104-6 |
| T9AN5L12-24 | | 1 form C, 1 CO | | pcb terminals | | | 1-1393210-0 |
| T9AN5L22-24 | | | | pcb + QC | | | 1419104-9 |
| T9AP1D52-12 | Unsealed, plastic dust cover | 1 form A, 1 NO | 1W | Flanged mount, QC | | 12VDC | 6-1419102-0 |
| T9AP1D52-24 | | | | | | 24VDC | 6-1419102-3 |
| T9AP1D52-48 | | | | | | 48VDC | 5-1419102-8 |
| T9AP1D54-24 | | | | | AgSnOInO | 24VDC | 7-1423091-3 |
| T9AP5D52-12 | | 1 form C, 1 CO | | | AgCdO | 12VDC | 5-1419102-4 |
| T9AP5D52-24 | | | | | | 24VDC | 5-1419102-2 |
| T9AP5D52-48 | | | | | | 48VDC | 6-1419102-4 |
| T9AP5D54-12 | | | | | AgSnOInO | 12VDC | 7-1423091-4 |
| T9AP5D54-24 | | | | | | 24VDC | 7-1423091-5 |
| T9AS1D12-5 | Wash tight, knock off nib | 1 form A, 1 NO | | pcb terminals | AgCdO | 5VDC | 2-1393210-0 |
| T9AS1D12-9 | | | | | | 9VDC | 2-1393210-2 |
| T9AS1D12-12 | | | | | | 12VDC | 1-1393210-3 |
| T9AS1D12-15 | | | | | | 15VDC | 1-1393210-4 |
| T9AS1D12-18 | | | | | | 18VDC | 1-1393210-5 |
| T9AS1D12-24 | | | | | | 24VDC | 1-1393210-8 |
| T9AS1D12-48 | | | | | | 48VDC | 1-1393210-9 |
| T9AS1D12-110 | | | | | | 110VDC | 1-1393210-2 |
| T9AS1D14-12 | | | | | AgSnOInO | 12VDC | 5-1423091-7 |
| T9AS1D14-24 | | | | | | 24VDC | 6-1423091-3 |
| T9AS1D22-5 | | | | pcb + QC | AgCdO | 5VDC | 2-1419104-3 |
| T9AS1D22-12 | | | | | | 12VDC | 1-1419104-7 |
| T9AS1D22-24 | | | | | | 24VDC | 2-1419104-1 |
| T9AS1D22-48 | | | | | | 48VDC | 2-1419104-2 |
| T9AS1D22-110 | | | | | | 110VDC | 1-1419104-6 |
| T9AS1L12-12 | | | 900mW | pcb terminals | | 12VDC | 2-1393210-4 |
| T9AS1L12-24 | | | | | | 24VDC | 2-1393210-5 |
| T9AS1L22-18 | | | | pcb + QC | | 18VDC | 2-1419104-6 |
| T9AS2L22-24 | | 1 form B, 1 NC | | | | 24VDC | 1423794-1 |
| T9AS5D12-5 | | 1 form C, 1 CO | 1W | pcb terminals | | 5VDC | 3-1393210-9 |
| T9AS5D12-12 | | | | | | 12VDC | 3-1393210-3 |
| T9AS5D12-18 | | | | | | 18VDC | 3-1393210-4 |
| T9AS5D12-24 | | | | | | 24VDC | 3-1393210-7 |
| T9AS5D12-48 | | | | | | 48VDC | 3-1393210-8 |
| T9AS5D12-110 | | | | | | 110VDC | 3-1393210-2 |
| T9AS5D14-5 | | | | | AgSnOInO | 5VDC | 6-1423091-4 |
| T9AS5D22-5 | | | | pcb + QC | AgCdO | | 3-1419104-9 |
| T9AS5D22-12 | | | | | | 12VDC | 3-1419104-3 |
| T9AS5D22-24 | | | | | | 24VDC | 3-1419104-6 |
| T9AS5D22-110 | | | | | | 110VDC | 3-1419104-2 |
| T9AS5D24-5 | | | | | AgSnOInO | 5VDC | 6-1423091-9 |
| T9AS5D24-12 | | | | | | 12VDC | 7-1423091-0 |
| T9AS5D24-24 | | | | | | 24VDC | 7-1423091-1 |
| T9AS5L12-12 | | | 900mW | pcb terminals | AgCdO | 12VDC | 4-1393210-1 |
| T9AS5L22-18 | | | | pcb + QC | | 18VDC | 4-1419104-0 |
| T9AS5L22-24 | | | | | | 24VDC | 4-1419104-1 |
| T9AS5L22-48 | | | | | | 48VDC | 9-1419136-6 |
| T9AV1D12-12 | Vented, flux tight | 1 form A, 1 NO | 1W | pcb terminals | | 12VDC | 4-1393210-3 |
| T9AV1D12-18 | | | | | | 18VDC | 5-1393210-2 |
| T9AV1D22-18 | | | | pcb + QC | | | 4-1419148-8 |
| T9AV1D22-24 | | | | | | 24VDC | 5-1419148-0 |
| T9AV1D22-48 | | | | | | 48VDC | 2-1423091-3 |
| T9AV1L12-12 | | | 900mW | pcb terminals | | 12VDC | 1-1423091-8 |
| T9AV1L22-24 | | | | pcb + QC | | 24VDC | 4-1419104-2 |
| T9AV2D22-24 | | 1 form B, 1NC | 1W | | | | 1419137-1 |
| T9AV5D12-24 | | 1 form C, 1CO | | pcb terminals | | | 4-1393210-8 |
| T9AV5D22-18 | | | | pcb + QC | | 18VDC | 5-1419148-2 |
| T9AV5D22-24 | | | | | | 24VDC | 1419137-2 |
| T9AV5L12-12 | | | 900mW | pcb terminals | | 12VDC | 1423091-6 |