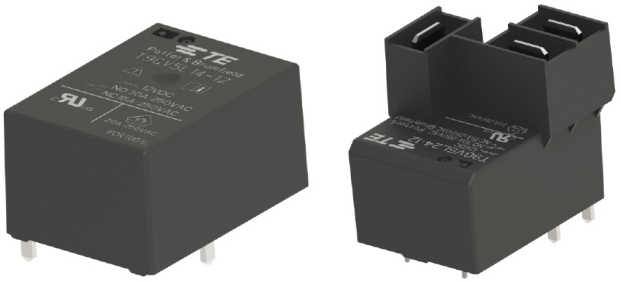
# POTTER & BRUMFIELD T9G SERIES

## DC COIL 30A PCB RELAY
## GENERAL PURPOSE RELAYS | POWER RELAYS

## INTRODUCTION

TE Connectivity (TE)'s Potter & Brumfield T9G relay series is a 30A Power PCB relay for HVAC, appliance and industrial control applications. The T9G relay is the smallest relay in its class with a 30% smaller package size and 13% less PCB floor space all while keeping the standard footprint, allowing manufacturers to add more components on PCBs without having to compromise on relay performance. By having both UL and VDE certifications, TE's P&B relay T9G series is a versatile relay that can be used globally and through its PCB and quick connect terminations, it is user-friendly and easy to install.



### FEATURES

- 30A switching in NO and 20A in CO
- 40A UL rating available
- Minimum board space (29mm x 21.5mm)
- Meets UL 508 for clearance / creepage
- Meets IEC 61810-1 for reinforced insulation
- Option for load connections via 0.250" (6.35mm) quick connect terminals
- 4kV dielectric withstand / 8kV surge voltage between coil & contacts
- UL approved for 480 VAC switching
- WG versions are in accordance with IEC 60335-1

### APPROVALS

- UL 508
- UL Listing #E214025 IEC 61810-1
- VDE Listing #40045012
- CQC 18002196927 (only for standard version; in preparation for WG version)

### APPLICATIONS

- HVAC
- Appliances
- Industrial controls
- Energy management

### CONTACT DATA

| | | | |
|---|---|---|---|
| Contact arrangement | 1 form A (NO) | 1 form B (NC) | 1 form C (CO) |
| Rated voltage | 250VAC | | |
| Max. switching voltage | 480VAC | | |
| Rated current | 30A | 20A | 20A |
| Contact material | AgSnO | | |
| Min. recommended contact load | 1A, 12VAC/VDC | | |
| Initial contact resistance | 300mΩ at 100mA/6VDC | | |
| Frequency of operation, with/without load | 360 cycles / hour = with<br>3600 cycles / hour = without | | |
| Operate/release time max., including bounce | 15/22ms | | |

## CONTACT RATINGS [1)]

| Type | Load | Cycles |
|---|---|---|
| **UL 508** | | |
| NO | 5A, 480VAC, General Purpose | $6x10^3$ |
| NO | 15,6A, 480VAC, Resistive | $100x10^3$ |
| NO | 30A, 277VAC, General Purpose, 85°C | $100x10^3$ |
| NO | 18A, 250VAC, Resistive, 105°C | $100x10^3$ |
| NO | 22A, 250VAC, Resistive | $250x10^3$ |
| NO | 22A FLA, 98A LRA, 120VAC, Def. Purpose | $100x10^3$ |
| NO | 14A FLA, 82A LRA, 250VAC, Def. Purpose, 70°C | $30x10^3$ |
| NO | 20A, 277VAC, Standard Ballast | $6x10^3$ |
| NO | 1HP, 125VAC | $100x10^3$ |
| NO [2)] | 40A, 277VAC, Resistive | $6x10^3$ |
| NO [2)] | TV8, 240VAC | $25x10^3$ |
| NC | 15A, 240VAC, General Purpose | $100x10^3$ |
| NC | 20A, 250VAC, Resistive (CO type only) | $20x10^3$ |
| NC | 30A LRA / 12A FLA, 250VAC, Definite Purpose | $30x10^3$ |
| NC | 1HP, 277VAC (CO type only) | $50x10^3$ |
| CO | 20A, 250VAC, Resistive | $15x10^3$ |
| CO | 20A /10A, 240VAC, Resistive | $100x10^3$ |
| CO | 30A / 15A Resistive, 250VAC | $20x10^3$ |
| CO | 30A FLA / 80A LRA (N.O.); 12A FLA, 30A LRA (N.C.) 250VAC, Definite Purpose | $30x10^3$ |
| CO | 80A LRA / 10A FLA (N.O.); 33A LRA / 10A FLA (N.C.) 250VAC, Definite Purpose | $30x10^3$ |
| **IEC 61810-1** | | |
| NO | 30A, 250VAC, Resistive, 85°C (PCB) | $75x10^3$ |
| NO | 20A, 250VAC, Resistive, 70°C (QC), 85°C (PCB) | $100x10^3$ |
| NO | 17A, 250VAC, Resistive, 105°C | $100x10^3$ |
| NO | 20A, 250VAC, Resistive, 85°C | $100x10^3$ |
| NO | 12A (12A), 250VAC, 60°C (per EN60730-1) | $150x10^3$ |
| NC | 10A, 250VAC, Resistive, 60°C (C.O. type only) | $50x10^3$ |
| CO | 20A, 250VAC, Resistive, 60°C (N.C.) | $10x10^3$ |
| CO | 20A/10A, 250VAC, Resistive, 60°C (N.O.) | $50x10^3$ |
| CO | 12A , 250VAC, Resistive, 85°C | $100x10^3$ |
| Mechanical endurance | | $10x10^6$ ops. |

1) Contact ratings at 40°C (unless otherwise noted) with relay properly vented. Remove vent nib after soldering and cleaning.

2) Valid only for mounting and termination code 1.

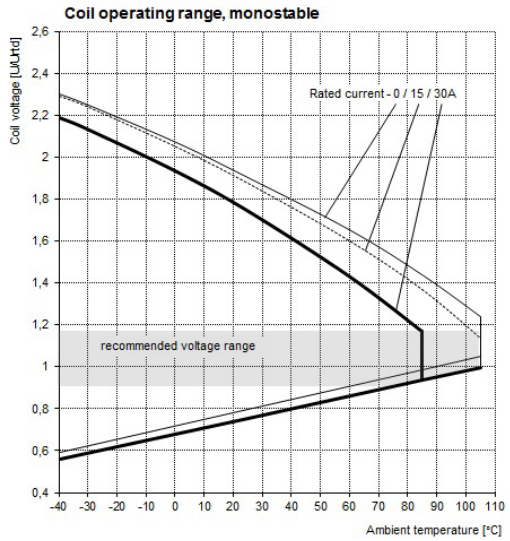
## COIL DATA

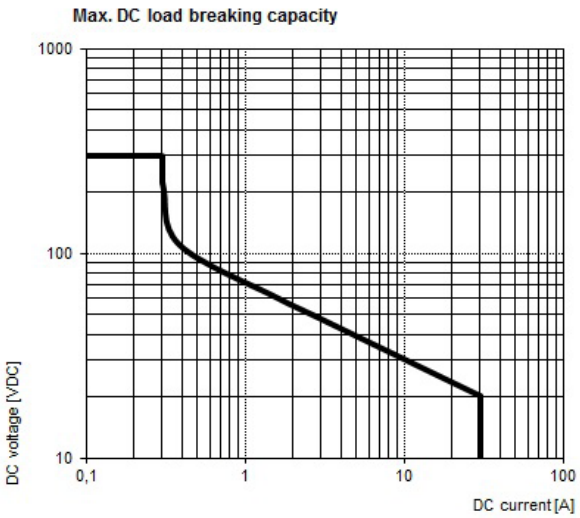
| | |
|---|---|
| Coil voltage range | 5 to 110VDC |
| Operative range, IEC 61810 | 2 |
| Coil insulation system according UL | Class F |

## Coil versions, DC coil

| Coil code | Rate voltage VDC | Operate voltage VDC | Release voltage VDC | Coil resistance Ω±10% | Rated coil power mW |
|---|---|---|---|---|---|
| 5 | 5 | 3.75 | 0.5 | 28 | 900 |
| 9 | 9 | 6.75 | 0.9 | 90 | 900 |
| 12 | 12 | 9 | 1.2 | 160 | 900 |
| 15 | 15 | 11.25 | 1.5 | 249 | 900 |
| 18 | 18 | 13.5 | 1.8 | 360 | 900 |
| 22 | 22 | 16.5 | 2.2 | 538 | 900 |
| 24 | 24 | 18 | 2.4 | 640 | 900 |
| 48 | 48 | 36 | 4.8 | 2,560 | 900 |
| 110 | 110 | 82.5 | 11 | 13,444 | 900 |

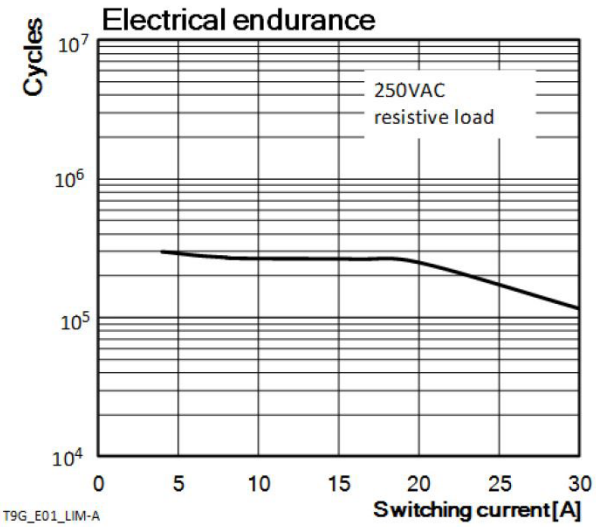
All figures are given for coil without preenergization, at ambient temperature +23°C.




## INSULATION DATA

| | |
|---|---|
| Initial dielectric strength | |
| between open contacts | 1500Vrms |
| between contact and coil | 4000Vrms |
| Initial surge withstand voltage | |
| between contact and coil | 8kV |
| Initial insulation resistance | |
| between insulated elements | 1x109Ω, 500VDC |
| Clearance/creepage | |
| between contact and coil | >6.4mm / >8mm |



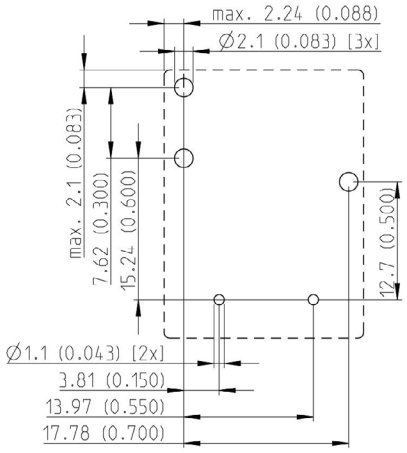
## OTHER DATA

| | |
|---|---|
| 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 | Operating -40 to + 105°C at reduced current |
| Category of environmental protection | |
| IEC 61810 | RTII - flux proof |
| | RTIII - wash tight |
| Vibration resistance (functional) | Opening NO contact >10g<br>Opening NC contact >7g |
| Shock resistance (functional) | 10g for 11msec |
| Shock resistance (destructive) | 100g |
| Terminal type | pcb-tht and pcb-tht + quick connect |
| Weight | 18g mounting code 1<br>23g mounting code 2 |
| Resistance to soldering heat THT | |
| IEC 60068-2-20 | 260°C/5s |
| Packaging/unit | 10/tube, 420/box (PCB + QC), 500/box (PCB) |

## PCB LAYOUT

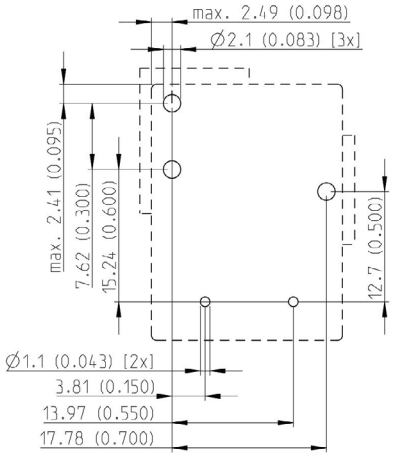
**Bottom view on pins**

**T9G - Mounting and termination code 1**




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

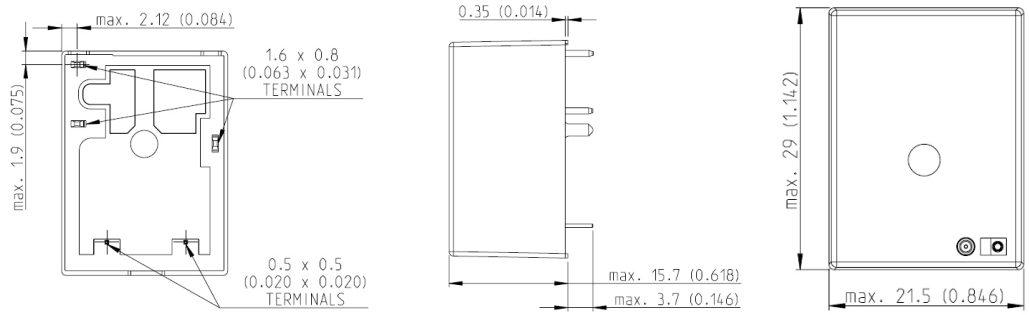
**T9G - Mounting and termination code 2**



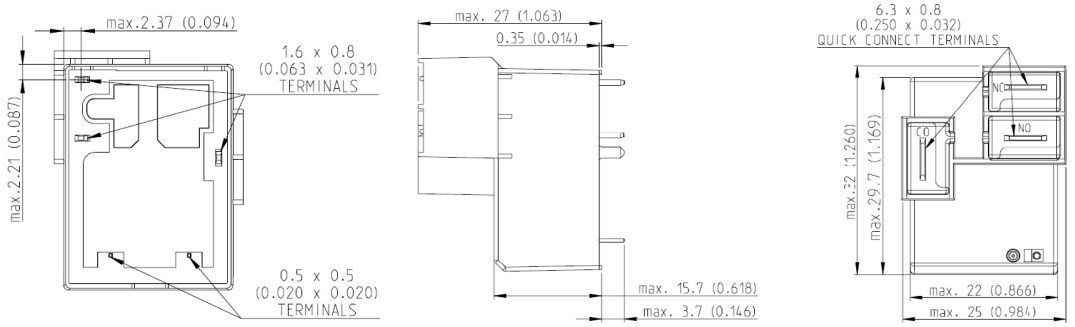

Only necessary terminals are present on single throw models. Consequently, some holes will be unnecessary for single throw models.

## DIMENSIONS

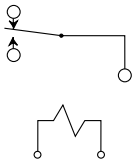
### Mounting and termination code 1



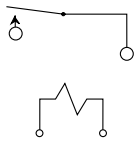

### Mounting and termination code 2



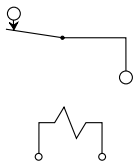

### 1 Form C (CO)



### 1 Form A (NO)



### 1 Form B (NC)



## ORDERING INFORMATION

**Typical product code**

**T9G S 5 L 2 4 -12**

**Type**

| | |
|---|---|
| **T9G** | Power PCB or panel mount relay T9G |

**Enclosure**

| | |
|---|---|
| **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**

| | |
|---|---|
| **L** | DC voltage, 900mW |

**Version**

| | |
|---|---|
| **WG** | Product in accordance with IEC 60335-1 (domestic appliances) |
| **Blank** | Standard Version |

**Coil voltage**

Coil code: please refer to coil versions table

**Contact material**

| | |
|---|---|
| **4** | AgSnO (RoHS compliant) |

**Mounting and termination**

| | |
|---|---|
| **1** | PCB mounting; PCB terminals for coil and contacts |
| **2** | PCB mounting; PCB term. for coil and contacts; 6.35mm (.250in) quick connect for contacts |

## PRODUCT DETAILS

| Product Code | Enclosure | Contacts | Mounting | Contact Material | Coil | Part Number |
|---|---|---|---|---|---|---|
| T9GV5L14-5 | Flux-proof plastic case (requires mounting code 1 or 2) | 1 CO | pcb terminals | AgSnO | 5VDC | 1558660-1 |
| T9GV5L14-9 | | | | | 9VDC | 1558660-2 |
| T9GV5L14-12 | | | | | 12VDC | 1558660-3 |
| T9GV5L14-15 | | | | | 15VDC | 1558660-4 |
| T9GV5L14-18 | | | | | 18VDC | 1558660-5 |
| T9GV5L14-22 | | | | | 22VDC | 1558660-6 |
| T9GV5L14-24 | | | | | 24VDC | 1558660-7 |
| T9GV5L14-48 | | | | | 48VDC | 1558660-8 |
| T9GV5L14-110 | | | | | 110VDC | 1558660-9 |
| T9GV1L14-5 | | 1 NO | | | 5VDC | 1558661-1 |
| T9GV1L14-9 | | | | | 9VDC | 1558661-2 |
| T9GV1L14-12 | | | | | 12VDC | 1558661-3 |
| T9GV1L14-15 | | | | | 15VDC | 1558661-4 |
| T9GV1L14-18 | | | | | 18VDC | 1558661-5 |
| T9GV1L14-22 | | | | | 22VDC | 1558661-6 |
| T9GV1L14-24 | | | | | 24VDC | 1558661-7 |
| T9GV1L14-48 | | | | | 48VDC | 1558661-8 |
| T9GV1L14-110 | | | | | 110VDC | 1558661-9 |
| T9GV2L14-5 | | 1 NC | | | 5VDC | 1558662-1 |
| T9GV2L14-9 | | | | | 9VDC | 1558662-2 |
| T9GV2L14-12 | | | | | 12VDC | 1558662-3 |
| T9GV2L14-15 | | | | | 15VDC | 1558662-4 |
| T9GV2L14-18 | | | | | 18VDC | 1558662-5 |
| T9GV2L14-22 | | | | | 22VDC | 1558662-6 |
| T9GV2L14-24 | | | | | 24VDC | 1558662-7 |
| T9GV2L14-48 | | | | | 48VDC | 1558662-8 |
| T9GV2L14-110 | | | | | 110VDC | 1558662-9 |
| T9GV5L24-5 | | 1 CO | pcb + QC | | 5VDC | 1558670-1 |
| T9GV5L24-9 | | | | | 9VDC | 1558670-2 |
| T9GV5L24-12 | | | | | 12VDC | 1558670-3 |
| T9GV5L24-15 | | | | | 15VDC | 1558670-4 |
| T9GV5L24-18 | | | | | 18VDC | 1558670-5 |
| T9GV5L24-22 | | | | | 22VDC | 1558670-6 |
| T9GV2L24-24 | | 1 NC | | | 24VDC | 1558672-7 |
| T9GV2L24-48 | | | | | 48VDC | 1558672-8 |
| T9GV2L24-110 | | | | | 110VDC | 1558672-9 |

| Product Code | Enclosure | Contacts | Mounting | Contact Material | Coil | Part Number |
|---|---|---|---|---|---|---|
| T9GS5L14-5 | Wash-tight plastic case with knock off nib (requires mounting code 1 or 2) | 1 CO | pcb terminals | AgSnO | 5VDC | 1558665-1 |
| T9GS5L14-9 | | | | | 9VDC | 1558665-2 |
| T9GS5L14-12 | | | | | 12VDC | 1558665-3 |
| T9GS5L14-15 | | | | | 15VDC | 1558665-4 |
| T9GS5L14-18 | | | | | 18VDC | 1558665-5 |
| T9GS5L14-22 | | | | | 22VDC | 1558665-6 |
| T9GS5L14-24 | | | | | 24VDC | 1558665-7 |
| T9GS5L14-48 | | | | | 48VDC | 1558665-8 |
| T9GS5L14-110 | | | | | 110VDC | 1558665-9 |
| T9GS1L14-5 | | 1 NO | | | 5VDC | 1558666-1 |
| T9GS1L14-9 | | | | | 9VDC | 1558666-2 |
| T9GS1L14-12 | | | | | 12VDC | 1558666-3 |
| T9GS1L14-15 | | | | | 15VDC | 1558666-4 |
| T9GS1L14-18 | | | | | 18VDC | 1558666-5 |
| T9GS1L14-22 | | | | | 22VDC | 1558666-6 |
| T9GS1L14-24 | | | | | 24VDC | 1558666-7 |
| T9GS1L14-48 | | | | | 48VDC | 1558666-8 |
| T9GS1L14-110 | | | | | 110VDC | 1558666-9 |
| T9GS2L14-5 | | 1 NC | | | 5VDC | 1558667-1 |
| T9GS2L14-9 | | | | | 9VDC | 1558667-2 |
| T9GS2L14-12 | | | | | 12VDC | 1558667-3 |
| T9GS2L14-15 | | | | | 15VDC | 1558667-4 |
| T9GS2L14-18 | | | | | 18VDC | 1558667-5 |
| T9GS2L14-22 | | | | | 22VDC | 1558667-6 |
| T9GS2L14-24 | | | | | 24VDC | 1558667-7 |
| T9GS2L14-48 | | | | | 48VDC | 1558667-8 |
| T9GS2L14-110 | | | | | 110VDC | 1558667-9 |
| T9GS5L24-5 | | 1 CO | pcb + QC | | 5VDC | 1558675-1 |
| T9GS5L24-9 | | | | | 9VDC | 1558675-2 |
| T9GS5L24-12 | | | | | 12VDC | 1558675-3 |
| T9GS5L24-15 | | | | | 15VDC | 1558675-4 |
| T9GS5L24-18 | | | | | 18VDC | 1558675-5 |
| T9GS5L24-22 | | | | | 22VDC | 1558675-6 |
| T9GS5L24-24 | | | | | 24VDC | 1558675-7 |
| T9GS5L24-48 | | | | | 48VDC | 1558675-8 |
| T9GS5L24-110 | | | | | 110VDC | 1558675-9 |

| Product Code | Enclosure | Contacts | Mounting | Contact Material | Coil | Part Number |
|---|---|---|---|---|---|---|
| T9GS1L24-5 | Wash-tight plastic case with knock off nib (requires mounting code 1 or 2) | 1 NO | pcb + QC | AgSnO | 5VDC | 1558676-1 |
| T9GS1L24-9 | | | | | 9VDC | 1558676-2 |
| T9GS1L24-12 | | | | | 12VDC | 1558676-3 |
| T9GS1L24-15 | | | | | 15VDC | 1558676-4 |
| T9GS1L24-18 | | | | | 18VDC | 1558676-5 |
| T9GS1L24-22 | | | | | 22VDC | 1558676-6 |
| T9GS1L24-24 | | | | | 24VDC | 1558676-7 |
| T9GS1L24-48 | | | | | 48VDC | 1558676-8 |
| T9GS1L24-110 | | | | | 110VDC | 1558676-9 |
| T9GS2L24-5 | | 1 NC | | | 5VDC | 1558677-1 |
| T9GS2L24-9 | | | | | 9VDC | 1558677-2 |
| T9GS2L24-12 | | | | | 12VDC | 1558677-3 |
| T9GS2L24-15 | | | | | 15VDC | 1558677-4 |
| T9GS2L24-18 | | | | | 18VDC | 1558677-5 |
| T9GS2L24-22 | | | | | 22VDC | 1558677-6 |
| T9GS2L24-24 | | | | | 24VDC | 1558677-7 |
| T9GS2L24-48 | | | | | 48VDC | 1558677-8 |
| T9GS2L24-110 | | | | | 110VDC | 1558677-9 |

**Note:**

- This list represents the most common types and does not show all variants covered by this datasheet. Other types on request.

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