

# **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

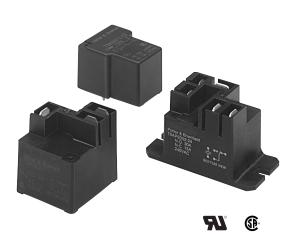
# Contact Data

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	Ag	gSnOlnO, AgC	dO
Min. recommended contact load	d 1A	A, 5VDC or 12\	/AC
Initial contact resistance	75 mΩ a	at 1A at 5VDC	or 12VAC
Frequency of operation, with/wi	thout load	360/3600	hr
Operate/release time max., inclu	uding bounce	15/15ms	

Туре	Load	Cycles
Factory		
AgCdO, 1W	coil	
NO	30A, 240VAC, general purpose	100x10 <sup>3</sup>
NO	25A, 240VAC, resistive	100x10 <sup>3</sup>
CO	20A/10A, 240VAC, general purpose	100x10 <sup>3</sup>
CO	20A/10A, 240VAC, resistive	100x10 <sup>3</sup>
CO	20A/10A, 28VDC, resistive	100x10 <sup>3</sup>
UL 508/873		
AgCdO, 1W	coil	
NO	30A, 240VAC, general purpose	100x10 <sup>3</sup>
NC	15A, 240VAC, general purpose	100x10 <sup>3</sup>
CO	20A/10A, 240VAC, general purpose	100x10 <sup>3</sup>
NC	20A, 240VAC, resistive	6x10 <sup>3</sup>
CO	16.75A/13.4A, 240VAC, resistive	6x10 <sup>3</sup>
NO	80LRA/30FLA, 240VAC	30x10 <sup>3</sup>
NC	30LRA/12FLA, 240VAC	30x10 <sup>3</sup>
CO	53.6LRA/20FLA / 20LRA/8FLA, 240VAC	30x10 <sup>3</sup>
NO	98LRA/22FLA, 120VAC	100x10 <sup>3</sup>
NO	2HP, 240VAC	1x10 <sup>3</sup>
NC	1/2HP, 240VAC	1x10 <sup>3</sup>
NO	1HP, 125VAC	1x10 <sup>3</sup>
NC	1/4HP, 125VAC	1x10 <sup>3</sup>
NO	10A, 277VAC, ballast	6x10 <sup>3</sup>
NC	3A, 277VAC, ballast	6x10 <sup>3</sup>
NO	8.3A, 120VAC, tungsten	6x10 <sup>3</sup>
NO	5.4A, 277VAC, tungsten	6x10 <sup>3</sup>
NO	470VA, 120VAC, pilot duty	30x10 <sup>3</sup>
NO	20A, 28VDC, resistive	100x10 <sup>3</sup>
NC	10A, 28VDC, resistive	100x10 <sup>3</sup>
AgCdO - En	hanced Version Only, 1W coil	
NO	21A, 250VAC, resistive	250x10 <sup>3</sup>
NO	25A, 277VAC, resistive	100x10 <sup>3</sup>
AgCdO, 1W	coil ("H" type)	
NO	25A, 240VAC, resistive, 105°C	6x10 <sup>3</sup>

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

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#### Contact ratings 1) (continued)

Туре	Load	Cycles
UL 508/8	73	
AgSnOInC	), 1W coil	
NO	30A, 240VAC, general purpose	100x10 <sup>3</sup>
NO	80LRA/30FLA, 240VAC	30x10 <sup>3</sup>
NC	10A, 250VAC, resistive	50x10 <sup>3</sup>
AgCdO, 9	00mW coil	
NO	30A, 240VAC, general purpose	100x10 <sup>3</sup>
NO	18A, 240VAC, resistive, 105°C	100x10 <sup>3</sup>
NC	15A, 240VAC, resistive	6x10 <sup>3</sup>
NO	30LRA/15FLA, 240VAC	100x10 <sup>3</sup>
NO	50LRA/16FLA, 120VAC	100x10 <sup>3</sup>
NO	30LRA/11FLA, 120VAC	200x10 <sup>3</sup>
1) Contact	rating at 25°C (upleas athenwise poteod) with relay prop	orly yoptod Romovo

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

Mechanical endurance 10x10 <sup>6</sup> op	ps.
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### Coil Data

Coll Da					
Coil volta	ge range			to 110VDC	
Max. coil			110	0% of nominal	
	temperature			155°C	
Coil insula	ation system a	according UL		Class F	
	sions, DC co	il			
Coil	Rated	Operate	Release	Coil	Rated coil
code	voltage	voltage	voltage	resistance	power
	VDC	VDC	VDC	Ω±10%	W
	(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 a	re given for coil	without preeperai	zation at ambi	ont temperature	L23°C

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

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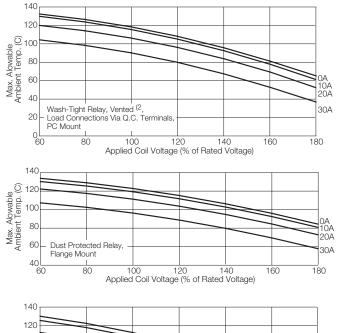
# T9A Series, DC Coil 30A PCB or Panel Mount Relay (Continued)

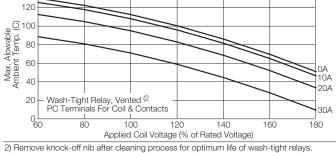
**Insulation Data** 

## Coil Data (continued)

Ambient temperature vs. coil voltage - 1W coil

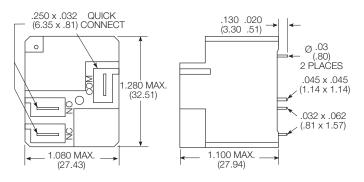
Data below are average values and should be verified in application. Tests were conducted within a 2' (.6 m) cube (still air); at nominal coil power @ 25°C; with normally open contact loaded; and with 4' (1.22 m) long, #10 AWG load wires. P.C. board relays were mounted to a 30A, single side P.C. board.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





#### Dimensions

T9AS - Mounting and termination code 2



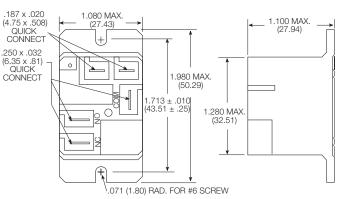
Initial dielectric strength	
between open contacts	1500V <sub>rms</sub>
between contact and coil	2500V <sub>rms</sub>
Initial surge withstand voltage	
between contact and coil	6kV
Initial insulation resistance	
between insulated elements	1×10 <sup>9</sup> Ω
Clearance/creepage	
between contact and coil	3.18mm clearance/6.3638mm

## **Other Data**

Material compliance: EU RoHS/ELV, China RoHS, REACH, Halogen content							
refer to the Pro	duct Compliance Support Center at						
www.te.com/c	ustomersupport/rohssupportcenter						
Ambient temperature							
DC coil	-55°C to 85°C <sup>3)</sup>						
	105°C models available						
Category of environmental protection	n						
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						
	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 co	nsider "Must Operate Voltage Change Over						

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.

#### 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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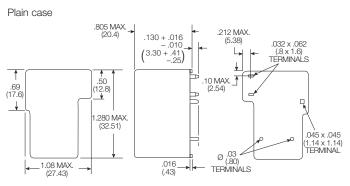
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2



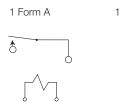
# T9A Series, DC Coil 30A PCB or Panel Mount Relay (Continued)

#### Dimensions



## Terminal assignment

Bottom view on pins



T9AP/S - Mounting and termination code 2

.250 MAX - (6.35)

\_\_.550 \_\_ (13.97) \_\_\_.700 \_ (17.78)

PCB layout Bottom view on pins

> .140 MAX (3.56)\_\_\_

¥

.300 1.100 (7.62) (2.54)

1

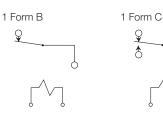
.500 (12.7)

150

(3.81)

Ť

.600 (15.24)



.081 ± .005 DIA (2.06 ± .13)

.078 ± .003 DIA. / (1.98 ± .08)

.043 ± .003 DIA.

 $(1.09 \pm .08)$ 

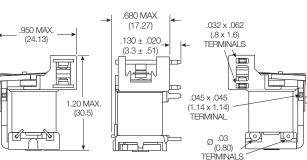
Only necessary terminals are present on single throw models.

Consequently, some holes will

be unnecessary for single throw

models.

# Bracket mount case



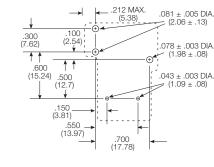
Notes: 1) General tolerance

Diagram Dimensions	Tolerance
<1mm	±0.1
1~3mm	±0.2
>3mm	±0.3

2) Dimensions of the pins after tin soldering for PCB type

 a) +0.2 for the widht and thickness
 b) +0.5 for the lenght

## 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.

Prod	uct	code structure			Typical p	roduct c	ode	T9A	S	5	D	2	2	-12
Туре								]						
	<b>T9</b>		nt relay	T9A										
Enclo	sure													
	Ν	Open, no enclosure (requires	mounti	ng code 1)										
	Ρ	Dust protected plastic case (	requires	mounting code 5)										
	S	Wash-tight plastic case with	knock c	ff nib (requires mountin	g code 1 d	or 2)								
	۷	Flux-proof plastic case (requi	res mou	nting code 1 or 2)	0									
Conta	ct a	rrangement								_				
	1	1 form A (1 NO)	2	1 form B (1 NC)		5	1 for	m C (1 C	D)					
Coil Ir	put										1			
	D	DC voltage, 1W	DC	voltage, 900mW	<b>H</b> <sup>1)</sup>	DC volt	age, 1	W (+0/-10	) percer	nt coil res	istance)			
Moun	ting	and termination										1		
	1	PCB mounting; PCB termina	ls for cc	il and contacts (only av	ailable with	h enclos	ure co	de N, S o	rV)					
	2	PCB mounting; PCB term. fc		· · ·					,	enclosur	re code N	N. S or V		
	5	Flanged mounting; 4.75mm		· · · · · ·	/		· ·	,				, ,		
Conta	ct n	naterial		· · · ·				-					1	
	2	AgCdO	4	AgSnOlnO		7	AgC	dO (Enhai	nced ve	rsion)				
Coil v	olta	ge		-										1
	Со	il code: please refer to coil vers	sions tal	ole										

<sup>1)</sup> "H" type coil is only available in mounting termination options 2 & 5.

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# 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					AgSnOlnO	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					AgSnOlnO	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					AgSnOlnO	12VDC	5-1423091-7
T9AS1D14-24					rigeneine	24VDC	6-1423091-3
T9AS1D22-5				pcb + QC	AgCdO	5VDC	2-1419104-3
T9AS1D22-12				poor @0	ngouo	12VDC	1-1419104-7
T9AS1D22-24						24VDC	2-1419104-1
T9AS1D22-48						48VDC	2-1419104-2
T9AS1D22-40						110VDC	1-1419104-2
T9AS1L12-12			900mW	pcb terminals		12VDC	2-1393210-4
T9AS1L12-12			9001110	pediterminais		24VDC	2-1393210-4
T9AS1L22-18				pcb + QC		18VDC	2-1419104-6
T9AS2L22-16		1 form B, 1 NC		pco + QC		24VDC	1423794-1
T9AS5D12-5		1 form C, 1 CO	1W	pcb terminals		5VDC	3-1393210-9
		1 10/11/0, 1 00	IVV	pediterminais		12VDC	-
T9AS5D12-12							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					AgSnOlnO	5VDC	6-1423091-4
T9AS5D22-5				pcb + QC	AgCdO	10) (DO	3-1419104-9
T9AS5D22-12						12VDC	3-1419104-3
T9AS5D22-24						24VDC	3-1419104-6
T9AS5D22-110						110VDC	3-1419104-2
T9AS5D24-5					AgSnOlnO	5VDC	6-1423091-9
T9AS5D24-12						12VDC	7-1423091-0
T9AS5D24-24			000 \4/	and the second second	A = 0 10	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

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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