POWER PCB RELAY T9F SERIES

INTRODUCTION

TE Connectivity (TE) introduces the T9F series 32 Amp miniature relays designed for generating control in the latest energy and power supply applications. The T9F series product line is a noteworthy and reliable solution for EV charging, power supply, solar inverters, and battery energy storage system applications. It has 32 Amp current capability and is suitable for 105 °C environments. More importantly, its size is significantly minimized to create space saving for the customer.

FEATURES

- 1 pole 32 A, 1 form A (NO) contact
- Ambient temperature up to 105 °C at 32 A
- Small size and footprint
- Compliant with AEC-Q200

APPLICATIONS

- On board chargers
- Power supply / UPS
- EV charging stations
- Photovoltaic inverters
- Battery energy storage systems

APPROVALS

- UL

CONTACT DATA

Characteristic	Specification
Contact arrangement	1 form A (NO)
Rated voltage	277 VAC
Max. switching voltage	277 VAC
Max. switching current	32 A
Breaking capacity max.	8864 KVA
Contact material	$AgSnO_2$
Initial contact resistance	Max.100mΩ (100 mA 6 VDC)
Frequency of operation, with/without load	6 cycles / min (with load) 300 cycles / min (without load)
Operation/release time max., including bounce time	15 ms / 10 ms

CONTACT RATINGS

Contact	Load	Cycles
Normally open	Making 16A, carrying 32 A, breaking 16 A, 277 VAC, 105 °C, resistive	$10x10^3$
Normally open	32A 277VAC, 85 °C, resistive	$10x10^3$
Mechanical endurance		$1x10^6$

COIL DATA

Coil voltage range	9 VDC ~ 48 VDC
Coil insulation system according to UL	Class F

COIL VERSIONS, DC COIL (only for coil power D)

Coil code	Rated voltage VDC 1)	Operation voltage VDC	Release voltage VDC	Coil resistance Ω±10%	Rated coil power W	Hold power W
9	9	7.2	0.45	67.5	1.2	min. 0.192
12	12	9.6	0.6	120	1.2	min. 0.192
24	24	19.2	1.2	480	1.2	min. 0.192
48	48	38.4	2.4	1920	1.2	min. 0.192

Notes:

1. All figures above are given for coil without pre-energization at ambient temperature +23 °C. Under this condition, after the energization time of 200 ms with the rated voltage, the coil requires a reduction of the coil voltage to ~30% ~ 80% of the rated voltage.
2. Under 105 °C ambient temperature, after the energization time of 200 ms with the rated voltage, the coil requires a reduction of the coil voltage to ~40%~45% of the rated voltage. **(Eg: 12 VDC rated coil need to be reduced to the hold voltage of 4.8 VDC ~ 5.4 VDC).**
3. Under 85 °C ambient temperature, after the energization time of 200 ms with the rated voltage, the coil requires a reduction of the coil voltage to ~45%~50% of the rated voltage. **(Eg: 12 VDC rated coil need to be reduced to the hold voltage of 5.4 VDC ~ 6.0 VDC).**
4. Only typical voltages listed, other coil voltages on request.

INSULATION DATA

Initial dielectric strength	
between open contacts	2,000 Vrms
between contact and coil	4,000 Vrms
Initial insulation resistance	
Initial insulation resistance	1000 MΩ min.
Clearance/creepage	
between contact and coil	≥3/5 mm
Flame resistance of plastic parts	UL94 V-0

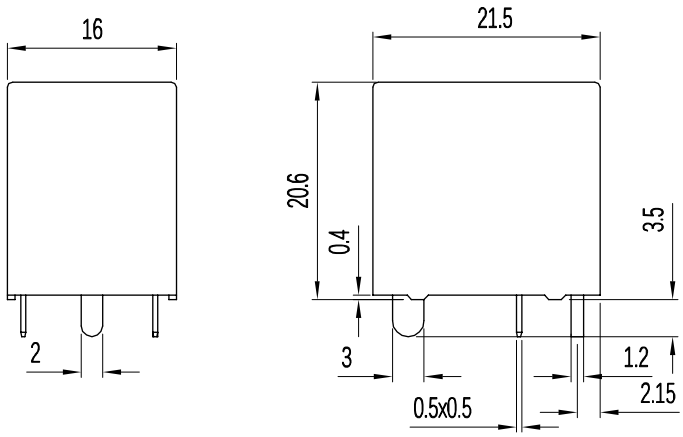
OTHER DATA

Material compliance	For Eu RoHS/ELV, China RoHS, REACH, Halogen content refer to the product compliance support center at **www.te.com/customersupport/rohssupportcenter**
Ambient temperature	- 40 °C to +105 °C
Temperature cycling (Shock)	1000cycles, -40 °C / +105 °C
Cold storage	240 h, -40 °C
Dry heat	240 h, +105 °C
Category of environmental protection IEC61810	RTII – flux resistant
Shock (functional, 11ms)	30 g
Shock (destructive, 6ms)	100 g
Vibration	10 Hz - 55 Hz, 1.5 mm double amplitude
Terminal type	THT PCB type
Terminal strength (leaded)	1.2 kg
Weight	16 grams
Resistance to soldering heat THT	Tb, method 1 A, hot dip 10s, 260 °C with thermal screen
Package unit	100 pcs/tray, 1000 pcs/ carton box

Note:

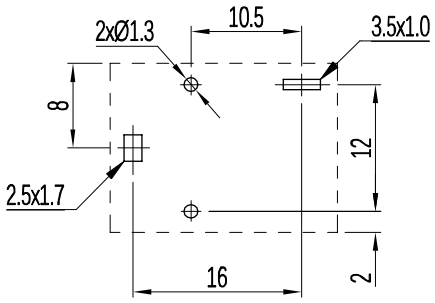
The relay connections and wiring have to be designed with an adequate cross sections to help ensure the current flow and heat dissipation as well as contact ratings with relay properly vented.

DIMENSIONS (Unit:mm)

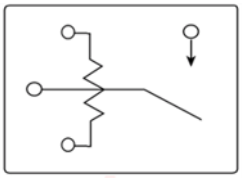


PCB LAYOUT / TERMINAL ASSIGNMENT (Unit:mm)

Bottom view of solder pins



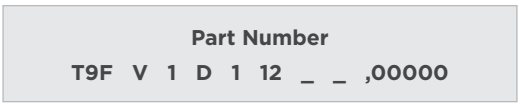
WIRING DIAGRAM



GENERAL TOLERANCE

Diagram Dimension	Tolerance
≤ 1 mm	± 0.2 mm
1 mm - 5 mm	± 0.3 mm
≥ 5 mm	± 0.4 mm

ORDERING INFORMATION



Type

T9F	Power Relay T9F

Enclosure

V	Flux-resistant plastic case

Contact arrangement

1	1 Form A (1 NO)

Coil power

D	1.2 w

Contact material

1	$AgSnO_2$

Coil voltage

Coil code	Please refer to coil version table Eg: 9, 12, 24, 48

Suffix

,00000	Standard
,XXXXX	Customized type

Coil terminal

blank	Standard

Contact gap

blank	standard contact gap (only for coil power D)

PRODUCT INFORMATION

Product Code	Version	Contact Arrangement	Contact Material	Coil	Part Number
T9FV1D112,00000	PCB, flux-resistant	1 form A (NO) contact	$AgSnO_2$	12 VDC	2071581-1
T9FV1D124,00000		1 form A (NO) contact	$AgSnO_2$	24 VDC	2071581-2
T9FV1D148,00000		1 form A (NO) contact	$AgSnO_2$	48 VDC	2071581-3
T9FV1D19,00000		1 form A (NO) contact	$AgSnO_2$	9 VDC	2071581-4

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TE Connectivity:

2071581-3 T9FV1D112,00000 2071581-4 T9FV1D148,00000 2071581-1 2071581-2 T9FV1D124,00000 T9FV1D109,00000