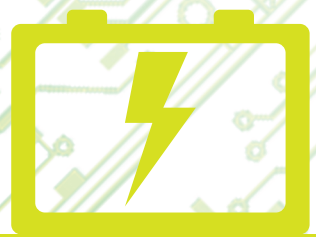


Tai-shing Electronics Components Corp.  
[www.tti.com.tw](http://www.tti.com.tw)



Power Relay

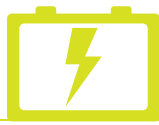







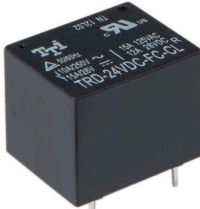

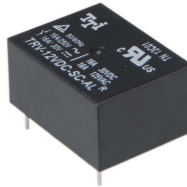


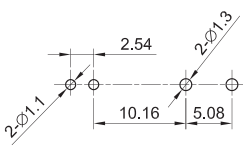
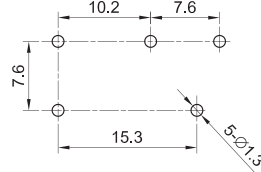
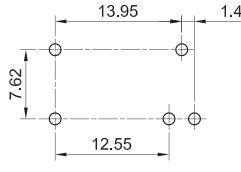
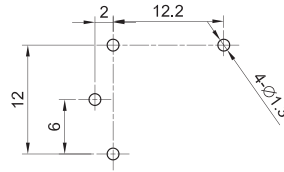
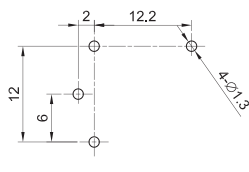
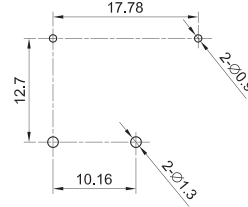
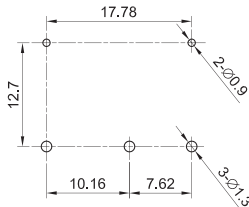
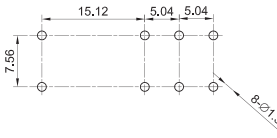
Continuing the concept of sincere and honest management, TSE provides quality products, competitive pricing and satisfactory service to our customers.

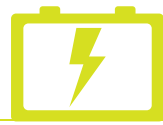
Provisions are made to insure freedom of innovation and creation of new ideas and their development.

[illegible]



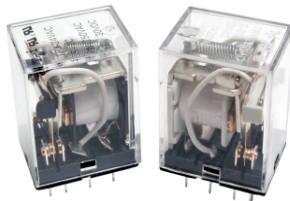

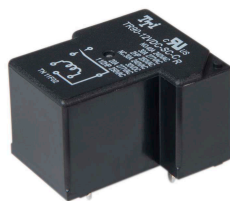


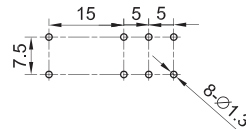
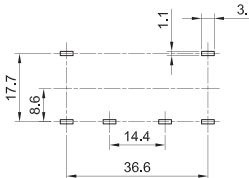
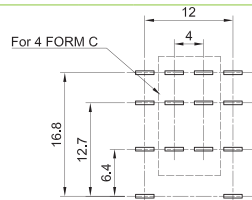
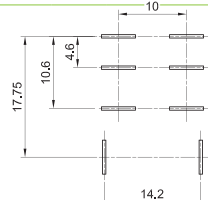
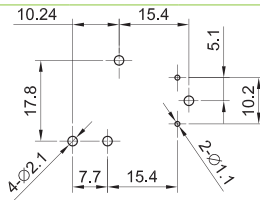
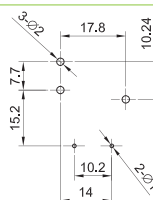
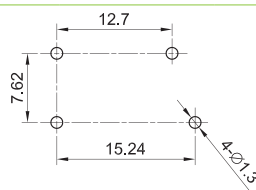


# Selection Chart

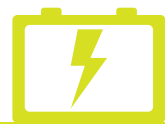
Model			TRND	TRJ	TRC	TRD	TRU	TRV	TRVF	TRIL						
Appearance																
size (LxWxH)			20.0 ×5.0 ×12.5	20.5 ×10.2 ×15.3	18.2 ×10.2 ×14.9	19.5 ×15.6 ×15.3	20.3 ×16.8 ×20.2	22.3 ×16.6 ×11.0	22.3 ×16.6 ×11.0	29.0 ×12.7 ×15.7						
Contact Ratings	Arrangement		1 Form A	1 Form A 1 Form C	1 Form A 1 Form C	1 Form A 1 Form C	1 Form A 1 Form C	1 Form A 1 Form C	1 Form A 1 Form C	1 Form A 1 Form C 2 Form A 2 Form C						
	Max. Switchiing Current	200A														
		100A														
		60A														
		50A														
		40A														
		30A														
20A																
10A																
5A																
3A																
2A																
1A																
Max.Switching Voltage		110VDC 250VAC	30VDC 277VAC	30VDC 265VAC	110VDC 250VAC	110VDC 250VAC	30VDC 250VAC	30VDC 250VAC	250VAC							
Max.Switching Power		150W 1250VA	150W 1250VA	280W 1200VA	420W 1875VA	420W 1875VA	480W 2000VA	300W 2500VA	4000VA							
Rated Load (Resistive Load)		5A 30VDC 5A 250VAC	Form A Type	Form C Type	10A 120VAC 10A 28VDC	12A TYPE	15A Type	12A TYPE	15A Type	Form A	Form C	Form A	Form C	E Type	H Type	M Type
			5A 250VAC 5A 30VDC 10A 125VAC	N/O 250VAC 30VDC 10A 125VAC N/C 3A 250VAC 30VDC		UL: 12A 120VAC 28VDC TUV: 6A 250VAC 12A 28VDC	UL: 15A 125VAC 12A 28VDC TUV: 10A 250VAC 15A 28VDC	UL: 12A 120VAC TUV: 10A 250VAC 15A 28VDC	UL: 15A 125VAC 12A 28VDC TUV: 10A 250VAC 15A 28VDC	16A 125VAC 16A 250VAC 16A 30VDC	N/O 16A 125VAC 25VAC 16A 30VDC N/C 15A125VAC 250VAC	TV-5 125VAC 16A 125VAC 10A 250VAC 125VAC 10A 30VDC	N/O 10A 250VAC N/C 6A 250VAC	16A 250VAC	12A 250VAC	8A 250VAC
Coil Ratings	Nominal Power		0.12~0.18W	0.2~0.45W	0.2~0.45W	0.36~0.51W	0.36~0.51W	0.2~0.6W	0.2W	0.15W~ 0.58W						
	Nominal Voltage		5VDC ~ 24VDC	3VDC ~ 24VDC	3VDC ~ 48VDC	3VDC ~ 48VDC	3VDC ~ 48VDC	5VDC ~ 100VDC	5VDC ~ 48VDC	3VDC~48VDC						
Terminal Type			PCB	PCB	PCB	PCB	PCB	PCB	PCB	PCB						
Safety Standard	UL		E156521	E156406	E156521	E156521	E156521	E156521	E156521	E156406						
	TUV				R50062360	R50062544	R50050851	R50050856								
	cUL		E156521	E156406	E156521	E156521	E156521	E156521	E156521	E156406						
Layout (Bottom View)																
Cross Reference			OMRON G6DS PANASONIC PA FUJITSU NY	OMRON G55B/G5Q PANASONIC JQ/PQ FUJITSU JY TE(OEG) PCH	TE(OEG) OJ/OJE TE(P&B) T77 FUJISTU JV	OMRON G5LC/G5LE PANASONIC JS TE(P&B) T72 TE(OEG) PCE/ORWH	OMRON G5L TE(SCHRACK) LN/41896 TE(OEG) SRUDH/SRUUH	OMRON G5CA PANASONIC JV/JVN NEC CQ TE(OEG) PCD	OMRON G5CA PANASONIC JV/JVN NEC CQ TE(OEG) PCD	OMRON G2RL/G5RL-AC FUJITSU FTR-K1 TE(SCHRACK) RT/RX/TR1 TE(P&B) RT						



# Selection Chart

Sensitivity			TRIH			TRG7			TRY			TRL			TR90			TR91			TRCT		
Appearance																							
size (LxWxH)			29.0×13.0×26.5			50.5×33.5×36.0 68.5×33.5×36.0			28.0 ×21.5 ×35.5 43.0 ×21.5 ×35.5			28.0 ×21.5 ×35.5 43.0 ×21.5 ×35.5			30.5×24.2×17.0 32.5×27.6×20.2			32.2×27.5×28.0 50.3×27.5×28.0			18.4 x 10.2 x 15.3		
Contact Ratings	Arrangement		1 Form A 1 Form C 2 Form A 2 Form C			1 Form A 2 Form A			2 Form C 4 Form C			1 Form C 2 Form C			1 Form A 1 Form B 1 Form C			1 Form A 1 Form B 1 Form C			1 Form A		
	Max. Switching Current	200A																					
		100A																					
		60A																					
		50A																					
		40A																					
		30A																					
		20A																					
		10A																					
		5A																					
3A																							
2A																							
1A																							
Max.Switching Voltage		30VDC 277VAC			277VAC			28VDC /220VAC			30VDC 300VAC						1100W 7200VA	NO 720W 4800VA	NC 360W 2400VA	30VDC 250VAC			
Max.Switching Power		300W 4000VA			8310VA			280W 220VA	140W 110VA	450W /3750VA	300W 2500VA				7200VA			300W					
Rated Load (Resistive Load)		E Type	H Type	M Type	1 Form A	2 Form A	2 Form C	4 Form C	1 Form C	2 Form C	Form A Type	Form C Type	Form A Type	Form C Type	10A 277/250VAC 10A 277/250VAC 30VDC 12A 125VAC								
		16A 250VAC 30VDC	10A 250VAC 30VDC	5A 250VAC 30VDC	30A 277VAC 3HP 240VAC TV-10 120VAC	25A 277VAC 2HP 240VAC TV-10 120VAC	10A 220VAC 10A 28VDC	5A 220VAC 5A 28VDC	15A 277VAC 15A 28VDC	10A 277VAC 10A 28VDC	40A 240VAC 30A 277VAC 2HP 250VAC	N/O 40A 240VAC 30A 277VAC 2HP 150VAC N/C 30A 240VAC 30VDC 20A 277VAC 1/2HP 250VAC	40A 240VAC 30A 277VAC 2HP 250VAC	N/O 40A 240VAC 30A 277VAC 2HP 150VAC N/C 30A 240VAC 30VDC 20A 277VAC 1/2HP 250VAC									
Coil Ratings	Nominal Power		0.53W			1.9W / 2.7VA			0.9W / 0.9~1.2VA			0.9W / 0.9~1.2VA			0.9W			0.93W / 2VA			0.45W		
	Nominal Voltage		3VDC ~ 48VDC			5VDC~200VDC 6VAC~220VAC			6VDC~110VDC 6VAC~220VAC			6VDC~110VDC 6VAC~220VAC			5VDC~110VDC			5VDC~110VDC 12VAC~220VAC			3VDC~48VDC		
Terminal Type			PCB			PCB Plug In /Other			PCB Plug In			PCB Plug In			PCB			PCB QC			PCB		
Safety Standard	UL		E156406			E156406			E156521			E156521			E156406			E156406					
	TUV																						
	cUL		E156406			E156406			E156521			E156521			E156406			E156406					
Layout (Bottom View)																							
Cross Reference			OMRON G2R/G2RG FUJITSU FBR610/FTR-F1/VS/VSB NEC CH TE(P&B) RKA/RKS			OMRON G7L PANASONIC HE			OMRON MY2/MY3/MY4 PANASONIC HC/HJ TE(SCHRACK) ZT TE(P&B) KHA			OMRON LY1/LY2 PANASONIC HL TE(SCHRACK) TM			OMRON G7G PANASONIC JTN/JTV TE(P&B) T9A/T90 ZETTLER AZ2150/AZ2151			OMRON G7G/G8P PANASONIC JT TE(P&B) T9A/491 TE(OEG) ORU			TE/OEG OJ/OJE P&B T77 FUJISTU JV		





# Power Relay

# TRND

## MAIN FEATURES

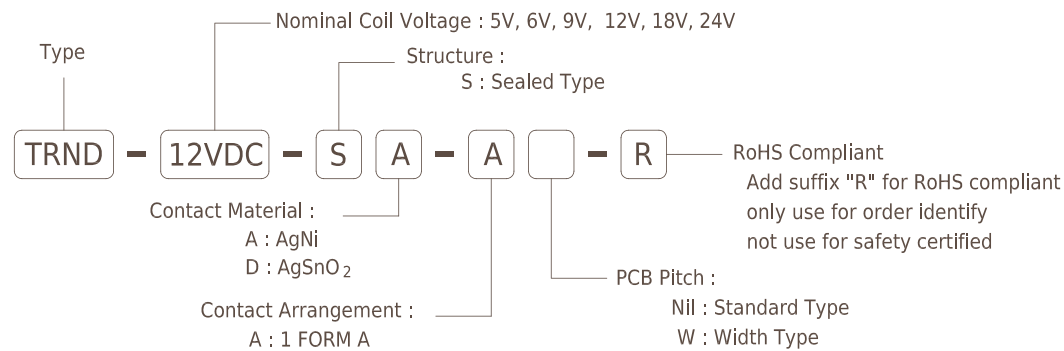
- Small size, light weight.
- Low coil power consumption 0.12W.
- PC board mounting, SIL terminal.

## APPLICATIONS

- Suitable for household electrical appliances, automation system, electronic equipment, instrument, meter, telecommunication facilities and remote control facilities.

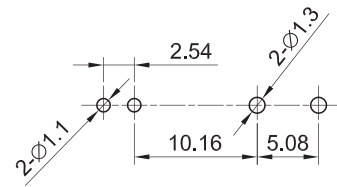
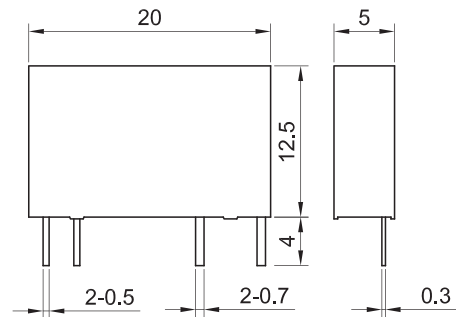


## ORDERING INFORMATION

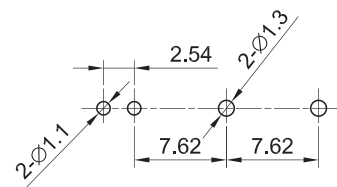
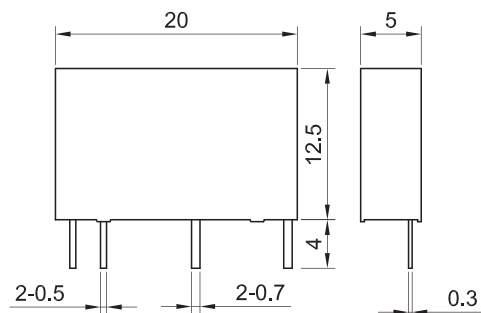


## DIMENSION(unit:mm)

### Standard Type



### Width Type



- Tolerance  $\pm 0.5\text{mm}$  on all dimensions unless otherwise stated.
- Tolerance  $\pm 0.1\text{mm}$  on PCB DRILLING dimension unless otherwise stated.

## COIL DATA CHART(at 20°C )

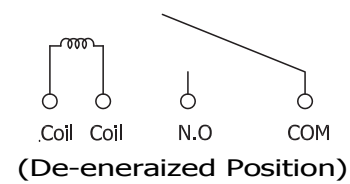
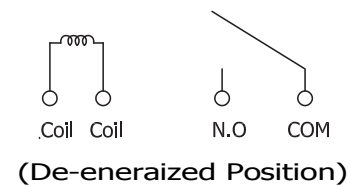
Coil Sensitivity	Coil Voltage (VDC)Rated	Nominal Current (mA)	Coil Resistance (Ω) ±10%	Coil Power (W)	Pickup voltage (VDC) Max	Release voltage (VDC) Min.	Coil Voltage (VDC) Max.
TRND	5	24	208	0.12	70% of rated voltage	5% of rated voltage	120%
	6	20	300				
	9	13.3	675				
	12	10	1200				
	18	6.7	2700	0.18			
	24	5	3200				

## CONTACT RATING

Item	TRND
Contact Capacity Resistive Load ( $\cos\Phi = 1$ )	5A 30VDC 5A 250VAC
Max. Switching Voltage	250VAC/30VDC
Max. Switching Current	5A
Max. Switching Power Force	1250VA/150W
Referenced Min. Applicable Load	0.1mA 0.1VDC
Contact Material	Silver Alloy

## PERFORMANCE(at initial value)

Item	TRND
Contact Resistance	100m $\Omega$ Min(at 1A 6VDC)
Operation Time	Approx. 10msec
Release Time	Approx. 5msec
Dielectric Strength Between open contacts Between coil & contact	1000VAC (1 minute) 3000VAC (1 minute)
Shock Resistance Functional Survival	98m/s <sup>2</sup> 980m/s <sup>2</sup>
Vibration Resistance Functional Survival	1.5mm D.A. 10 to 55Hz 1.5mm D.A. 10 to 55Hz
Temperature Range	-40°C ~+85°C
Relative Humidity	5%~85%(at 40°C)
Insulation Resistance	1000M $\Omega$ Min. (at 500VDC)
Life Expectancy Mechanically Electrically	2 $\times$ 10 <sup>7</sup> ops. Min. 1 $\times$ 10 <sup>5</sup> ops. Min.
Weight	abt.3g.
UL	E156521



Only for reference, won't notify if any change.



# Power Relay

# TRJ

## MAIN FEATURES

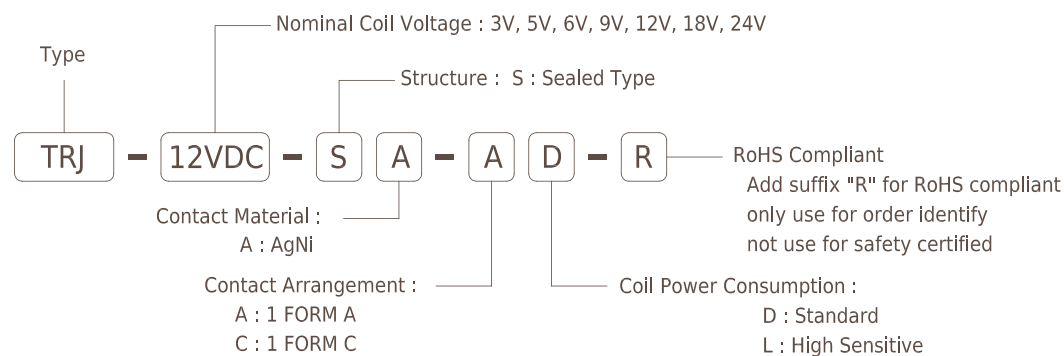
- 5A , 10A switching capabilities
- SPST-NO and SPDT configuration
- Subminiature, standard PC layout
- Sealed & Unsealed types available
- UL & cUL recognized.



## APPLICATIONS

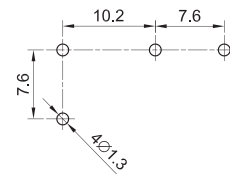
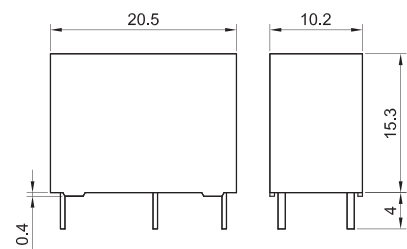
- House-hold appliance, office machine, etc.

## ORDERING INFORMATION

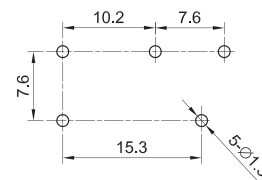
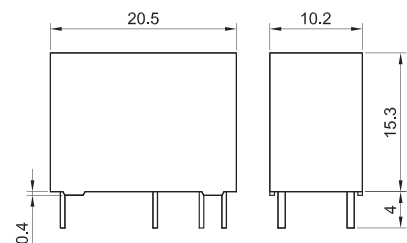


## DIMENSION(unit:mm)

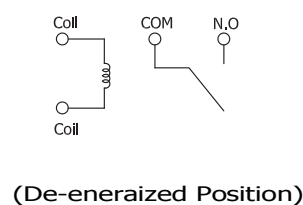
### 1 Form A



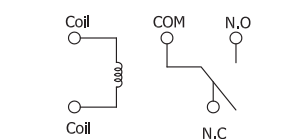
### 1 Form C



## WIRING DIAGRAM



(De-eneraized Position)



(De-eneraized Position)

## COIL DATA CHART(at 20℃ )

Coil Sensitivity	Nominal Voltage (VDC)	Nominal Current (mA)	Coil Resistance (Ω) ± 10%	Power Consumption (W)	Pull-In Voltage (VDC)	Drop-Out Voltage (VDC)	Max-Allowable Voltage (VDC)
TRJ - L (High Sensitivity)	3	67	45	abt. 0.2W	75% Max.	5% Min.	110% Max.
	5	40	125				
	6	33.3	180				
	9	22.5	400				
	12	16.7	720				
	18	11.25	1600				
TRJ -D (Standard)	24	8.57	2800	abt. 0.45W	75% Max.	5% Min.	110% Max.
	3	150	20				
	5	91	55				
	6	75	80				
	9	50	180				
	12	37.5	320				
	18	25	720				
	24	18.75	1280				

## CONTACT RATING

Item	TRJ		
	1 Form A	1 Form C	
		N/O	N/C
Contact Capacity	5A 30VDC	5A 30VDC	3A 30VDC
Resistive Load (cosΦ=1)	5A 250VAC 10A 125VAC	5A 250VAC 10A 125VAC	3A 250VAC
Rated Carrying Current	10A	10A	3A
Max. Allowable Voltage	277VAC/30VDC		
Max. Allowable Current	10A	10A	3A
Max. Allowable Power Force	1250VA/150W		750VA/90W
Contact Material	Silver Alloy		

## PERFORMANCE(at initial value)

Item	TRJ
Contact Resistance	100mΩ Max(measured at 1A 24VDC).
Operation Time	8msec Max.
Release Time	5msec Max.
Dielectric Strength	
Between coil & contact	4000VAC, 1min
Between contacts	1000VAC, 1min
Insulation Resistance	1000MΩ Min. (at 500VDC)
Operating Ambient Temperature	-40°C to +70°C
Operating Humidity	35% ~ 95%
Vibration Resistance	10 to 55Hz Double Amplitude 1.6mm
Shock Resistance	
Function	100 m/s <sup>2</sup>
Destructive	1000 m/s <sup>2</sup>
Life Expectancy	
Mechanically	1 × 10 <sup>7</sup> ops. Min. (no load)
Electrically	1 × 10 <sup>5</sup> ops. Min. (at rated coil voltage)
Weight	Abt. 7g.
UL & cUL	E156406

1.Tolerance ±0.5mm on all dimensions unless otherwise stated.  
2. Tolerance ±0.1mm on PCB DRILLING dimension unless otherwise stated.





# Power Relay

# TRC

## MAIN FEATURES

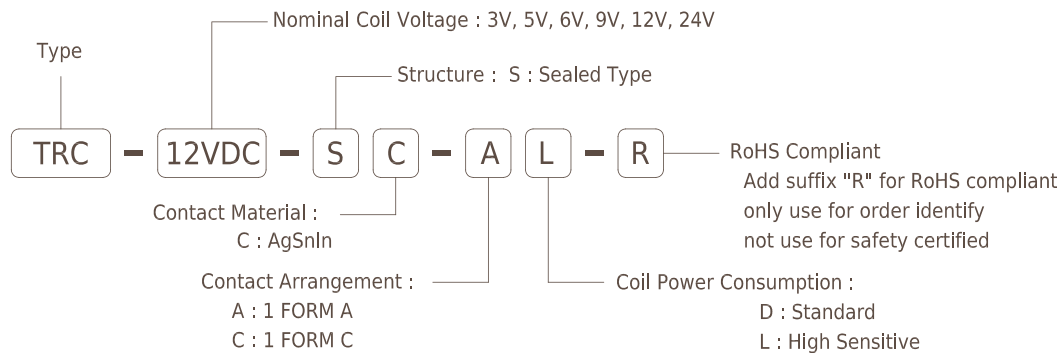
- Smallest size (18.2 × 10.2 × 15.0 mm) at 10A switching capacity relay for high density P.C. board mounting technique.
- 1A and 1C contact form available.
- Surge resistiveness of 5000V on series relays.
- Selection of plastic insulation material for high temperature and better chemical solution performance.
- UL , CSA and TUV recognized.



## APPLICATIONS

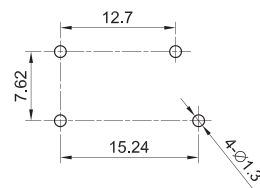
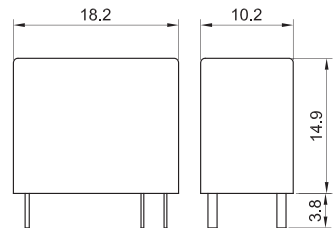
- Domestic appliance, office machine, audio equipment, automobile, etc.

## ORDERING INFORMATION

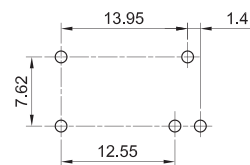
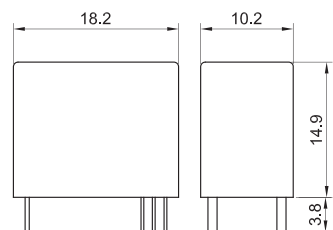


## DIMENSION(unit:mm)

### 1 Form A



### 1 Form C



- Tolerance ±0.5mm on all dimensions unless otherwise stated.
- Tolerance ±0.1mm on PCB DRILLING dimension unless otherwise stated.

## COIL DATA CHART(at 20°C )

Coil Sensitivity	Nominal Coil Voltage (VDC)	Nominal Current (mA)	Coil Resistance (Ω) ±10%	Power Consumption (W)	Pull-In Voltage (VDC)	Drop-Out Voltage (VDC)	Max-Allowable Voltage (VDC)
TRC -L (High Sensitivity) *	3	67	45	abt. 0.2W	75% Max.	5% Min.	130% Max.
	5	40	125				
	6	33.3	180				
	9	22.5	400				
	12	16.7	720				
	24	8.16	2800				
TRC -D (Standard)	3	150	20	abt. 0.45W	75% Max.	5% Min.	120% Max.
	5	91	55				
	6	75	80				
	9	50	180				
	12	37.5	320				
	24	18.8	1280				
	48	9.4	5100				

## CONTACT RATING

Item	TRC
Contact Capacity	10A 120VAC/ 10A 28VDC ( UL )
Resistive Load (cosΦ=1)	5A 240VAC/ 10A 28VDC (TUV)
Rated Carrying Current	10A
Max. Allowable Voltage	265VAC / 30VDC
Max. Allowable Current	10A
Max. Allowable Power Force	1200VA / 280W
Referenced Min. Applicable Load	5VDC / 10mA
Contact Material	Silver Alloy

## PERFORMANCE(at initial value)

Item	TRC	
	1 Form C	1 Form A
Contact Resistance	100mΩ Max.	
Operation Time	10msec Max.	
Release Time	4msec Max.	
Dielectric Strength	Between coil & contact Between contacts	
	2800VAC 1 min 750VAC 1 min	3200VAC 1 min 750VAC 1 min
Surge Resistiveness	5000V	
Insulation Resistance	100 MΩ Min. (500VDC)	
Max. ON/OFF Switching	Mechanically Electrically	
	300 operation/min 30 operation/min	
Operating Ambient Temperature	-30°C to +60°C	
Operating Humidity	45% to 85% RH	
Coil Temperature Rise	40 deg. Max. (at rated coil voltage)	
Vibration	10 to 55Hz Double Amplitude 1.5mm	
Shock	Endurance Error Operation	
	980m/s <sup>2</sup> . 98m/s <sup>2</sup> .	
Life Expectancy	Mechanically Electrically	
	1 × 10 <sup>7</sup> ops. Min. (no load) 1 × 10 <sup>5</sup> ops. Min. (at rated coil voltage)	
Weight	abt. 6g.	
UL	E156521	
CSA	LR102317	
TUV	R50062360	

Only for reference, won't notify if any change.

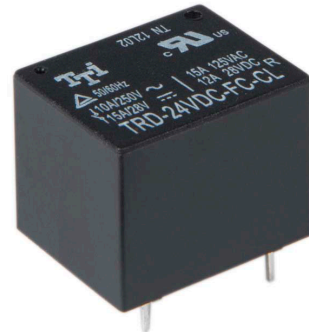


# Power Relay

# TRD

## MAIN FEATURES

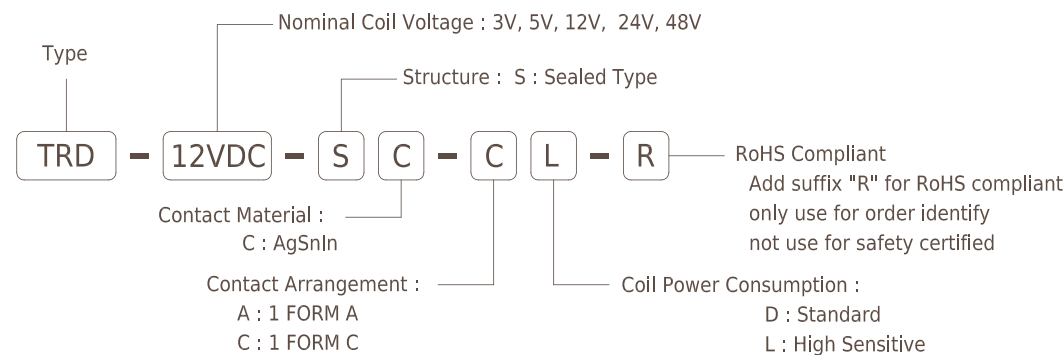
- Switching capacity available by 12A,15A in spite of small size design for high density P.C. board mounting technique.
- Selection of plastic material for high temperature and better chemical solution performance.
- Sealed types available.
- Simple relay magnetic circuit to meet low cost of mass production.
- UL and TUV recognized.



## APPLICATIONS

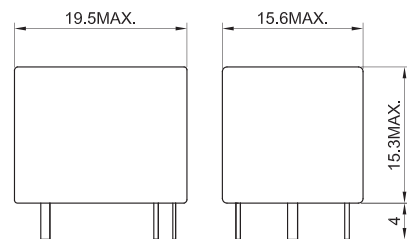
- Domestic appliance, office machine, audio, equipment, automobile, etc.

## ORDERING INFORMATION

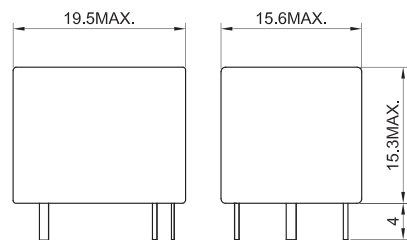


## DIMENSION(unit:mm)

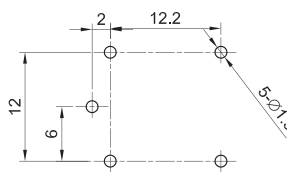
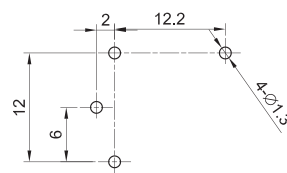
### 1 Form A



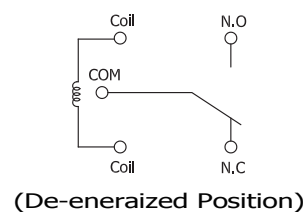
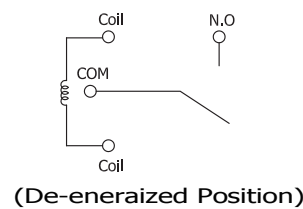
### 1 Form C



## DRILLING(unit:mm)



## WIRING DIAGRAM



## COIL DATA CHART(at 20℃ )

Coil Sensitivity	Coil Voltage Code	Nominal Current (mA)	Coil Resistance $\pm 10\%(\Omega)$	Power Consumption (W)	Pull-In Voltage (VDC)	Drop-Out Voltage (VDC)	Max-Allowable Voltage (VDC)
TRD (High Sensitivity)	3	120	25	abt. 0.36W	75% Max.	5% Min.	120%
	5	71.4	70				
	12	30	400				
	24	15	1600				
TRD (Standard)	48	7.5	6400	abt. 0.45W	75% Max.	5% Min.	110%
	3	150	20				
	5	89.3	55				
	12	37.5	320				
	24	18.7	1280	abt. 0.51W			
	48	10	4500				

## CONTACT RATING

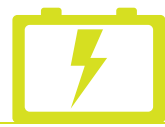
Item	TRD	
	12A	15A
Contact Capacity Resistive Load ( $\cos\Phi=1$ )	12A 28VDC (UL ) 12A 120VAC 12A 28VDC (TUV) 6A 250VAC	12A 28VDC (UL ) 15A 125VAC 15A 28VDC (TUV)10A 250VAC
Rated Carrying Current	12A	15A
Max. Allowable Voltage	250VAC / 110VDC	250VAC / 110VDC
Max. Allowable Current	12A	15A
Max. Allowable Power Force	125VA/60W	125VA/60W
Referenced Min. Applicable Load	5VDC/10mA	5VDC/10mA
Contact Material	Silver Alloy	

## PERFORMANCE(at initial value)

Item	TRD
Contact Resistance	100m $\Omega$ Max.
Operation Time	10msec Max.
Release Time	5msec Max.
Dielectric Strength	Between coil & contact 1500VAC 50/60Hz (1 minute) Between contacts 750VAC 50/60Hz (1 minute)
Surge Resistiveness	3000V (between coil & contact 1x40u sec)
Insulation Resistance	100 M $\Omega$ Min. (at 500VDC)
Max. ON/OFF Switching	Mechanically 300 operation/min Electrically 30 operation/min
Operating Ambient Temperature	-30°C to +80°C (No water condensation and no water drop)
Operating Humidity	45% to 85% RH
Coil Temperature Rise	35 deg. Max.
Vibration	Endurance 10 to 55Hz Double Amplitude 1.5mm Error Operation 10 to 55Hz Double Amplitude 1.5mm
Shock	Endurance 980m/s <sup>2</sup> . Error Operation 98m/s <sup>2</sup> .
Life Expectancy	Mechanically 1 x 10 <sup>7</sup> operations. Min. (no load) Electrically 1 x 10 <sup>5</sup> operations. Min. (at rated coil voltage)
Weight	abt. 10g.
UL	E156521
TUV	R 50062544

1.Tolerance  $\pm 0.5\text{mm}$  on all dimensions unless otherwise stated.  
2. Tolerance  $\pm 0.1\text{mm}$  on PCB DRILLING dimension unless otherwise stated.





# Power Relay

# TRU

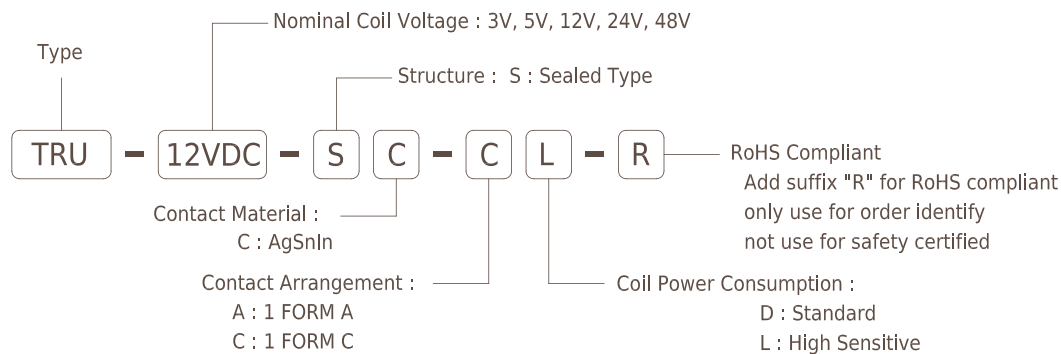
## MAIN FEATURES

- High contact capacity : 12A, 15A
- Employment of suitable plastic materials to be applied to high temperature and various chemical solution.
- Sealed types available.
- UL and TUV recognized.

## APPLICATIONS

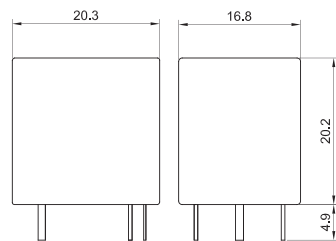
- Home appliance, air conditioner, heater, etc.
- Automotive Power-window, car antenna, door-lock, etc.
- Office machine, facsimile, etc.
- Vending machine.

## ORDERING INFORMATION

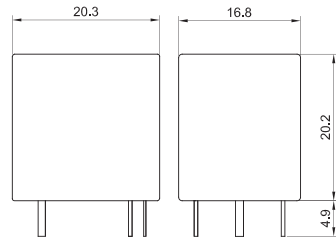


## DIMENSION(unit:mm)

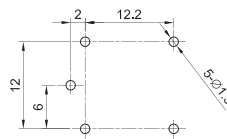
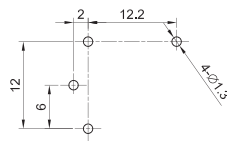
1 Form A



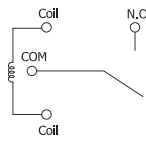
1 Form C



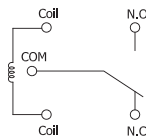
## DRILLING(unit:mm)



## WIRING DIAGRAM



(De-eneraized Position)



(De-eneraized Position)

## COIL DATA CHART(at 20℃ )

Coil Sensitivity	Nominal Voltage (VDC)	Nominal Current (mA)	Coil Resistance ( $\Omega \pm 10\%$ )	Power Consumption (W)	Pull-In Voltage (VDC)	Drop-Out Voltage (VDC)	Max-Allowable Voltage (VDC)
TRU (High Sensitivity)	3	120	25	abt. 0.36W	75% Max.	5% Min.	130%
	5	71.5	70				
	12	30	400				
	24	15	1600				
TRU (Standard)	48	7.5	6400	abt. 0.45W	75% Max.	5% Min.	130%
	3	150	20				
	5	89.3	56				
	12	37.5	320				
	24	18.7	1280	abt. 0.51W			
	48	10	4500				

## CONTACT RATING

Item	TRU	
	12A	15A
Contact Capacity	12A 28VDC(UL )	12A 28VDC( UL )
Resistive Load	12A 120VAC	15A 125VAC
(cos $\Phi$ =1)	15A 28VDC(TUV)	15A 28VDC(TUV)
	10A 250VAC	10A 250VAC
Rated Carrying Current	12A	15A
Max. Allowable Voltage	250VAC/110VDC	250VAC/110VDC
Max. Allowable Current	12A	15A
Max. Allowable Power Force	1440VA/336W	1875VA/420W
Referenced Min. Applicable Load	5VDC/10mA	5VDC/10mA
Contact Material	Silver Alloy	

## PERFORMANCE(at initial value)

Item	TRU
Contact Resistance	100m $\Omega$ Max.
Operation Time	15msec Max.
Release Time	5msec Max.
Dielectric Strength	1500VAC 50/60Hz (1 minute)
Between coil & contact	750VAC 50/60Hz (1 minute)
Between contacts	
Surge Resistiveness	3000V (between coil & contact 1x40 usec)
Insulation Resistance	100 M $\Omega$ Min. (at 500VDC)
Max. ON/OFF Switching	
Mechanically	300 operation/min
Electrically	30 operation/min
Operating Ambient Temperature	-30°C to +80°C(No water condensation and no water drop)
Operating Humidity	45 to 85% RH
Coil Temperature Rise	35 deg. Max.
Vibration	
Endurance	10 to 55Hz Double Amplitude 1.5mm
Shock	
Endurance	980m/s <sup>2</sup> .
Error Operation	98m/s <sup>2</sup> .
Life Expectancy	
Mechanically	1 × 10 <sup>7</sup> operations. Min. (no load)
Electrically	1 × 10 <sup>5</sup> operations. Min. (at rated coil voltage)
Weight	abt. 12g.
UL	E156521.
TUV	R50050851

1.Tolerance  $\pm 0.5$ mm on all dimensions unless otherwise stated.  
2. Tolerance  $\pm 0.1$ mm on PCB DRILLING dimension unless otherwise stated.



# Power Relay

# TRV/TRVF

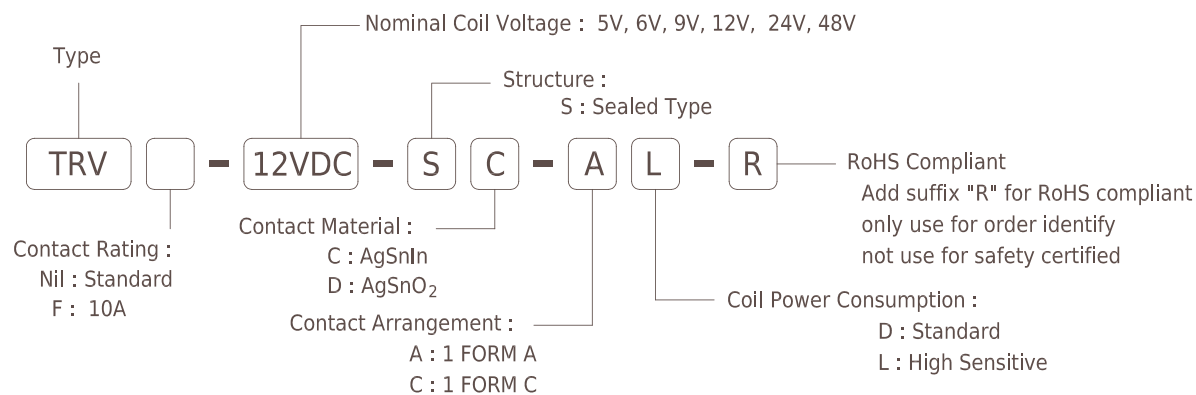
## MAIN FEATURES

- High capacity type (16A) available.
- High sensitivity 0.2W (1 Form A).
- Flat type : L×W×H=16.5mm×22.2mm×11.2mm.
- UL , cUL and TUV recognized.

## APPLICATIONS

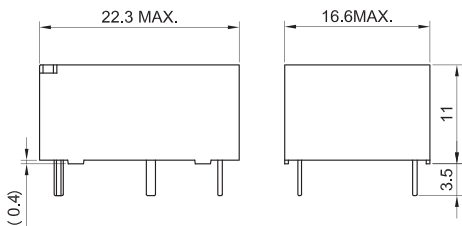
- Home appliances : Air conditioner, heater, etc.
- Automotive : Power supply for car stereo and air conditioner.

## ORDERING INFORMATION

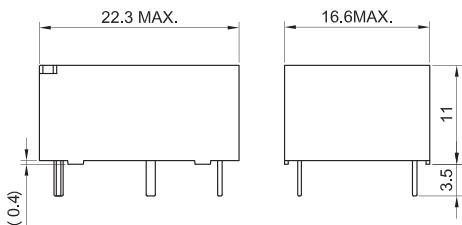


## DIMENSION(unit:mm)

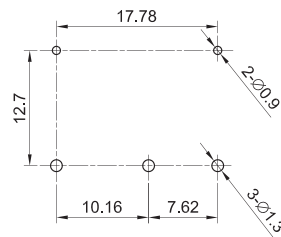
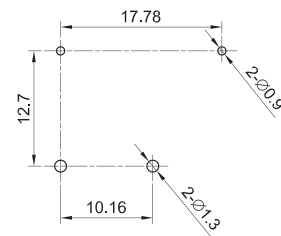
### 1 Form A



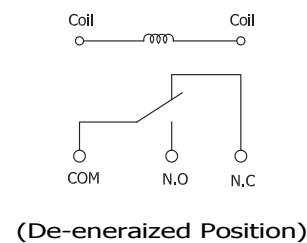
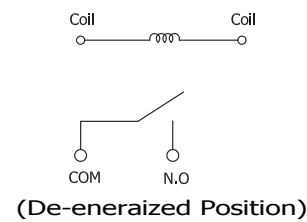
### 1 Form C



## DRILLING(unit:mm)



## WIRING DIAGRAM



## COIL DATA CHART(at 20°C )

TRV TYPE					
Coil Sensitivity	Nominal Voltage (VDC)	Coil Resistance (Ω) ± 10%	Pull-In Voltage (VDC)	Drop-Out Voltage (VDC)	Allowable Voltage (max)
High Sensitivity Type (Form A only) (0.2W)	5	125	80% Max.	5% Min.	130%
	6	180			
	9	405			
	12	720			
	18	1620			
Standard Type (0.45W)	24	2880	80% Max.	5% Min.	130%
	48	9200 *			
	5	55.5			
	6	80			
	9	180			
	12	320			
	18	720			
	24	1280			
	48	5120			
	100	16600 *			

TRVF TYPE					
Coil Sensitivity	Nominal Voltage (VDC)	Coil Resistance (Ω) ± 10%	Pull-In Voltage (VDC)	Drop-Out Voltage (VDC)	Allowable Voltage (max)
High Sensitivity Type (Form A only) (0.2W)	5	125	80% Max.	5% Min.	130%
	6	180			
	9	405			
	12	720			
	18	1620			
Standard Type (0.45W)	24	2880	80% Max.	5% Min.	130%
	48	11250			
	5	62.5			
	6	90			
	9	202.5			
	12	360			
	18	810			
	24	1440			
	48	5760			

## CONTACT RATING

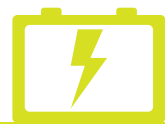
Item	TRV			TRVF		
	FORM A	FORM C		FORM A	FORM C	
		N/O	N/C		N/O	N/C
Contact Capacity Resistive Load (cosΦ=1)	16A 125VAC 16A 250VAC 16A 30VDC	16A 125VAC 16A 250VAC 16A 30VDC	15A 125VAC 15A 250VAC 12A 30VDC	TV-5 125VAC 16A 125VAC 10A 250VAC/125VAC 10A 30VDC	10A 250VAC	6A 250VAC
Rated Carrying Current	16A	16A	12A	16A	10A	6A
Max. Allowable Voltage	250VAC/30VDC			250VAC/30VDC	250VAC	
Max. Allowable Current	16A	16A	12A	16	10A	6A
Max. Allowable Power Force	2000VA 480W	2000VA 480W	1875VA 360W	2500VA 300W	2500VA	1500VA
Referenced Min. Applicable Load	5VDC , 100mA			5VDC , 100mA		
Contact Material	Silver Alloy			Silver Alloy		

## PERFORMANCE(at initial value)

Item	TRV
Contact Resistance	100mΩ Max. (at 1A 6VDC)
Operation Time	10msec Max.
Release Time	5msec Max.
Dielectric Strength	1500VAC 50/60Hz (1 minute) 750VAC 50/60Hz (1 minute)
Insulation Resistance	100 MΩ Min. (at 500VDC)
Max. ON/OFF Switching	300 operation/min
Mechanically Electrically	30 operation/min
Operating Ambient Temperature	-40°C to +70°C (No condensation)
Operating Ambient Temperature	-30°C to +60°C (No water condensation and no water drop)
Operating Humidity	45 to 80% RH
Coil Temperature Rise	30deg. Max. (at rated coil voltage)
Vibration	10 to 55Hz Double Amplitude 1.6mm
Endurance Error Operation	10 to 55Hz Double Amplitude 1.6mm
Shock	100G Min.
Endurance Error Operation	10G Min.
Life Expectancy	5 × 10 <sup>6</sup>
Mechanically Electrically	1 × 10 <sup>5</sup>
Weight	abt. 10g.
UL & cUL	E156521
TUV	R50050856

Only for reference, won't notify if any change.





# Power Relay

# TRIL

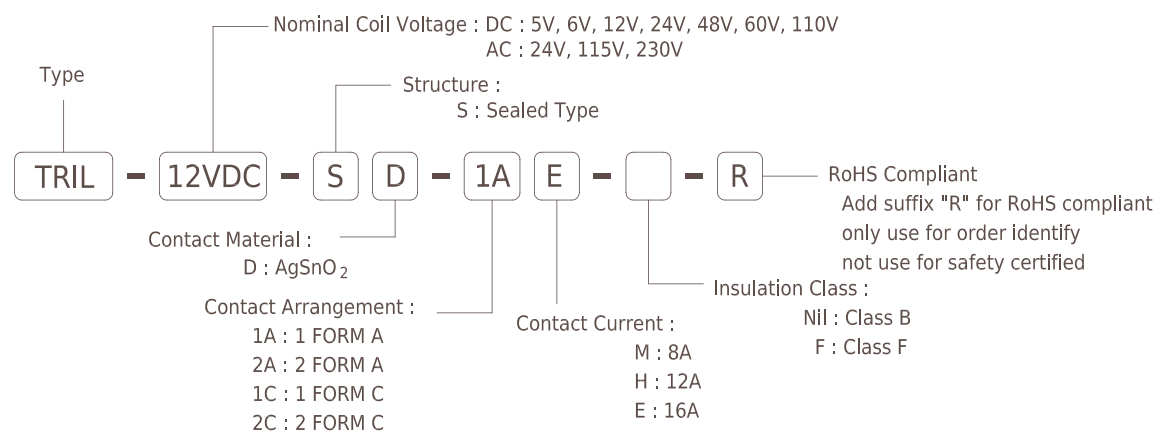
## MAIN FEATURES

- 16A switching capabilities.
- Low height of 15.7mm.
- 1 & 2 pole configurations.
- Sealed & Unsealed types available.
- 5KV/10mm dielectric coil to contacts.
- UL & cUL recognized.

## APPLICATIONS

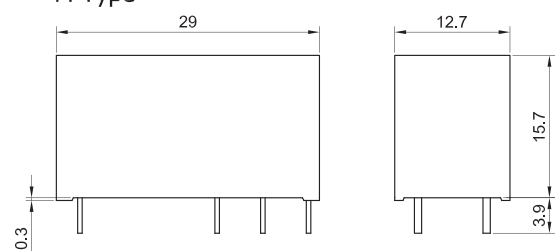
- Microwave Oven; Facsimile; Refrigerator, Air Conditioner, Conditioner, Stereo Equipment; Copiers , TV Set, Monitor, Vending Machine, Temperature Controller, etc.

## ORDERING INFORMATION

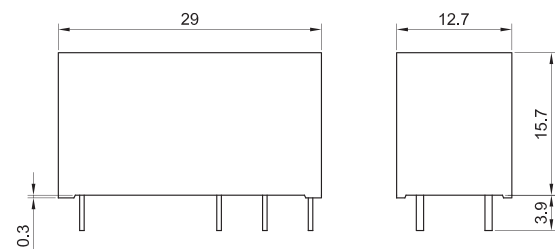


## DIMENSION(unit:mm)

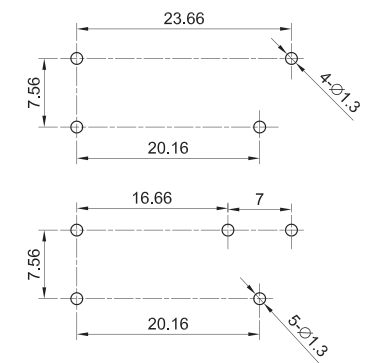
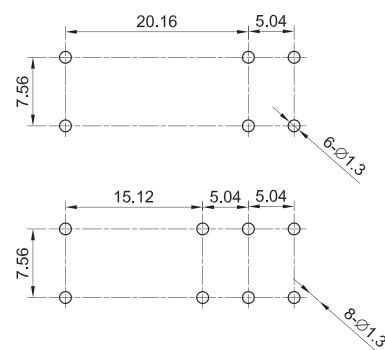
M Type



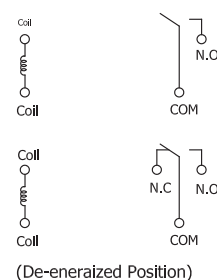
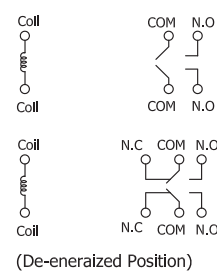
H Type



## DRILLING(unit:mm)

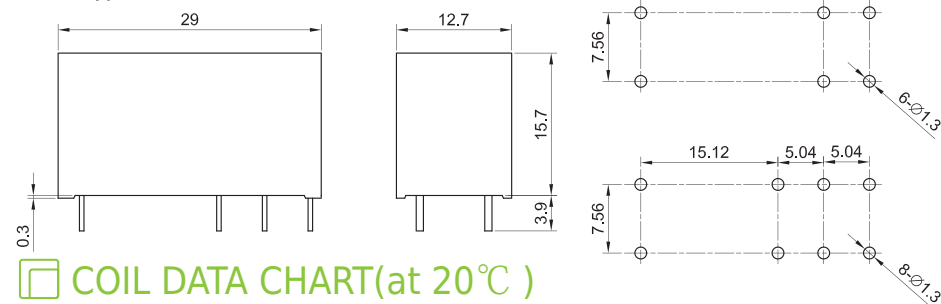


## WIRING DIAGRAM



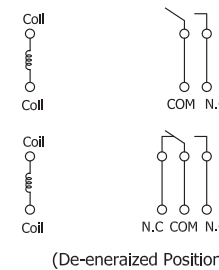
## DIMENSION(unit:mm)

E Type



## DRILLING(unit:mm)

## WIRING DIAGRAM



## COIL DATA CHART(at 20°C )

Coil Sensitivity	Nominal Voltage (VDC)	Nominal Current (mA)	Coil Resistance (Ω) ± 10%	Power Consumption (W)	Pull-InVoltage (VDC)	Drop-Out Voltage (VDC)	Max-Allowable Voltage (VDC)
TRIL (DC TYPE)	5	80.6	62	abt. 0.4W	70% Max.	10% Min.	110% Max.
	6	66.7	90				
	12	33.3	360				
	24	16.7	1440				
	48	8.3	5760 ±15%				
	60	8.0	7500 ± 15%				
TRIL (AC TYPE)	110	4.3	25200 ± 15%	abt. 0.75VA	75% Max.	15% Min.	110% Max.
	24	31.6	350				
	115	17.3	8100 ± 15%				
	230	34.5	32500 ± 15%				

## CONTACT RATING

Item	SPST (1A) , SPDT (1C)		DPST (2A) , DPDT (2C)
	TRIL -E	TRIL -H	TRIL -M
Contact Capacity Resistive Load (cosΦ=1)	16A 250VAC	12A 250VAC	8A 250VAC
Rated Carrying Current	16A	12A	8A
Max. Switching Voltage	440VAC		
Contact Current(Res. Load)	10A	10A	5A
Max. Allowable Power Force	4000VA	3000VA	2000VA
Contact Material	Silver Alloy		

## PERFORMANCE(at initial value)

Item	TRIL
Contact resistance	100mΩ max (measured at 1A 6VDC).
Operation time	15msec max.
Release time	8msec max.
Insulation resistance	1000 MΩ min. (at 500VDC)
Dielectric strength	5000VAC, 1min 1000VAC, 1min 2500VAC, 1min
Surge voltage (between coil & contacts)	10KV(1.2 x 50us)
Temperature rise(at nomi.volt.)	55K max. (DC TYPE)/ 65K max. (AC TYPE)
Shock resistance	Functional 98 m/s <sup>2</sup> Destructive 980 m/s <sup>2</sup>
Vibration resistance	10 to 150Hz 10g/5g
Operating ambient temperature	(DC TYPE) -40°C to +85°C. (AC TYPE) -40°C to +70°C.
Operating humidity	35% to 85% RH
Life expectancy	1 × 10 <sup>7</sup> ops. Min. Mechanically 1 × 10 <sup>5</sup> ops. Min.(DC TYPE) Electrically 5 × 10 <sup>5</sup> ops. Min.(AC TYPE)
Weight	abt. 13.5g.
UL & cUL	E156406

1.Tolerance ±0.5mm on all dimensions unless otherwise stated.  
2. Tolerance ±0.1mm on PCB DRILLING dimension unless otherwise stated.

Only for reference, won't notify if any change.



# Power Relay

# TRIH

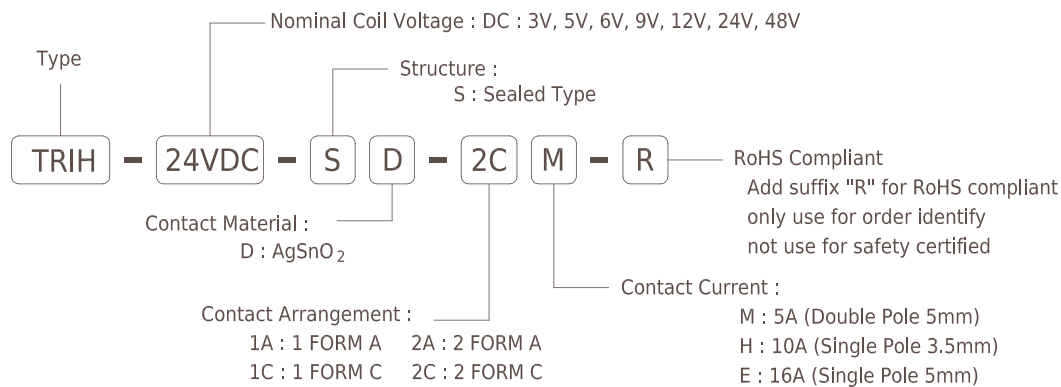
## MAIN FEATURES

- Miniature heavy-duty relays
- 5KV dielectric coil to contacts
- Single-Pole, 10 Amp PC Board
- Sealed & Unsealed types available
- SPST and SPDT configurations
- UL • cUL and TUV recognized.

## APPLICATIONS

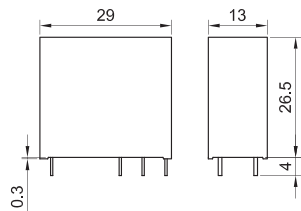
- Microwave Ovens, Facsimiles, Refrigerators Air Conditioners, Stereo Equipment, Copier, TV Set, Vending Machines, Temperature Controllers, etc.

## ORDERING INFORMATION

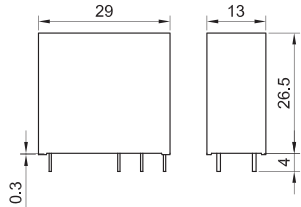


## DIMENSION(unit:mm)

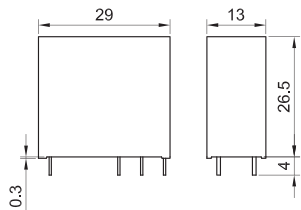
M Type



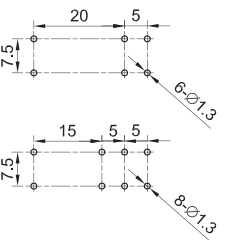
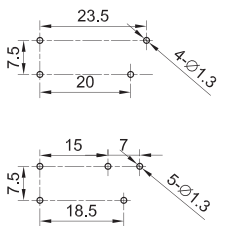
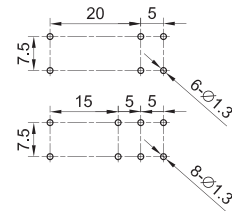
H Type



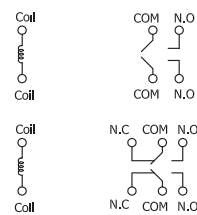
E Type



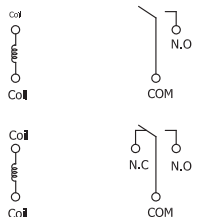
## DRILLING(unit:mm)



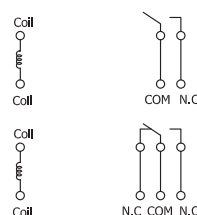
## WIRING DIAGRAM



(De-eneraized Position)



(De-eneraized Position)



(De-eneraized Position)

## COIL DATA CHART(at 20℃ )

Coil Sensitivity	Nominal Voltage (VDC)	Nominal Current (mA ±10%)	Coil Resistance (Ω ±10%)	Power Consumption (mW)	Pick-Up Voltage VDC(Max.)	Drop-out Voltage VDC(Min.)	allowable Voltage VDC (Max.)
TRIH (DC TYPE)	3	176	17	Approx. 530	80% Max.	10% Min. of nominal voltage	110% of nominal voltage
	5	106	47				
	6	88.2	68				
	9	56.2	160				
	12	43.6	275				
	24	21.8	1100±15%				
	48	11.5	4170±15%				

## CONTACT RATING

Item		TRIH -E		TRIH -H		TRIH -M	
		E-Type		H-Type		M-Type	
Resistive load (cosΦ=1)	UL	16A 250VAC 16A 24VDC 1HP 240VAC TV-8 125VAC(※)		10A 250VAC 10A 30VDC 1/3HP 250VAC TV-5 125VAC		10A 250VAC 10A 30VDC TV-3 125VAC	
	TUV	16A 250VAC 16A 30VDC		10A 250VAC 10A 30VDC		5A 250VAC 5A 30VDC	
Carrying current		16A		10A		5A	
Max. switching voltage		277VAC, 30VDC					
Max. switching current		16A		10A		5A	
Max. switching power		4000VA 300W	2000VA 192W	2500VA 300W	1875VA 150W	1250VA 150W	500VA 90W
Min. permissible load		DC 5V 100mA			DC 5V 10mA		
Contact material		Silver Alloy					

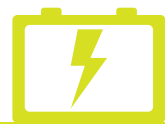
※ TRIH E-Type Form A(N.O.) Only.

## PERFORMANCE(at initial value)

Item	TRIH
Contact Resistance	50mΩ Max.
Operation time	15msec Max. (at nominal voltage)
Release time	10msec Max. (at nominal voltage)
Dielectric strength	Between coil & contacts Between open contacts Between contact sets
Insulation Resistance	5000VAC. for 1minute 3000VAC. for 1minute 1000VAC. for 1minute
Operating frequency	100MΩ Min. (at 500VDC)
Operating frequency	20 ops/minute
Ambient temperature	
Storage	-40℃ to +70℃
Operating	-40℃ to +70℃
Humidity	35% to 85% RH
Vibration resistance	10 to 55 Hz, 1.5mm double amplitude
Shock resistance	
Functional :	98m/s <sup>2</sup>
Destructive :	980m/s <sup>2</sup>
Life expectancy	
Mechanical :	1 × 10 <sup>7</sup> operations
Electrical :	1 × 10 <sup>5</sup> operations (at rated load)
Weight	abt. 18g.
UL & cUL	E156406

1.Tolerance ±0.5mm on all dimensions unless otherwise stated.  
2. Tolerance ±0.1mm on PCB DRILLING dimension unless otherwise stated.





# Power Relay

# TRG7

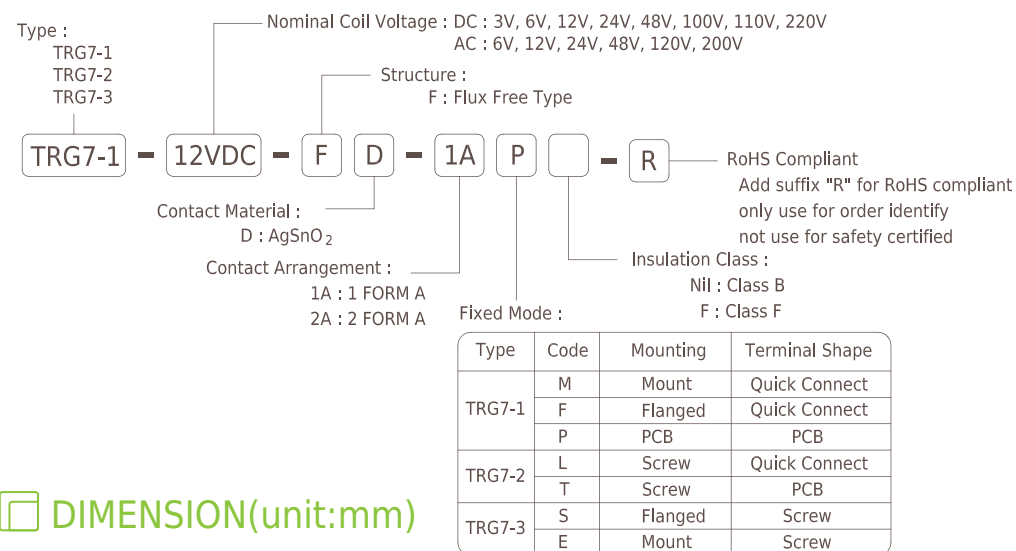
## MAIN FEATURES

- 30A switching capabilities
- SPST-NO and SPDT configurations
- 4KV dielectric coil to contacts
- Heavy load up to 7500VA
- UL & cUL recognized.

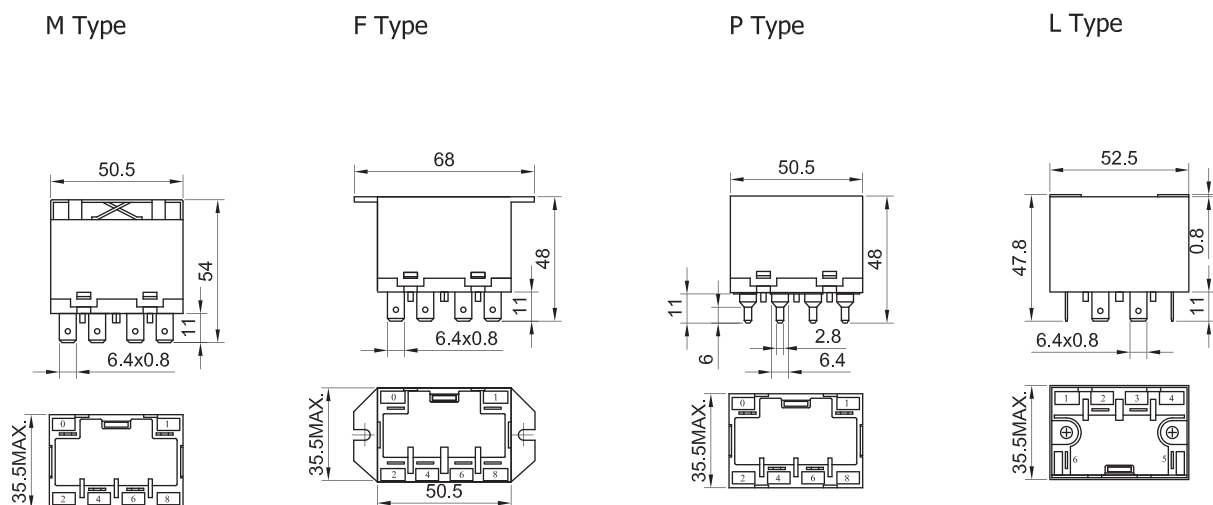
## APPLICATIONS

- Home appliance: Air conditioners, Microwave ovens, TV-set, Heaters, Stereo
- Office equipment: Copiers, Vending Machine.
- U.P.S source circuit control , etc.

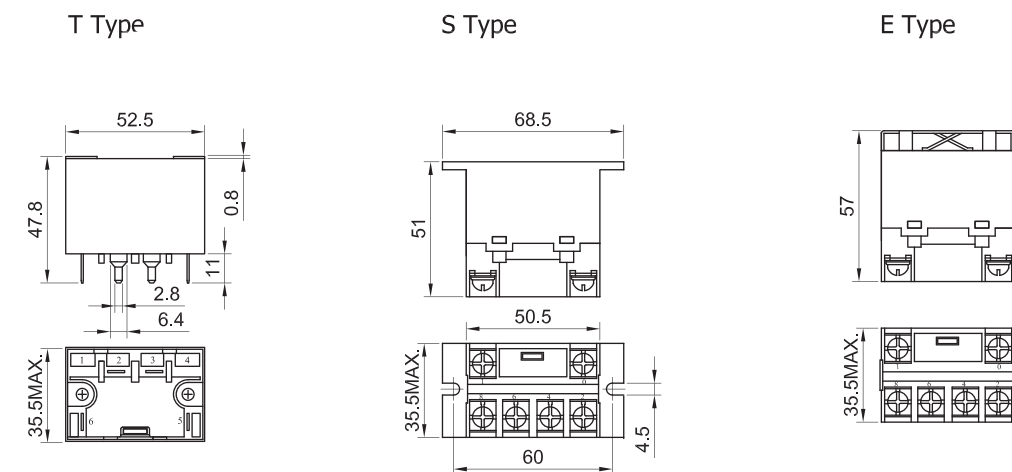
## ORDERING INFORMATION



## DIMENSION(unit:mm)



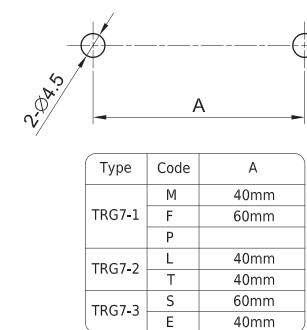
## DIMENSION(unit:mm)



## DRILLING(unit:mm)

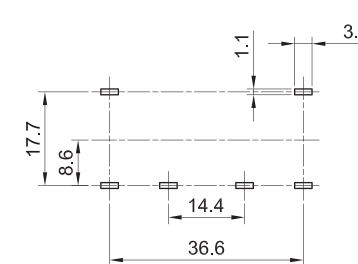
### Fixed Mode

Screw / Mount /Flanged

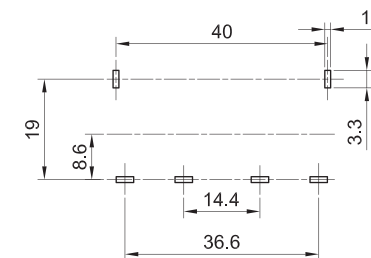


Type	Code	A
TRG7-1	M	40mm
	F	60mm
	P	60mm
TRG7-2	L	40mm
	T	40mm
TRG7-3	S	60mm
	E	40mm

PCB  
P Type

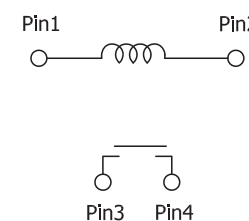


T Type



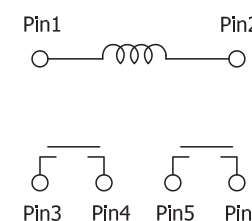
## WIRING DIAGRAM

### 1 Form A



Type	Code	Terminal No.			
		Pin1	Pin2	Pin3	Pin4
TRG7-1	M				
	F	0	1	4	6
	P				
TRG7-2	L	5	6	3	2
	T				
TRG7-3	S	0	1	4	6
	E				

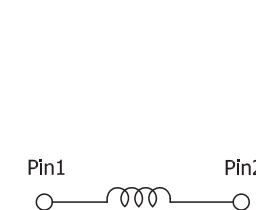
### 2 Form A



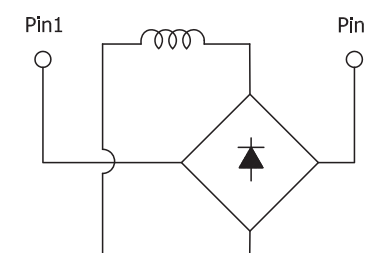
Type	Code	Terminal No.					
		Pin1	Pin2	Pin3	Pin4	Pin5	Pin6
TRG7-1	M						
	F	0	1	2	4	6	8
	P						
TRG7-2	L	5	6	4	3	2	1
	T						
TRG7-3	S	0	1	2	4	6	8
	E						

### Coil Inner Cricuit

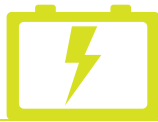
DC Operation Coil



AC Operation Coil



1.Tolerance  $\pm 0.5\text{mm}$  on all dimensions unless otherwise stated.  
2. Tolerance  $\pm 0.1\text{mm}$  on PCB DRILLING dimension unless otherwise stated.



# Power Relay

## COIL DATA CHART(at 20℃ )

Nominal Voltage	Nominal Current (mA ±10%)	Coil Resistance (Ω ±10%)	Power Consumption (mW)	Pick-Up Voltage VDC(Max.)	Drop-out Voltage VDC(Min.)	allowable Voltage VDC (Max.)
AC Type						
VAC	VAC(Max.)	VAC(Min.)	mA(+15%,-20%)	Ω (±10%)	(VA)	(VAC)
6	4.8	0.9	275	18.8	Approx. 2.7	110% of nominal voltage
12	9.6	1.8	138	75		
24	19.2	3.6	74	300		
48	38.4	7.2	39	1200		
120	96.0	18	22.1	5200		
220	176.0	48	9.5	20800		
DC Type						
VDC	VDC(Max.)	VDC(Min.)	mA(±10%)	Ω (±10%)	(W)	(VDC)
3	2.25	0.3	638	4.7	Approx. 1.9	110% of nominal voltage
6	4.5	0.6	319	18.8		
12	9.0	1.2	160	75		
24	18.0	2.4	80	300		
48	36.0	4.8	40	1200		
100	75.0	10.0	19.23	5200		
110	82.5	12.0	17.46	6300		
200	150.0	20.0	9.52	21000		

## CONTACT RATING

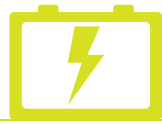
Item	TRG7	
	1 Form A	2 Form A
Contact Capacity	30A 277VAC	25A 277VAC
Resistive Load (cosΦ=1)	3HP 240VAC	2HP 240VAC
	TV-10 120VAC	TV-10 120VAC
Rated Carrying Current	30A	25A
Max. Allowable Voltage	277VAC	
Max. Allowable Current	30A	25A
Max. Allowable Power Force	8310VA	6925VA
Contact Material	Silver Alloy	

## PERFORMANCE(at initial value)

Item	TRG7
Contact Resistance	Max. 100mΩ
Operation time (at nominal voltage)	Max. 30msec
Release time (at nominal voltage)	Max. 30msec
Operating frequency	20 ops/minute
Insulation resistance	Min. 1000MΩ(at 500VDC)
Vibration resistance	10 Hz to 55 Hz, at double amplitude of 1.5mm
Shock resistance	98m/s <sup>2</sup> Malfunction. 980m/s <sup>2</sup> Mechanical.
Dielectric strength	4000VAC. For 1minute between coil and contacts 2000VAC. For 1minute between open contacts.
Ambient temperature	-55℃ to +70℃
Humidity	98%, +40℃
Life expectancy	1 x 10 <sup>6</sup> operations 1 x 10 <sup>5</sup> operations (at rated load)
Mechanically	
Electrically	
Weight	abt 120g.
SCREW TYPE	abt 100g.
PC BOARD TYPE	
UL & cUL	E156406

1.Tolerance ±0.5mm on all dimensions unless otherwise stated.  
2. Tolerance ±0.1mm on PCB DRILLING dimension unless otherwise stated.

Only for reference, won't notify if any change.



# Power Relay

# TRY

## MAIN FEATURES

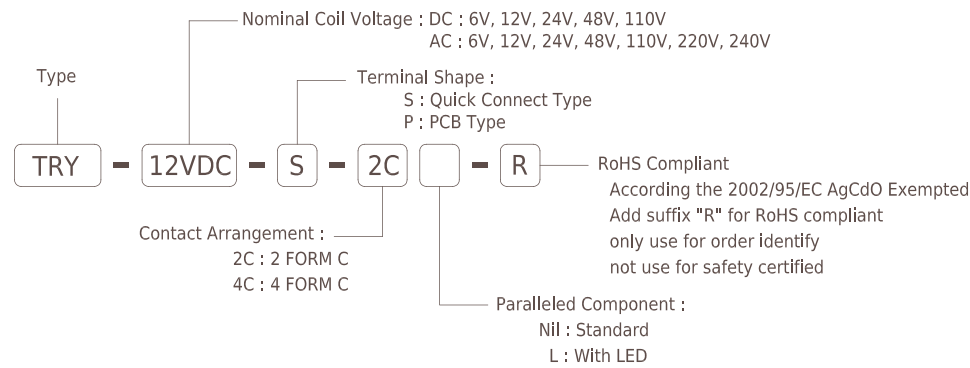
- Long life and high reliability
- Strong construction for vibration and shock
- Approximately thousands for kinds are available depending on the combination of terminals, covers, contact ratings, coil etc.
- Molded material : All UL 94V-0
- UL & cUL recognized.

## APPLICATIONS

Power station control equipments	Coil operated machines
Transportations	Building control equipments
Refrigerators	Medical equipments
Coil operated machines	Amusement devices, etc.

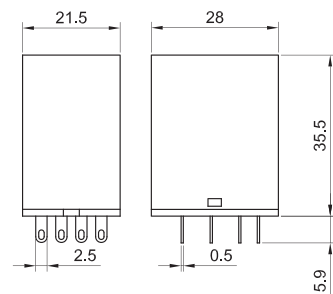


## ORDERING INFORMATION

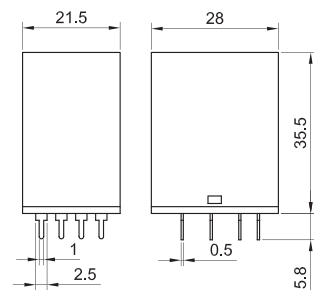


## DIMENSION(unit:mm)

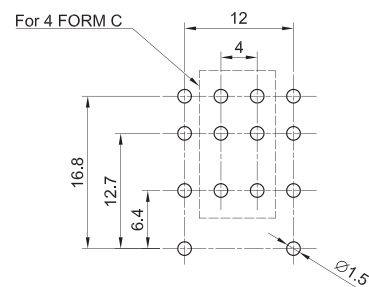
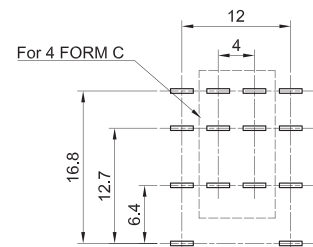
### Quick Connect Type



### PCB Type

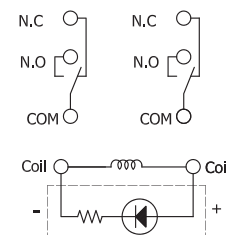


## DRILLING(unit:mm)



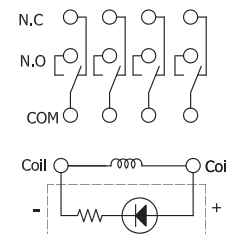
## WIRING DIAGRAM

### 2 From C



(De-eneraized Position)

### 4 From C



(De-eneraized Position)

## COIL DATA CHART(at 20°C )

Nominal Voltage	Pick-Up voltage	Drop-out voltage	Nominal current	Coil resistance	Power consumption	Max. allowable voltage
AC Type (at 20°C)						
VAC	80% of rated voltage	30% of rated voltage	mA(+15%,-20%)	$\Omega(\pm 10\%)$	(VA)	(VAC)
6	4.8	1.8	200	11.5	Approx. 1.2A	110% of nominal voltage
12	9.6	3.6	100	46		
24	19.2	7.2	50	184		
48	38.4	14.4	25	735		
110	88	33	11	3750		
120	96	36	10	4550 $\pm 15\%$		
220/240	176/192	66/72	5	14400 $\pm 15\%$		
DC Type (at 20°C)						
VDC	80% of rated voltage	10% of rated voltage	mA( $\pm 10\%$ )	$\Omega(\pm 10\%)$	(W)	(VDC)
6	4.8	0.6	150	40	Approx. 0.9W	110% of nominal voltage
12	9.6	1.2	75	160		
24	19.2	2.4	36.9	650		
48	38.4	4.8	18.5	2600		
110	88	11	10	11000		

## CONTACT RATING

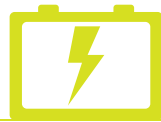
Item	TRY -2C (DPDT)	TRY -4C (4PDT)
Contact Capacity	10A 220VAC	5A 220VAC
Resistive load (cos $\Phi$ =1)	10A 28VDC	5A 28VDC
Max. switching voltage	220VAC, 28VDC	
Max. switching current	10A	5A
Max. switching power	2200VA/280W	1100VA/140W
Min. permissible load	5VDC 100mA	
Contact material	AgCdO	

## PERFORMANCE(at initial value)

Item	TRY
Contact Resistance	Max. 100m $\Omega$
Operation time (at nominal voltage)	Max. 25msec
Release time (at nominal voltage)	Max. 25msec
Operating frequency	20ops/minute
Insulation resistance	Min. 100M $\Omega$ (at 500VDC)
Vibration resistance	Functional : 6G 10 to 55 Hz, at double amplitude of 1mm Destructive : 12G 10 to 55 Hz, at double amplitude of 2mm
Shock resistance	Functional : Min, 20G Destructive : Min, 100G
Dielectric strength	1500VAC. for 1minute between coil and contact. 750VAC. for 1minute between contact sets. 750VAC. for 1minute between open contacts.
Ambient temperature	-40°C to +70°C
Humidity	40 to 85% RH
Life expectancy	Mechanical : 1 x 10 <sup>7</sup> operations Electrical : 2 x 10 <sup>5</sup> operations (at rated load)
Weight	abt 37g.
UL & cUL	E156521

1.Tolerance  $\pm 0.5$ mm on all dimensions unless otherwise stated.  
2. Tolerance  $\pm 0.1$ mm on PCB DRILLING dimension unless otherwise stated.





# Power Relay

# TRL

## MAIN FEATURES

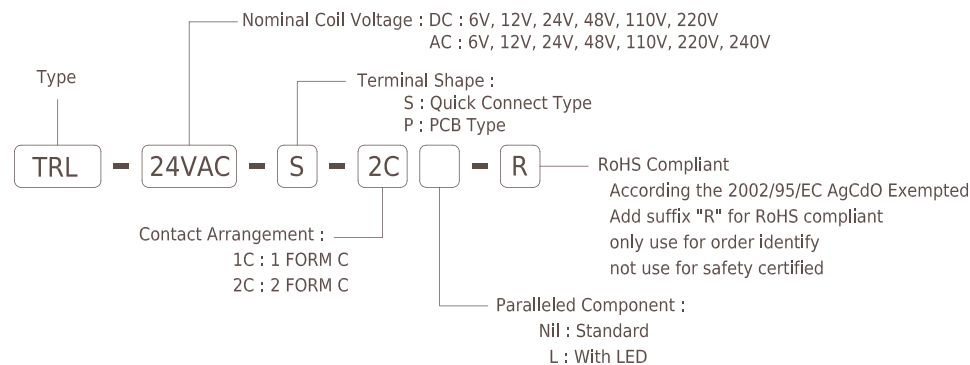
- Long life and high reliability
- Strong construction for vibration and shock
- Approximately thousands for kinds are available depending on the combination of terminals, covers, contact ratings, coil etc.
- Plastic-sealed type is available
- Molded material : All UL 94V-0
- UL & cUL recognized

## APPLICATIONS

Coil operated machines	Transportations	Medical equipment
Vending machines	Office machines	Amusement devices, etc.
Refrigerators	Building control equipment	Power station control equipment

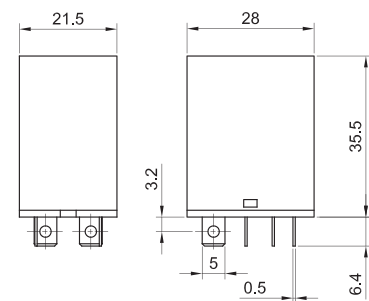


## ORDERING INFORMATION

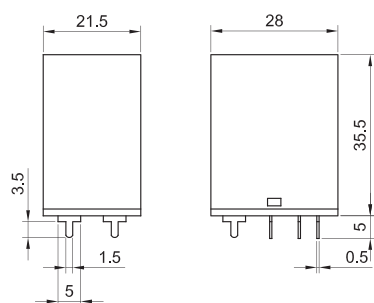


## DIMENSION(unit:mm)

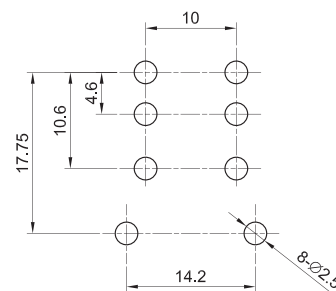
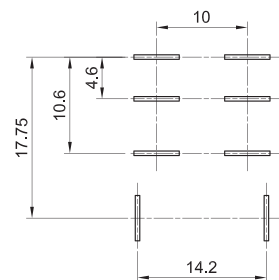
### Quick Connect Type



### PCB Type

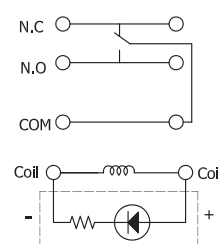


## DRILLING(unit:mm)



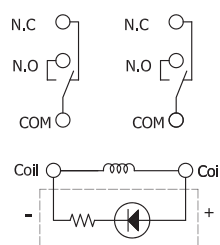
## WIRING DIAGRAM

### 1 From C



(De-eneraized Position)

### 2 From C



(De-eneraized Position)

## COIL DATA CHART(at 20°C )

Nominal voltage	Pick-Up voltage	Drop-out voltage	Nominal current	Coil resistance	Power consumption	Max. allowable voltage
AC Type						
VAC	VAC(Max.)	VAC(Min.)	mA(+15%,-20%)	WΩ (±10%)	P(VA)	(VAC)
6	4.8	1.8	183	11.5	Approx. 1.2VA	110% of nominal voltage
12	9.6	3.6	91	46		
24	19.2	7.2	46	184		
48	38.4	14.4	24	735		
110	88	33	11	3900		
120	96	36	9.8	4550± 15%		
220	176	66	4.2	14400± 15%		
240	192	72	5.5	15210± 15%		
DC Type						
VDC	VDC(Max.)	VDC(Min.)	mA(10%)	Ω (±10%)	P(W)	(VDC)
6	4.8	0.6	150	40	Approx. 0.9W	110% of nominal voltage
12	9.6	1.2	75	160		
24	19.2	2.4	37.2	650		
48	38.4	4.8	18.8	2560± 15%		
110	88	11	8.2	13444± 15%		
220	176	22	4.1	53778± 15%		

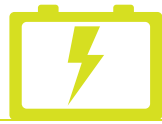
## CONTACT RATING

Item	TRL -1C (SPDT)	TRL -2C(DPDT)
Rated load	15A 277VAC 15A 28VDC	10A 277VAC 10A 28VDC
Carrying current	15A	10A
Max. switching voltage	300VAC, 30VDC	
Max. switching current	15A	10A
Max. switching power	4155VA, 420W	2770VA, 280W
Min. permissible load	5VDC 100mA	
Contact material	AgCdO	

## PERFORMANCE(at initial value)

Item	TRL
Contact Resistance	Max. 100mΩ
Operation time (at nominal voltage)	Max. 25msec
Release time (at nominal voltage)	Max. 25msec
Operating frequency	20 ops/minute
Insulation resistance	Min. 100MΩ (at 500VDC)
Vibration resistance	Functional : 6G 10 to 55 Hz, at double amplitude of 1mm Destructive : 12G 10 to 55 Hz, at double amplitude of 2mm
Shock resistance	Functional : Min, 20G Destructive : Min, 100G
Dielectric strength	1500VAC. for 1minute between coil and contact. 750VAC. for 1minute between contact sets. 750VAC. for 1minute between open contacts.
Ambient temperature	-40°C to +70°C
Humidity	40% to 85% RH
Life expectancy	Mechanical : 1 x 10 <sup>7</sup> operations Electrical : 2 x 10 <sup>5</sup> operations (at rated load)
Weight	abt 37g.
UL & cUL	E156521

1.Tolerance ±0.5mm on all dimensions unless otherwise stated.  
2. Tolerance ±0.1mm on PCB DRILLING dimension unless otherwise stated.



# Power Relay

# TR90

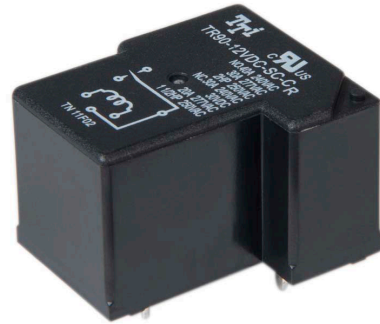
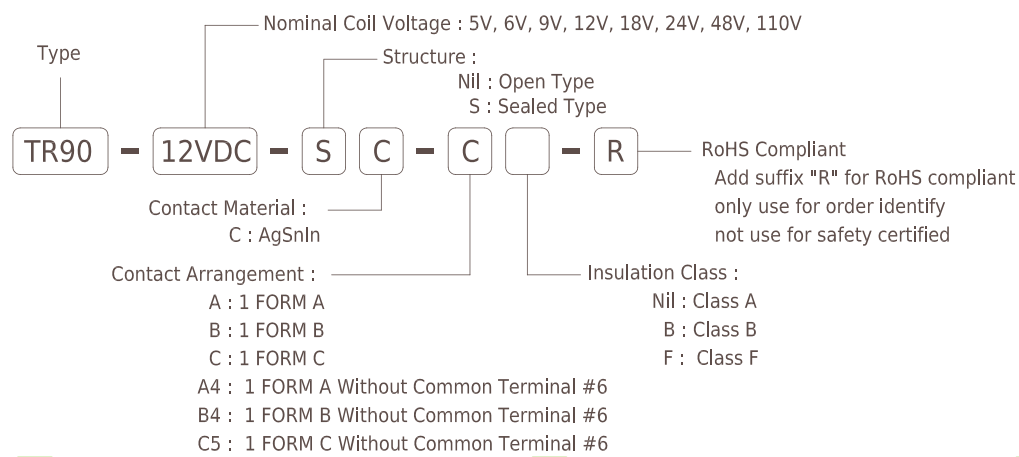
## MAIN FEATURES

- Up to 30A switching in SPST and 20A switching in SPDT arrangements
- Available as an open-frame relay, with an immersion cleanable, plastic sealed case.
- Meet UL F Insulation class.
- UL , cUL and TUV recognized.

## APPLICATIONS

- Used for power switching, Electrical Heater, ventilator, Air conditioning, Refrigerating, Automobile and House-hold Appliance.

## ORDERING INFORMATION



## COIL DATA CHART(at 20°C )

Coil Sensitivity	Nominal Coil Voltage (VDC)	Nominal Current (mA)	Coil Resistance ( $\Omega$ ) $\pm 10\%$	Power Consumption (W)	Pull-In Voltage (VDC)	Drop-Out Voltage (VDC)	Max-Allowable Voltage (VDC)
TR90	5	185	27	abt. 0.93	80% Max.	10% Max.	120% Max.
	6	150	40				
	9	93	97				
	12	77	155				
	18	47	380				
	24	36	660				
	48	19	2560				
	110	8	13450 $\pm 15\%$				

## CONTACT RATING

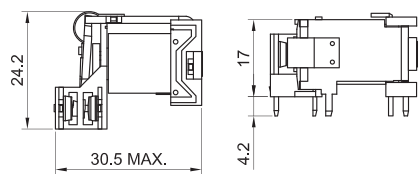
Item		TR90		
		- A / - A4	- C / - C5	
			N/O	N/C
Resistive Load (cos $\Phi$ =1) General	UL	40A 240VAC 30A 277VAC	40A 240VAC 30A 277VAC	30A 240VAC/30VDC 20A 277VAC
	TUV	(*B:AgCdO) 40A 240VAC/14VDC	(*B:AgCdO) 40A 240VAC/14VDC	(*B:AgCdO) 30A 240VAC/14VDC
Motor		2HP 250VAC	2HP 250VAC	1.5HP 250VAC
Contact material		Silver Alloy		

## PERFORMANCE(at initial value)

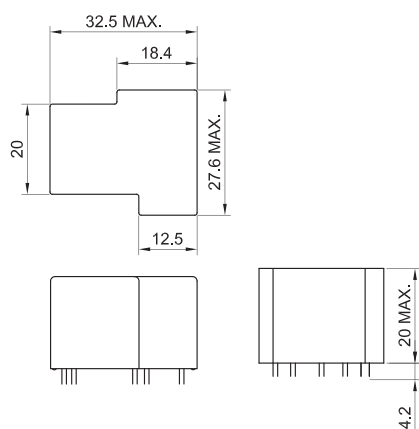
Item	TR90	
	UL508	UL873
Contact Resistance	100m $\Omega$ Max.	
Operation Time	15msec Max.	
Release Time	10msec Max.	
Dielectric Strength Between coil & contact Between contacts	1500VAC 50/60Hz (1 minute) 1500VAC	2500VAC
Insulation Resistance	10 M $\Omega$ Min. (at 500VDC)	
Max. ON/OFF Switching Mechanically Electrically	300 operation/min 30 operation/min	
Operating Ambient Temperature	-55°C to +85°C (operating) -55°C to +155°C (storage)	
Operating Humidity	45% to 85% RH	
Coil Temperature Rise	60 deg. Max.	
Vibration Endurance Error Operation	10 to 55Hz Double Amplitude 1.5mm 10 to 55Hz Double Amplitude 1.5mm	
Shock Endurance Error Operation	100 m/sec <sup>2</sup> (abt. 100g's) 10 m/sec <sup>2</sup> (abt. 10g's)	
Life Expectancy Mechanically Electrically	1 $\times$ 10 <sup>7</sup> 1 $\times$ 10 <sup>5</sup>	
Weight	abt. 22g. , 28g.(SEALED)	
UL & CUL	E156406	

## DIMENSION(unit:mm)

### Open Type

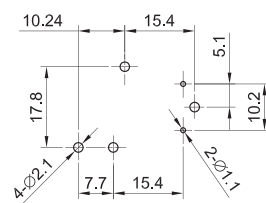


### Sealed Type

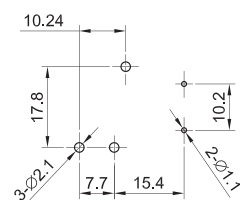


## DRILLING(unit:mm)

### A / B / C Type

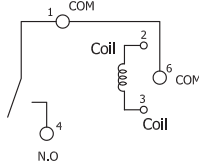


### A4 / B4 / C5 Type

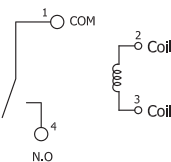


## WIRING DIAGRAM

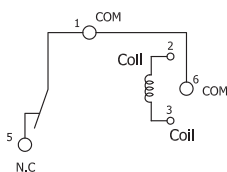
### 1 Form A



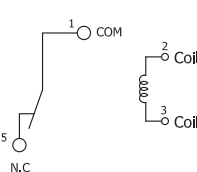
### 1 Form A4



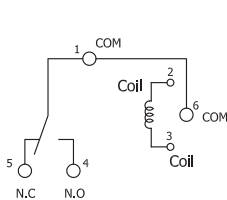
### 1 Form B



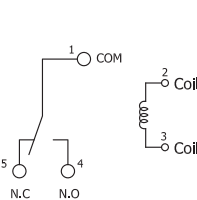
### 1 Form B4



### 1 Form C

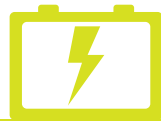


### 1 Form C5



(De-enerazed Position)

1.Tolerance  $\pm 0.5$ mm on all dimensions unless otherwise stated.  
2. Tolerance  $\pm 0.1$ mm on PCB DRILLING dimension unless otherwise stated.



# Power Relay

# TR91

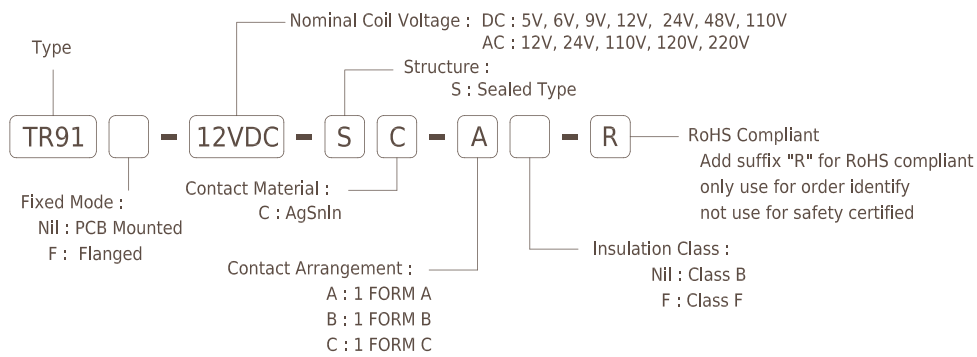
## MAIN FEATURES

- Up to 30A switching in SPST and 20A switching in SPDT arrangements.
- Available as an open-frame relay, with a snap-on dust cover or with an immersion cleanable, plastic sealed case.
- Meets UL508 and UL873 spacing requirements.
- Available with UL class B & class F Insulation materials.
- UL , cUL recognized.

## APPLICATIONS

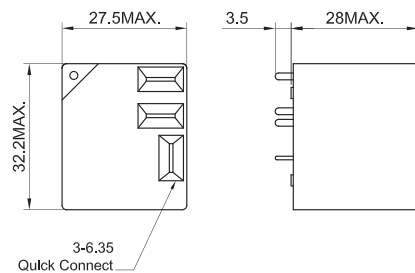
- Used for power switching, Electrical Heater, ventilator, Air conditioning, Refrigerating, Automobile and House-hold Appliance.

## ORDERING INFORMATION

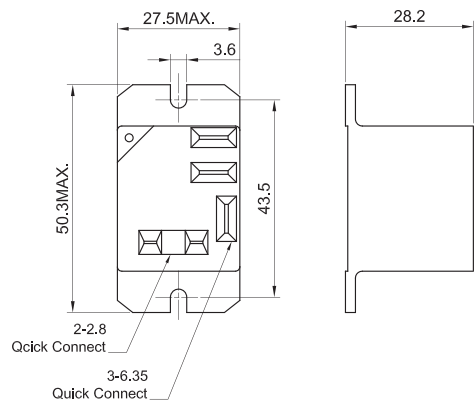


## DIMENSION(unit:mm)

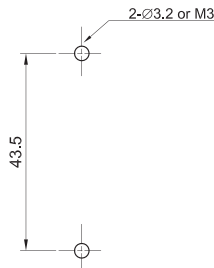
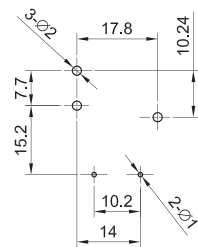
### PCB Type - Quick Connect



### Flanged Type - Quick Connect

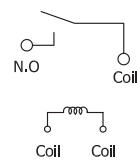


## DRILLING(unit:mm)



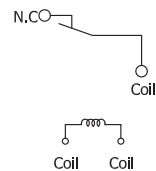
## WIRING DIAGRAM

### 1 Form A



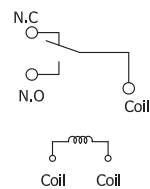
(De-eneraized Position)

### 1 Form B



(De-eneraized Position)

### 1 Form C



(De-eneraized Position)

## COIL DATA CHART(at 20°C )

Coil Sensitivity		Nominal Coil Voltage (VDC)	Nominal Current (mA)	Coil Resistance (Ω) ±10%	Power Consumption (W)	Pull-In Voltage (VDC)	Drop-Out Voltage (VDC)	Max-Allowable Voltage (VDC)
TR91	DC Type	5	185	28	abt. 0.9	75% Max.	10% Max.	110%
		6	150	40				
		9	93	90				
		12	77	160				
		24	36	640				
		48	19	2560				
		110	8	13445				
		12	167	27	abt. 2.0	75% Max.	30% Max.	110%
		24	83	120				
		110	19	2360				
		120	17	3040				
		220	9.5	13490				

## CONTACT RATING

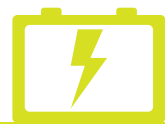
Item	TR91		
	1 Form A	1 Form C	
		N/O	N/C
UL/CUL	40A 240VAC 30A 277VAC 2HP 250VAC	40A 240VAC 30A 277VAC 2HP 250VAC	30A 240VAC 30A 30VDC 20A 277VAC 1.5HP 250VAC
Switching Voltage(Max.)	277VAC		
Switching Current(Max.)	40A	40A	30A
Switching Power(Max.)	7200VA	4800VA	2400VA
Contact material	Silver Alloy		

## PERFORMANCE(at initial value)

Item	TR91
Contact Resistance	100mΩ Max.
Operation Time	DC : 15msec Max. / AC : 20msec Max.
Release Time	DC : 10msec Max. / AC : 15msec Max.
Dielectric Strength Between coil & contact Between contacts	1500VAC 50/60Hz (1 minute) 1500VAC
Insulation Resistance	1000 MΩ Min. (at 500VDC)
Max. ON/OFF Switching Mechanically Electrically	300 operation/min 30 operation/min
Operating Ambient Temperature	-55°C to +85°C (operating) -55°C to +155°C (storage)
Operating Humidity	45% to 80% RH
Coil Temperature Rise	60 deg. Max.
Vibration Endurance Error Operation	10 to 55Hz Double Amplitude 1.5mm 10 to 55Hz Double Amplitude 1.5mm
Shock Endurance Error Operation	1000 m/sec (abt. 100g's) 100 m/sec (abt. 10g's)
Life Expectancy Mechanically Electrically	1 × 10 <sup>7</sup> 1 × 10 <sup>5</sup>
Weight	abt. 33g.
UL&cUL	E156406

1.Tolerance ±0.5mm on all dimensions unless otherwise stated.  
2. Tolerance ±0.1mm on PCB DRILLING dimension unless otherwise stated.





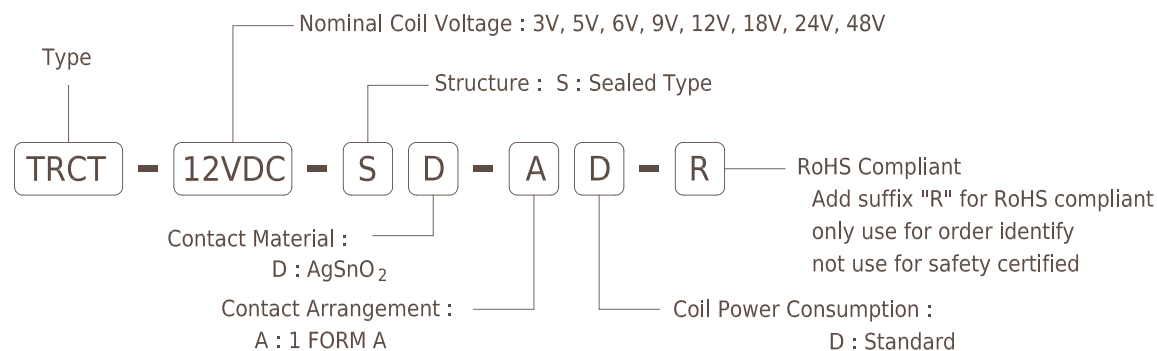
## MAIN FEATURES

- Smallest size (18.4 x 10.2 x 15.3 mm) at 10A switching capacity relay for high density P.C. board mounting technique.
- 1 Form A contact form available.
- Surge resistiveness of 4000V on series relays.
- Selection of plastic insulation material for high temperature and better chemical solution performance.

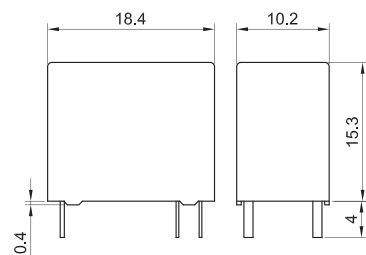
## APPLICATIONS

- Domestic appliance, office machine, audio equipment, automobile, etc.

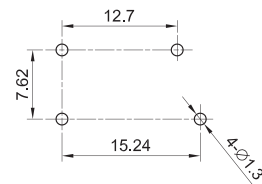
## ORDERING INFORMATION



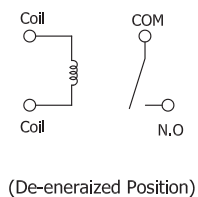
## DIMENSION(unit:mm)



## DRILLING(unit:mm)



## WIRING DIAGRAM



## COIL DATA CHART(at 20°C )

Coil Sensitivity	Nominal Coil Voltage (VDC)	Coil Resistance (Ω) ±10%	Power Consumption (W)	Pull-In Voltage (VDC)	Drop-Out Voltage (VDC)	Max-Allowable Voltage (VDC)
TRCT	3	20	abt. 0.45W	2.25	0.15	3.9
	5	55		3.75	0.25	6.5
	6	80		4.5	0.3	7.8
	9	180		6.75	0.45	11.7
	12	320		9.0	0.6	15.6
	18	720		13.5	0.9	23.4
	24	1280		18.0	1.2	31.2
	48	5120		36.0	2.4	62.4

## CONTACT RATING

Item	TRCT
Contact Capacity Resistive Load (cosΦ=1)	UL 10A 277/250VAC, Resistive, 100 K cycles, 40°C 10A 277/250VAC / 30VDC, Resistive, 50 K cycles, 85°C 12A 125VAC, Resistive, 10 K cycles, 85°C TV-5 120VAC, 25 K cycles, 40°C Pilot Duty: D150, 10 K cycles, 40°C VDE 10A 250VAC 4A 400VAC
Max. Switching Voltage	250VAC / 30VDC
Max. Switching Current	10A
Power Force (Max.)	2500VA / 300W
Contact Material	Silver Alloy

## PERFORMANCE(at initial value)

Item	TRCT
Contact Resistance	100mΩ Max.(at 1A 6VDC)
Operation Time	8msec Max.
Release Time	5msec Max.
Dielectric Strength Between coil & contact Between contacts	2500VAC 1 min 1000VAC 1 min
Insulation Resistance	1000MΩ Min. (at 500VDC)
Operating Ambient Temperature	-40°C to +70°C
Operating Humidity	35% to 95% RH
Vibration Resistance	10 to 55Hz Double Amplitude 1.5mm
Shock Resistance Functional Destructive	98m/s <sup>2</sup> 980m/s <sup>2</sup>
Life Expectancy Mechanically Electrically	1 × 10 <sup>6</sup> ops. (no load) 1 × 10 <sup>5</sup> ops. (at rated coil voltage)
Weight	abt. 6g.
UL	Pending