



Tianbo Product Documents

English Version CD-ROM

Telecom Relays	TR5V, HJR4102, HJR4102E, HJR1-2C
Pc Board Relays	HJR-3FF, HJR-21FF, HJR-7FF, HJR-78F, TRJV, TRG1, TRA1, TRA2, TRA3, TRA4, TRA5
Power Relays	HJQ-14F, HJQ13F, HJQ-18F(4453), HJQ-22F, HJQ-15F, HJQ-15F-1, HJQ-15F-2, HJQ-15F-3, HJQ-15F-4, TRAF
Automotive Relays	TRKM, TRKP, TRV3, TRV4



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TR5V

SPECIFICATION

FILE NUMBER: T-08KH101A

DATE: 2001/11/02



■ Features

Designed for thermostat modem, computer peripherals, video recording and security applications.

1 form A and 1 form C contact arrangement.

Low coil power requirement for IC compatibility.

Terminals arranged on gird pattern.

Designed for compact, high density mounting.

■ CONTACT DATA

Contact Form	1C	
Contact Material	AgNi+Au	
Contact Ratings	2A 120VAC/2A 24VDC	
Max Switching Voltage	120VAC/60VDC	
Max Switching Current	2A	
Max Switching Power	240VA/48W	
Contact Resistance	100m Ω Max	at 6VDC 1A
Life Expectancy Electrical	100,000	Operations(at30Operations/minute)
Mechanical	10,000,000	Operations

■ GENERAL DATA

Insulation Resistance	1000M Ω Min at500VDC	
Dielectric Strength Between Open Contacts	400VAC(for one minute)	
Between Contacts and coil	1000VAC(for one minute)	
Operate Time	4ms Max	
Release Time	3ms Max	
Temperature Range	-25°C~ +55 °C	
Shock Resistance	Operating Extremes	10G
	Damage Limits	100G
Vibration Resistance	10-55Hz Double amplitude of 2.0.mm	
Humidity	35%-85%RH	
Weight	Approx. 2.2g	
Safety Standard	UL:E173485	



■ COIL DATA

Nominal Voltage (VDC)	Coil Resistance at 20±10% (Ω)		Max Operate Voltage (VDC)		Min Release Voltage (VDC)	Max Applicable Voltage (VDC)
	0.2w	0.36w	0.2w	0.36w		
3	45	25	2.25	2.1	0.3	3.9
5	125	69.4	3.75	3.5	0.5	6.5
6	180	100	4.5	4.2	0.6	7.8
9	405	225	6.75	6.3	0.9	11.7
12	720	400	9	8.4	1.2	15.6
24	2880	1600	18	16.8	2.4	31.2

TR5V

SPECIFICATION

FILE NUMBER: T-08KH101A

DATE: 2001/11/02



■ Features

- Designed for thermostat modem, computer peripherals, video recording and security applications.
- 1 form A and 1 form C contact arrangement.
- Low coil power requirement for IC compatibility.
- Terminals arranged on gird pattern.
- Designed for compact, high density mounting.

■ CONTACT DATA

Contact Form	1C	
Contact Material	AgNi+Au	
Contact Ratings	1A 120VAC/1A 24VDC	
Max Switching Voltage	120VAC/60VDC	
Max Switching Current	1A	
Max Switching Power	120VA/30W	
Contact Resistance	100m Ω Max	at 6VDC 1A
Life Expectancy Electrical	100,000	Operations(at30Operations/minute)
Mechanical	10,000,000	Operations



■ GENERAL DATA

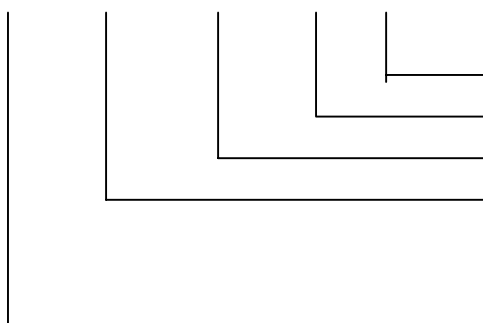
Insulation Resistance		1000M Ω Min at500VDC
Dielectric Strength Between Open Contacts		400VAC(for one minute)
Between Contacts and coil		1000VAC(for one minute)
Operate Time		4ms Max
Release Time		3ms Max
Temperature Range		-25 °C~+55 °C
Shock Resistance	Operating Extremes	10G
	Damage Limits	100G
Vibration Resistance		10-55Hz Double amplitude of 2.0.mm
Humidity		35%-85%RH
Weight		Approx. 2.2g
Safety Standard		UL:E173485

■ COIL DATA

Nominal Voltage (VDC)	Coil Resistance at20±10% (Ω)	Max Operate Voltage (VDC)	Min Release Voltage (VDC)	Max Applicable Voltage (VDC)
	0.15w	0.15w		
3	60	2.4	0.3	3.9
5	167	4.0	0.5	6.5
6	240	4.8	0.6	7.8
9	540	7.2	0.9	11.7
12	960	9.6	1.2	15.6

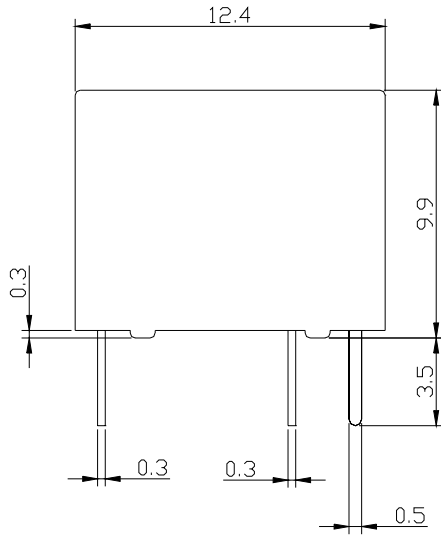
■ ORDERING CODE

TR5V D--12VDC-S---Z

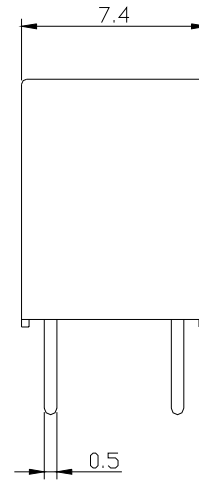


Z Form C
 Sealed
 Coil Nominal Voltage
 D=0.36W Coil Power
 L=0.2W
 M=0.15W
 Relay Model

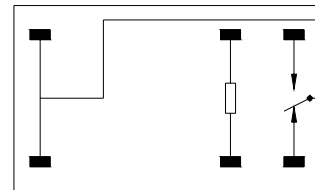
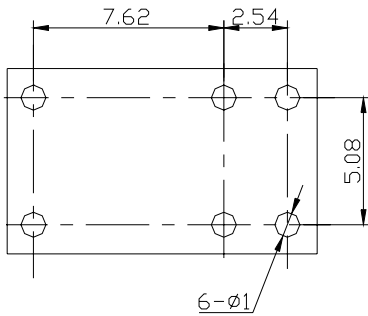
OVERALL AND MOUNTING DIMENSIONS



Dimensions



Terminal Arrangement/
Internal Connections
(Bottom view)





HJR4102

SPECIFICATION

FILE NUMBER: P-08KA201A

DATE: 2001/11/02



■ Features

- Small size and low cost
- DIP standard terminals
- Several sensitivity
- Sealed type available

■ CONTACT DATA

Contact Form	1A/1C	
Contact Material	Ag+Au	AgNi+Au
Contact Ratings	1A 120VAC/24VDC	3A 120VAC/24VDC
Max Switching Voltage	240VAC/60VDC	240VAC/60VDC
Max Switching Current	1A	3A
Max Switching Power	120VA/30W	360VA/90W
Contact Resistance	100m Ω Max	at 6VDC 1A
Life Expectancy Electrical	100, 000	Operations(at30Operations/minute)
Mechanical	10, 000, 000	Operations

■ GENERAL DATA

Insulation Resistance	100M Ω Min at 500VDC	
Dielectric Strength Between Open Contacts	500VAC(for one minute)	
Between Contacts and coil	1000VAC(for one minute)	
Operate Time	5ms	
Release Time	5ms	
Temperature Range	-25°C to+55°C	
Shock Resistance	Operating Extremes	10G
	Damage Limits	50G
Vibration Resistance	10-55Hz,1.5mm	
Humidity	40-85%	
Weight	Approx. 3.5g	
Safety Standard	UL E173485	

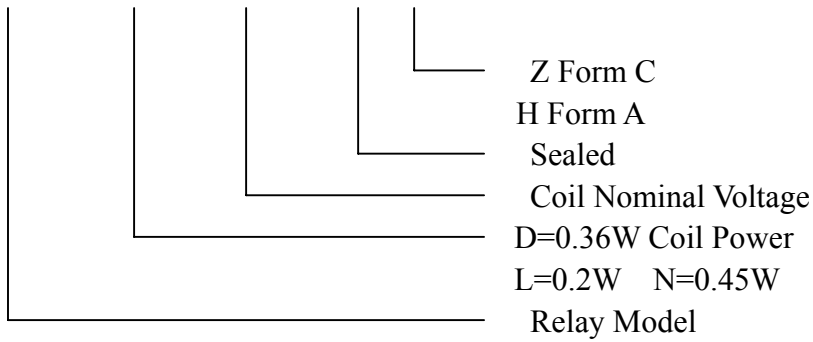


■ COIL DATA

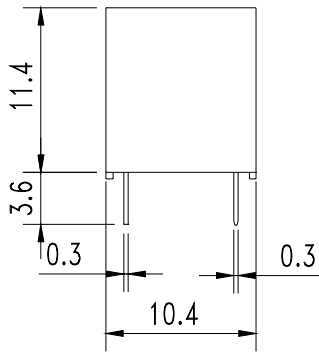
Nominal Voltage (VDC)	Coil Resistance at 20±10%(Ω)			Max Operate Voltage VDC	Min Release Voltage VDC	Max Applicable Voltage VDC
	0.2W	0.36W	0.45W			
3	45	25	20	2.25	0.3	3.9
5	125	70	56	3.75	0.5	6.5
6	180	100	80	4.5	0.6	7.8
9	405	220	180	6.75	0.9	11.7
12	720	400	320	9	1.2	15.6
24	2800	1600	1280	18	2.4	31.2

■ ORDERING CODE

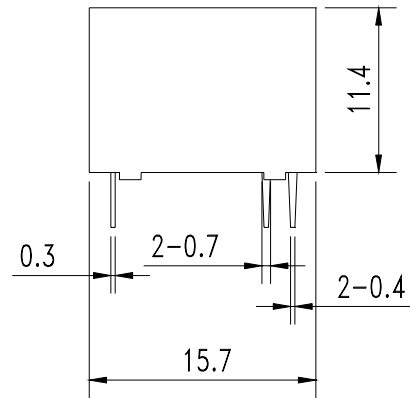
HJR4102 D--12VDC--S--Z



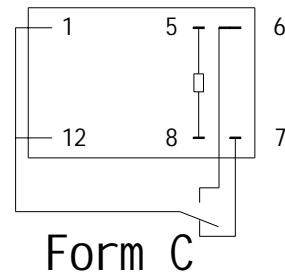
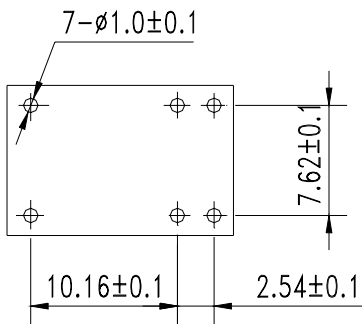
OVERALL AND MOUNTING DIMENSIONS



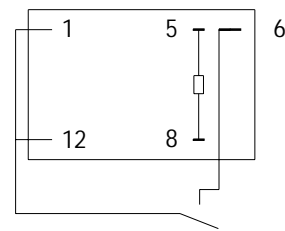
Dimensions



Terminal Arrangement/
Internal Connections
(Bottom view)



Form C



Form A

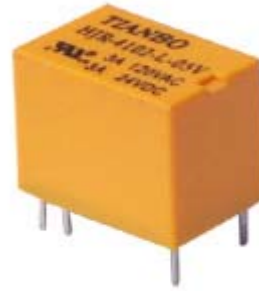


HJR4102E

SPECIFICATION

FILE NUMBER: P-08KA301A

DATE: 2001/11/02



■ Features

- Small size and low cost
- DIP standard terminals
- Several sensitivity
- Sealed type available

■ CONTACT DATA

Contact Form	1A/1C	
Contact Material	Ag+Au	AgNi+Au
Contact Ratings	1A 120VAC/24VDC	3A 120VAC/30VDC
Max Switching Voltage	240VAC/60VDC	240VAC/60VDC
Max Switching Current	1A	3A
Max Switching Power	120VA/30W	360VA/90W
Contact Resistance	100m Ω Max	at 6VDC 1A
Life Expectancy Electrical	100,000	Operations(at30Operations/minute)
Mechanical	10,000,000	Operations

■ GENERAL DATA

Insulation Resistance	100M Ω Min at 500VDC	
Dielectric Strength Between Open Contacts	500VAC(for one minute)	
Between Contacts and coil	1000VAC(for one minute)	
Operate Time	5ms	
Release Time	5ms	
Temperature Range	-25°C to+55 °C	
Shock Resistance	Operating Extremes	10G
	Damage Limits	50G
Vibration Resistance	10-55Hz,1.5mm	
Humidity	40-85%	
Weight	Approx 3.5g	
Safety Standard	UL E173485	

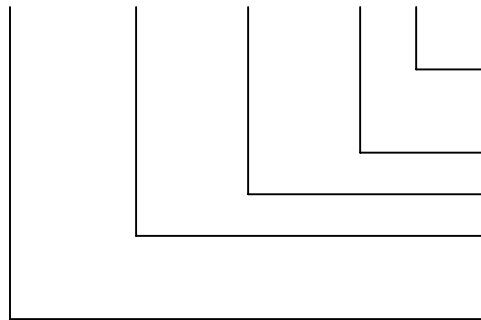


■ COIL DATA

Nominal Voltage (VDC)	Coil Resistance at 20±10%(Ω)			Max Operate Voltage VDC	Min Release Voltage VDC	Max Applicable Voltage VDC
	0.2W	0.36W	0.45W			
3	45	25	20	2.25	0.3	3.9
5	125	70	56	3.75	0.5	6.5
6	180	100	80	4.5	0.6	7.8
9	405	220	180	6.75	0.9	11.7
12	720	400	320	9	1.2	15.6
24	2800	1600	1280	18	2.4	31.2

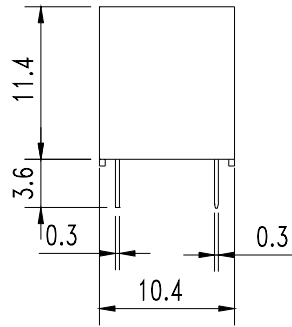
■ ORDERING CODE

HJR4102E D--12VDC--S--Z

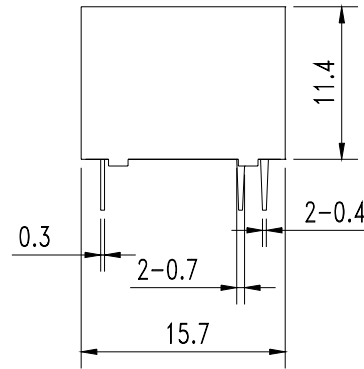


- Z Form C
- H Form A
- Sealed
- Coil Nominal Voltage
- D=0.36W Coil Power
- L=0.2W N=0.45W
- Relay Model

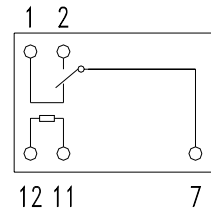
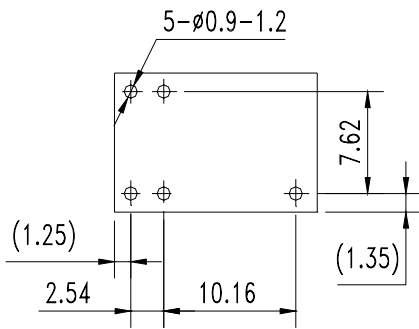
OVERALL AND MOUNTING DIMENSIONS



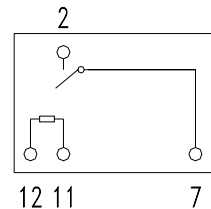
Dimensions



Terminal Arrangement/
Internal Connections
(Bottom view)



FormC



FormA



HJR1-2C

SPECIFICATION

FILE NUMBER: P-08KA401A

DATE: 2001/11/02



■ Features

- DPDT configuration
- High sensitivity
- DIP standard terminals
- Sealed version

■ CONTACT DATA

Contact Form	2C	
Contact Material	Ag+Au	AgNi+Au
Contact Ratings	0.5A 120VAC/1A 24VDC	1A 120VAC/2A 24VDC
Max Switching Voltage	240VAC/60VDC	
Max Switching Current	1A	2A
Max Switching Power	60VA/30W	120VA/60W
Contact Resistance	100m Ω Max	at 6VDC 1A
Life Expectancy Electrical	100,000	Operations(at30Operations/minute)
Machanical	10,000,000	Operations

■ GENERAL DATA

Insulation Resistance	100M Ω Min at 500VDC	
Dielectric Strength Between Open Contacts	500/750VAC (for one minute/sec)	
Between Contacts and coil	1000/1250VAC (for one minute/sec)	
Operate Time	6ms	
Release Time	4ms	
Temperature Range	-30°C to+70 °C	
Shock Resistance	Operating Extremes	10G
	Damage Limits	50G
Vibration Resistance	10-55Hz, 1.5mm	
Humidity	40-85%	
Weight	Approx.5g	
Safety Standard	UL:E173485 cUL. TUV:R9859574	



■ COIL DATA

Nominal Voltage (VDC)	Coil Resistance at 20±10%(Ω)			Max Operate Voltage VDC	Min Release Voltage VDC	Max Applicable Voltage VDC
	0.2W	0.36W	0.45W			
3	45	25	20	2.25	0.3	3.9
5	125	70	56	3.75	0.5	6.5
6	180	100	80	4.5	0.6	7.8
9	405	220	180	6.75	0.9	11.7
12	720	400	320	9	1.2	15.6
24	2800	1600	1280	18	2.4	31.2
48		6400±15%	5100±15%	36	4.8	62.4

HJR1-2C

SPECIFICATION

FILE NUMBER: P-08KA401A

DATE: 2001/11/02



■ Features

- DPDT configuration
- High sensitivity
- DIP standard terminals
- Sealed version

■ CONTACT DATA

Contact Form	2C	
Contact Material	Ag+Au	
Contact Ratings	0.5A 120VAC	1A 24VDC
Max Switching Voltage	240VAC/60VDC	
Max Switching Current	2A	
Max Switching Power	240VA/60W	
Contact Resistance	100m Ω Max	at 6VDC 1A
Life Expectancy Electrical	100,000	Operations(at30Operations/minute)
Machanical	10,000,000	Operations



■ GENERAL DATA

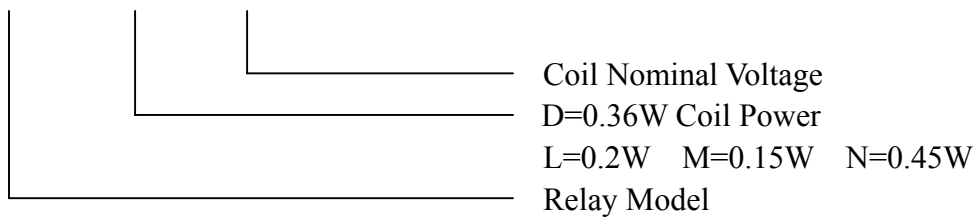
Insulation Resistance		100M Ω Min at 500VDC
Dielectric Strength Between Open Contacts		500(for one minute)
Between Contacts and coil		1000(for one minute)
Operate Time		8ms
Release Time		4ms
Temperature Range		-30 °C to+70 °C
Shock Resistance	Operating Extremes	10G
	Damage Limits	50G
Vibration Resistance		10-55Hz,1.5mm
Humidity		40-85%
Weight		Approx.5g
Safety Standard		UL:E173485 cUL. TUV:R9859574

■ COIL DATA

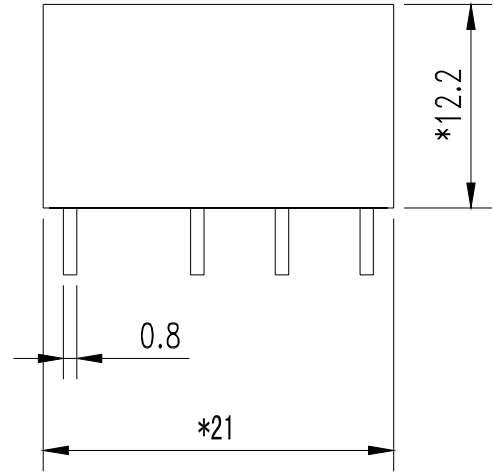
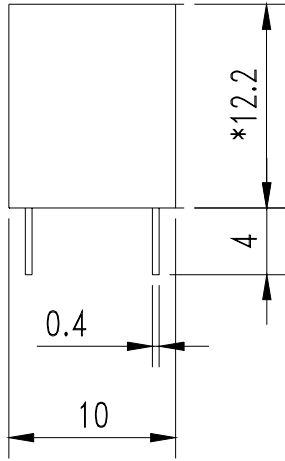
Nominal Voltage (VDC)	Coil Resistance at 20±10%(Ω)	Max Operate Voltage	Min Release Voltage	Max Applicable Voltage
	0.15W	VDC	VDC	VDC
3	60	2.4	0.15	3.9
5	167	4	0.25	6.5
6	240	4.8	0.3	7.8
9	540	7.2	0.45	11.7
12	960	9.6	0.6	15.6

■ ORDERING CODE

HJR1-2C D--12VDC



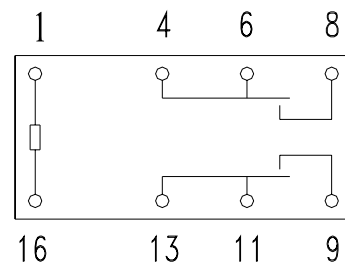
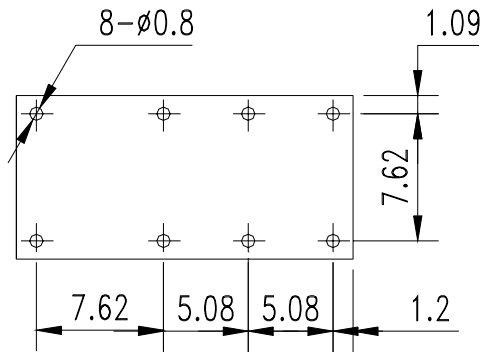
OVERALL AND MOUNTING DIMENSIONS



*(1)11.8 x20.3 (2)12.2x21

Dimensions

Terminal Arrangement/
Internal Connections
(Bottom view)





HJR-3FF

SPECIFICATION

FILE NUMBER: P-08KA501A

DATE: 2001/11/02



■ Features

10A switching capability

Small footprint

Sealed type available

■ CONTACT DATA

Contact Form	1A/1C	
Contact Material	AgCdO	AgSnO
Contact Ratings	1A:10A 240VAC, 15A 12VDC(TUV) 12A 120VAC/24VDC	1C: 7A 240VAC/10A 120VAC/24VDC 5A 240VAC(TUV)
Max Switching Voltage	250VAC/30VDC	
Max Switching Current	15A	
Max Switching Power	2770VA/240W	
Contact Resistance	100m Ω Max	at 6VDC 1A
Life Expectancy Electrical	100,000	Operations(at30Operations/minute)
Machanical	10,000,000	Operations

■ GENERAL DATA

Insulation Resistance	100M Ω Min at 500VDC	
Dielectric Strength Between Open Contacts	750VAC(for one minute)	
Between Contacts and coil	1500VAC(for one minute)	
Operate Time	10ms	
Release Time	5ms	
Temperature Range	-40°C to+70 °C	
Shock Resistance	Operating Extremes	10G
	Damage Limits	100G
Vibration Resistance	10-50Hz 1.5mm	
Humidity	40—85%	
Weight	Approx 10g	
Safety Standard	UL:E 173485 TUV:R 9859574,CH0062184-2001	

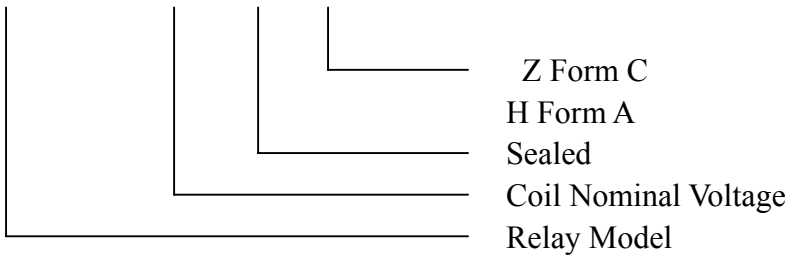


■ COIL DATA

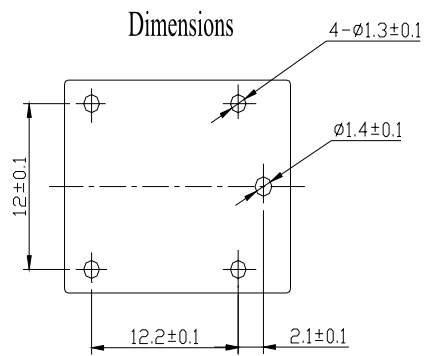
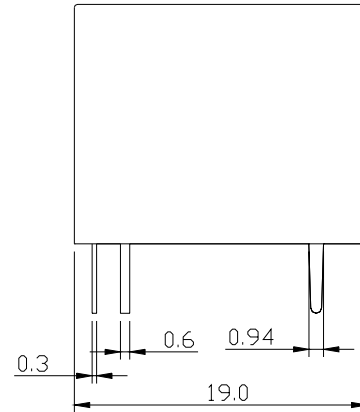
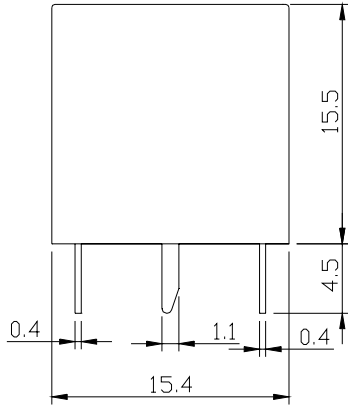
Nominal Voltage (VDC)	Coil Resistance at 20±10% (Ω)		Max Operate Voltage VDC	Min Release Voltage VDC	Max Applicable Voltage VDC
	0.36W	0.45W			
3	25 Ω		2.25	0.3	3.9
5	70 Ω		3.75	0.5	6.5
6	100 Ω		4.5	0.6	7.8
9	225 Ω		6.75	0.9	11.7
12	400 Ω		9	1.2	15.6
18	900 Ω		13.5	1.8	23.4
24	1600 Ω		18	2.4	31.2
48	6400Ω ±15%	5100Ω ±15%	36	4.8	62.4

■ ORDERING CODE

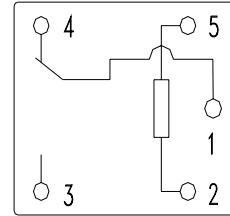
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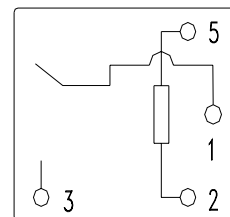
OVERALL AND MOUNTING DIMENSIONS



Terminal Arrangement/
Internal Connections
(Bottoms view)



Form C



Form A



HJR-21FF

SPECIFICATION

FILE NUMBER: P-08KA601A

DATE: 2001/11/02



■ Features

- 10A switching capability
- SPST-NO configuration
- Small footprint
- Sealed version available

■ CONTACT DATA

Contact Form	1A/1C	
Contact Material	AgCdO	AgSnO
Contact Ratings	1A:12A 240VAC 15A 12VDC(TUV) 15A 120VAC/24VDC	1C:10A 240VAC/12A 120VAC/240VDC 7A 240VAC(TUV)
Max Switching Voltage	250VAC/30VDC	
Max Switching Current	15A	
Max Switching Power	2770VA/240W	
Contact Resistance	100m Ω Max	at 6VDC 1A
Life Expectancy Electrical	100,000	Operations(at30Operations/minute)
Machanical	10,000,000	Operations

■ GENERAL DATA

Insulation Resistance	100M Ω Min at 500VDC	
Dielectric Strength Between Open Contacts	750VAC(for one minute)	
Between Contacts and coil	1500VAC(for one minute)	
Operate Time	10ms	
Release Time	5ms	
Temperature Range	-40°C to+70 °C	
Shock Resistance	Operating Extremes	10G
	Damage Limits	100G
Vibration Resistance	10-55Hz,1.5mm	
Humidity	40-85%	
Weight	Approx 13g	
Safety Standard	TUV R9859574 UL:E173485, CH0062182-2001	

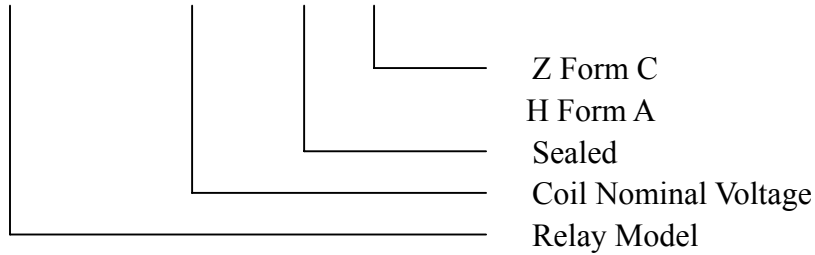


■ COIL DATA

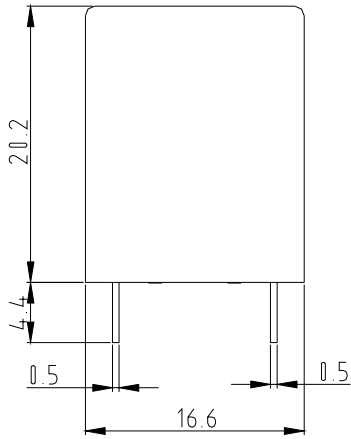
Nominal Voltage (VDC)	Coil Resistance at 20±10% (Ω)		Max Operate Voltage VDC	Min Release Voltage VDC	Max Applicable Voltage VDC
	0.36W	0.45W			
3	25		2.25	0.3	3.9
5	70		3.75	0.5	6.5
6	100		4.5	0.6	7.8
9	225		6.75	0.9	11.7
12	400		9	1.2	15.6
24	1600		18	2.4	31.2
48	6400±15%	5100±15%	36	4.8	62.4

■ ORDERING CODE

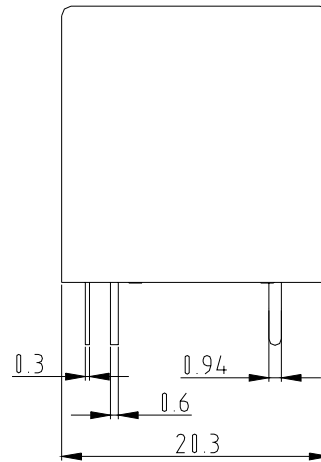
HJR-21FF---12VDC--S--H



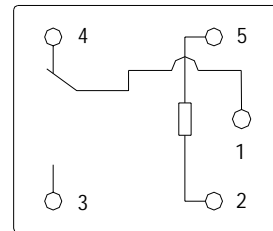
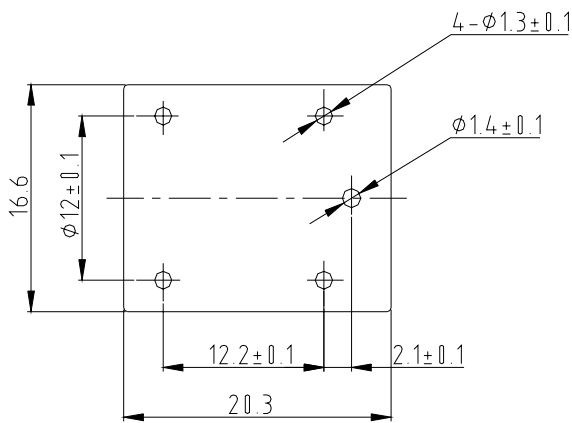
OVERALL AND MOUNTING DIMENSIONS



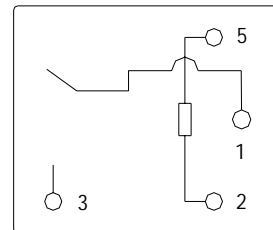
Dimensions



Terminal Arrangement/
Internal Connections
(Bottom view)



Form C



Form A



HJR-7FF

SPECIFICATION

FILE NUMBER: P-08KA701A

DATE: 2001/11/02



■ Features

- Extremely low cost
- SPST-NO & SPDP configuration
- Standard PC layout
- Sealed type available

■ CONTACT DATA

Contact Form	1A/1C	
Contact Material	AgCdO	AgSnO
Contact Ratings	1A:10A 240VAC 12A 120VAC/24VDC	1C:10A 120VAC 7A 240VAC/24VDC
Max Switching Voltage	250VAC/30VDC	
Max Switching Current	12A	
Max Switching Power	2770VA/240W	
Contact Resistance	100m Ω Max	at 6VDC 1A
Life Expectancy Electrical	100,000	Operations(at30Operations/minute)
Machanical	10,000,000	Operations

■ GENERAL DATA

Insulation Resistance	100M Ω Min at 500VDC	
Dielectric Strength Between Open Contacts	750VAC(for one minute)	
Between Contacts and coil	1500VAC(for one minute)	
Operate Time	10ms	
Release Time	5ms	
Temperature Range	-40°C to+70 °C	
Shock Resistance	Operating Extremes	10G
	Damage Limits	100G
Vibration Resistance	10-55Hz,1.5mm	
Humidity	40-85%	
Weight	Approx 10g	
Safety Standard	UL:E173485	

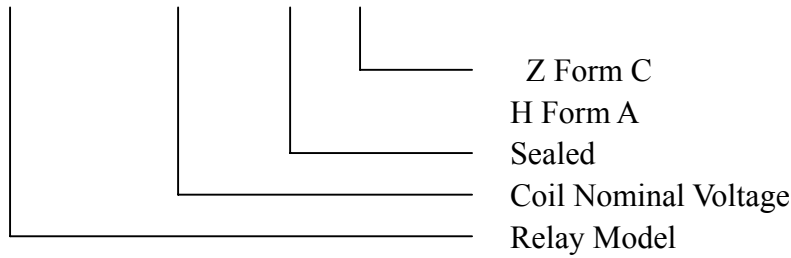


■ COIL DATA

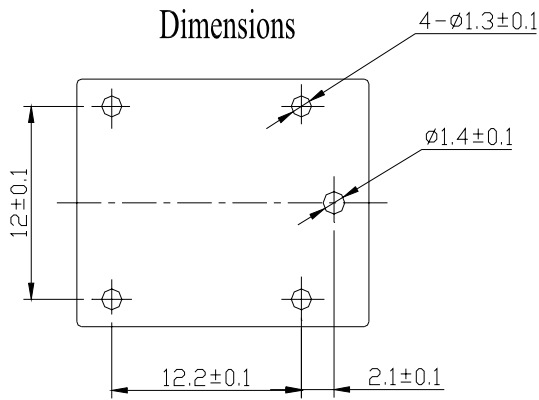
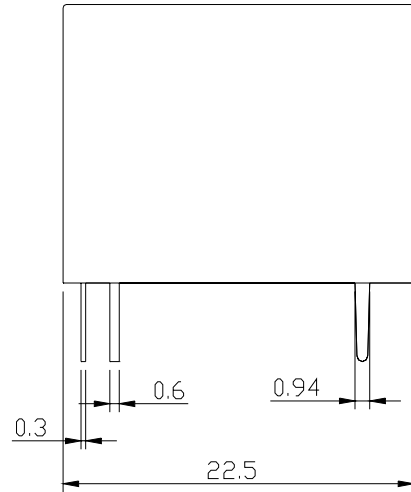
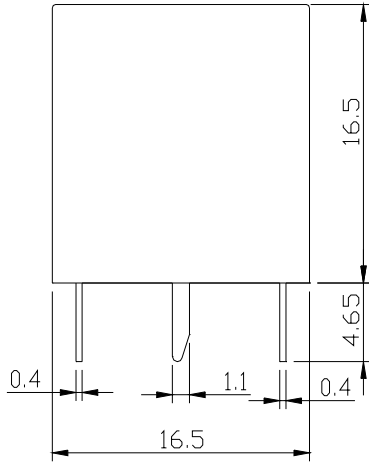
Nominal Voltage (VDC)	Coil Resistance at 20±10%(Ω)			Max Operate Voltage VDC	Min Release Voltage VDC	Max Applicable Voltage VDC
	0.2W	0.36W	0.45W			
3		25		2.25	0.3	3.9
5		70		3.75	0.5	6.5
6		100		4.5	0.6	7.8
9		225		6.75	0.9	11.7
12		400		9	1.2	15.6
24		1600		18	2.4	31.2
48		6400±15%	5100±15%	36	4.8	62.4

■ ORDERING CODE

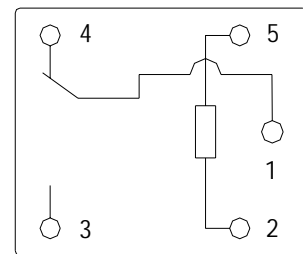
HJR-7FF--12VDC---S---Z



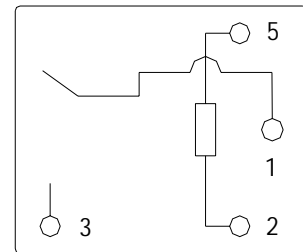
OVERALL AND MOUNTING DIMENSIONS



Terminal Arrangement/
Internal Connections
(Bottom view)



Form C



Form A



HJR-78F(TRKM)

SPECIFICATION

FILE NUMBER: P-08KE201A

DATE: 2001/11/02



■ Features

20A switching capability

Small size auto relay

■ CONTACT DATA

Contact Form	1A/1C	
Contact Material	AgNi, AgSnO	
Contact Ratings	NC:20A/14VDC NC:12A/14VDC 1C:7A 120VAC	
Max Switching Voltage	16VDC	
Max Switching Current	25A	
Max Switching Power	400W,840VA	
Contact Resistance	100m Ω Max	at 6VDC 1A
Life Expectancy Electrical	100,000	Operations(at30Operations/minute)
Mechanical	10,000,000	Operations

■ GENERAL DATA

Insulation Resistance	100M Ω Min at 500VDC	
Dielectric Strength Between Open Contacts	500VAC(for one minute)	
Between Contacts and coil	500VAC(for one minute)	
Operate Time	10ms	
Release Time	5ms	
Temperature Range	-40°C to+85°C	
Shock Resistance	Operating Extremes	10G
	Damage Limits	100G
Vibration Resistance	10-55Hz,2.0mm	
Humidity	35-85%	
Weight	Approx. 6g	
Safety Standard	UL:E173485	



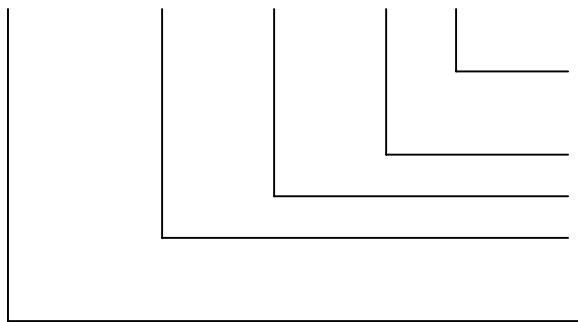
COIL DATA

Nominal Voltage (VDC)	Coil Resistance at 20±10%(Ω)		Max Operate Voltage (VDC)	Min Release Voltage (VDC)	Max Applicable Voltage (VDC)
	0.6W	0.8W			
6	60	45	3.9	0.48	7.8
9	135	100	5.85	0.72	11.7
12	240	180	7.8	0.96	15.6
24	960	720	15.6	1.92	31.2

ORDERING CODE

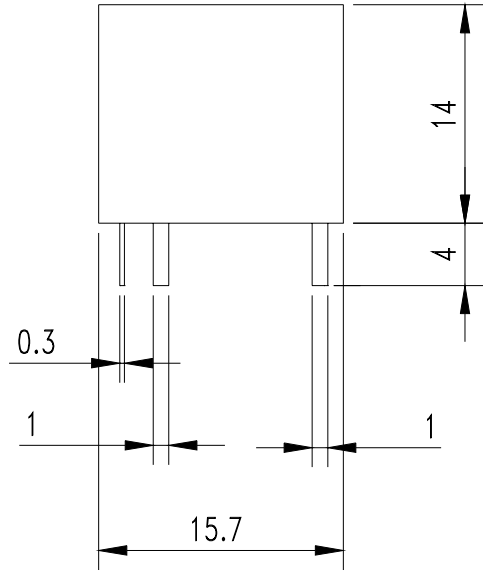
HJR-78F(TRKM)

D--12VDC--S--Z

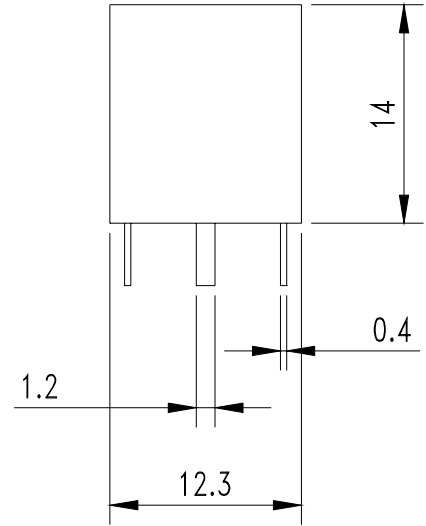


- Z Form C
- H Form A
- Sealed
- Coil Nominal Voltage
- D=0.8W Coil Power
- L=0.6W
- Relay Model

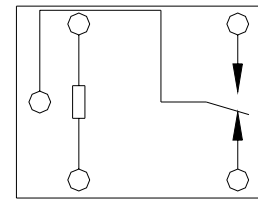
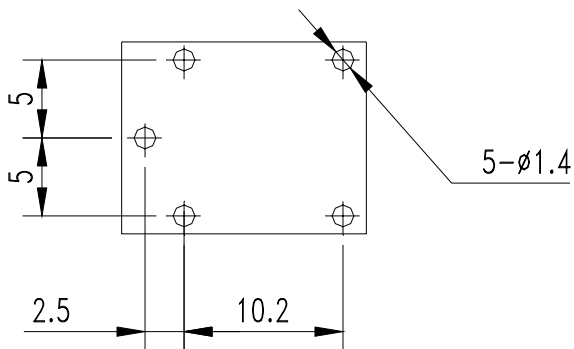
OVERALL AND MOUNTING DIMENSIONS



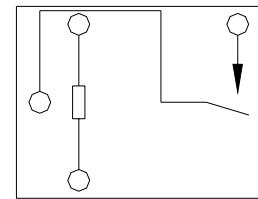
Dimensions



Terminal Arrangement/
Internal connections
(Bottom view)



Form C



Form A

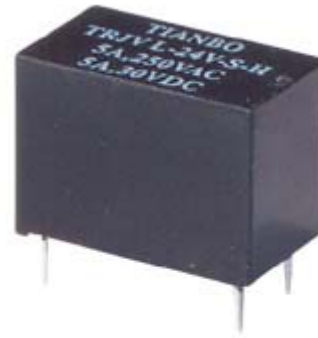


TRJV

SPECIFICATION

FILE NUMBER: P-08KF201A

DATE: 2002/1/28



■ Features

- Low profile and space saving
- High sensitivity in small package
- Nominal power:0.2 to 0.3W
- High insulation with reinforced insulation system
- Plastic sealed type

■ CONTACT DATA

Contact Form	1A(SPST-NO)	
Contact Material	SILVER ALLOY	
Contact Ratings	5A 250VAC / 5A30VDC	
Max Switching Voltage	250VAC / 150VDC	
Max Switching Current	5A	
Max Switching Power	1250VA / 150W	
Contact Resistance	100m Ω Max	at 6VDC 1A
Life Expectancy Electrical	100,000	Operations(at30Operations/minute)
Machanical	5,000,000	Operations

■ GENERAL DATA

Insulation Resistance	1000M Ω Min at 500VDC
Dielectric Strength Between Open Contacts	750VAC(for one minute)
Between Contacts and coil	5000VAC(for one minute)
Operate Time	8ms
Release Time	4ms
Temperature Range	-40°C to+70 °C
Shock Resistance	10G 11ms
Vibration Resistance	10-55Hz,1.5mm
Humidity	40-85%
Weight	Approx 4.5g
Safety Standard	

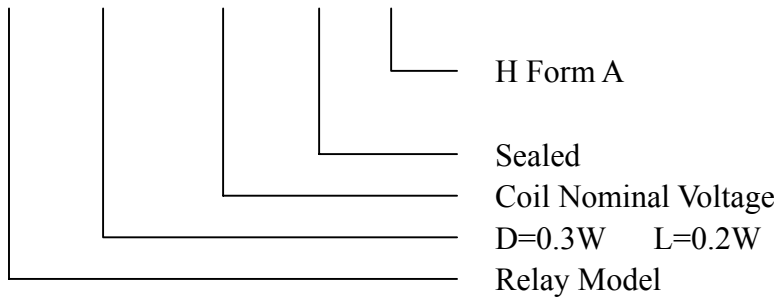


■ COIL DATA

Nominal Voltage (VDC)	Coil Resistance at 20±10%(Ω)		Max Operate Voltage (VDC)	Min Release Voltage (VDC)	Max Applicable Voltage (VDC)
	0.2W	0.3W			
3	45	30	2.25	0.15	3.9
5	125	83	3.75	0.25	6.5
6	180	120	4.5	0.3	7.8
9	405	270	6.75	0.45	11.7
12	720	480	9	0.6	15.6
18	1620	1080	13.5	0.9	23.4
24	2880	1920	18	1.2	31.2
48	0.36W 6400±15%(Ω)		36	2.4	62.4

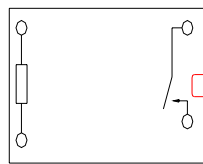
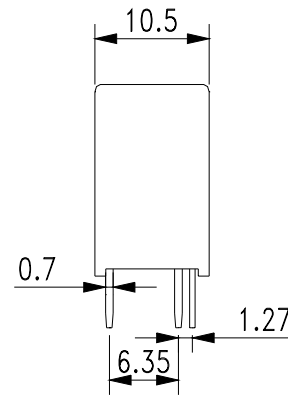
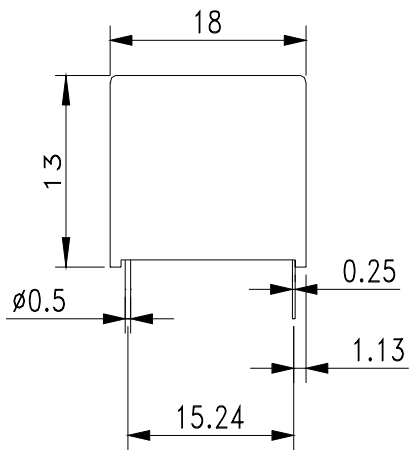
■ ORDERING CODE

TRJV D--12VDC--S--H

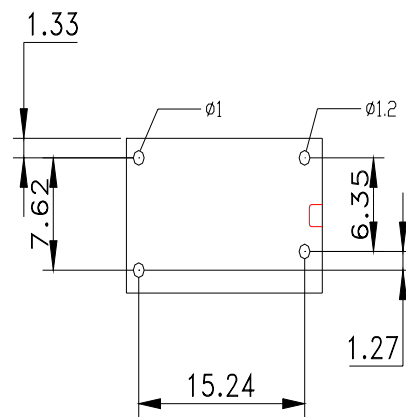


OVERALL AND MOUNTING DIMENSIONS

DIMENSIONS



BOTTOM VIEW



PCB BOTTOM VIEW



TRG1

SPECIFICATION

FILE NUMBER: P-08KB101A

DATE: 2001/11/02



■ Features

- 10A switching capability
- SPST-NO & SPDP configuration
- Standard PC layout
- Sealed type available

■ CONTACT DATA

Contact Form	1A/1C	
Contact Material	AgCdO	AgSnO
Contact Ratings	1A:10A/120VAC 5A/240VAC/30VDC 1A-L,1C:3A 240VAC/30VDC	
Max Switching Voltage	250VAC/30VDC	
Max Switching Current	10A	
Max Switching Power	1200VA/150W	
Contact Resistance	100M Ω max	at 6VDC 1A
Life Expectancy Electrical	100,000	Operations(at30Operations/minute)
Machanical	10,000,000	Operations

■ GENERAL DATA

Insulation Resistance	100M Ω Min at 500VDC	
Dielectric Strength Between Open Contacts	750VAC(for one minute)	
Between Contacts and coil	2500VAC(for one minute)	
Operate Time	8ms	
Release Time	5ms	
Temperature Range	-40°C to+70°C	
Shock Resistance	Operating Extremes	10G
	Damage Limits	100G
Vibration Resistance	10-55Hz,1.5mm	
Humidity	40-85%	
Weight	Approx 6g	
Safety Standard	UL: E173485, CH0062183-2001	

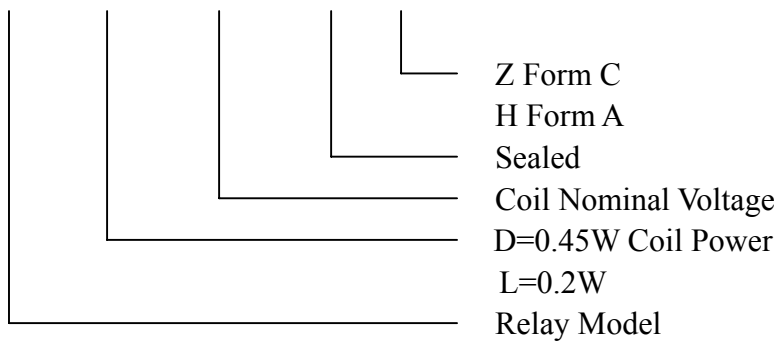


■ COIL DATA

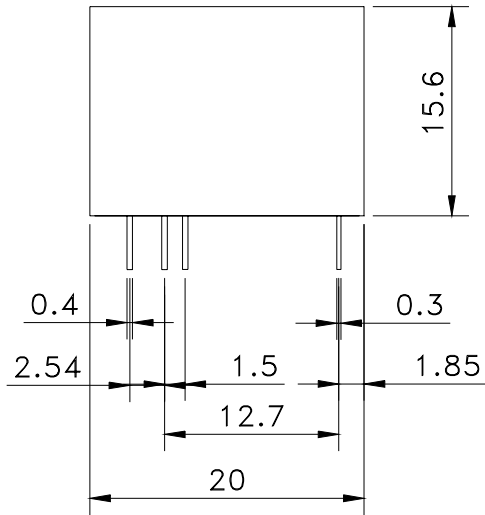
Nominal Voltage (VDC)	Coil Resistance at 20±10%(Ω)		Max Operate Voltage VDC	Min Release Voltage VDC	Max Applicable Voltage VDC
	0.2W	0.45W			
3	45	20	2.25	0.3	3.9
5	125	56	3.75	0.5	6.5
6	180	80	4.5	0.6	7.8
9	405	180	6.75	0.9	11.7
12	720	320	9	1.2	15.6
24	2880	1280	18	2.4	31.2
48		5100±15%	36	4.8	62.4

■ ORDERING CODE

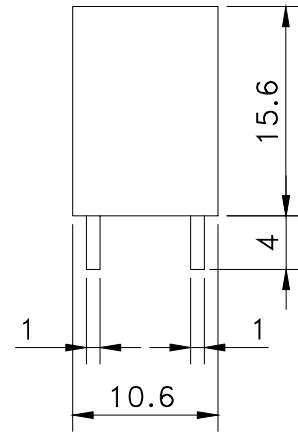
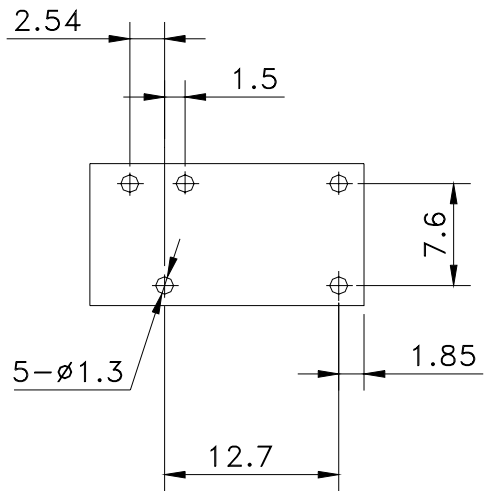
TRG1 D--12VDC--S--Z



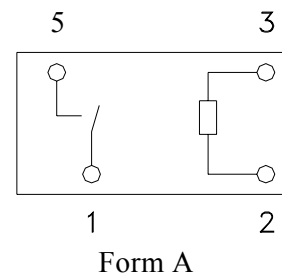
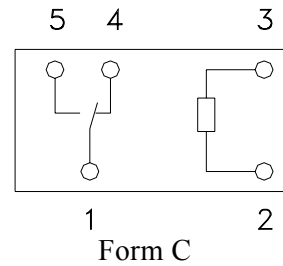
OVERALL AND MOUNTING DIMENSIONS



Dimensions



Terminal Arrangement/
Internal Connections
(Bottom view)





TRA1

SPECIFICATION

FILE NUMBER: P-08KC101A

DATE: 2001/11/02



■ Features

- 10A switching capability
- SPST-NO & SPDP configuration
- Small footprint
- Sealed version available

■ CONTACT DATA

Contact Form	1A/1C	
Contact Material	AgCdO	AgSnO
Contact Ratings	10A 240VAC	10A 30VDC
Max Switching Voltage	250VAC/30VDC	
Max Switching Current	12A	
Max Switching Power	2500VA/300W	
Contact Resistance	100m Ω Max	at 6VDC 1A
Life Expectancy Electrical	100,000	Operations(at30Operations/minute)
Machanical	10,000,000	Operations

■ GENERAL DATA

Insulation Resistance	100M Ω Min at 500VDC	
Dielectric Strength Between Open Contacts	1000VAC(for one minute)	
Between Contacts and coil	5000VAC(for one minute)	
Operate Time	20ms	
Release Time	10ms	
Temperature Range	-30°C to+70 °C	
Shock Resistance	Operating Extremes	10G
	Damage Limits	100G
Vibration Resistance	10-55Hz,1.5mm	
Humidity	40-85%	
Weight	Approx 14g	
Safety Standard	UL:E173485	

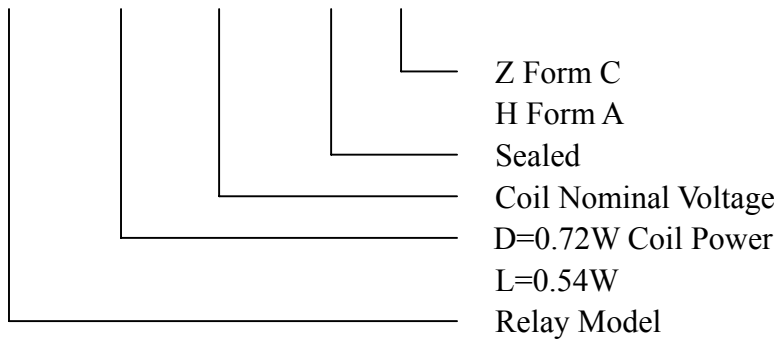


■ COIL DATA

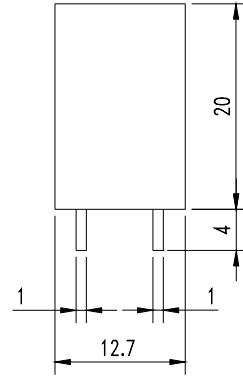
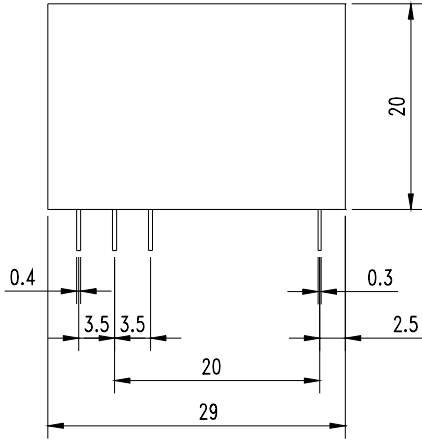
Nominal Voltage (VDC)	Coil Resistance at 20±10% (Ω)		Max Operate Voltage VDC	Min Release Voltage VDC	Max Applicable Voltage VDC
	0.54W	0.72W			
3	17	13	2.4	0.15	3.9
5	46	35	4	0.25	6.5
6	67	50	4.8	0.3	7.8
9	150	110	7.2	0.45	11.7
12	270	200	9.6	0.6	15.6
24	1050	800	19.2	1.2	31.2
48	4250±15%	3200	38.4	2.4	62.4

■ ORDERING CODE

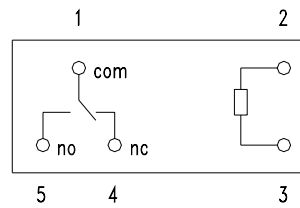
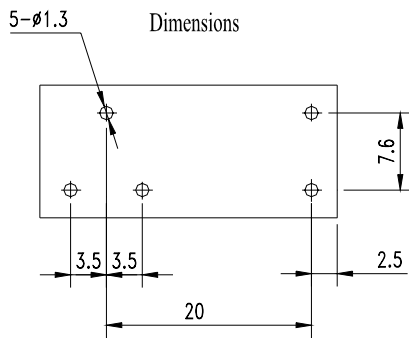
TRA1 D--12VDC S--Z



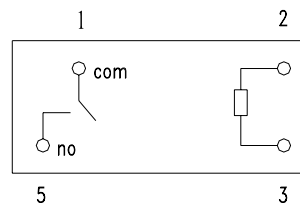
OVERALL AND MOUNTING DIMENSIONS



Terminal Arrangement/
Internal Connections
(Bottom view)



Form C



Form A



TRA2

SPECIFICATION

FILE NUMBER: P-08KC201A

DATE: 2001/11/02



■ Features

16 switching capability

SPST-NO & SPDP configuration

5kv dielectric between coil and contacts

■ CONTACT DATA

Contact Form	1A/1C	
Contact Material	AgCdO	AgSnO
Contact Ratings	16A 240VAC	16A 30VDC
Max Switching Voltage	250VAC/30VDC	
Max Switching Current	20A	
Max Switching Power	4800VA/480W	
Contact Resistance	100m Ω Max	at 6VDC 1A
Life Expectancy Electrical	100,000	Operations(at30Operations/minute)
Machanical	10,000,000	Operations

■ GENERAL DATA

Insulation Resistance	100M Ω Min at 500VDC	
Dielectric Strength Between Open Contacts	1000VAC(for one minute)	
Between Contacts and coil	5000VAC(for one minute)	
Operate Time	20ms	
Release Time	10ms	
Temperature Range	-40°C to+70°C	
Shock Resistance	Operating Extremes	10G
	Damage Limits	100G
Vibration Resistance	10-55Hz,1.5mm	
Humidity	40-85%	
Weight	Approx 14g	
Safety Standard	UL:E173485	

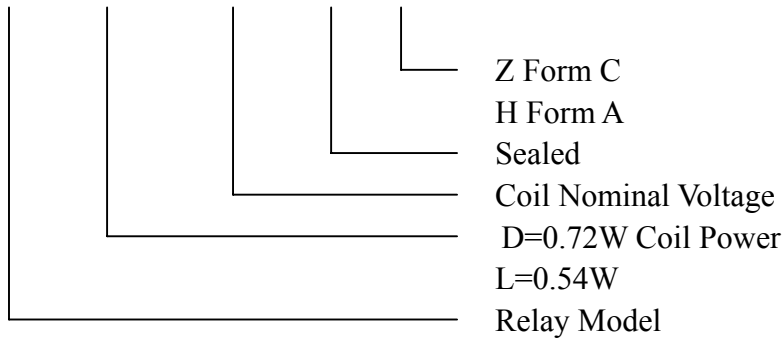


■ COIL DATA

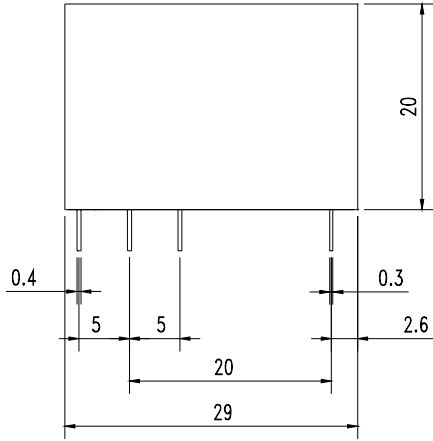
Nominal Voltage (VDC)	Coil Resistance at 20±10%(Ω)		Max Operate Voltage VDC	Min Release Voltage VDC	Max Applicable Voltage VDC
	0.54W	0.72W			
3	17	13	2.4	0.15	3.9
5	46	35	4	0.25	6.5
6	67	50	4.8	0.3	7.8
9	150	110	7.2	0.45	11.7
12	270	200	9.6	0.6	15.6
24	1050	800	19.2	1.2	31.2
48	4250±15%	3200	38.4	2.4	62.4

■ ORDERING CODE

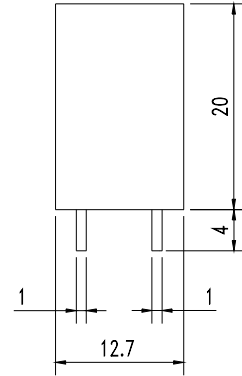
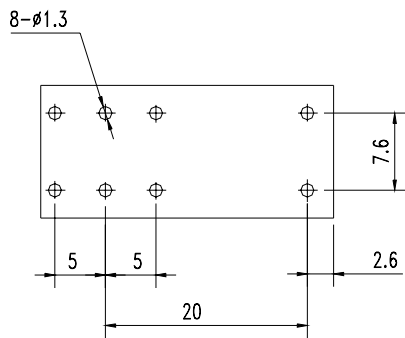
TRA2 D--12VDC--S--Z



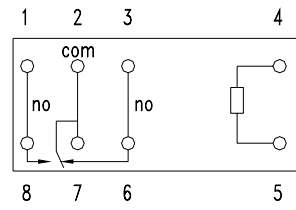
OVERALL AND MOUNTING DIMENSIONS



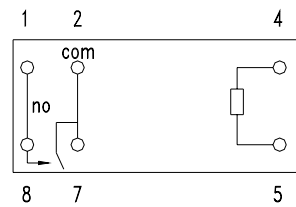
Dimensions



Terminal Arrangement/
Internal Connections
(Bottom view)



Form C



Form A



TRA3

SPECIFICATION

FILE NUMBER: P-08KC301A

DATE: 2001/11/02



■ Features

Creepage distance: 8.0mm Min

Au-clad contact available

■ CONTACT DATA

Contact Form	2A/2C	
Contact Material	AgCdO	AgSnO
Contact Ratings	5A 240VAC	5A 30VDC
Max Switching Voltage	250VAC/30VDC	
Max Switching Current	8A	
Max Switching Power	1250VA/240W	
Contact Resistance	100m Ω Max	at 6VDC 1A
Life Expectancy Electrical	100,000	Operations(at30Operations/minute)
Machanical	10,000,000	Operations

■ GENERAL DATA

Insulation Resistance	100M Ω Min at 500VDC	
Dielectric Strength Between Open Contacts	1000VAC(for one minute)	
Between Contacts and coil	5000VAC(for one minute)	
Operate Time	20ms	
Release Time	10ms	
Temperature Range	-30°Cto+70 °C	
Shock Resistance	Operating Extremes	10G
	Damage Limits	100G
Vibration Resistance	10-55Hz,1.5mm	
Humidity	40-85%	
Weight	Approx 14g	
Safety Standard	UL:E173485	

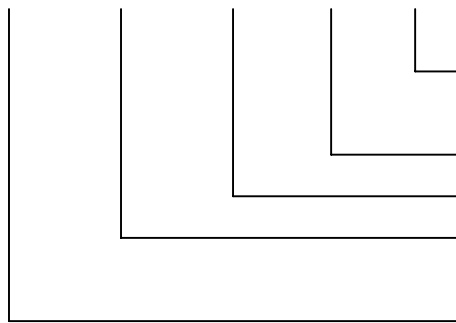


■ COIL DATA(2Z)

Nominal Voltage (VDC)	Coil Resistance at 20±10%(Ω)		Max Operate Voltage VDC	Min Release Voltage VDC	Max Applicable Voltage VDC
	0.54W	0.72W			
3	17	13	2.4	0.15	3.9
5	46	35	4	0.25	6.5
6	67	50	4.8	0.3	7.8
9	150	110	7.2	0.45	11.7
12	270	200	9.6	0.6	15.6
24	1050	800	19.2	1.2	31.2
48	4250±15%	3200	38.4	2.4	62.4

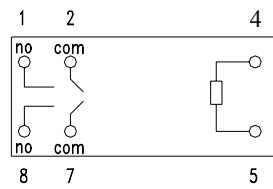
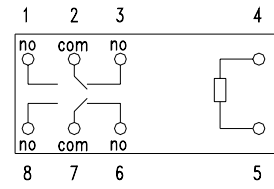
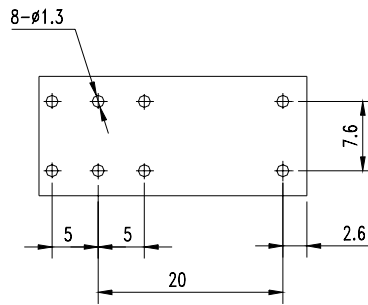
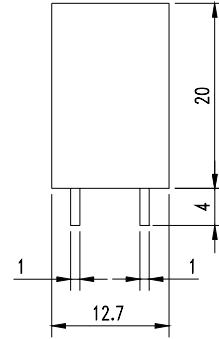
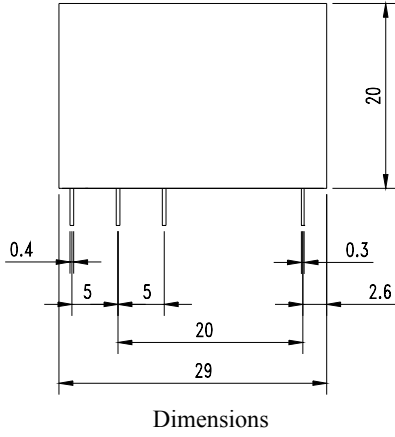
■ ORDERING CODE

TRA3 D--12VDC--S---2Z



- 2Z Form 2C
- 2H Form 2A
- Sealed
- Coil Nominal Voltage
- D=0.72W Coil Power
- L=0.54W
- Relay Model

OVERALL AND MOUNTING DIMENSIONS





TRA4

SPECIFICATION

FILE NUMBER: P-08KB201A

DATE: 2001/7/19



■ Features

1 form A contact arrangement
 Immersion cleanable, sealed version available
 Applications include appliance, HAVC, CTV,
 Monitor, Emergency lighting

■ CONTACT DATA

Contact Form	1A	
Contact Material	AgSnO	
Contact Ratings	10A 250VAC/30VDC	
Max Switching Voltage	250VAC/110VDC	
Max Switching Current	12A	
Max Switching Power	2500VA/300W	
Contact Resistance	100m Ω Max	at 6VDC 1A
Life Expectancy Electrical	100,000	Operations(at30Operations/minute)
Machanical	10,000,000	Operations

■ GENERAL DATA

Insulation Resistance	100M Ω Min at 500VDC	
Dielectric Strength Between Open Contacts	1000VAC(for one minute)	
Between Contacts and coil	4000VAC(for one minute)	
Operate Time	20ms	
Release Time	10ms	
Temperature Range	-40°C to+70 °C	
Shock Resistance	Operating Extremes	10G
	Damage Limits	100G
Vibration Resistance	10-55Hz,1.5mm	
Humidity	20-85%	
Weight	Approx 11g	
Safety Standard		

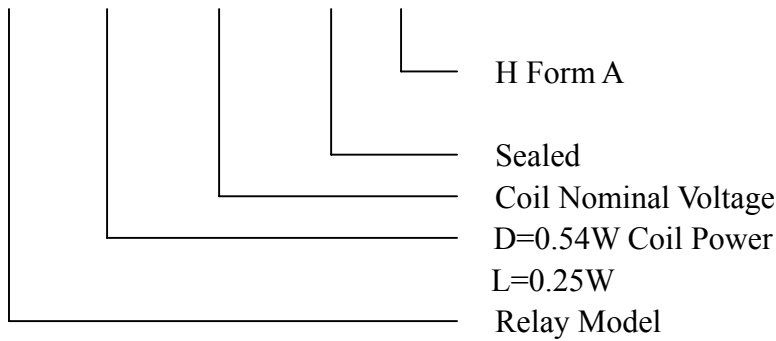


COIL DATA

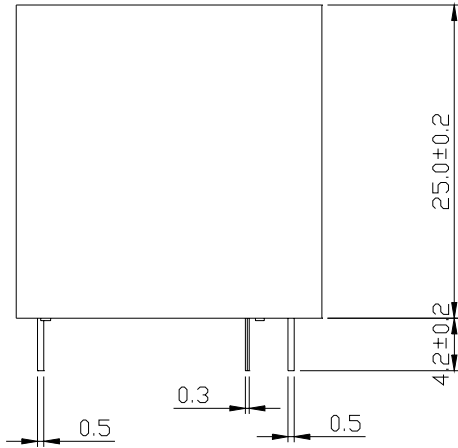
Nominal Voltage (VDC)	Coil Resistance at 20±10%(Ω)		Max Operate Voltage VDC	Min Release Voltage VDC	Max Applicable Voltage VDC
	0.25W	0.54W			
3	36	16.7	2.25	0.3	3.9
5	100	46.3	3.75	0.5	6.5
6	144	66.7	4.5	0.6	7.8
9	324	150	6.75	0.9	11.7
12	576	266.7	9	1.2	15.6
24	2304	1066.7	18	2.4	31.2
48	9216±15%	4266.7±15%	36	4.8	62.4

ORDERING CODE

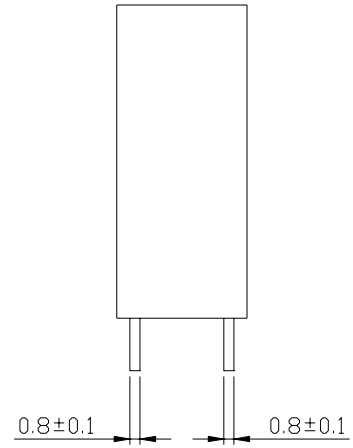
TRA4 D--12VDC--S--H



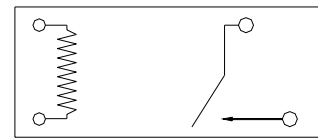
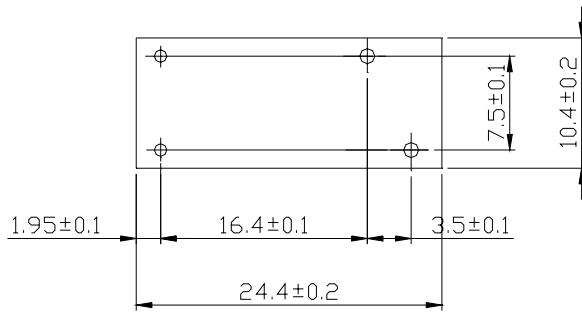
OVERALL AND MOUNTING DIMENSIONS



Dimensions



Terminal Arrangement/
Internal Connections
(Bottom view)





TRA5

SPECIFICATION

FILE NUMBER: P-08KB301A

DATE: 2001/7/19



■ Features

- 2 form A contact arrangement
- Immersion cleanable, sealed version available
- Meet 3000V dielectric voltage between coil and contacts (1.2/50us)

■ CONTACT DATA

Contact Form	2A	
Contact Material	AgSnO	
Contact Ratings	3A 125VAC/24VDC	5A 250VAC/30VDC
Max Switching Voltage	250VAC/30VDC	
Max Switching Current	7A	
Max Switching Power	1250VA/150W	
Contact Resistance	100m Ω Max	at 6VDC 1A
Life Expectancy Electrical	100,000	Operations(at30Operations/minute)
Machanical	10,000,000	Operations

■ GENERAL DATA

Insulation Resistance	100M Ω Min at 500VDC	
Dielectric Strength Between Open Contacts	1000VAC(for one minute)	
Between Contacts and coil	4000VAC(for one minute)	
Operate Time	20ms	
Release Time	10ms	
Temperature Range	-40°C to+70 °C	
Shock Resistance	Operating Extremes	10G
	Damage Limits	100G
Vibration Resistance	10-55Hz,1.5mm	
Humidity	20-85%	
Weight	Approx 13g	
Safety Standard		

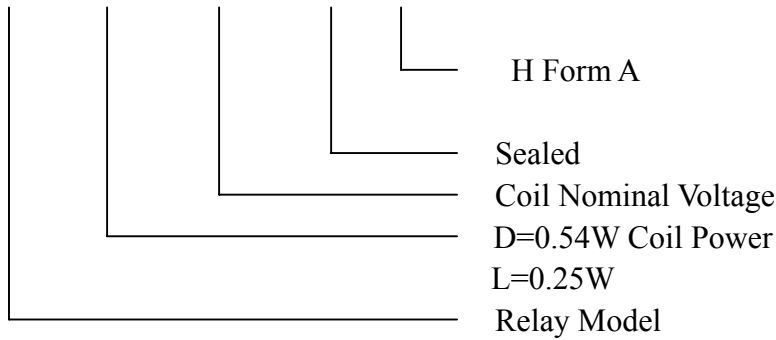


■ COIL DATA

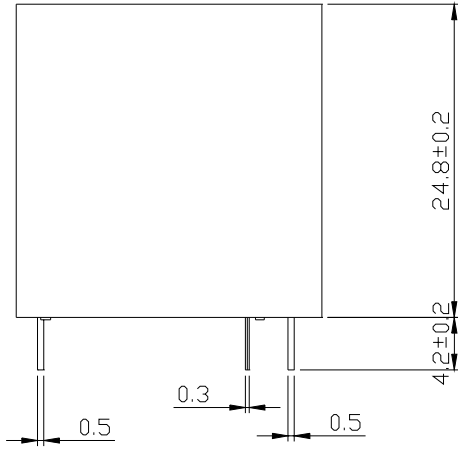
Nominal Voltage (VDC)	Coil Resistance at 20±10%(Ω)		Max Operate Voltage VDC	Min Release Voltage VDC	Max Applicable Voltage VDC
	0.25W	0.54W			
3	36	16.7	2.25	0.3	3.9
5	100	46.3	3.75	0.5	6.5
6	144	66.7	4.5	0.6	7.8
9	324	150	6.75	0.9	11.7
12	576	266.7	9	1.2	15.6
24	2304	1066.7	18	2.4	31.2
48	9216±15%	4266.7±15%	36	4.8	62.4

■ ORDERING CODE

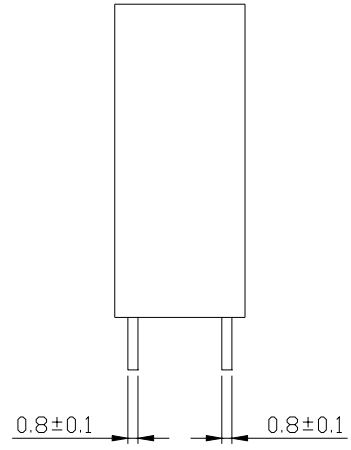
TRA5 D--12VDC--S---H



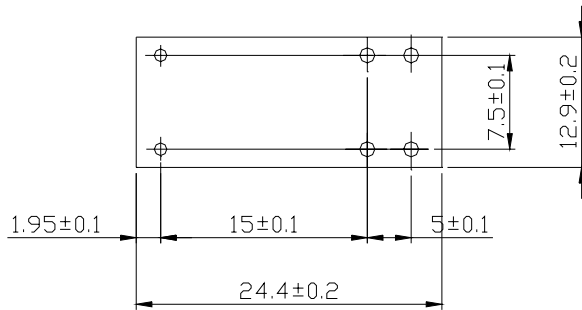
OVERALL AND MOUNTING DIMENSIONS



Dimensions



Terminal Arrangement/
Internal Connections
(Bottom view)





HJQ-14F

SPECIFICATION

FILE NUMBER: P-08KD201A

DATE: 2001/11/02



■ Features

- 10A switching capability
- SPST-NO & SPDP configuration
- Sealed type available

■ CONTACT DATA

Contact Form	1A/1C	
Contact Material	AgCdO/AgSnO	
Contact Ratings	10A 240VAC/30VDC	
Max Switching Voltage	250VAC/30VDC	
Max Switching Current	12A	
Max Switching Power	2500VA/300W	
Contact Resistance	100m Ω Max	at 6VDC 1A
Life Expectancy Electrical	100,000	Operations(at30Operations/minute)
Machanical	10,000,000	Operations

■ GENERAL DATA

Insulation Resistance	100MΩ Min at 500VDC	
Dielectric Strength Between Open Contacts	1000VAC(for one minute)	
Between Contacts and coil	5000VAC(for one minute)	
Operate Time	15ms	
Release Time	8ms	
Temperature Range	-30°C to +70 °C	
Shock Resistance	Operating Extremes	10G
	Damage Limits	100G
Vibration Resistance	10-55Hz,1.5mm	
Humidity	40-85%	
Weight	Approx 18g	
Safety Standard	CCEE CH0031717-99	

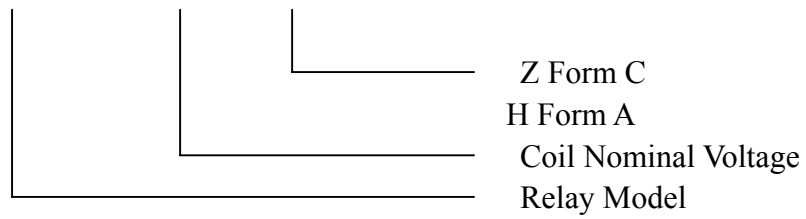


■ COIL DATA

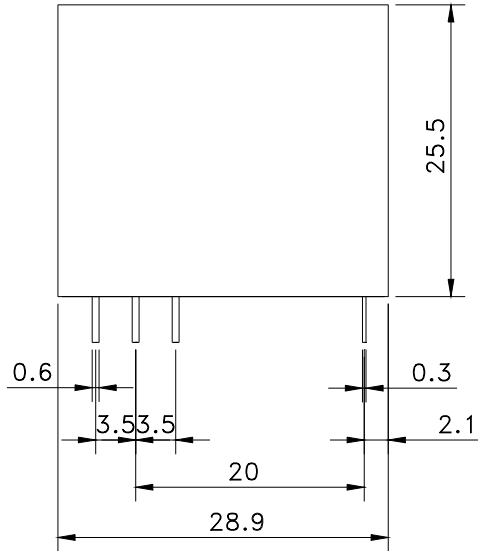
Nominal Voltage (VDC)	Coil Resistance at 20±10%(Ω)		Max Operate Voltage VDC	Min Release Voltage VDC	Max Applicable Voltage VDC
	0.54W	0.72W			
3	16.7	12.5	2.25	0.3	3.9
5	46.3	34.7	3.75	0.5	6.5
6	66.7	50	4.5	0.6	7.8
9	150	112.5	6.75	0.9	11.7
12	266.7	200	9	1.2	15.6
24	1067	800	18	2.4	31.2
48	4267	3200	36	4.8	62.4

■ ORDERING CODE

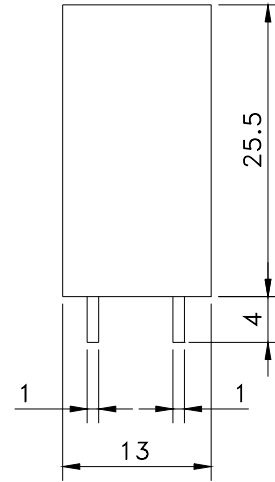
HJQ-14F---12VDC---Z



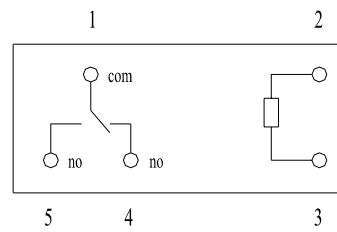
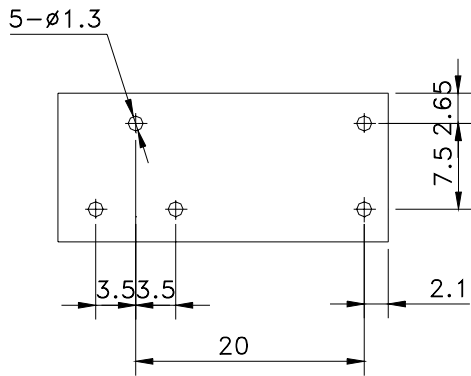
OVERALL AND MOUNTING DIMENSIONS



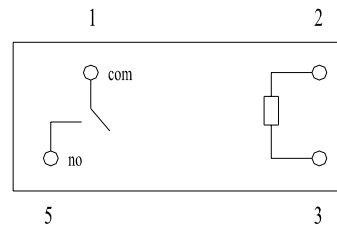
Dimensions



Terminal arrangement/
Internal connections
(Bottom view)



Form C



Form A



HJQ-13F

SPECIFICATION

FILE NUMBER: P-08KD101A

DATE: 2001/11/02

■ Features

15A transfer contacts

Au-clad contact available



■ CONTACT DATA

Contact Form	2C	1C
Contact Material	AgCdO	AgCdO
Contact Ratings	10A 240VAC/30VDC	16A240VAC/30VDC
Max Switching Voltage	250VAC/30VDC	
Max Switching Current	12A	20A
Max Switching Power	3000VA/360W	4000VA/480 W
Contact Resistance	100m Ω Max	at 6VDC 1A
Life Expectancy Electrical	100,000	Operations(at30Operations/minute)
Machanical	10,000,000	Operations

■ GENERAL DATA

Insulation Resistance	100M Ω Min at 500VDC	
Dielectric Strength Between Open Contacts	1000VAC(for one minute)	
Between Contacts and coil	1500VAC(for one minute)	
Operate Time	25ms	
Release Time	25ms	
Temperature Range	-40°C to+70 °C	
Shock Resistance	Operating Extremes	20G
	Damage Limits	100G
Vibration Resistance	10-55Hz,1.5mm	
Humidity	40-85%	
Weight	Approx 35g	
Safety Standard	CSA:203664	

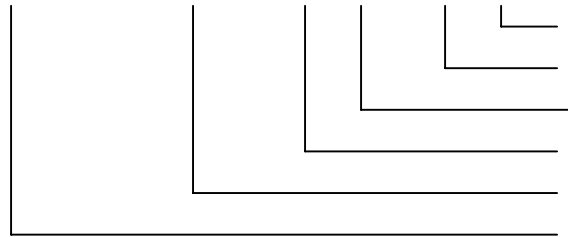


■ COIL DATA(2Z)

Nominal Voltage		Coil Resistance at 20±10%(Ω)		Max Operate Voltage		Min Release Voltage		Max Applicable Voltage	
5-110VDC	6-240VAC	VDC	VAC	VDC	VAC	VDC	VAC	VDC	VAC
		0.9W	1.2VA						
5	6	28	11.5	3.75	4.8	0.5	1.8	6.5	7.8
6	12	40	46	4.5	9.6	0.6	3.6	7.8	15.6
12	24	160	184	9	19.2	1.2	7.2	15.6	31.2
24	48	640	735	18	38.4	2.4	14.4	31.2	62.4
48	120	2560	4550±15%	36	96	4.8	36	62.4	156
110	220/240	13445	14400±15%	82.5	220	11	39.6	143	286/312

■ ORDERING CODE

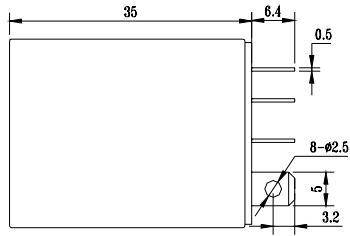
HJQ-13F--12VDC--2Z(P)----F----D



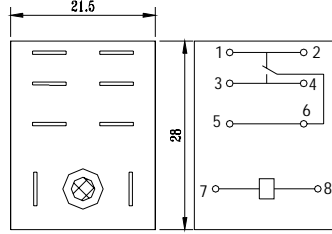
- With LED
- With Flange for 38mm pitch hole
- P: PCB Type Nil: B Type
- 1Z form 1C 2Z Form 2C
- Coil Nominal Voltage
- Relay Model



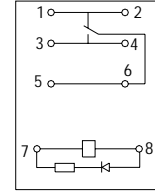
OVERALL AND MOUNTING DIMENSIONS



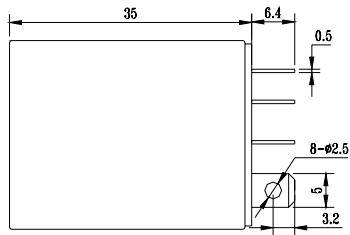
Dimensions



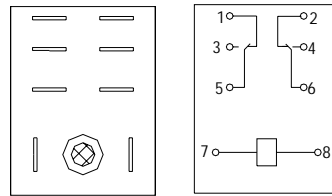
Terminal arrangement/
Internal connections
(Bottom view)



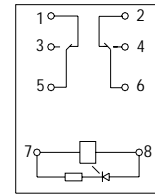
1ZD



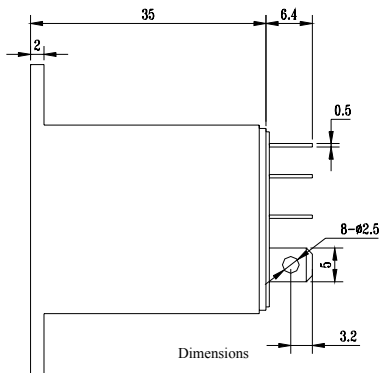
Dimensions



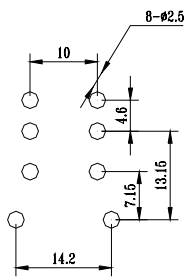
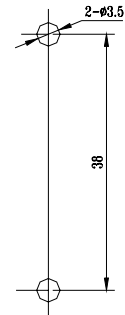
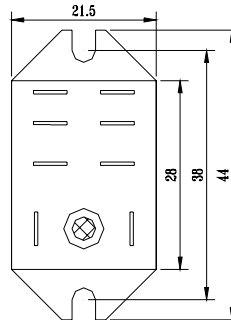
Terminal arrangement/
Internal connections
(Bottom view)



2ZD



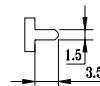
Dimensions



PCB Mounting



B Type



P Type



HJQ-18F(4453)

SPECIFICATION

FILE NUMBER: P-08KD301A

DATE: 2001/11/02



■ Features

2 to 3 pole configurations

Au-clad contact available

■ CONTACT DATA

Contact Form	2C/3C	
Contact Material	AgCdO	
Contact Ratings	5A 240VAC/30VDC	
Max Switching Voltage	250VAC/30VDC	
Max Switching Current	7A	
Max Switching Power	1750VA/210W	
Contact Resistance	100m Ω Max	at 6VDC 1A
Life Expectancy Electrical	100,000	Operations(at30Operations/minute)
Machanical	10,000,000	Operations

■ GENERAL DATA

Insulation Resistance	100M Ω Min at 500VDC	
Dielectric Strength Between Open Contacts	1000VAC(for one minute)	
Between Contacts and coil	1500VAC(for one minute)	
Operate Time	25ms	
Release Time	25ms	
Temperature Range	-40°C to+70 °C	
Shock Resistance	Operating Extremes	20G
	Damage Limits	100G
Vibration Resistancs	10-55Hz,1.5mm	
Humidity	40-85%	
Weight	Approx 32g	
Safety Standard	UL:E173485	

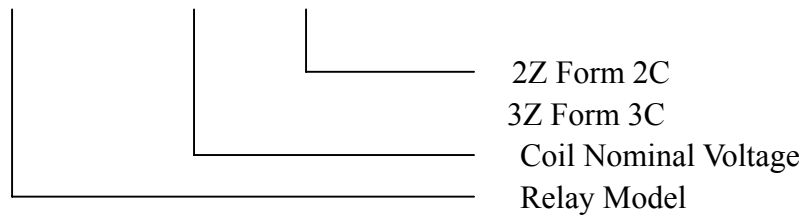


■ COIL DATA(2Z)

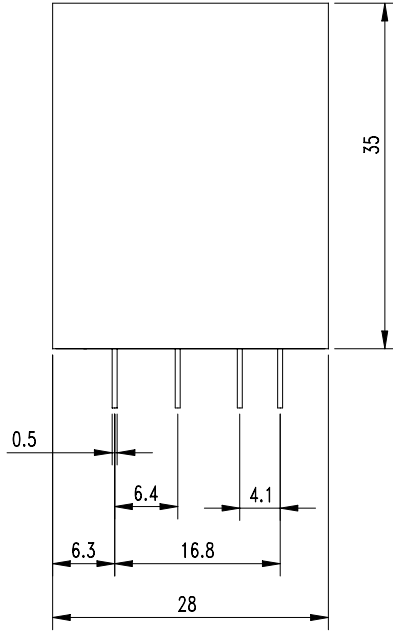
Nominal Voltage		Coil Resistance at 20±10%(Ω)		Max Operate Voltage		Min Release Voltage		Max Applicable Voltage	
5-110VDC	6-240VAC	VDC	VAC	VDC	VAC	VDC	VAC	VDC	VAC
		0.9W	1.2VA						
5	6	70	11.5	3.75	4.8	0.5	1.8		
6	12	100	46	4.5	9.6	0.6	3.6		
12	24	360	184	9	19.2	1.2	7.2		
24	48	650	735	18	38.4	2.4	14.4		
48	120	2600	4550±15%	36	96	4.8	36		
	220/240		14400±15%		176		72		

■ ORDERING CODE

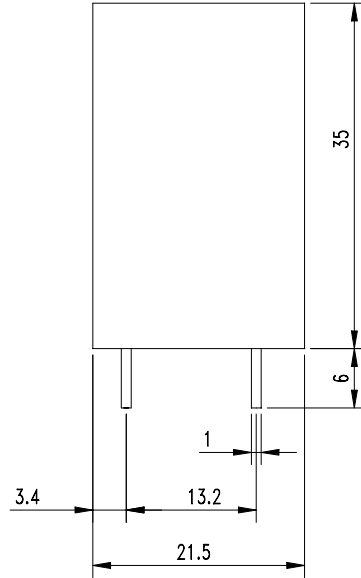
HJQ-18F---12VDC--2Z



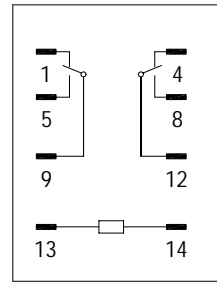
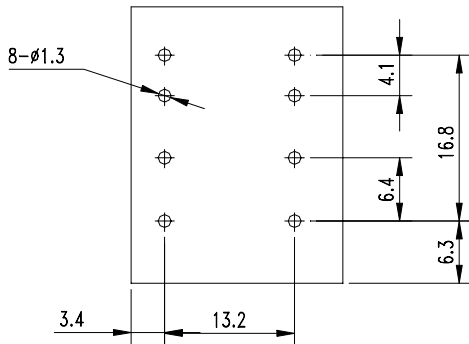
OVERALL AND MOUNTING DIMENSIONS



Dimensions

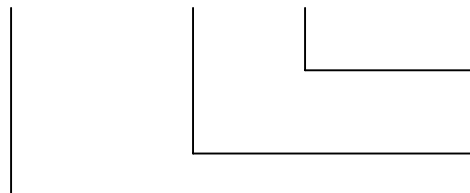


Terminal Arrangement/
Internal Connections
(Bottom view)



ORDERING CODE

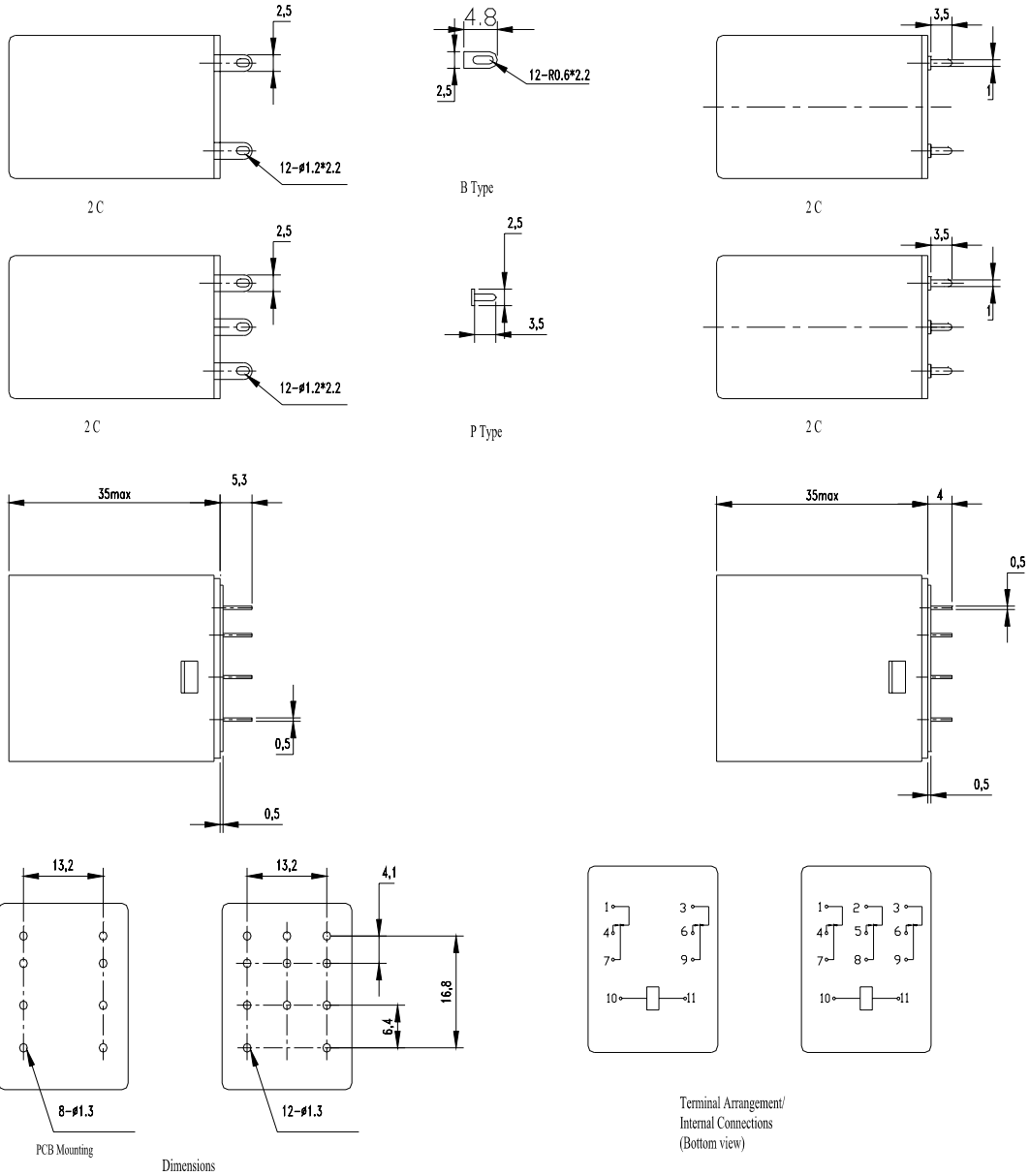
HJQ-18F---12VDC---2Z



2Z Form 2C
3Z Form 3C
Coil Nominal Voltage
Relay Model



OVERALL AND MOUNTING DIMENSIONS





HJQ-22F

SPECIFICATION

FILE NUMBER: P-08KD401A

DATE: 2001/11/02



■ Features

- 4 pole configurations
- Au-clad contact available

■ CONTACT DATA

Contact Form	4C/2C	
Contact Material	AgCdO	
Contact Ratings	5A 240VAC/30VDC	
Max Switching Voltage	250VAC/30VDC	
Max Switching Current	5A	
Max Switching Power	1750VA/210W	
Contact Resistance	100m Ω Max	at 6VDC 1A
Life Expectancy Electrical	100,000	Operations(at30Operations/minute)
Machanical	10,000,000	Operations

■ GENERAL DATA

Insulation Resistance	100MΩ Min at 500VDC	
Dielectric Strength Between Open Contacts	1000VAC(for one minute)	
Between Contacts and coil	1500VAC(for one minute)	
Operate Time	25ms	
Release Time	25ms	
Temperature Range	-40°C to+70 °C	
Shock Resistance	Operating Extremes	20G
	Damage Limits	100G
Vibration Resistance	10-55Hz,1.5mm	
Humidity	40-85%	
Weight	Approx 35g	
Safety Standard	CSA:203664 UL:E209198	

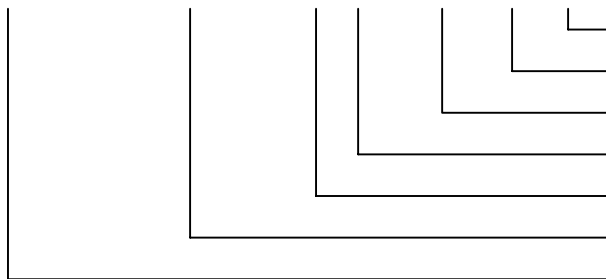


■ COIL DATA(4Z)

Nominal Voltage		Coil Resistance at 20±10%(Ω)		Max Operate Voltage		Min Release Voltage		Max Applicable Voltage	
5-110VDC	6-240VAC	VDC	VAC	VDC	VAC	VDC	VAC	VDC	VAC
		0.9W	1.2VA						
5	6	27.5	11.5	3.75	4.8	0.5	0.6	6.5	7.8
6	12	40	46	4.5	9.6	0.6	1.2	7.8	15.6
12	24	160	184	9	19.2	1.2	2.4	15.6	31.2
24	48	650	735	18	38.4	2.4	4.8	31.2	62.4
48	110	2600	4550±15%	36	88	4.8	11	62.4	143
110	120	11000	4550±15%	82.5	96	11	12	143	156
	220/240		14400±15%		176		24		286/312

■ ORDERING CODE

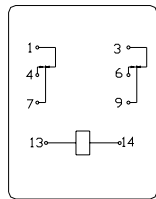
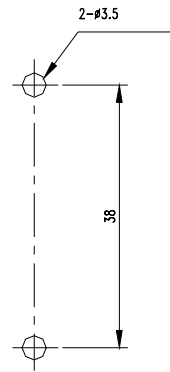
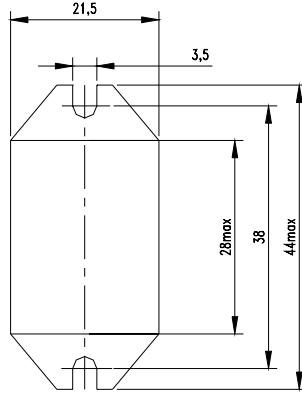
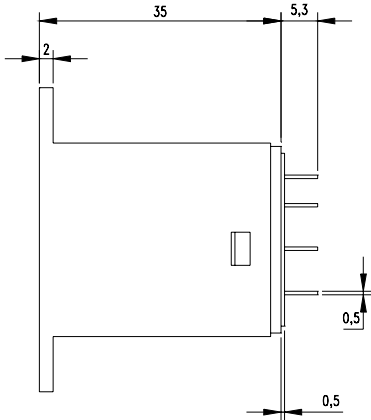
HJQ-22F-12VDC-4Z(P)---1---F--D



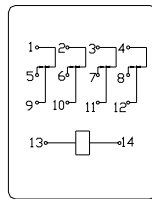
- With LED
- With Flange for 38mm pitch hole
- Bifurcated moving spring
- P: PCB Type Nil: B Type
- 2Z Form 2C 4Z Form 4C
- Coil Nominal Voltage
- Relay Model

OVERALL AND MOUNTING DIMENSIONS

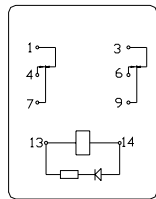
MOUNTING COVER



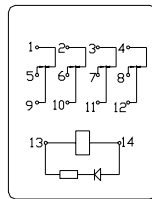
2C Terminal Arrangement/
Internal Connections
(Bottom view)



4C Terminal Arrangement/
Internal Connections
(Bottom view)

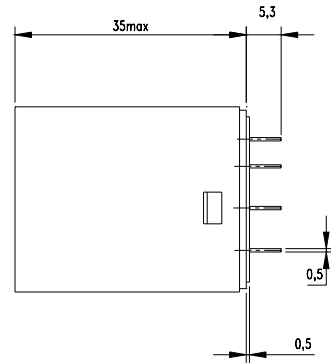
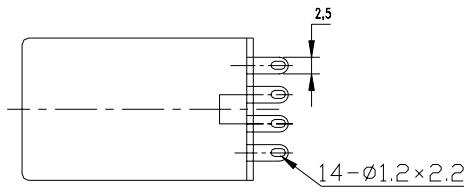


2CD

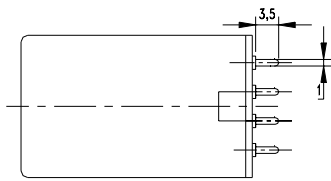


4CD

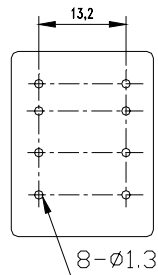
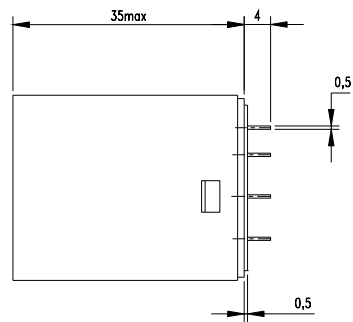
B Type Terminals



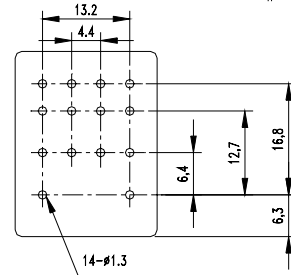
P Type Terminals



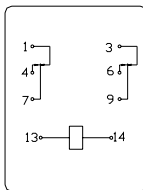
P Type PCB Mounting



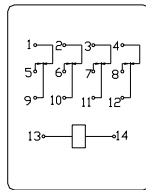
2C



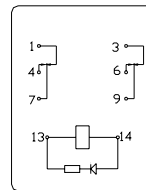
4C



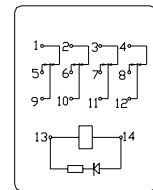
2C Terminal Arrangement/
Internal Connections
(Bottom view)



4C Terminal Arrangement/
Internal Connections
(Bottom view)



2CD



4CD



HJQ-15F

SPECIFICATION

FILE NUMBER: P-08KD501A

DATE: 2001/11/02



Features

- High power & low cost
- 30A switching capability
- Less than 1W coil power
- Open sealed type available

CONTACT DATA

Contact Form	1A,1B,1C	
Contact Material	AgCdO AgSnO	
Contact Ratings	1A: 25A 240VAC/20A 28VDC 30A240VAC 1B: 15A 240VAC/10A 28VDC 20A240VAC 1C:20/10A 240VAC/28VDC	
Max Switching Voltage	250VAC/30VDC	
Max Switching Current	30A	
Max Switching Power	6000VA/560W	
Contact Resistance	100m Ω Max at 6VDC 1A	
Life Expectancy Electrical	100,000	Operations(at30Operations/minute)
Machanical	10,000,000	Operations

GENERAL DATA

Insulation Resistance	100M Ω Min at 500VDC	
Dielectric Strength Between Open Contacts	1500VAC(1min 1mA)	
Between Contacts and coil	1500VAC(1min 1mA)	
Operate Time	15ms	
Release Time	10ms	
Temperature Range	-40°C to+70 °C	
Shock Resistance	Operating Extremes	10G
	Damage Limits	100G
Vibration Resistance	10-55Hz,1.5mm	
Humidity	40-85%	
Weight	Approx 36g	
Safety Standard	CCEE:CH0064848-2001	

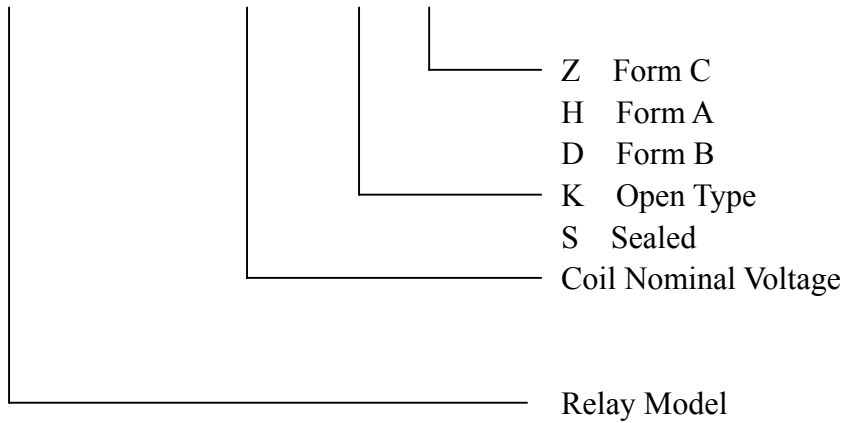


■ COIL DATA

Nominal Voltage (VDC)	Coil Resistance at 20±10%(Ω)			Max Operate Voltage VDC	Min Release Voltage VDC	Max Applicable Voltage VDC
			0.93W			
3			9.7	2.25	0.3	3.9
5			26.9	3.75	0.5	6.5
6			38.8	4.5	0.6	7.8
9			87.1	6.75	0.9	11.7
12			154.9	9	1.2	15.6
24			619.4	18	2.4	31.2
48			2477.5	36	4.8	62.4

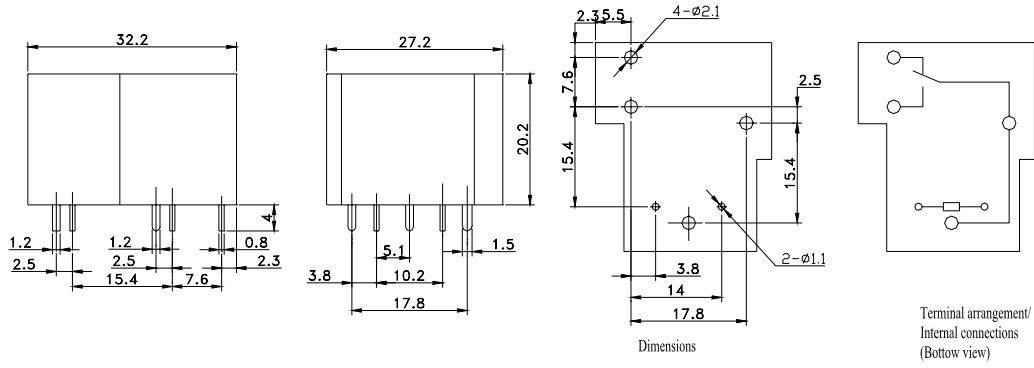
■ ORDERING CODE

HJQ-15F-----12VDC---S---Z

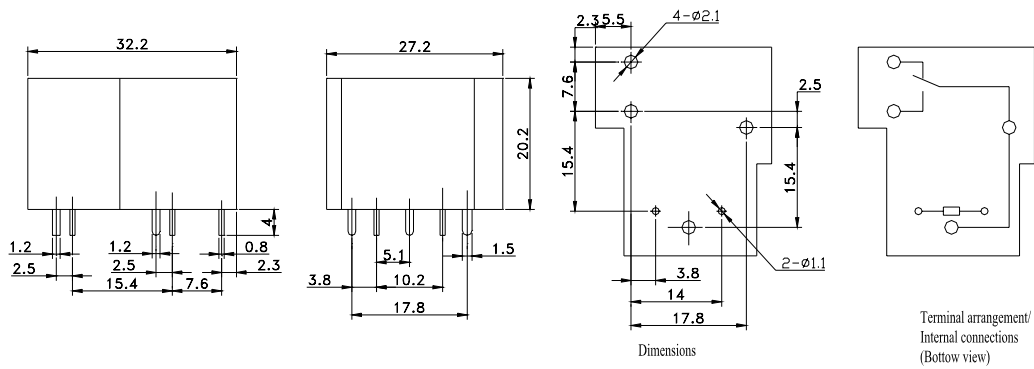


OVERALL AND MOUNTING DIMENSIONS

HJQ-15F

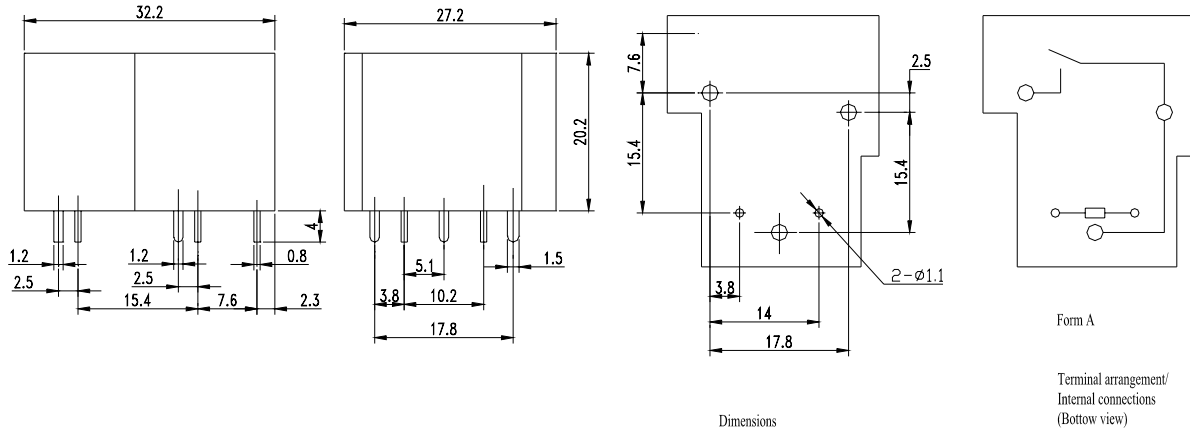


HJQ-15F(Open Type)

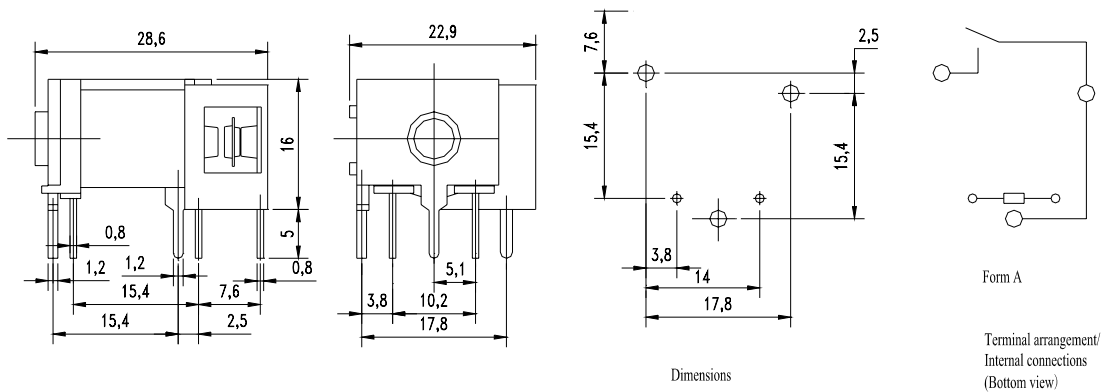




HJQ-15F



HJQ-15F(Open Type)





HJQ-15F-1

SPECIFICATION

FILE NUMBER: P-08KD501A

DATE: 2001/11/02



■ Features

QC & PC terminals

High dielectric strength 3000VAC

Optional flanged case for panel mounting

■ CONTACT DATA

Contact Form	1A,1B,1C
Contact Material	AgCdO AgSnO
Contact Ratings	1A: 25A 240VAC/20A 28VDC 30A240VAC 1B: 15A 240VAC/10A 28VDC 20A240VAC 1C: 20/10A 240VAC/28VDC
Max Switching Voltage	250VAC/30VDC
Max Switching Current	30A
Max Switching Power	6000VA/560W
Contact Resistance	100m Ω Max at 6VDC 1A
Life Expectancy Electrical	100,000 Operations(at30Operations/minute)
Mechanical	10,000,000 Operations

■ GENERAL DATA

Insulation Resistance	100M Ω Min at 500VDC	
Dielectric Strength Between Open Contacts	1500VAC(1min 1mA)	
Between Contacts and coil	1500VAC(1min 1mA)	
Operate Time	15ms	
Release Time	10ms	
Temperature Range	-40°C to+70 °C	
Shock Resistance	Operating Extremes	10G
	Damage Limits	100G
Vibration Resistance	10-55Hz,1.5mm	
Humidity	40-85%	
Weight	Approx. 36g	
Safety Standard	CCEE:CH0064848-2001	

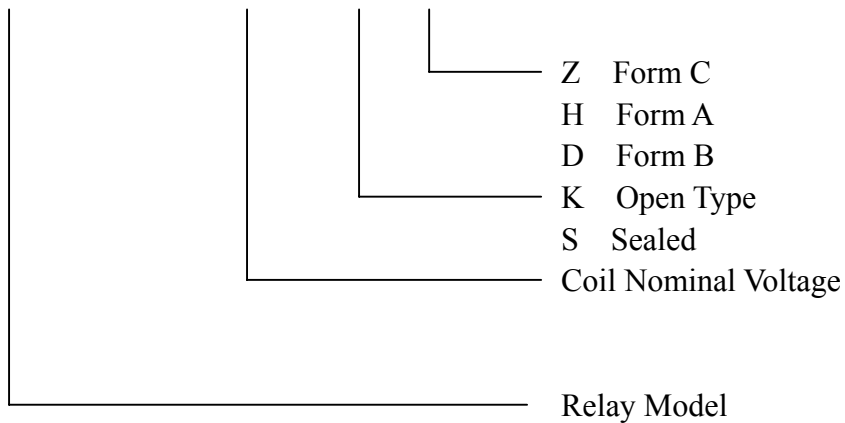


■ COIL DATA

Nominal Voltage (VDC)	Coil Resistance at 20±10%(Ω)			Max Operate Voltage VDC	Min Release Voltage VDC	Max Applicable Voltage VDC
			0.93W			
3			9.7	2.25	0.3	3.9
5			26.9	3.75	0.5	6.5
6			38.8	4.5	0.6	7.8
9			87.1	6.75	0.9	11.7
12			154.9	9	1.2	15.6
24			619.4	18	2.4	31.2
48			2477.5	36	4.8	62.4

■ ORDERING CODE

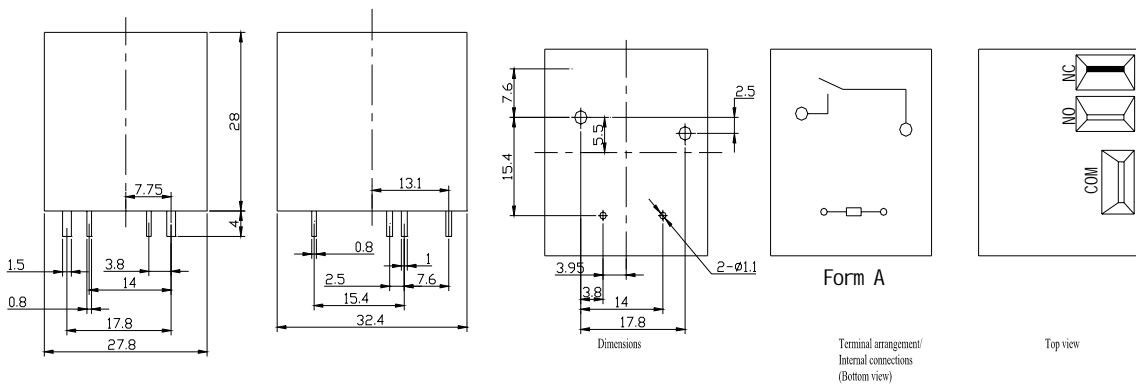
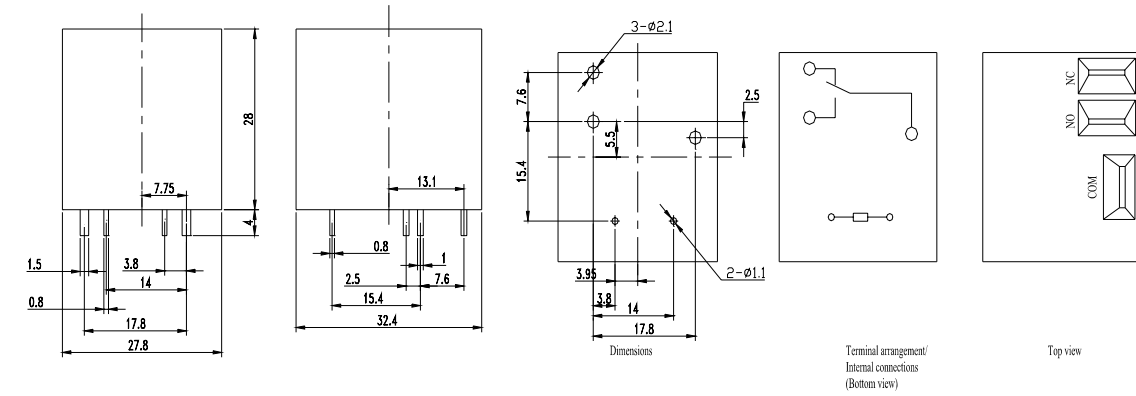
HJQ-15F-1-----12VDC----S----Z





OVERALL AND MOUNTING DIMENSIONS

HJQ-15F-1





HJQ-15F-2

SPECIFICATION

FILE NUMBER: P-08KD501A

DATE: 2001/11/02



■ Features

QC & PC terminals

High dielectric strength 3000VAC

Optional flanged case for panel mounting

■ CONTACT DATA

Contact Form	1A,1B,1C	
Contact Material	AgCdO AgSnO	
Contact Ratings	1A: 25A 240VAC/20A 28VDC 30A240VAC 1B: 15A 240VAC/10A 28VDC 20A240VAC 1C:20/10A 240VAC/28VDC	
Max Switching Voltage	250VAC/30VDC	
Max Switching Current	30A	
Max Switching Power	6000VA/560W	
Contact Resistance	100m Ω Max	at 6VDC 1A
Life Expectancy Electrical	100,000	Operations(at30Operations/minute)
Mechanical	10,000,000	Operations

■ GENERAL DATA

Insulation Resistance	100M Ω Min at 500VDC	
Dielectric Strength Between Open Contacts	1500VAC(1min 1mA)	
Between Contacts and coil	1500VAC(1min 1mA)	
Operate Time	15ms	
Release Time	10ms	
Temperature Range	-40°C to+70 °C	
Shock Resistance	Operating Extremes	10G
	Damage Limits	100G
Vibration Resistance	10-55Hz,1.5mm	
Humidity	40-85%	
Weight	Approx. 36g	
Safety Standard	CCEE:CH0064848-2001	

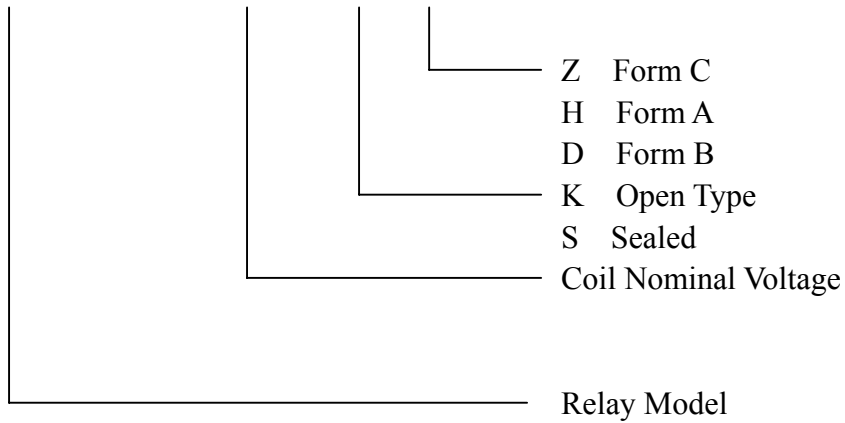


■ COIL DATA

Nominal Voltage (VDC)	Coil Resistance at 20±10% (Ω)			Max Operate Voltage VDC	Min Release Voltage VDC	Max Applicable Voltage VDC
			0.93W			
3			9.7	2.25	0.3	3.9
5			26.9	3.75	0.5	6.5
6			38.8	4.5	0.6	7.8
9			87.1	6.75	0.9	11.7
12			154.9	9	1.2	15.6
24			619.4	18	2.4	31.2
48			2477.5	36	4.8	62.4

■ ORDERING CODE

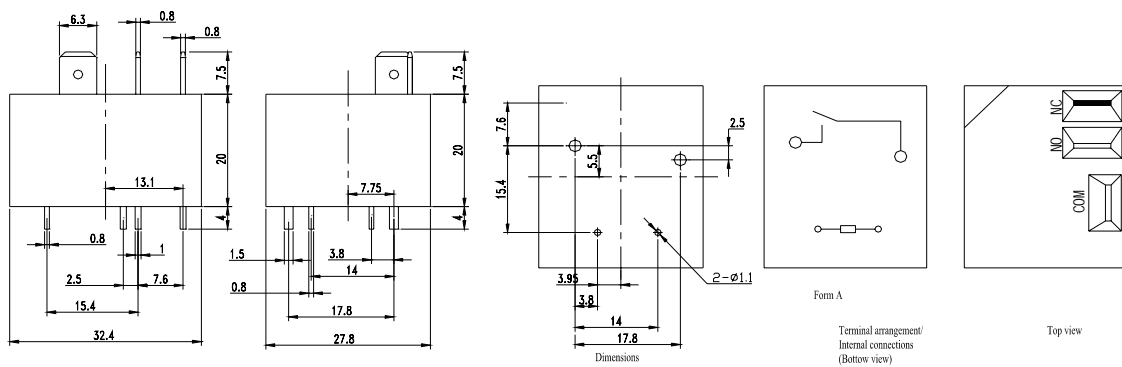
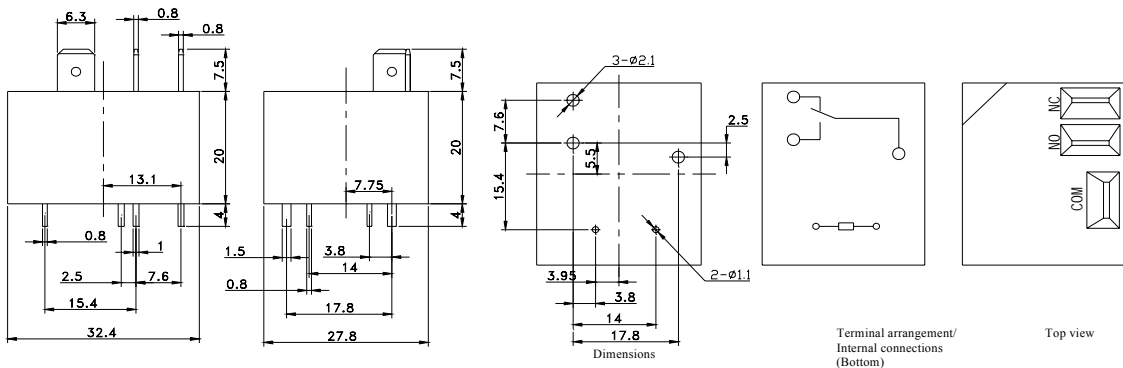
HJQ-15F-2-----12VDC----S---Z





OVERALL AND MOUNTING DIMENSIONS

HJQ15F-2





HJQ-15F-3

SPECIFICATION

FILE NUMBER: P-08KD501A

DATE: 2001/11/02



■ Features

- QC & PC terminals
- High dielectric strength 3000VAC
- Optional flanged case for panel mounting

■ CONTACT DATA

Contact Form	1A,1B,1C	
Contact Material	AgCdO AgSnO	
Contact Ratings	1A: 25A 240VAC/20A 28VDC 30A240VAC 1B: 15A 240VAC/10A 28VDC 20A240VAC 1C:20/10A 240VAC/28VDC	
Max Switching Voltage	250VAC/30VDC	
Max Switching Current	30A	
Max Switching Power	6000VA/560W	
Contact Resistance	100m Ω Max at 6VDC 1A	
Life Expectancy Electrical	100,000	Operations(at30Operations/minute)
Mechanical	10,000,000	Operations

■ GENERAL DATA

Insulation Resistance	100M Ω Min at 500VDC	
Dielectric Strength Between Open Contacts	1500VAC(1min 1mA)	
Between Contacts and coil	1500VAC(1min 1mA)	
Operate Time	15ms	
Release Time	10ms	
Temperature Range	-40°C to+70 °C	
Shock Resistance	Operating Extremes	10G
	Damage Limits	100G
Vibration Resistance	10-55Hz,1.5mm	
Humidity	40-85%	
Weight	Approx. 36g	
Safety Standard	CCEE:CH0064848-2001	

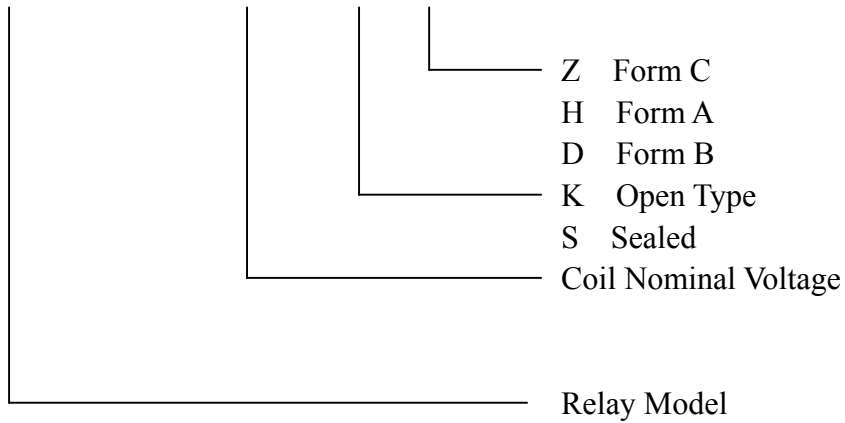


■ COIL DATA

Nominal Voltage (VDC)	Coil Resistance at 20±10% (Ω)			Max Operate Voltage VDC	Min Release Voltage VDC	Max Applicable Voltage VDC
			0.93W			
3			9.7	2.25	0.3	3.9
5			26.9	3.75	0.5	6.5
6			38.8	4.5	0.6	7.8
9			87.1	6.75	0.9	11.7
12			154.9	9	1.2	15.6
24			619.4	18	2.4	31.2
48			2477.5	36	4.8	62.4

■ ORDERING CODE

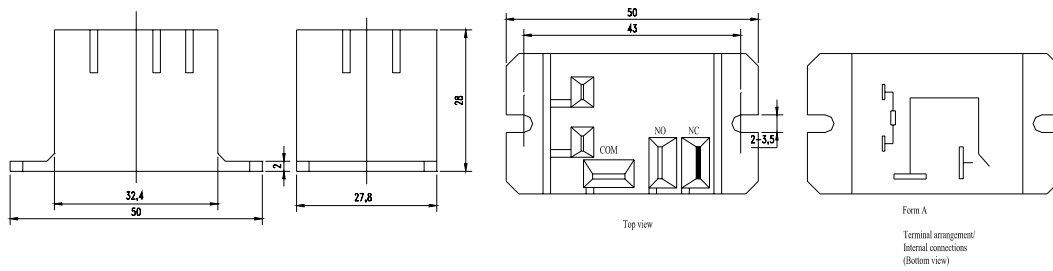
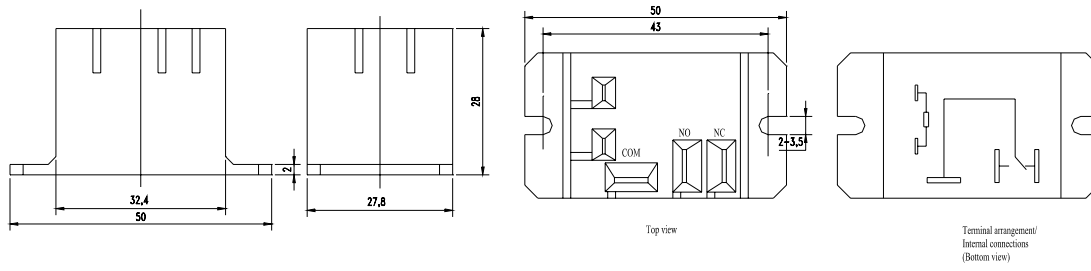
HJQ-15F-3-----12VDC---S---Z





OVERALL AND MOUNTING DIMENSIONS

HJQ-15F-3





HJQ-15F-4

SPECIFICATION

FILE NUMBER: P-08KD501A

DATE: 2001/11/02



■ Features

QC & PC terminals

High dielectric strength 3000VAC

Optional flanged case for panel mounting

■ CONTACT DATA

Contact Form	1A,1B,1C	
Contact Material	AgCdO AgSnO	
Contact Ratings	1A: 25A 240VAC/20A 28VDC 30A240VAC 1B: 15A 240VAC/10A 28VDC 20A240VAC 1C:20/10A 240VAC/28VDC	
Max Switching Voltage	250VAC/30VDC	
Max Switching Current	30A	
Max Switching Power	6000VA/560W	
Contact Resistance	100m Ω Max at 6VDC 1A	
Life Expectancy Electrical	100,000	Operations(at30Operations/minute)
Mechanical	10,000,000	Operations

■ GENERAL DATA

Insulation Resistance	100M Ω Min at 500VDC	
Dielectric Strength Between Open Contacts	1500VAC(1min 1mA)	
Between Contacts and coil	1500VAC(1min 1mA)	
Operate Time	15ms	
Release Time	10ms	
Temperature Range	-40°C to+70 °C	
Shock Resistance	Operating Extremes	10G
	Damage Limits	100G
Vibration Resistance	10-55Hz,1.5mm	
Humidity	40-85%	
Weight	Approx. 36g	
Safety Standard	CCEE:CH0064848-2001	

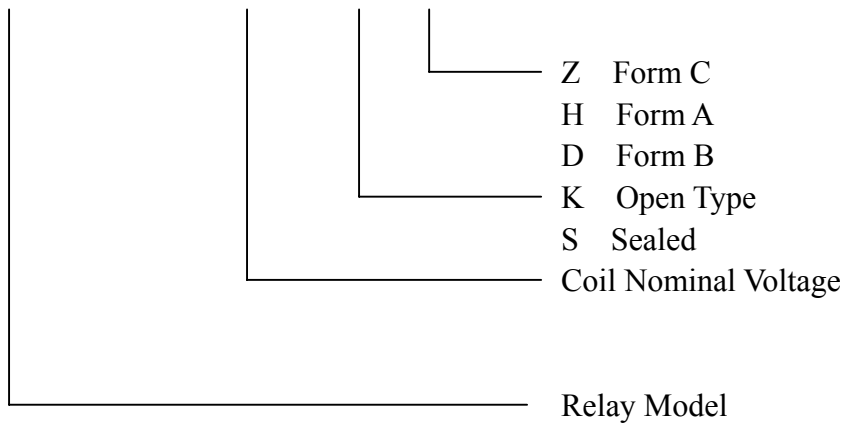


■ COIL DATA

Nominal Voltage (VDC)	Coil Resistance at 20±10%(Ω)			Max Operate Voltage VDC	Min Release Voltage VDC	Max Applicable Voltage VDC
			0.93W			
3			9.7	2.25	0.3	3.9
5			26.9	3.75	0.5	6.5
6			38.8	4.5	0.6	7.8
9			87.1	6.75	0.9	11.7
12			154.9	9	1.2	15.6
24			619.4	18	2.4	31.2
48			2477.5	36	4.8	62.4

■ ORDERING CODE

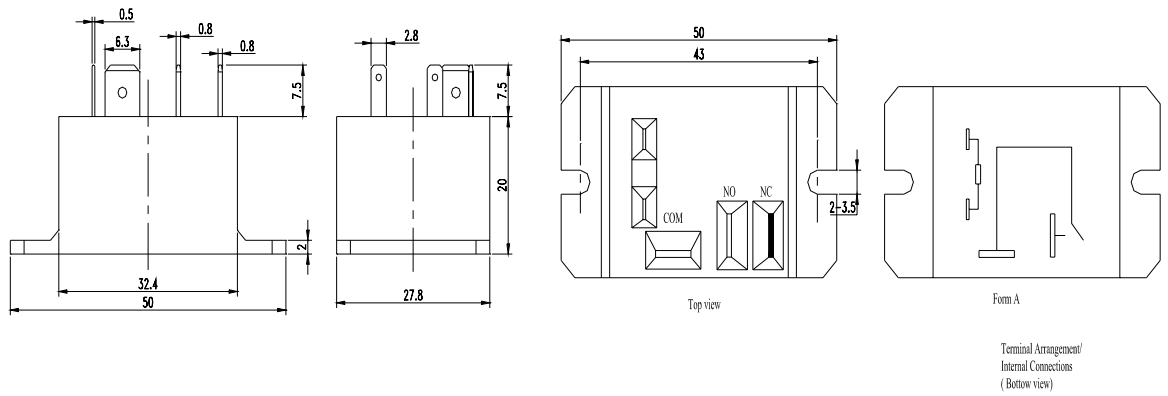
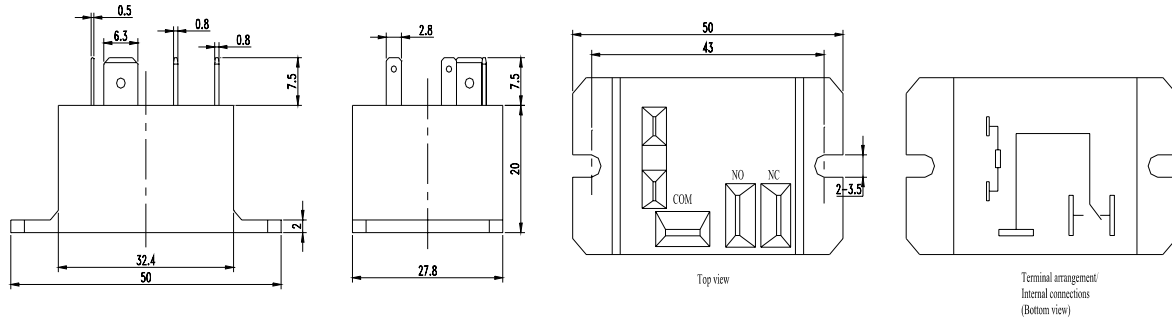
HJQ-15F-4-----12VDC----S---Z





OVERALL AND MOUNTING DIMENSIONS

HJQ-15F-4





TRAF

SPECIFICATION

FILE NUMBER: P-08KF301A

DATE: 2001/11/02



■ Features

Ideal for motor switching in appliances and HVAC

20A switching capability

Designed for high inrush compressor loads

Semi-sealed construction

Sealed version available

■ CONTACT DATA

Contact Form	1A	
Contact Material	AgCdO	
Contact Ratings	Motor:inrush 80A 250VAC Break 20A 250VAC	Eesistive:20A 250VAC
Max Switching Voltage	250VAC	
Max Switching Current	20A	80A
Max Switching Power	5000VA	
Contact Resistance	100m Ω Max	at 6VDC 1A
Life Expectancy Electrical	100,000	Operations(at30Operations/minute)
Mechanical	10,000,000	Operations

■ GENERAL DATA

Insulation Resistance	100M Ω Min at 500VDC
Dielectric Strength Between Open Contacts	1500VAC(for one minute)
Between Contacts and coil	4500VAC(for one minute)
Operate Time	20ms
Release Time	10ms
Temperature Range	-25°C o+55°C
Shock Resistance	20G 11ms
Vibration Resistance	10-55Hz,1.5mm
Humidity	40-85%
Weight	Approx. 23g
Safety Standard	

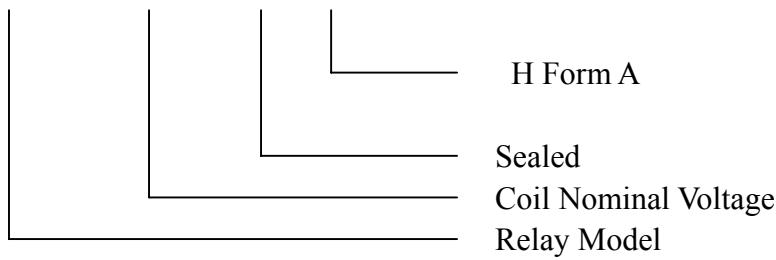


COIL DATA

Nominal Voltage (VDC)	Coil Resistance at 20±10%(Ω)	Max Operate Voltage (VDC)	Min Release Voltage (VDC)	Max Applicable Voltage (VDC)
	0.9W			
5	27.8	3.75	0.5	6.5
6	40	4.5	0.6	7.8
12	160	9	1.2	15.6
24	640	18	2.4	31.2
48	2560	36	4.8	62.4

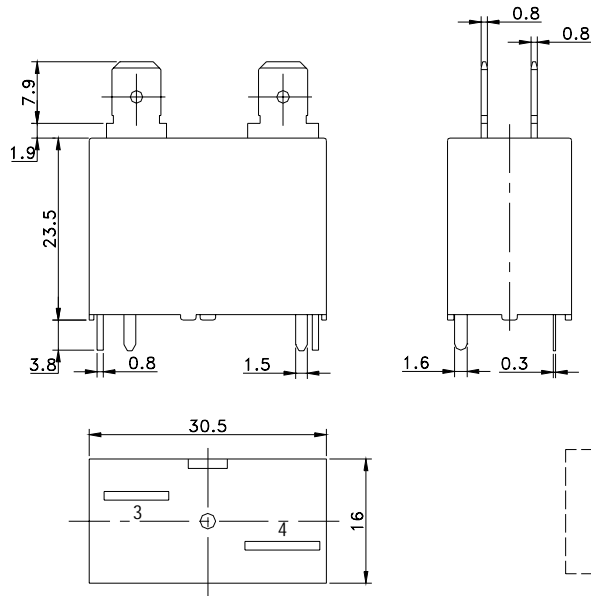
ORDERING CODE

TRAF--12VDC--S--H

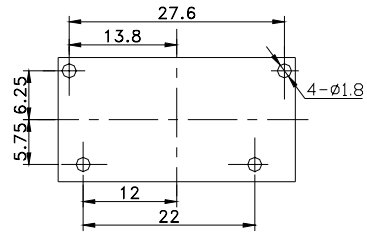


OVERALL AND MOUNTING DIMENSIONS

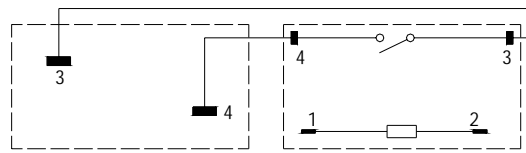
TRAF-H



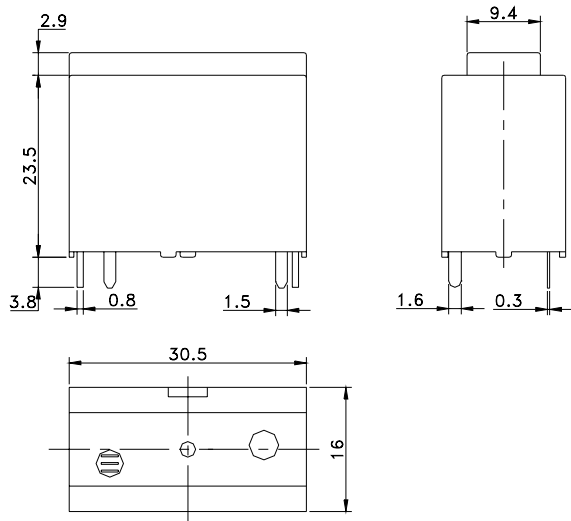
Bottom terminals



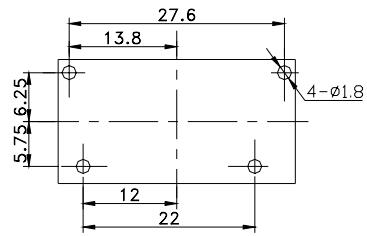
Terminal arrangement



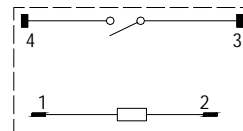
TRAF-H-P



Bottom terminals



Terminal arrangement





TRKM(78F)

SPECIFICATION

FILE NUMBER: P-08KE201A

DATE: 2001/11/02



■ Features

20A switching capability

Small size auto relay

■ CONTACT DATA

Contact Form	1A/1C/1B	
Contact Material	AgNi, AgSnO	
Contact Ratings	NC:20A14VDC	NC:12A/14VDC
Max Switching Voltage	16VDC	
Max Switching Current	25A	
Max Switching Power	840VA/400W	
Contact Resistance	100m Ω Max	at 6VDC 1A
Life Expectancy Electrical	100,000	Operations(at30Operations/minute)
Mechanical	10,000,000	Operations

■ GENERAL DATA

Insulation Resistance	100M Ω Min at 500VDC	
Dielectric Strength Between Open Contacts	500VAC(for one minute)	
Between Contacts and coil	500VAC(for one minute)	
Operate Time	10ms	
Release Time	5ms	
Temperature Range	-40°C to+85 °C	
Shock Resistance	Operating Extremes	10G
	Damage Limits	100G
Vibration Resistance	10-55Hz,2.0mm	
Humidity	35-85%	
Weight	Approx. 6g	
Safety Standard	UL:E173485	

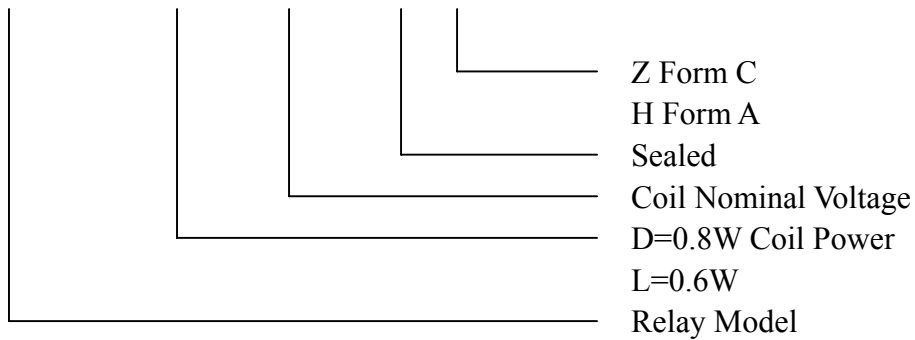


■ COIL DATA

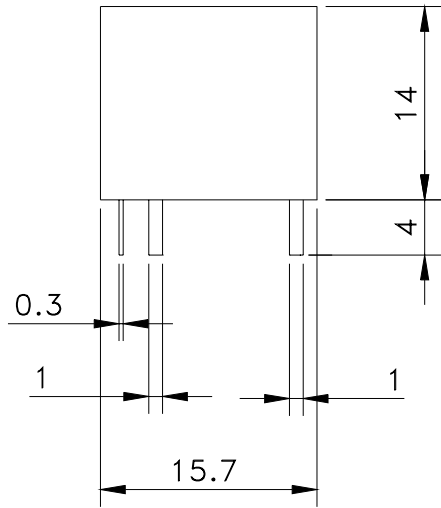
Nominal Voltage (VDC)	Coil Resistance at 20±10%(Ω)		Max Operate Voltage (VDC)	Min Release Voltage (VDC)	Max Applicable Voltage (VDC)
	0.6W	0.8W			
6	60	45	3.9	0.48	7.8
9	135	100	5.85	0.72	11.7
12	240	180	7.8	0.96	15.6
24	960	720	15.6	1.92	31.2

■ ORDERING CODE

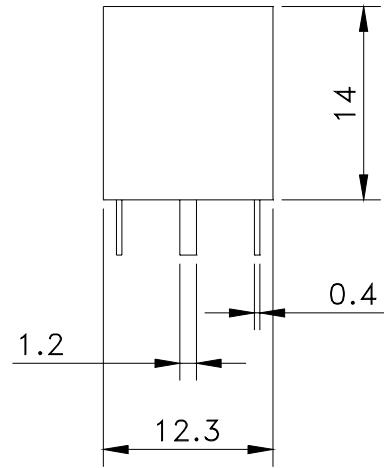
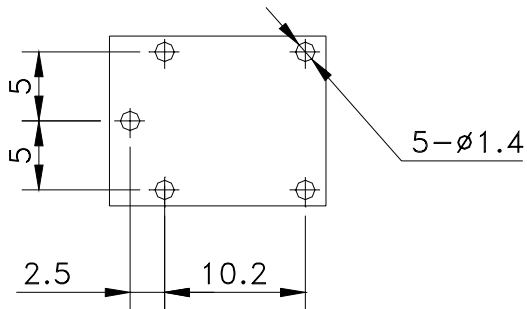
TRKM(78F) D--12VDC--S--Z



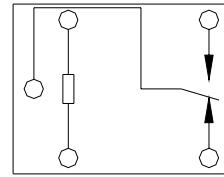
OVERALL AND MOUNTING DIMENSIONS



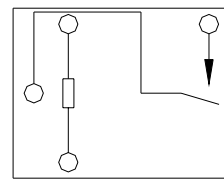
Dimensions



Terminal Arrangement/
Internal Connections
(Bottom view)



Form C



Form A

TRKP

SPECIFICATION

FILE NUMBER: P-08KE101A

DATE: 2001/11/02



■ Features

40A continuous rating 85 °C

PC board terminals

Inrush current 100A

Open & sealed version available

■ CONTACT DATA

Contact Form	1A/1C	
Contact Material	AgNi/AgSnO	
Contact Ratings	NO:40A 14VDC	NC:30A 14VDC
Max Switching Voltage	30VDC	
Max Switching Current	40A	
Max Switching Power	560W	
Contact Resistance	100m Ω Max	at 6VDC 1A
Life Expectancy Electrical	100,000	Operations(at30Operations/minute)
Machanical	10,000,000	Operations

■ GENERAL DATA

Insulation Resistance	100M Ω Min at 500VDC
Dielectric Strength Between Open Contacts	500VAC(for one minute)
Between Contacts and coil	750VACfor one minute)
Operate Time	5ms
Release Time	4ms
Temperature Range	-40 °C to+70 °C
Shock Resistance	20G,11ms half sine wave pulse
Vibration Resistance	10-55Hz,1.5mm
Humidity	40-85%
Weight	Approx 21g
Safety Standard	

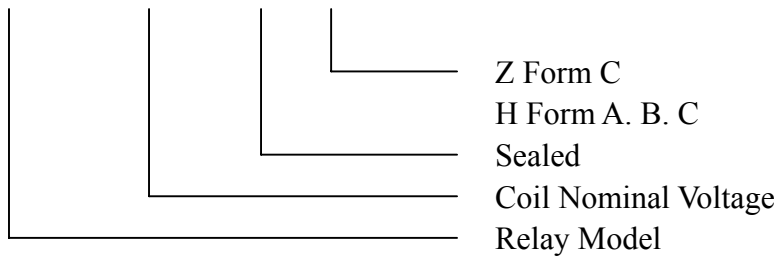


■ COIL DATA

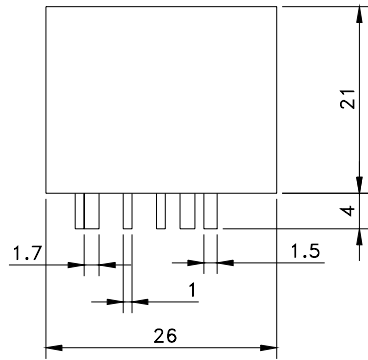
Nominal Voltage (VDC)	Coil Resistance at 20±10%(Ω)		Max Operate Voltage VDC	Min Release Voltage VDC	Max Applicable Voltage VDC
	1.6W	1.9W			
3	5.7	4.8	2.25	0.3	3.9
5	15.7	13.2	3.75	0.5	6.5
6	22.5	19	4.5	0.6	7.8
9	50.7	42.7	6.75	0.9	11.7
12	90	75.8	9	1.2	15.6
24	360	303.2	18	2.4	31.2

■ ORDERING CODE

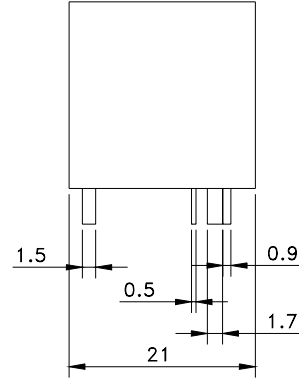
TRKP---12VDC---S---Z



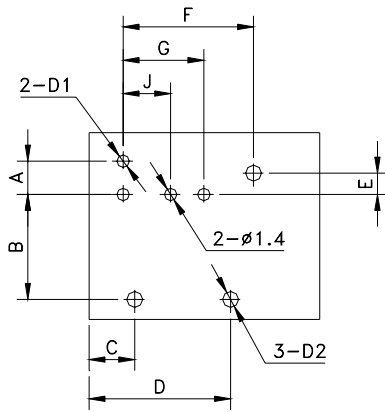
OVERALL AND MOUNTING DIMENSIONS



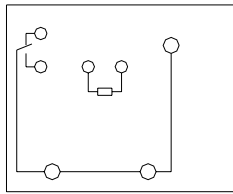
Dimensions



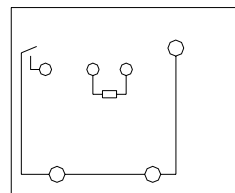
Terminal Arrangement/
Internal Connectins
(Bottom view)



	European Footprint	American Footprint
A	3.3	3.78
B	12.1	11.89
C	2.2	4
D	13.2	12.2
E	2.2	2.28
F	15.9	14.8
G	10.1	9.09
J	5.9	5.53
D1	φ2.1	φ1.5
D2	φ2	



Form C



Form A



TRV3

SPECIFICATION

FILE NUMBER: P-08KF201A

DATE: 2001/11/02



■ Features

40A continuous rating 85 °C

1A & 1C arrangements

Plug-in or PC board terminals

Optional mounting bracket

■ CONTACT DATA

Contact Form	1A/1C	
Contact Material	AgNi/AgSnO	
Contact Ratings	1A:40A 14VDC	1C:30A 14VDC
Max Switching Voltage	30VDC	
Max Switching Current	40A	
Max Switching Power	560W	
Contact Resistance	100m Ω Max	at 6VDC 1A
Life Expectancy Electrical	100,000	Operations(at30Operations/minute)
Machanical	10,000,000	Operations

■ GENERAL DATA

Insulation Resistance	100M Ω Min at 500VDC
Dielectric Strength Between Open Contacts	500VAC(for one minute)
Between Contacts and coil	750VAC(for one minute)
Operate Time	10ms
Release Time	10ms
Temperature Range	-40°Cto+70 °C
Shock Resistance	20G 11ms
Vibration Resistance	10-55Hz,1.5mm
Humidity	40-85%
Weight	Approx 40g
Safety Standard	

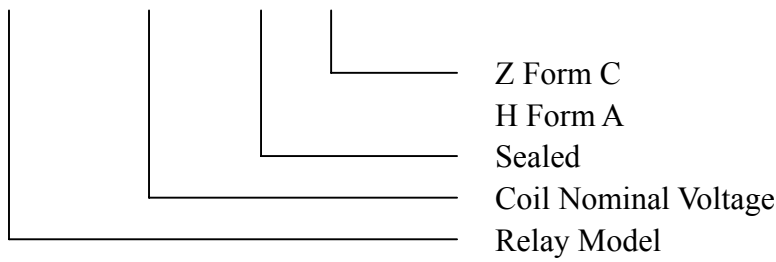


■ COIL DATA

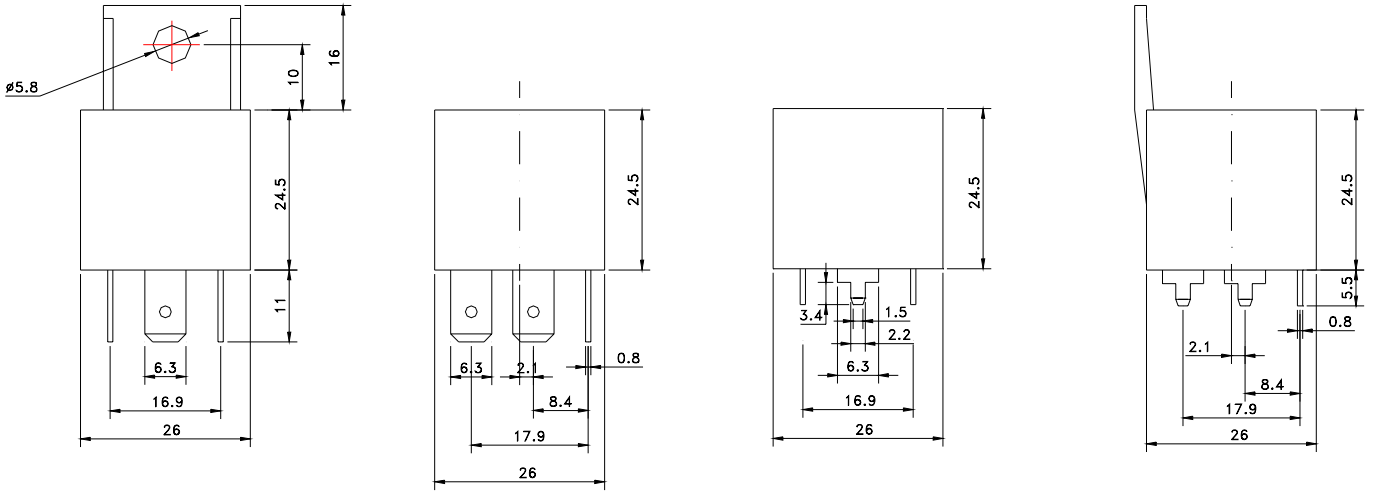
Nominal Voltage (VDC)	Coil Resistance at 20±10%(Ω)		Max Operate Voltage (VDC)	Min Release Voltage (VDC)	Max Applicable Voltage (VDC)
	1.6W	1.9W			
6	22.5	19	3.9	0.6	7.8
12	90	75.8	7.8	1.2	15.6
24	360	303.2	15.6	2.4	31.2

■ ORDERING CODE

TRV3--12VDC--S--Z



OVERALL AND MOUNTING DIMENSIONS



I

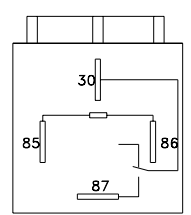
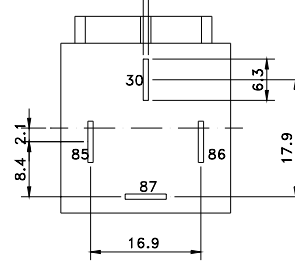
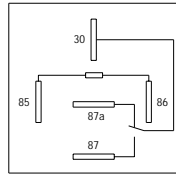
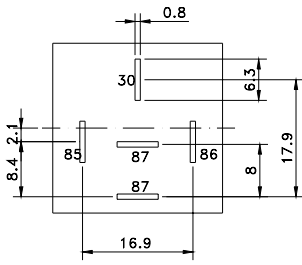
II

Dimensions

Terminal Arrangement/
Internal Connections
(Bottom view)

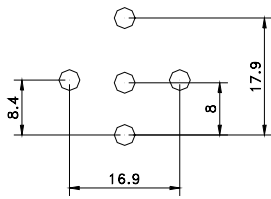
Dimensions

Terminal Arrangement/
Internal Connections
(Bottom view)

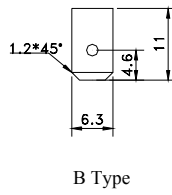


(1)Form C

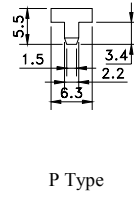
(2)Form A



PCB Mounting



B Type



P Type



TRV4

SPECIFICATION

FILE NUMBER: P-08KF101A

DATE: 2001/11/02



■ Features

40A continuous rating 85 °C

1A & 1C arrangements

Plug-in or PC board terminals

Optional mounting bracket

■ CONTACT DATA

Contact Form	1A/1C	1U
Contact Material	AgNi,AgSnO	
Contact Ratings	NO:40A 14VDC NC:30A 14VDC	2*20A 14VDC
Max Switching Voltage	30VDC	
Max Switching Current	40A	
Max Switching Power	560W	
Contact Resistance	100m Ω Max	at 6VDC 1A
Life Expectancy Electrical	100,000	Operations(at30Operations/minute)
Machanical	10,000,000	Operations

■ GENERAL DATA

Insulation Resistance	100M Ω Min at 500VDC
Dielectric Strength Between Open Contacts	500VAC(for one minute)
Between Contacts and coil	750VAC(for one minute)
Operate Time	10ms
Release Time	10ms
Temperature Range	-40°C to+70 °C
Shock Resistance	20G 11ms
Vibration Resistance	10-55Hz,1.5mm
Humidity	40-85%
Weight	Approx 40g
Safety Standard	

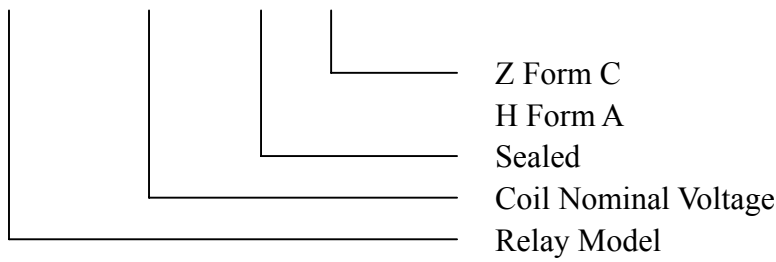


■ COIL DATA

Nominal Voltage (VDC)	Coil Resistance at 20±10%(Ω)		Max Operate Voltage (VDC)	Min Release Voltage (VDC)	Max Applicable Voltage (VDC)
	1.6W	1.9W			
6	22.5	19	3.9	0.6	7.8
12	90	75.8	7.8	1.2	15.6
24	360	303.2	15.6	2.4	31.2

■ ORDERING CODE

TRV4--12VDC--S--Z



OVERALL AND MOUNTING DIMENSIONS

