HF33F SUBMINIATURE INTERMEDIATE POWER RELAY

File No.:E134517

File No.:125661

File No.:CQC12002076530



Features

- 10A switching capability
- Creepage distance: 8mm (coil & contacts)
- Clearance distance: NO type 4.5mm, NC type 4mm
- 1 Form A and 1 Form C configurations
- Subminiature, standard PCB layout
- Plastic sealed and flux proofed types available
- UL insulation system: Class F
- Product in accordance to IEC 60335-1 available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (20.5 x 10.2 x 15.3) mm

CONTACT DATA

Contact arrangement	1A, 1C		
Contact resistance	100mΩ max.(at 1A 6VDC)		
Contact material	$AgSnO_2$, AgNi, AgCdO		
Contact rating (Res. load)	1A	1C	
		NO	NC
	5A 250VAC 5A 30VDC 10A 125VAC	5A 250VAC 5A 30VDC 10A 125VAC	3A 250VAC 3A 30VDC
Max. switching current	10A	3A	
Max. switching power	1250VA / 150W	750VA / 90W	
Max. switching voltage	250VAC / 30VDC		
Mechanical endurance	5 x 10^6OPS		
Electrical endurance	H type:1 x 10^5OPS（5A 250VAC, Resistive load, Room temp., 1s on 9s off) Z type:1 x 10^5OPS（NO:5A /NC:3A 250VAC,Resistive load, Room temp., 1.5s on 1.5s off)		

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	1000VAC 1min
Operate time (at nomi. volt.)		8ms max.
Release time (at nomi. volt.)		5ms max.
Ambient temperature		-40˚C to 70˚C
Humidity		5% to 85% RH
Shock resistance	Functional	98m/s²
	Destructive	980m/s²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Termination		PCB
Unit weight		Approx. 7g
Construction		Plastic sealed, Flux proofed

Notes: 1) The data shown above are initial values.

COIL

Coil power	Standard: Approx. 450mW; Sensitive: Approx. 200mW

COIL DATA at 23˚C

Standard Type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
3	2.25	0.15	3.9	20 x (1±10%)
5	3.75	0.25	6.5	55 x (1±10%)
6	4.50	0.30	7.8	80 x (1±10%)
9	6.75	0.45	11.7	180 x (1±10%)
12	9.00	0.60	15.6	320 x (1±10%)
18	13.5	0.90	23.4	720 x (1±10%)
24	18.0	1.20	31.2	1280 x (1±10%)
48	36.0	2.40	62.4	5120 x (1±10%)

Sensitive type (Only for 1 Form A)

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
3	2.25	0.15	4.5	45 x (1±10%)
5	3.75	0.25	7.5	125 x (1±10%)
6	4.50	0.30	9.0	180 x (1±10%)
9	6.75	0.45	13.5	400 x (1±10%)
12	9.00	0.60	18.0	720 x (1±10%)
18	13.5	0.90	27.0	1600 x (1±10%)
24	18.0	1.20	36.0	2800 x (1±10%)
48	36.0	2.40	72.0	11520 x (1±10%)

Notes: *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

SAFETY APPROVAL RATINGS

UL/CUL	1 Form A	AgCdO	5A 250VAC/30VDC at 40˚C 8A 250VAC at 40˚C 10A 125VAC at 40˚C 10A 277VAC COSØ =0.4 at 40˚C 1/10HP 125VAC, 1/6HP 250VAC at 40˚C
		AgNi	5A 250VAC/30VDC at 70˚C 8A 250VAC at 70˚C 10A 125VAC at 70˚C 10A 277VAC COSØ =0.4 at 70˚C 1/10HP 125VAC, 1/6HP 250VAC at 70˚C
		$AgSnO_2$	5A 250VAC/30VDC at 70˚C 10A 125VAC at 70˚C
	1 Form C	AgCdO	3A 250VAC at 40˚C 3A 30VDC at 40˚C
		AgNi $AgSnO_2$	3A 250VAC at 70˚C 3A 30VDC at 70˚C
VDE	1 Form A	AgNi	5A 250VAC at 85˚C
		AgCdO	5A 250VAC at 70˚C*
		$AgSnO_2$	5A 250VAC at 70˚C
	1 Form C	AgCdO AgNi	NC: 3A 250VAC at 70˚C*

Notes: 1) *The vent hole is kept open during load approval;
2) For $AgSnO_2$ Contact type, the vent-hole cover should be excised.
3) All values unspecified are at room temperature.
4) Only typical loads are listed above. Other load specifications can be available upon request.

ORDERING INFORMATION

HF33F / 012 -H S L 3 F (XXX)

Type				
Coil voltage	3, 5, 6, 9, 12, 18, 24, 48VDC			
Contact arrangement	**H:** 1 Form A	**Z:** 1 Form C		
Construction 1)	**S:** Plastic sealed	**Nil:** Flux proofed		
Coil power	**L:** Sensitive (Only for 1 Form A)	**Nil:** Standard		
Contact material	**T:** $AgSnO_2$	**3:** AgNi	**Nil:** AgCdO	
Insulation standard	**F:** Class F			
Special code 3)	**XXX:** Customer special requirement	**Nil:** Standard		

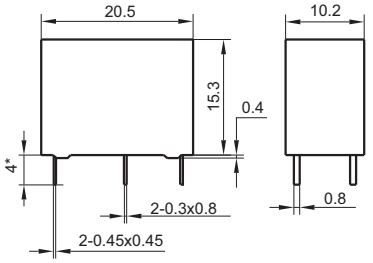
Notes: 1) Under the ambience with dangerous gas like H_2S, SO_2 or NO_2, plastic sealed type is recommended; Please test the relay in real applications. If the ambience allows, flux proofed type is preferentially recommended.
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
3) The customer special requirement express as special code after evaluating by Hongfa.

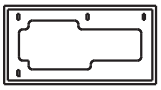
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

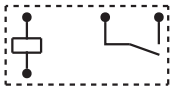
Outline Dimensions | Wiring Diagram (Bottom view) | PCB Layout (Bottom view)

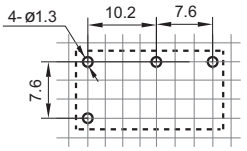
1 Form A



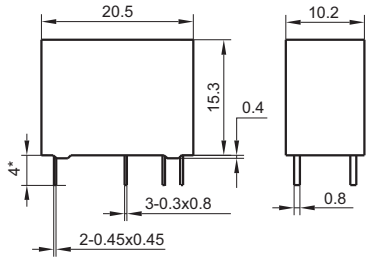


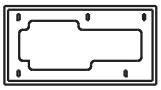
(Bottom view)



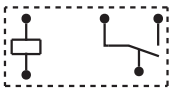


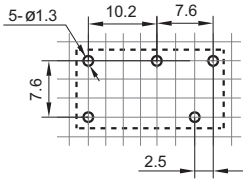
1 Form C





(Bottom view)





Remark:1) * The additional tin top is max. 1mm.

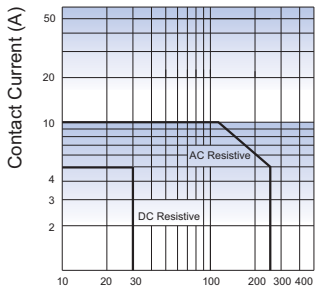
2) In case of no tolerance shown in outline dimension: outline dimension ≤1mm, tolerance should be ±0.2mm; outline dimension >1mm and ≤5mm, tolerance should be ±0.3mm; outline dimension >5mm, tolerance should be ±0.4mm.

3) The tolerance without indicating for PCB layout is always ±0.1mm.

4) The width of the gridding is 2.54mm.

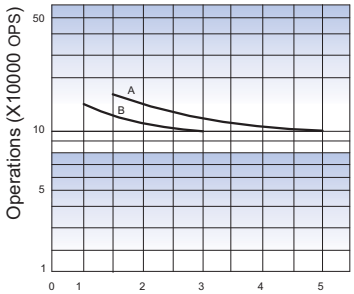
CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



Contact Voltage (V)

ENDURANCE CURVE



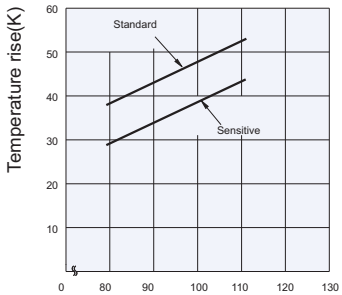
Contact Current (A)

Notes:

1.Curve A: NO contact
Curve B: NC contact

2.**Test conditions:**
Curve A:NO, Resistive load, Room temp., flux proofed, 250VAC/30VDC, 1s on 9s off
Curve B: NC, Resistive load, Room temp., flux proofed, 250VAC/30VDC, 1s on 9s off

COIL TEMPERATURE RISE



Percentage Of Nominal Coil Voltage

Notes:

Standard: 5A at 70℃
Sensitive: 5A at 70℃
Mounting distance: 10mm

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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