HF33F SUBMINIATURE INTERMEDIATE POWER RELAY

File No.:E134517

File No.:125661

File No.:CQC09002028694

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 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 24VDC)		
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	277VAC / 30VDC		
Mechanical endurance	1×10^7 OPS		
Electrical endurance	1×10^5 OPS		

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	$98m/s^2$
	Destructive	$980m/s^2$
Vibration resistance		10Hz to 55Hz 1.6mm DA
Termination		PCB
Unit weight		Approx. 7g
Construction		Plastic sealed, Flux proofed

Notes: 1) The data shown above are initial values.
2) Please find coil temperature curve in the characteristic curves below.
3) In order to obtain better electrical endurance, it's better not use this product in the high temperature environment.
4) UL insulation system: Class F, Class B.

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. Allowable 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. Allowable 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%)

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 1A tungsten 120VAC at 105˚C 15A LRA; 2.5A FLA 120VAC at 105˚C 4A 120VAC at 105˚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 $AgSnO_2$	5A 250VAC at 70˚C
	1 Form C	AgCdO AgNi	3A 250VAC at 70˚C

Notes: Only some typical ratings are listed above. If more details are required, please contact us.

ORDERING INFORMATION

	HF33F /	012	-H	S	L	3	G	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	
Contact plating							**G:** Gold plated	**Nil:** No gold plated	
Insulation standard								**F:** Class F	**Nil:** Class B
Customer special code									

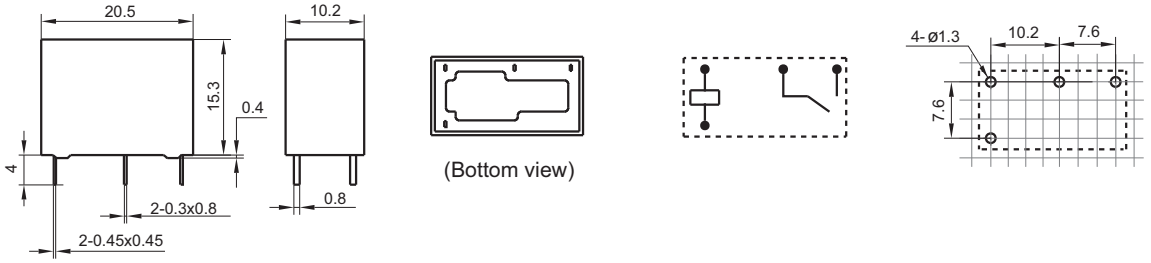
Notes: 1) Under the ambience with dangerous gas like H_2S, SO_2 or NO_2, plastic sealed type is recommended; Please test the relay in real applications.
If the ambience allows, flux proofed type is preferentially recommended.
If water cleaning is required after the relay is assembled on PCB, please contact us for suggestion about suitable parts.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

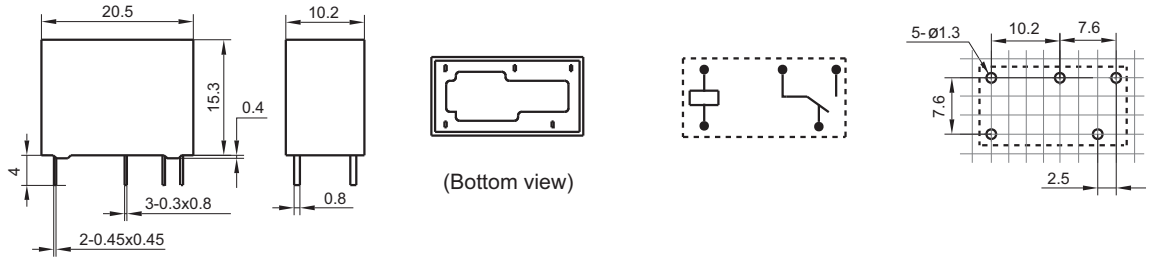
Unit: mm

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

1 Form A



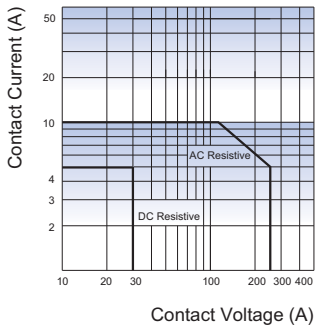
1 Form C



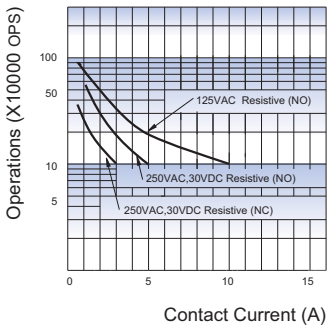
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension ≤1mm, tolerance should be ±0.2mm; outline dimension >1mm and ≤5mm, tolerance should be ±0.3mm; outline dimension >5mm, tolerance should be ±0.4mm.
2) The tolerance without indicating for PCB layout is always ±0.1mm.
3) The width of the gridding is 2.54mm.

CHARACTERISTIC CURVES

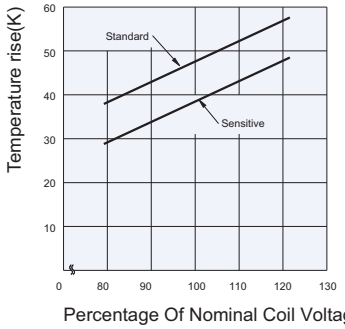
MAXIMUM SWITCHING POWER



ENDURANCE CURVE



COIL TEMPERATURE RISE



Disclaimer

This datasheet is for the customers' reference. All the specifications are 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.