HF33F SUBMINIATURE INTERMEDIATE POWER RELAY

File No.:E134517

File No.:125661

File No.:CQC12002076530

Features

- Provide 5A 250VAC to meet 300000 switching capability specifications
- Creepage distance: 8mm (coil & contacts)
- Clearance distance: NO type 4.5mm, NC type 4mm
- 1 Form A , 1 Form B and 1 Form C configurations
- Subminiature, standard PCB layout
- Reflow soldering version available
- Plastic sealed and flux proofed types available
- UL insulation system: Class F
- Product in accordance to IEC 60335-1 available

RoHS compliant

CONTACT DATA

Contact arrangement	1A, 1C,1B			
Contact resistance	100mΩ max.(at 1A 6VDC)			
Contact material	$AgSnO_2$, AgNi, AgCdO			
Contact rating (Res. load)	1A	1C		1B
		NO	NC	NC
	5A 250VAC 5A 30VDC 10A 125VAC	5A 250VAC 5A 30VDC 10A 125VAC	3A 250VAC 3A 30VDC	5A 250VAC
Max. switching current	10A		3A	5A
Max. switching power	1250VA /150W		750VA	1250VA
Max. switching voltage	250VAC / 30VDC			250VAC
Mechanical endurance	5×10^6OPS			
Electrical endurance	H type:3×10^5OPS(5A 250VAC, Resistive load, Room temp., 1s on 1s off) Z type:1×10^5OPS(NO:5A /NC:3A 250VAC,Resistive load, Room temp., 1.5s on 1.5s off) D type:1×10^4OPS(5A 250VAC, Resistive load, Room temp., 1s on 1s off)			

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

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	1000VAC 1min
Operate time (at rated. volt.)		8ms max.
Release time (at rated. volt.)		5ms max.
Ambient operating temperature		-40˚C to 105˚C
Humidity		5% to 85% RH
Shock resistance	Functional	$98m/s^2$
	Destructive	$980m/s^2$
Vibration resistance		10Hz to 55Hz 1.5mm DA
Termination		PCB
Unit weight		Approx. 7g
Construction		Plastic sealed, Flux proofed

Notes:)

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 85°C 8A 250VAC at 70°C 10A 125VAC at 85°C 10A 277VAC COSØ =0.4 at 70°C 1/10HP 125VAC, 1/6HP 250VAC at 70°C
		$AgSnO_2$	5A 250VAC/30VDC at 85°C 10A 125VAC at 85°C
	1 Form C	AgCdO	NO:5A 250VAC/30VDC at 40°C NC:3A 250VAC/30VDC at 40°C
		AgNi $AgSnO_2$	NO:5A 250VAC/30VDC at 85°C NC:3A 250VAC/30VDC at 85°C
VDE	1 Form A	AgNi	5A 250VAC at 85°C
		AgCdO	5A 250VAC at 70°C
		$AgSnO_2$	5A 250VAC at 85°C
	1 Form C	AgCdO AgNi	NO: 5A 250VAC at 70°C* NC: 3A 250VAC at 70°C*
		$AgSnO_2$	NO: 5A 250VAC at 85°C* NC: 3A 250VAC at 85°C*
CQC	1 Form A	AgNi AgCdO $AgSnO_2$	5A 250VAC/30VDC at 85°C NO: 5A 250VAC at 80°C
	1 Form C	AgNi AgCdO $AgSnO_2$	NO: 5A 250VAC/30VDC at 85°C NC: 3A 250VAC/30VDC at 85°C
	1 Form B	AgNi AgCdO $AgSnO_2$	NC: 5A 250VAC at 40°C

Notes: 1) *The vent hole is kept open during load approval;
2) All values unspecified are at room temperature.
3) 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	HF33F /		
Coil voltage	3, 5, 6, 9, 12, 18, 24, 48VDC		
Contact arrangement	**H:** 1 Form A	**Z:** 1 Form C	**D:** 1 Form B
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 code3)	**XXX:** Customer special requirement	**Nil:** Standard	

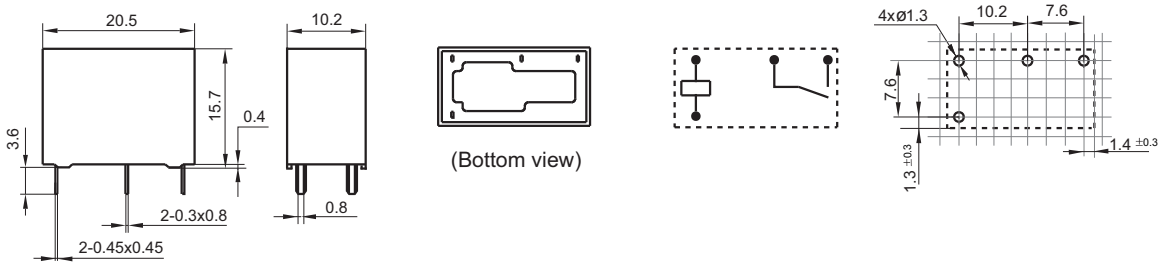
Notes: 1) Under the ambience with dangerous gas like H_2S, SO_2 or NO_2, plastic sealed type is recommended; Please test the relay in real applications. If the ambience allows, flux proofed type is preferentially recommended.
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
3) The customer special requirement express as special code after evaluating by Hongfa.
4) Two packing methods available: paper box package, tube package,Standard tube packing length is 553mm. Any special requirement needed, please contact us for more details.
5) For products that should meet the explosion-proof requirements of "IEC 60079 series",please note [Ex] after the specification while placing orders.Not all products have explosion-proof certification,so please contact us if necessary, in order to select the suitable products.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

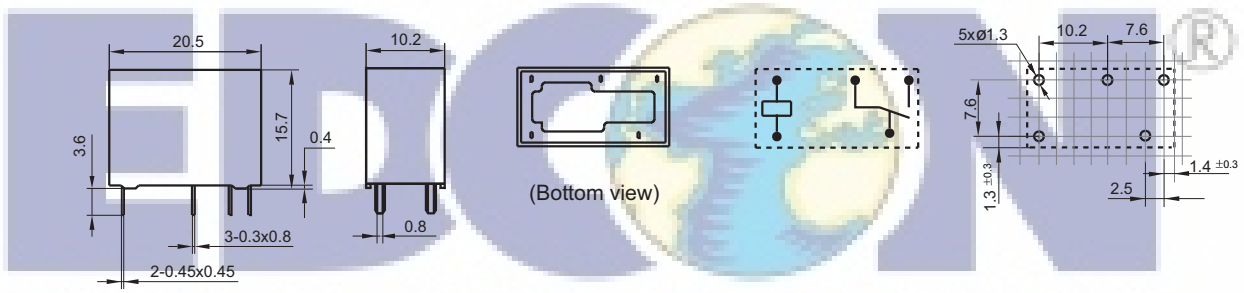
Unit: mm

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

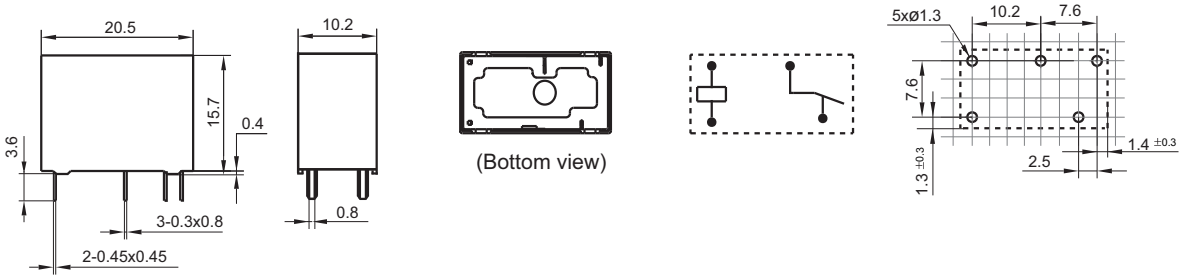
1 Form A



1 Form C



1 Form B（With 5 terminal）



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

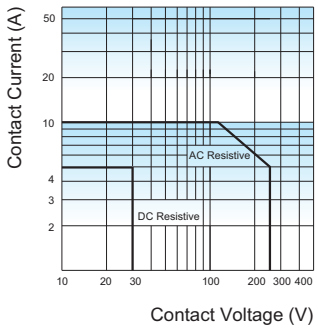
2) In case of no tolerance shown in outline dimension: outline dimension ≤1mm, tolerance should be ±0.2mm; outline dimension ＞1mm and ≤5mm, tolerance should be ±0.3mm; outline dimension ＞5mm, tolerance should be ±0.4mm.

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

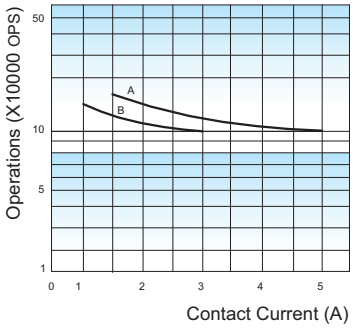
4) The width of the gridding is 2.54mm.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



ENDURANCE CURVE

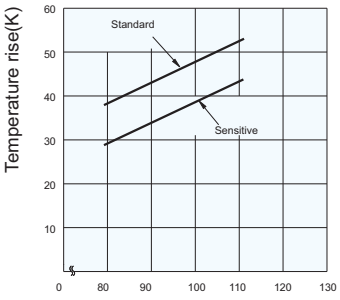


Notes:

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



Notes:

Standard: 5A at 85℃
Sensitive: 5A at 85℃
Mounting distance: 10mm