

HFE60P

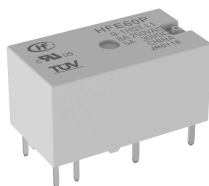
SUBMINIATURE INTERMEDIATE POWER RELAY



File No.: E134517



File No.: B140653286012



Features

- Low height 10.5mm
- Low coil power
- High switching capacity
1A: 8A 250VAC
2A,1A+1B: 5A 250VAC
- 3kV dielectric strength (between coil and contacts)

CONTACT DATA

Contact arrangement	1A	2A, 1A+1B
Contact resistance ¹⁾	No gold plated: 30mΩ (at 1A 6VDC) Gold plated: 20mΩ (at 0.1A 6VDC)	
Contact material	AgSnO ₂	
Contact rating	8A 250VAC(COSφ=1.0) 5A 250VAC(COSφ=0.4) 0.3A 240VDC(τ=0ms) 0.15A 240VDC(τ=40ms) 5A 30VDC(τ=0ms)	5A 250VAC(COSφ=1.0) 3A 250VAC(COSφ=0.4) 0.3A 240VDC(τ=0ms) 0.15A 240VDC(τ=40ms) 5A 30VDC(τ=0ms)
Max. switching voltage	380VAC / 240VDC	
Max. switching current	8A	5A
Max. switching power	2000VA / 150W	1250VA / 150W
Mechanical endurance	1 x 10 ⁷ OPS	
Electrical endurance	1 x 10 ⁴ OPS(at 40°C, 1.5s on 1.5s off)	

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

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	3000VAC 1min
	Between open contacts	1000VAC 1min
	Between contact sets	2000VAC 1min
Surge voltage (between coil and contacts)	5.5kV (1.2/50μs)	
Operate time (single side stable)	10ms max.	
Release time (single side stable)	5ms max.	
Set time (latching)	10ms max.	
Reset time (latching)	10ms max.	
Shock resistance	Functional	196m/s ²
	Destructive	980m/s ²
Vibration resistance	Functional	10Hz to 55Hz 2.0mm DA
	Destructive	10Hz to 55Hz 3.5mm DA
Humidity	5% to 85% RH	
Ambient temperature	-40°C to 85°C	
Termination	coil termination	PCB
	load termination	PCB
Unit weight	Approx. 4.5g	
Construction	Plastic sealed	

Notes: The data shown above are initial values.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

COIL

Coil power	Single side stable: Approx. 300mW 1 coil latching: Approx. 150mW 2 coils latching: Approx. 300mW
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COIL DATA

at 23°C

Single side stable (300mW)

Nominal Voltage VDC	Pick-up VDC ¹⁾ max. ²⁾	Drop-out Voltage VDC ¹⁾ min. ²⁾	Max. Allowable Voltage VDC	Coil Resistance
3	2.4	0.3	3.9	30 x (1±10%)
5	4.0	0.5	6.5	83 x (1±10%)
6	4.8	0.6	7.8	120 x (1±10%)
9	7.2	0.9	11.7	270 x (1±10%)
12	9.6	1.2	15.6	480 x (1±10%)
18	14.4	1.8	23.4	1080 x (1±10%)
24	19.2	2.4	31.2	1920 x (1±10%)

1 coil latching (150mW)

Nominal Voltage VDC	Set Voltage VDC ¹⁾ max. ²⁾	Reset Voltage VDC ¹⁾ max. ²⁾	Max. Allowable Voltage VDC	Coil Resistance
3	2.4	2.4	3.9	60 x (1±10%)
5	4.0	4.0	6.5	167 x (1±10%)
6	4.8	4.8	7.8	240 x (1±10%)
9	7.2	7.2	11.7	540 x (1±10%)
12	9.6	9.6	15.6	960 x (1±10%)
18	14.4	14.4	23.4	2160 x (1±10%)
24	19.2	19.2	31.2	3840 x (1±10%)

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

2) Above driving voltage only apply to check relay normal function without load. When normal use with load, use (1~1.5)U_e for latching relay set/reset voltage, use (1~1.3)U_e for set voltage and 0V for release voltage for monostable relay.

COIL DATA

at 23°C

2 coils latching (300mW)

Nominal Voltage VDC	Set Voltage VDC max. 1) 2)	Reset Voltage VDC max. 1) 2)	Max. Allowable Voltage VDC	Coil Resistance
3	2.4	2.4	3.9	30 x (1±10%)
5	4.0	4.0	6.5	83 x (1±10%)
6	4.8	4.8	7.8	120 x (1±10%)
9	7.2	7.2	11.7	270 x (1±10%)
12	9.6	9.6	15.6	480 x (1±10%)
18	14.4	14.4	23.4	1080 x (1±10%)
24	19.2	19.2	31.2	1920 x (1±10%)

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

2) Above driving voltage only apply to check relay normal function without load. When normal use with load, use (1~1.5)Ue for latching relay set/reset voltage, use (1~1.3)Ue for set voltage and 0V for release voltage for monostable relay.

SAFETY APPROVAL RATINGS

UL/CUL	1 Form A: 8A 250VAC 5A 30VDC B300 R150 1/6HP 125VAC/250VAC	2 Form A / 1 Form A+1 Form B: 5A 250VAC 5A 30VDC B300 R150 1/6HP 125VAC/250VAC(For 1HD) 1/10HP 125VAC/250VAC(For 2H)
TÜV	1 Form A: 8A 250VAC 5A 250VAC (COSØ=0.4) 5A 30VDC	2 Form A / 1 Form A+1 Form B: 5A 250VAC 3A 250VAC (COSØ=0.4) 5A 30VDC

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.

ORDERING INFORMATION

Type	HFE60P/ 12 -1HD S T G -L2 -R (XXX)						
Coil voltage	3, 5, 6, 9, 12, 18, 24VDC						
Contact form	1H: 1 Form A 2H: 2 Form A 1HD: 1 Form A +1 Form B						
Construction	S: Plastic sealed						
Contact material	T: AgSnO ₂						
Contact plating	G: Gold plated Nil: No gold plated						
Sort	L1: 1 coil latching L2: 2 coils latching Nil: Single side stable						
Polarity	R: Reverse polarity Nil: Standard polarity						
Special code¹⁾	XXX: Customer special requirement						

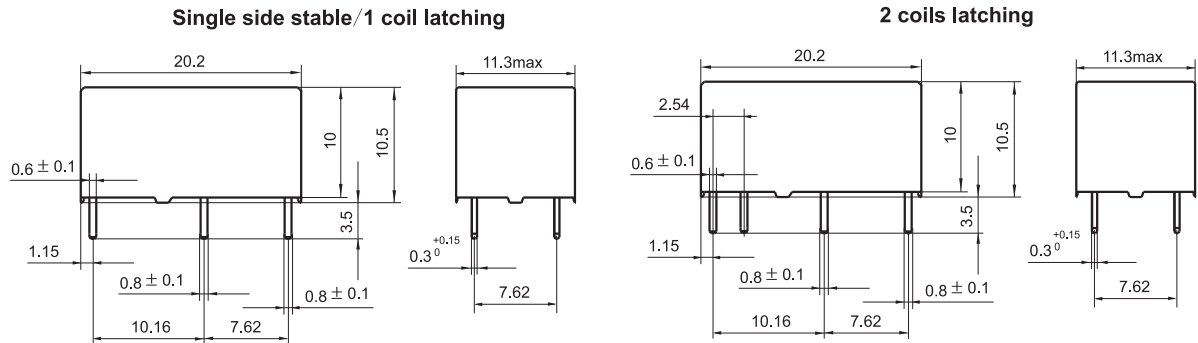
Notes: 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).

We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).

2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

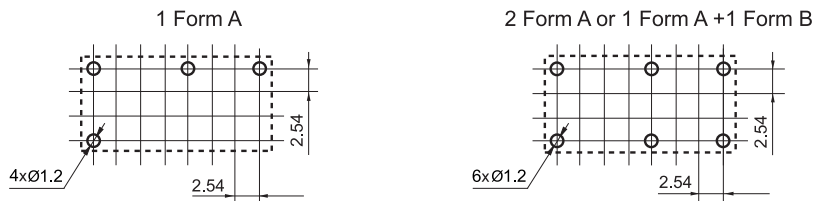
3) The customer special requirement express as special code after evaluating by Hongfa.

Outline Dimensions

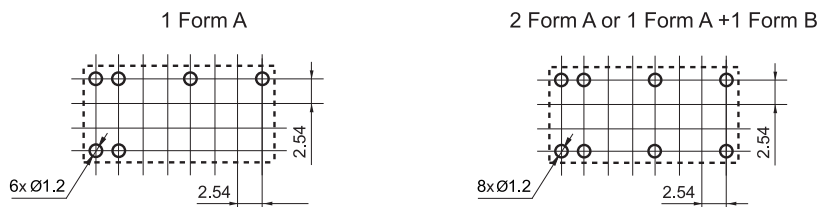


PCB Layout
(Bottom view)

Single side stable/1 coil latching

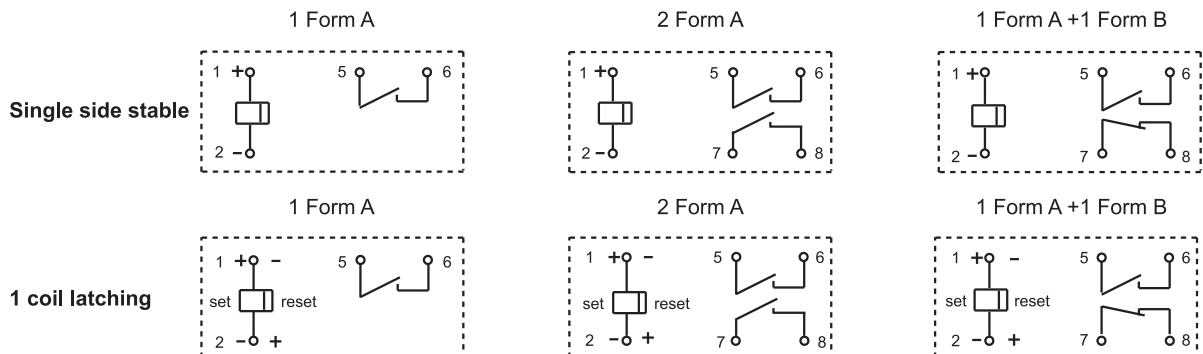
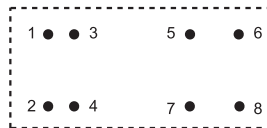


2 coils latching



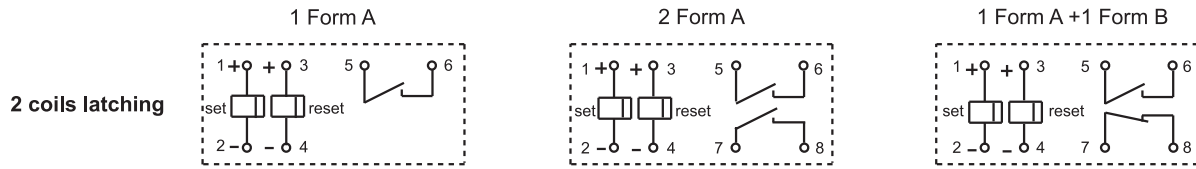
- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.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

Wiring Diagram
(Bottom view)



OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

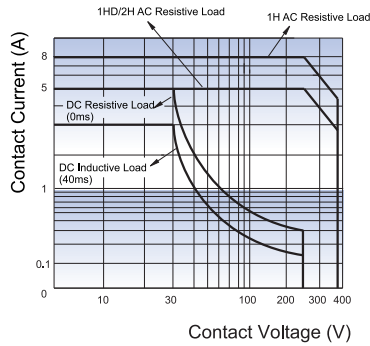
Unit: mm



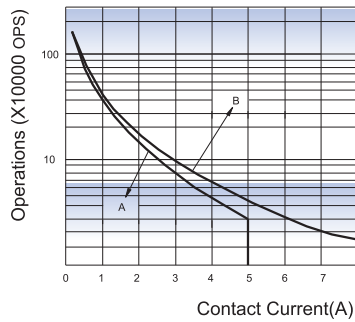
Remark: The above is wiring diagram for product with standard polarity, the coil polarity of reverse polarity and standard polarity is opposite.

CHARACTERISTIC CURVES

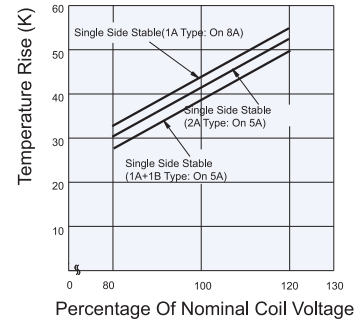
MAXIMUM SWITCHING POWER



ENDURANCE CURVE



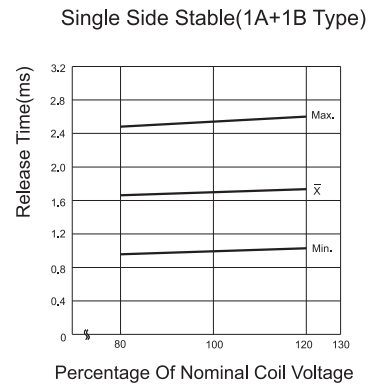
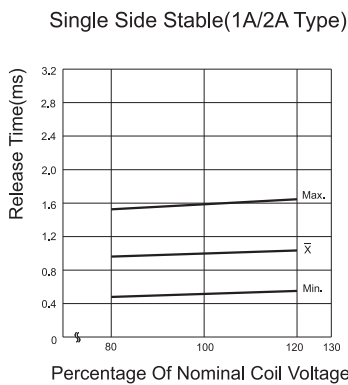
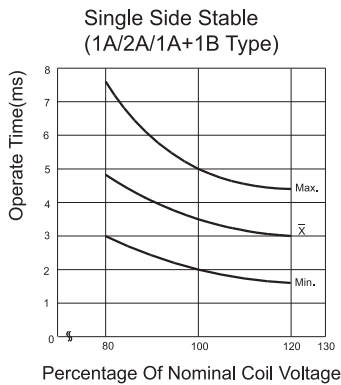
COIL TEMPERATURE RISE



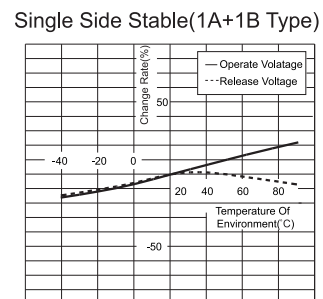
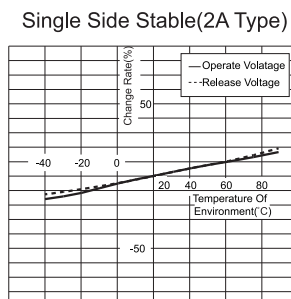
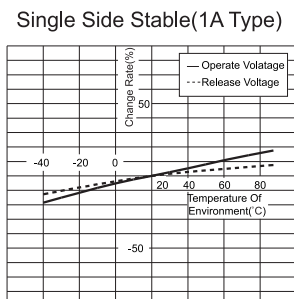
Test conditions:

- Curve A: 1A+1B type (or 2A type)
Curve B: 1A type
- Test conditions:
Resistive load, 120VAC~250VAC, 40°C.

Operate & Release Time



Operate & Release Voltage

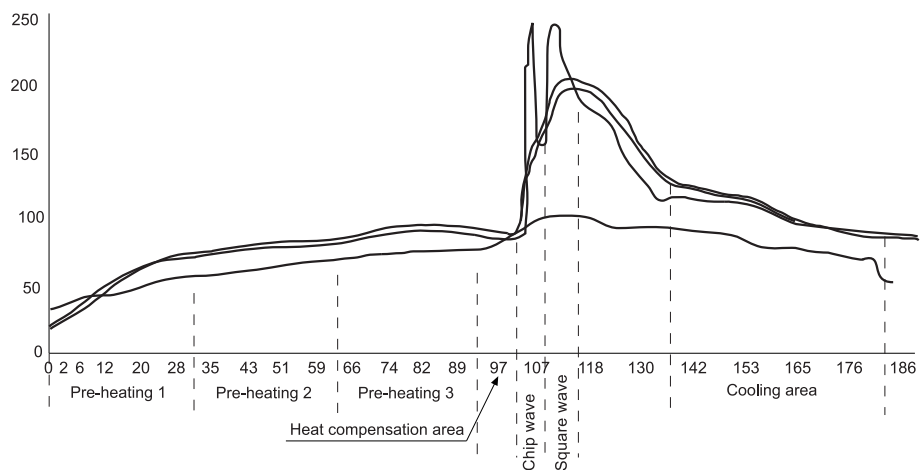


CHARACTERISTIC CURVES

Notice:

1. Latching relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. When choose the relay with PCB termination, the recommended welding temperature range and duration is 240°C to 260°C, 2s to 5s; Please do not use the reflow welding method, if the reflow is really required, please contact our technicals; the normal recommended wave soldering temperature is 250°C within 2s; the below chart is the wave soldering temperature distribution chart we recommended for your reference.
4. Keep the product away from strong magnetic field during transportation, storage and application, to avoid change of set/reset voltage.
5. This is a polarized relay. Please pay attention to the coil polarity according to the datasheet when using it.

Wave soldering temperature distribution chart



Disclaimer

The specification is for reference only. 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.