

# HFE60P

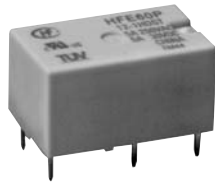
# SUBMINIATURE INTERMEDIATE POWER RELAY



File No.: E134517



File No.: B121253286006



### Features

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

### CONTACT DATA

Contact arrangement	1A	2A, 1A+1B
Contact resistance	No gold plated: 30mΩ (at 1A 6VDC) Gold plated: 20mΩ (at 0.1A 6VDC)	
Contact material	AgSnO <sub>2</sub>	
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 <sup>7</sup> OPS	
Electrical endurance	1 x 10 <sup>4</sup> OPS(at 40°C, 1.5s on 1.5s off)	

### 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)	5kV (1.2 x 50μs)	
Set/operate time	10ms max. (Approx. 4ms)	
Release time (single side stable)	5ms max.(Approx.2ms)	
Reset time (latching)	10ms max. (Approx. 4ms)	
Shock resistance	Functional	196m/s <sup>2</sup>
	Destructive	980m/s <sup>2</sup>
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	PCB	
Unit weight	Approx. 4.5g	
Construction	Plastic sealed	

Notes: The data shown above are initial values.

### 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 max.	Drop-out Voltage VDC min.	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 max.	Reset Voltage VDC max.	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%)

#### 2 coils latching (300mW)

Nominal Voltage VDC	Set Voltage VDC max.	Reset Voltage VDC max.	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%)



HONGFA RELAY

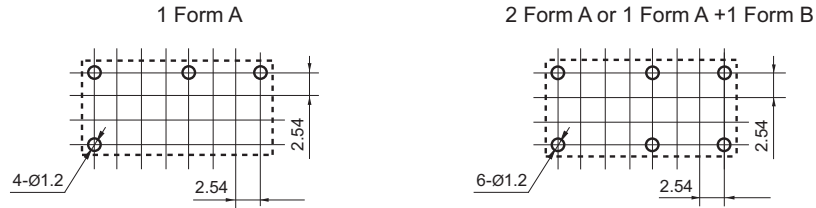
ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2015 Rev. 1.00

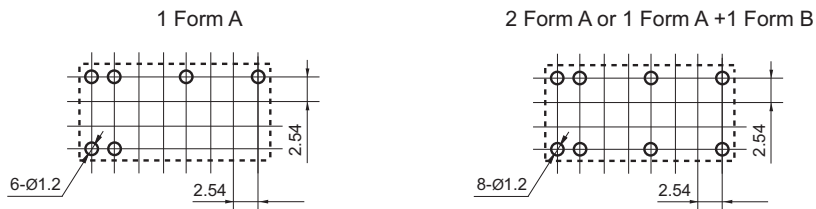


**PCB Layout**  
(Bottom view)

**Single side stable/1 coil latching**

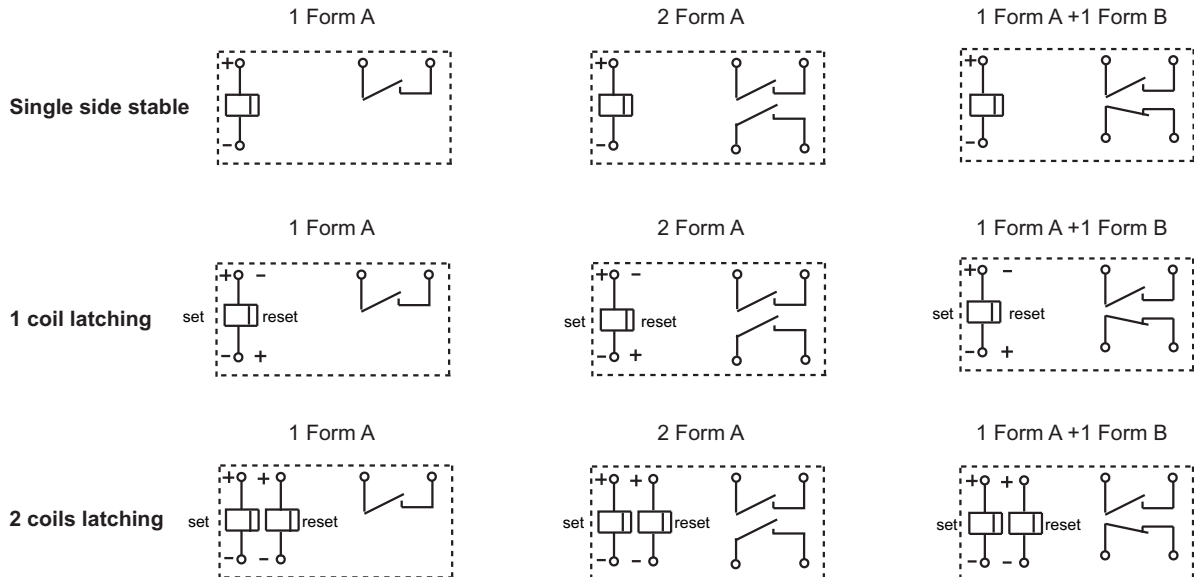


**2 coils latching**



- 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.

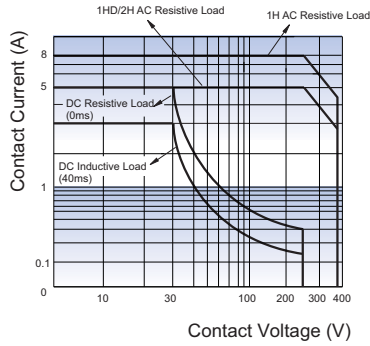
**Wiring Diagram**  
(Bottom view)



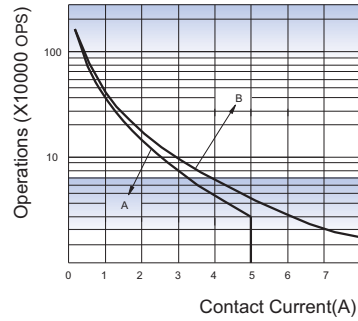
Remark: The above is wiring diagram for product with standard polarity, the coil polarity of reverse polarity and standard polarity is opposite.

# CHARACTERISTIC CURVES

## MAXIMUM SWITCHING POWER



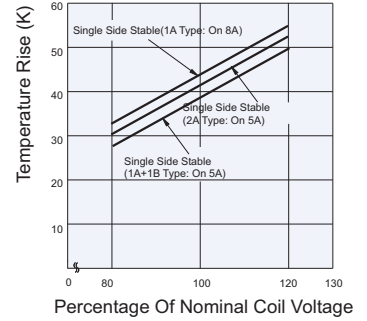
## ENDURANCE CURVE



### Test conditions:

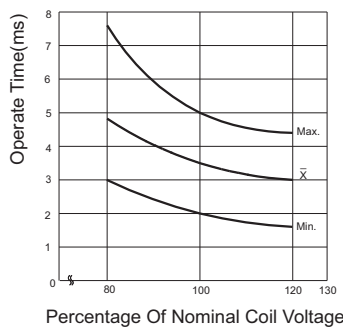
- 1) Curve A: 1A+1B type (or 2A type)  
Curve B: 1A type
- 2) Test conditions:  
Resistive load, 120VAC~250VAC, 40°C.

## COIL TEMPERATURE RISE

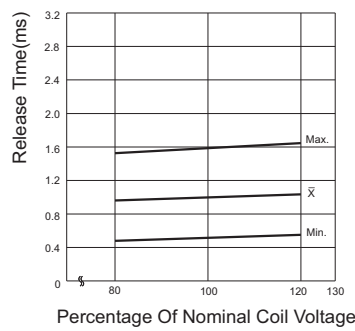


## Operate & Release Time

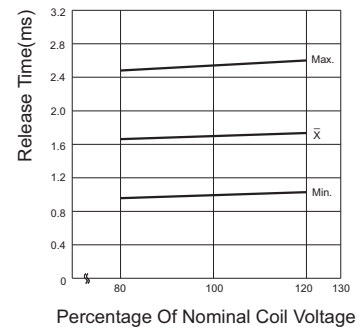
Single Side Stable (1A/2A/1A+1B Type)



Single Side Stable(1A/2A Type)

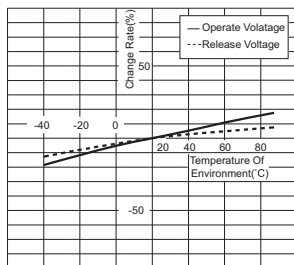


Single Side Stable(1A+1B Type)

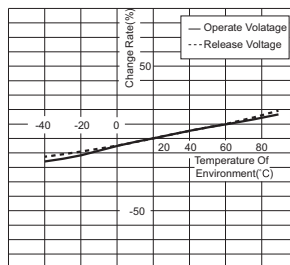


## Operate & Release Voltage

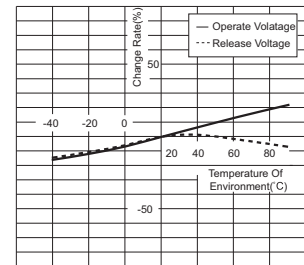
Single Side Stable(1A Type)



Single Side Stable(2A Type)



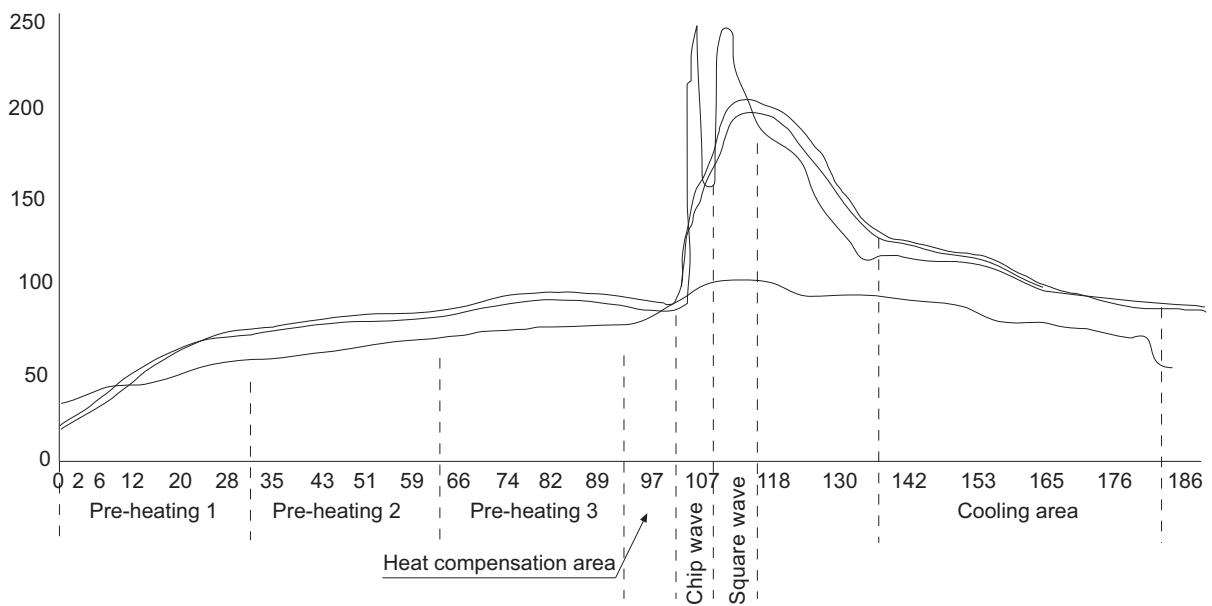
Single Side Stable(1A+1B Type)



## 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~260°C, 2s~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. 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.