HF115F-T/TH   MINIATURE HIGH POWER RELAY

c **UL** US

File No.: E134517

VDE
File No.:116934

CQC
File No.:CQC17002168381

Features

● High Temperature: 105˚C
● Low height 15.7 mm
● 5kV dielectric strength (between coil and contacts)
● Creepage distance: 10mm
● Meeting VDE 0700, 0631 reinforce insulation
● Product in accordance to IEC 60335-1 available
● UL insulation system: Class F
● Sockets available
● Plastic sealed and flux proofed types available
● Environmental friendly product (RoHS compliant)
● Outline Dimensions: 29.0mm x 12.7mm x 15.7mm

CONTACT DATA

Contact arrangement	1A, 1C
Contact resistance [1]	100mΩ max.(at 1A 6VDC)
Contact material	See ordering info.
Contact rating (Res. load)	HF115F-TH: 10A 250VAC HF115F-T: 16A 250VAC
Max. switching voltage	440VAC / 300VDC
Max. switching current	HF115F-TH:10A HF115F-T:16A
Max. switching power	HF115F-TH: 2500VA HF115F-T: 4000VA
Mechanical endurance	1 x 10^7OPS
Electrical endurance	HF115F-T 1H3B type: 5 x 10^4OPS (16A 250VAC, Resistive load, at 105℃, 5s on 5s off) HF115F-TH 1H3B type: 5 x 10^4OPS (10A 250VAC, Resistive load, at 105℃, 5s on 5s off)

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

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
Surge voltage (between coil & contacts)		10kV (1.2 / 50μs)
Operate time (at nomi. volt.)		15ms max.
Release time (at nomi. volt.)		8ms max.
Temperature rise (at nomi. volt.)		55K max.
Shock resistance *	Functional	98m/s²
	Destructive	980m/s²
Vibration resistance *		10Hz to 150Hz 10g/5g
Humidity		5% to 85% RH
Ambient temperature		-40˚C to 105˚C
Termination		PCB
Unit weight		Approx. 13.5g
Construction		Plastic sealed, Flux proofed

Notes: 1) The data shown above are initial values.
2) ＊Index is not that of relay length direction.

COIL

Coil power	HF115F-TH: Approx. 250mW; HF115F-T: Approx. 400mW

COIL DATA   at 23˚C

Standard type (HF115F-T)

Nominal Voltage VDC	Pick-up Voltage VDC max.[1]	Drop-out Voltage VDC min.[1]	Max. Voltage VDC [2]	Coil Resistance Ω
5	3.50	0.5	6.5	62 x (1±10%)
6	4.20	0.6	7.8	90 x (1±10%)
9	6.30	0.9	11.7	202 x (1±10%)
12	8.40	1.2	15.6	360 x (1±10%)
18	12.6	1.8	23.4	810 x (1±10%)
24	16.8	2.4	31.2	1440 x (1±10%)
48 [3]	33.6	4.8	62.4	5760 x (1±15%)
60 [3]	42.0	6.0	78	7500 x (1±15%)

Sensitive type (HF115F-TH)

Nominal Voltage VDC	Pick-up Voltage VDC max.[1]	Drop-out Voltage VDC min.[1]	Max. Voltage VDC [2]	Coil Resistance Ω
5	3.75	0.5	6.5	100 x (1±10%)
6	4.50	0.6	7.8	144 x (1±10%)
9	6.75	0.9	11.7	324 x (1±10%)
12	9.00	1.2	15.6	576 x (1±10%)
18	13.50	1.8	23.4	1296 x (1±10%)
24	18.00	2.4	31.2	2304 x (1±10%)
48 [3]	36.00	4.8	62.4	9216 x (1±15%)
60 [3]	45.00	6.0	78	12857 x (1±15%)

Notes: 1) The data shown above are initial values.
2) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.
3) For products with rated voltage ≥ 48V, measures should be taken to prevent coil overvoltage in order to protect coil in test and application (eg. Connect diodes in parallel).

SAFETY APPROVAL RATINGS

VDE	HF115F-T-1H(S)3A	18.4A 250VAC at 105°C
	HF115F-TH -1H(S)3	10A 250VAC at 105°C 6A 400VAC at 105°C
	HF115F-T-1H(S)3B	16A 250VAC at 105°C
	HF115F-TH -1H(S)3B	10A 250VAC at 105°C
	HF115F-T-1Z(S)3B	NO: 16A 250VAC at 105°C NC: 5A 250VAC at 105°C
UL/CUL	HF115F-TH -1H(S)3B	10A 277VAC
	HF115F-TH -1H(S)3A	10A 277VAC
	HF115F-T-1H(S)3B	16A 277VAC
	HF115F-T-1H(S)3A	16A 250VAC

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

$$\text{H F 1 1 5 F - T / T H} \quad 012 \quad \text{-1H} \quad \text{S} \quad 3 \quad \text{A} \quad \text{(XXX)}$$

Type	HF115F-T: Standard HF115F-TH: High Sensitive
Coil voltage	5, 6, 9, 12, 18, 24, 48, 60VDC
Contact arrangement	**1H:** 1 Form A　　**1Z:** 1 Form C
Construction[1)2)]	**S:** Plastic sealed　　**Nil:** Flux proofed
Version	**3:** 5.0mm
Contact material	**A:** AgSnO$_2$　　**B:** AgNi　　**Nil:** AgCdO
Special code[3)]	**XXX:** Customer special requirement　　**Nil:** Standard

Notes: 1) We recommend flux proofed types for a clean environment (free from contaminations like H$_2$S, SO$_2$, NO$_2$, dust, etc.).
We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H$_2$S, SO$_2$, NO$_2$, 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. e.g.(335) stands for product in accordance to IEC 60335-1 (GWT).

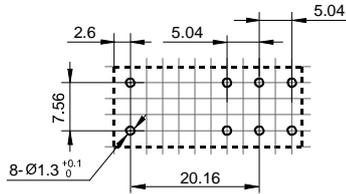## OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT　　Unit: mm
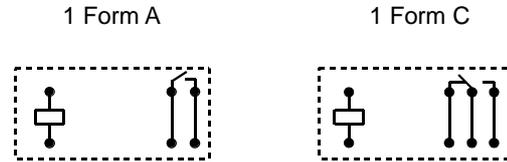
Outline Dimensions
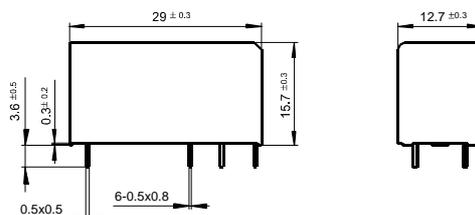
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

PCB Layout
(Bottom view)

2.6 5.04 5.04

7.56

8-Ø1.3 $^{+0.1}_{0}$

20.16

Wiring Diagram
(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 2.52mm.

CHARACTERISTIC CURVES

ENDURANCE CURVE
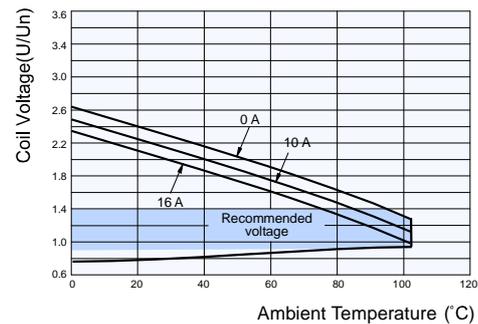
Operations (X10000 OPS)

1000

100

10

1

0 2 4 6 8 10 12 14 16

A

B

Contact Current (A)
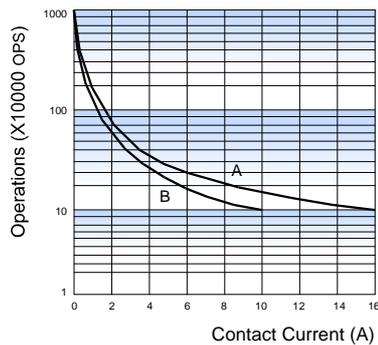
Notes:
1. Curve A: HF115F-T 1H3B type
   Curve B: HF115F-TH 1H3B type
2. Test conditions:
   NO, Resistive load, 250VAC, Flux proofed,
   Room temp., 1s on 9s off

COIL OPERATING RANGE (DC) *

Coil Voltage(U/Un)

3.6
3.4
3.0
2.6
2.2
1.8
1.4
1.0
0.6

0 20 40 60 80 100 120

0 A

10 A

16 A

Recommended voltage

Ambient Temperature (˚C)

Notes: * The use of a relay with an energising voltage other than the rated coil voltage may lead to reduced electrical life.
An energising voltage over the abver range may damage the insulation of relay coil.