

**HF3 Relay**

- Y-Design
- Frequency range DC to 3GHz
- Impedance 50Ω or 75Ω
- Small dimensions (14.6x7.2x10mm)
- 1 form C contact (1 changeover contact)
- Immersion cleanable
- Low power consumption (≤140mW)

Typical applications  
Cable modems and linecards/ CATV, Tabs, measurement and test equipment ATE, satellite / audio / video tuners, wireless base stations and antennas, switching boards



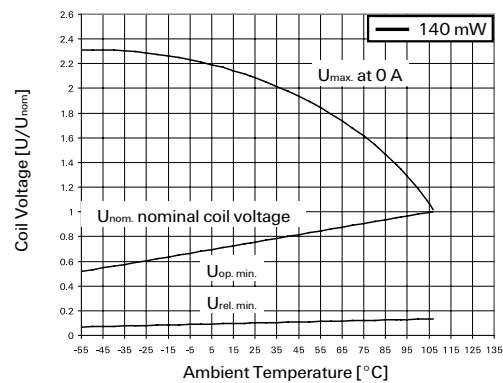
Contact Data	
Contact arrangement	1 form C, 1 CO
Max. switching voltage	220VDC, 250VAC
Rated current	2A
Limiting continuous current, 23°C	2A
Switching power	60W, 62.5VA, 50W (2.5GHz)
Max. continuous RF-power, 23°C	50W (2.5GHz)
Contact material	Ag, Au covered
Minimum switching voltage	100μV
Initial contact resistance	<100mΩ at 10mA, 20mV
Operate time	typ. 3ms, max. 5ms
Release time	
without diode in parallel	typ. 2ms, max. 5ms
with diode in parallel	typ. 4ms, max. 6ms
Bounce time	typ. 1ms, max. 3ms
Mechanical endurance	10 <sup>7</sup> operations

Coil Data	
Coil voltage range	3 to 24VDC

Coil versions, monostable						
Coil code	Rated voltage VDC	Operate voltage VDC	Limiting voltage VDC	Release voltage VDC	Coil resistance Ω±10%	Rated coil power mW
<b>50Ω version, monostable, 1 coil</b>						
51	3	2.25	6.50	0.30	64	140
52	4.5	3.38	9.80	0.45	145	140
53	5	3.75	10.90	0.50	178	140
54	6	4.50	13.00	0.60	257	140
55	9	6.75	19.60	0.90	574	140
56	12	9.00	26.10	1.20	1028	140
57	24	18.00	52.30	2.40	4114	140
<b>75Ω version, monostable, 1 coil</b>						
01	3	2.25	6.50	0.30	64	140
02	4.5	3.38	9.80	0.45	145	140
03	5	3.75	10.90	0.50	178	140
04	6	4.50	13.00	0.60	257	140
05	9	6.75	19.60	0.90	574	140
06	12	9.00	26.10	1.20	1028	140
07	24	18.00	52.30	2.40	4114	140

All figures are given for coil without pre-energization, at ambient temperature +23°C.

**Coil Data (continued)**



**Coil versions, bistable**

Coil code	Rated voltage VDC	Set voltage VDC	Limiting voltage VDC	Reset voltage VDC	Coil resistance Ω±10%	Rated coil power mW
<b>50Ω version, bistable, 1 coil</b>						
71	3	2.25	9.20	-2.25	128	70
72	4.5	3.38	13.85	-3.38	289	70
73	5	3.75	15.30	-3.75	357	70
74	6	4.50	18.50	-4.50	514	70
75	9	6.75	27.70	-6.75	1157	70
76	12	9.00	37.00	-9.00	2057	70
77	24	18.00	74.00	-18.00	8228	70
<b>50Ω version, bistable, 2 coils</b>						
91	3	2.25	6.50	2.25	64	140
92	4.5	3.38	9.80	3.38	145	140
93	5	3.75	10.90	3.75	178	140
94	6	4.50	13.00	4.50	257	140
95	9	6.75	19.60	6.75	574	140
96	12	9.00	26.10	9.00	1028	140
97	24	18.00	52.30	18.00	4114	140

All figures are given for coil without pre-energization, at ambient temperature +23°C.

**HF3 Relay (Continued)**

**Coil Data (continued)**

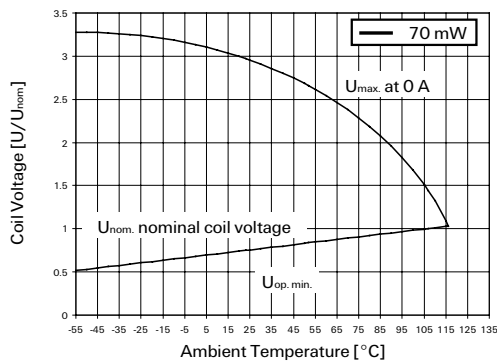
**Coil versions, bistable**

Coil code	Rated voltage VDC	Set voltage VDC	Limiting voltage VDC	Reset voltage VDC	Coil resistance $\Omega \pm 10\%$	Rated coil power mW
<b>75<math>\Omega</math> version, bistable, 1 coil</b>						
21	3	2.25	9.20	-2.25	128	70
22	4.5	3.38	13.85	-3.38	289	70
23	5	3.75	15.30	-3.75	357	70
24	6	4.50	18.50	-4.50	514	70
25	9	6.75	27.70	-6.75	1157	70
26	12	9.00	37.00	-9.00	2057	70
27	24	18.00	74.00	-18.00	8228	70

**75 $\Omega$  version, bistable, 2 coils**

41	3	2.25	6.50	2.25	64	140
42	4.5	3.38	9.80	3.38	145	140
43	5	3.75	10.90	3.75	178	140
44	6	4.50	13.00	4.50	257	140
45	9	6.75	19.60	6.75	574	140
46	12	9.00	26.10	9.00	1028	140
47	24	18.00	52.30	18.00	4114	140

All figures are given for coil without pre-energization, at ambient temperature +23°C.



**Insulation Data**

**50 $\Omega$  version 75 $\Omega$  version**

Initial dielectric strength		
between open contacts	600V <sub>rms</sub>	
between contact and coil	1000V <sub>rms</sub>	
Initial surge withstand voltage		
between open contacts	1000V	
between contact and coil	1500V	

**RF Data**

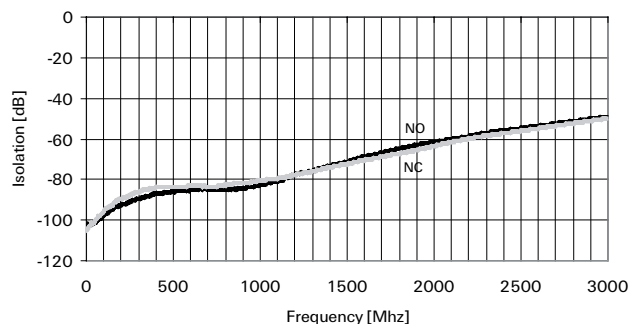
Isolation		
at 100MHz/900MHz	-80dB/-72dB	-80dB/-72dB
at 3GHz	-45dB	-40dB
Insertion loss		
at 100MHz/900MHz	-0.03dB/-0.12dB	-0.03dB/-0.12dB
at 3GHz	-0.35dB	-0.40dB
Voltage standing wave ratio (VSWR)		
at 100MHz/900MHz/3GHz	1.05/1.20/1.20	1.05/1.20/1.40

**Other Data**

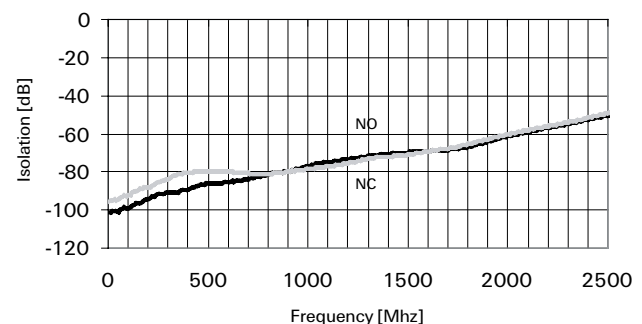
Material compliance: EU RoHS/ELV, China RoHS, REACH, Halogen content refer to the Product Compliance Support Center at [www.tycoelectronics.com/customersupport/rohssupportcenter](http://www.tycoelectronics.com/customersupport/rohssupportcenter)

Ambient temperature	-55°C to +85°C
Thermal resistance	<165K/W
Category of environmental protection	
IEC 61810	RT III - wash tight
Degree of protection, IEC 60529	IP 67, immersion cleanable
Vibration resistance (functional)	35g, 10 to 1000Hz
Shock resistance (functional), half sinus 11ms	50g
Shock resistance (destructive), half sinus 0.5ms	150g
Terminal type	SMT
Weight	max. 2.5g
Resistance to soldering heat SMT	
IEC 60068-2-58	265°C/10s
Moisture sensitive level, JEDEC J-Std-020D	MSL3
Ultrasonic cleaning	not recommended
Packaging/unit	reel/400 pcs., box/400 or 2000 pcs.

**Typical RF performance, 50 $\Omega$  version**

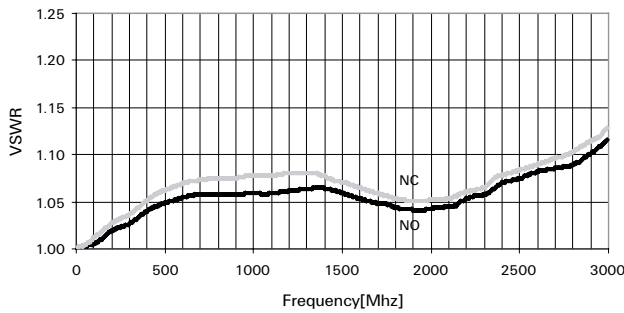
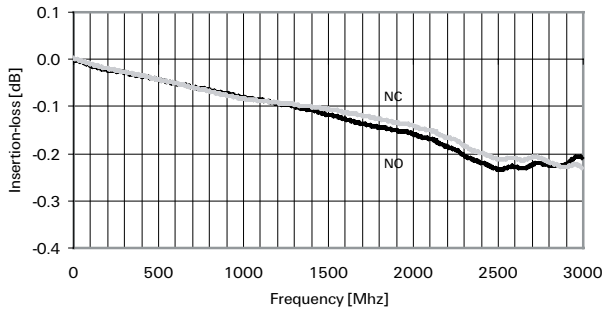


**Typical RF performance, 75 $\Omega$  version**

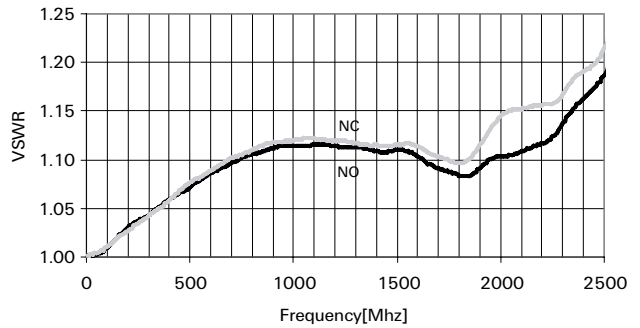
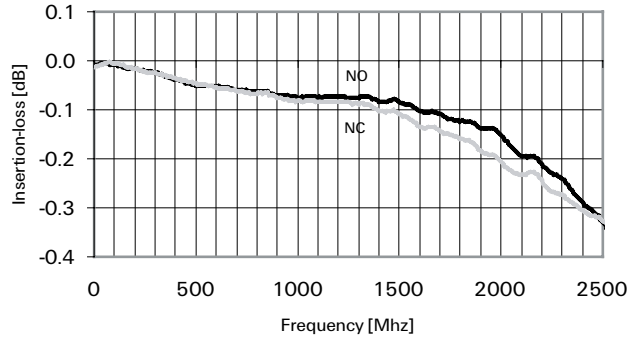


**HF3 Relay (Continued)**

**Typical RF performance, 50Ω version (continued)**



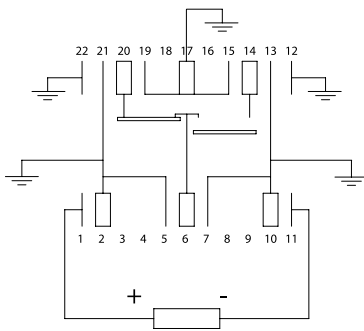
**Typical RF performance, 75Ω version (continued)**



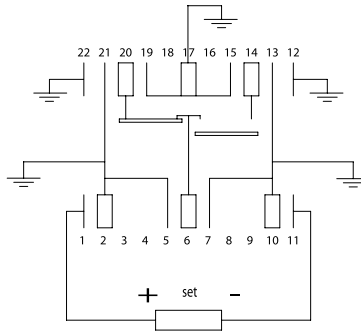
**Terminal assignment**

TOP view on component side of PCB

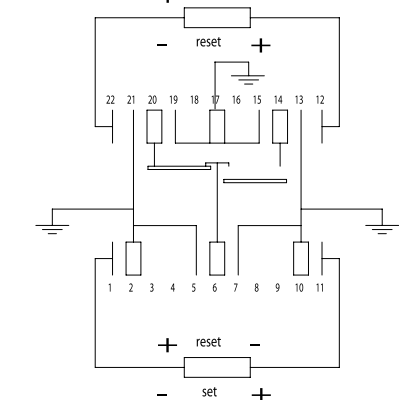
Monostable



Bistable, 1 coil



Bistable, 2 coils

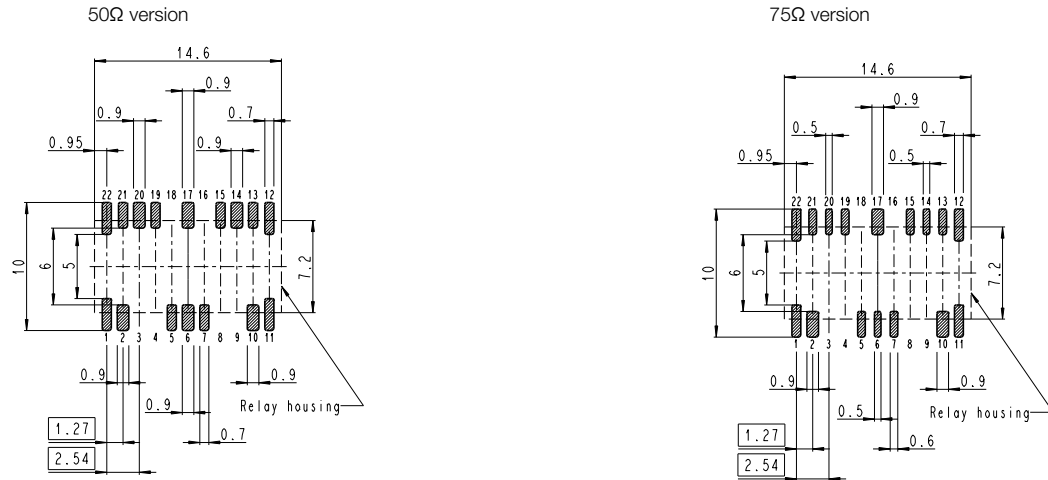


Contacts are shown in reset condition.  
Contact position might change during transportation and must be reset before use.

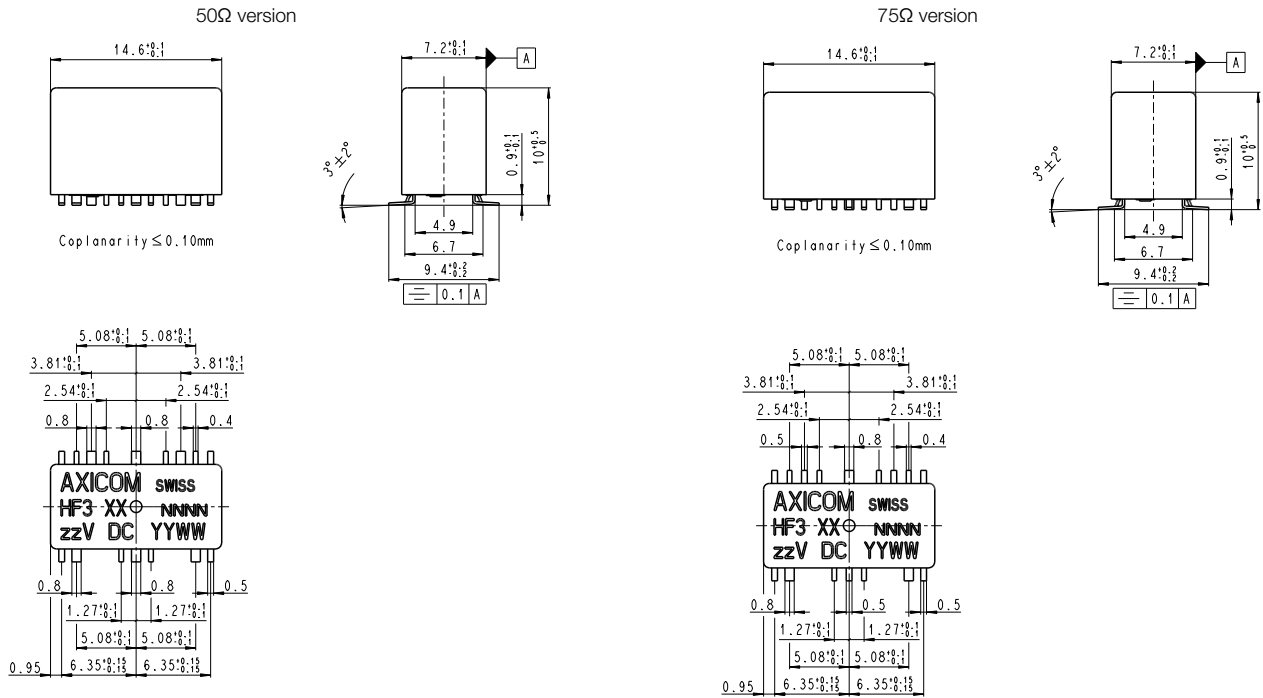
**HF3 Relay (Continued)**

**PCB layout**

TOP view on component side of PCB

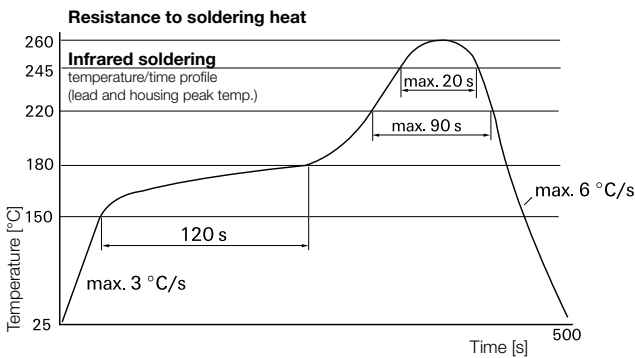
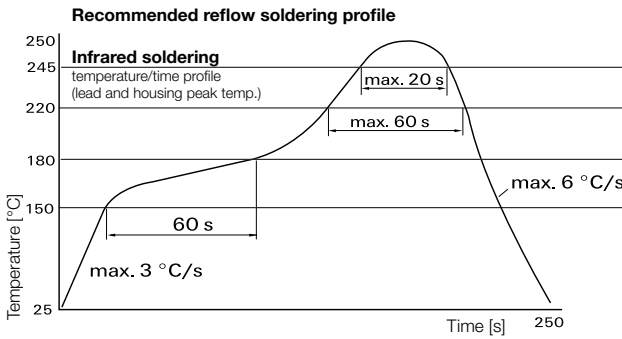
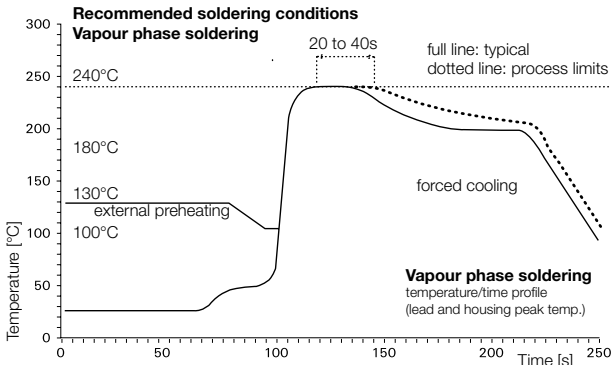


**Dimensions**

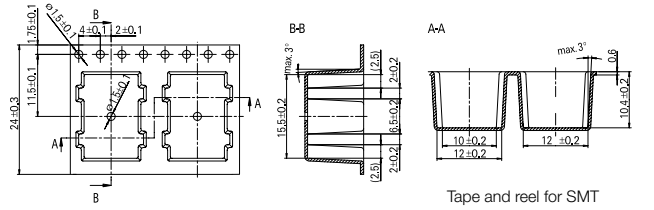


**HF3 Relay (Continued)**

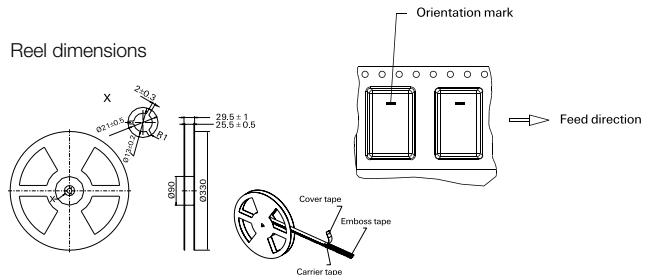
**Processing**



**Packing**



**Reel dimensions**



**HF3 Relay** (Continued)

**Product code structure**

Typical product code **HF3 53**

<b>Type</b>	<b>HF3</b> Signal Relays HF3 Series 1 form C, 1 CO
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**Coil**

Coil code: please refer to coil versions table

Performance type

<b>5x</b> 50Ω version, monostable 1coil	<b>0x</b> 75Ω version, monostable 1coil
<b>7x</b> 50Ω version, bistable 1coil	<b>2x</b> 75Ω version, bistable 1coil
<b>9x</b> 50Ω version, bistable 2coils	<b>4x</b> 75Ω version, bistable 2coils

Product code	Arrangement	Version	Coil	Coil type	Part number
HF3 51	1 form C (1 CO)	50Ω	3VDC	Monostable	1462051-1
HF3 52			4.5VDC		1-1462051-6
HF3 53			5VDC		1462051-2
HF3 54			6VDC		1-1462051-7
HF3 55			9VDC		1462051-3
HF3 56			12VDC		1462051-4
HF3 57			24VDC		1462051-5
HF3 71	1 form C (1 CO)	50Ω	3VDC	Bistable 1 coil	1462051-6
HF3 72			4.5VDC		1-1462051-8
HF3 73			5VDC		1462051-7
HF3 74			6VDC		1-1462051-9
HF3 75			9VDC		1462051-8
HF3 76			12VDC		1462051-9
HF3 77			24VDC		1-1462051-0
HF3 91	1 form C (1 CO)	50Ω	3VDC	Bistable 2 coils	1-1462051-1
HF3 92			4.5VDC		2-1462051-0
HF3 93			5VDC		1-1462051-2
HF3 94			6VDC		2-1462051-1
HF3 95			9VDC		1-1462051-3
HF3 96			12VDC		1-1462051-4
HF3 97			24VDC		1-1462051-5
HF3 01	1 form C (1 CO)	75Ω	3VDC	Monostable	1462050-1
HF3 02			4.5VDC		1-1462050-6
HF3 03			5VDC		1462050-2
HF3 04			6VDC		1-1462050-7
HF3 05			9VDC		1462050-3
HF3 06			12VDC		1462050-4
HF3 07			24VDC		1462050-5
HF3 21	1 form C (1 CO)	75Ω	3VDC	Bistable 1 coil	1462050-6
HF3 22			4.5VDC		1-1462050-8
HF3 23			5VDC		1462050-7
HF3 24			6VDC		1-1462050-9
HF3 25			9VDC		1462050-8
HF3 26			12VDC		1462050-9
HF3 27			24VDC		1-1462050-0
HF3 41	1 form C (1 CO)	75Ω	3VDC	Bistable 2 coils	1-1462050-1
HF3 42			4.5VDC		2-1462050-0
HF3 43			5VDC		1-1462050-2
HF3 44			6VDC		2-1462050-1
HF3 45			9VDC		1-1462050-3
HF3 46			12VDC		1-1462050-4
HF3 47			24VDC		1-1462050-5