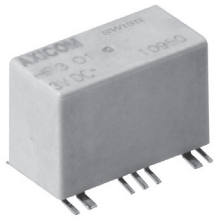
HF3 Relay

- **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. continuos 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
Duration of set/reset pulse min.	20ms
Mechanical endurance	10^7 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
50Ω version, monostable, 1 coil						
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
75Ω version, monostable, 1 coil						
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
50Ω version, bistable, 1 coil						
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
50Ω version, bistable, 2 coils						
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.

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
75Ω version, bistable, 1 coil						
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
75Ω 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.

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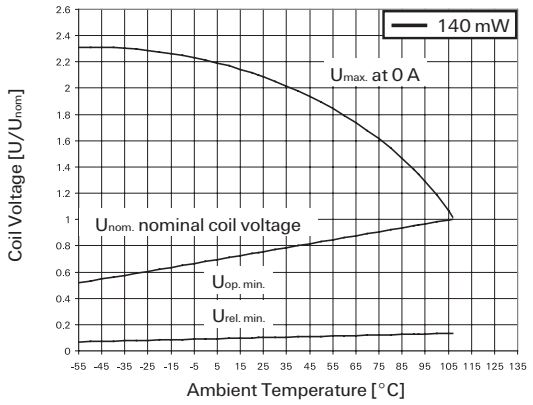
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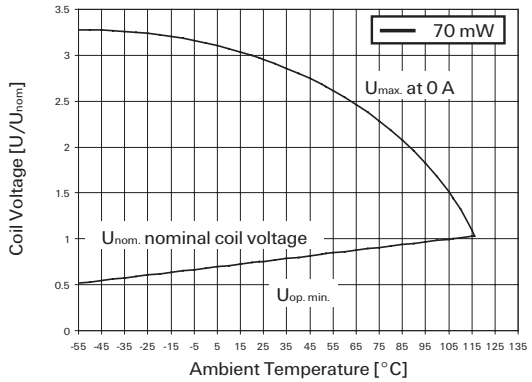
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HF3 Relay (Continued)

Coil operating Range





Insulation Data	50Ω version	75Ω version
Initial dielectric strength		
between open contacts	$600V_{rms}$	
between contact and coil	$1000V_{rms}$	
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.te.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.

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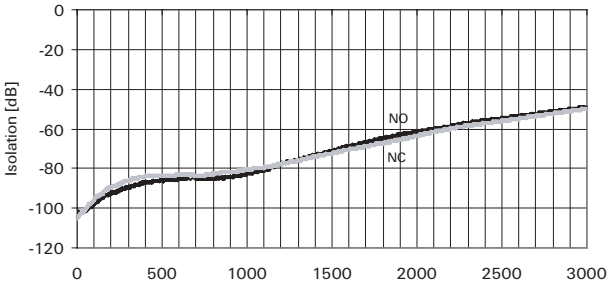
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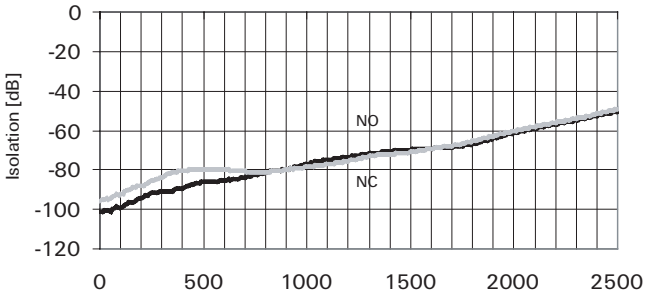
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HF3 Relay (Continued)

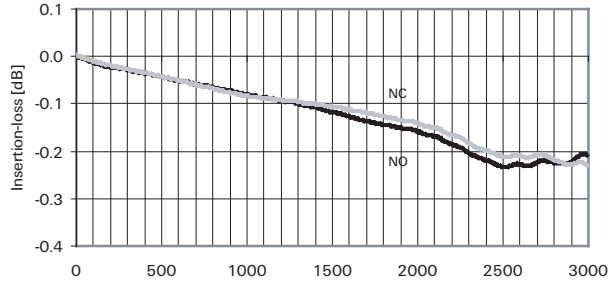
Typical RF performance, 50Ω version



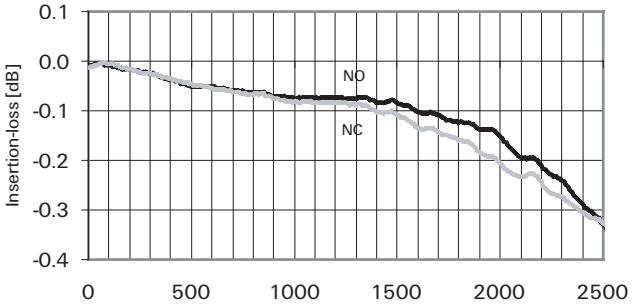
Typical RF performance, 75Ω version

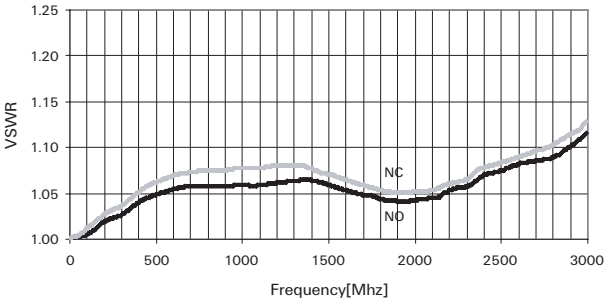


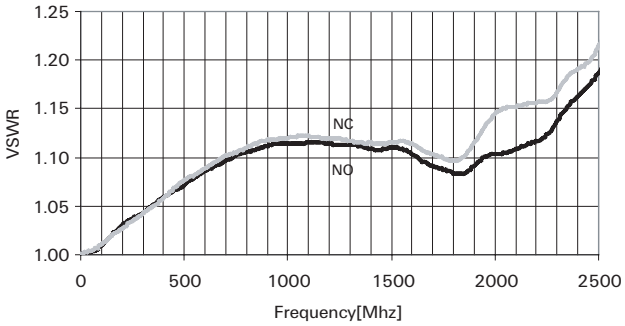
Typical RF performance, 50Ω version (continued)



Typical RF performance, 75Ω version (continued)



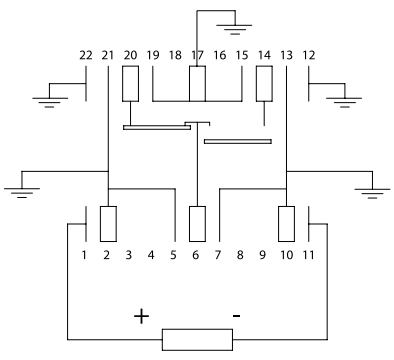




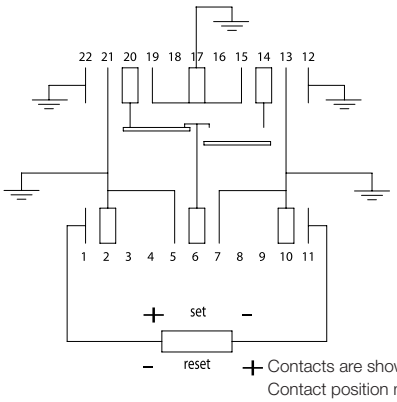
Terminal assignment

TOP view on component side of PCB

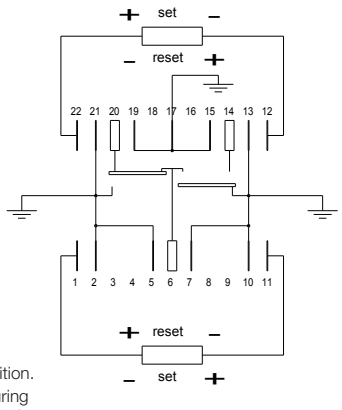
Monostable



Bistable, 1 coil



Bistable, 2 coils



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

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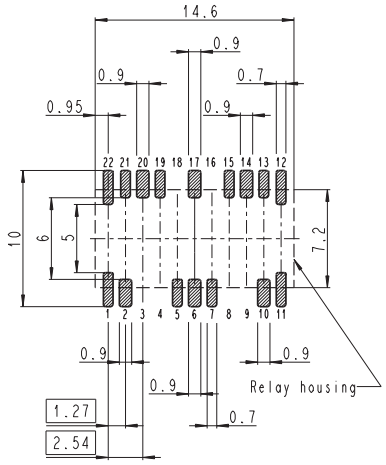
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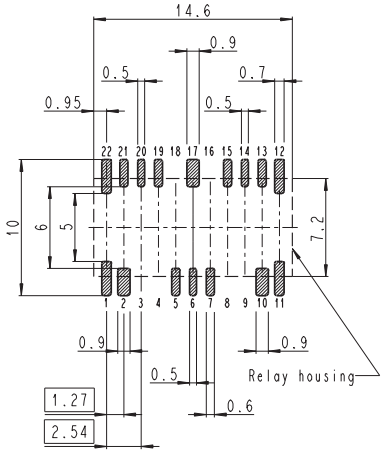
HF3 Relay (Continued)

PCB layout
TOP view on component side of PCB

50Ω version

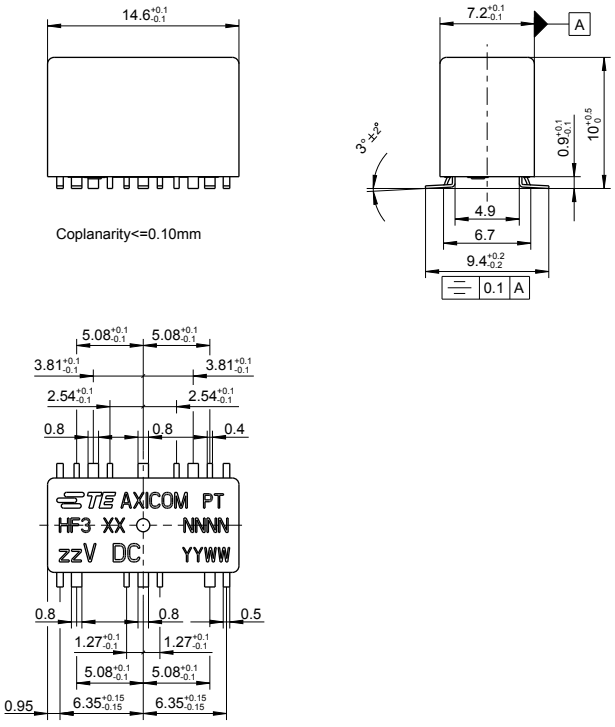


75Ω version

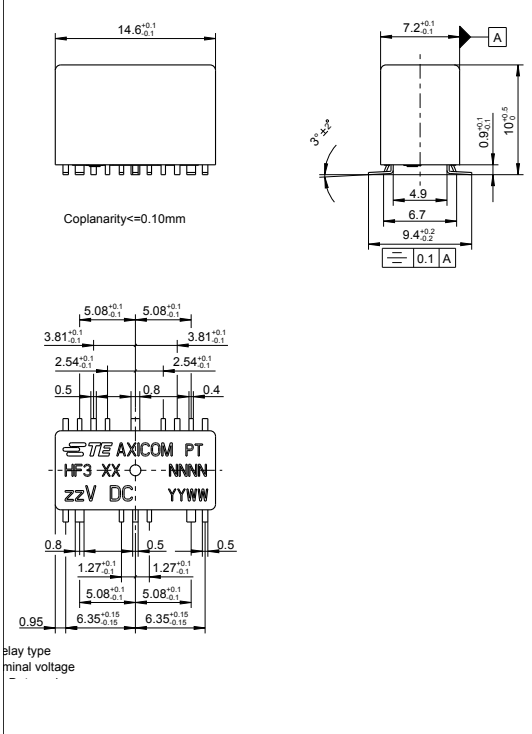


Dimensions

50Ω version



75Ω version



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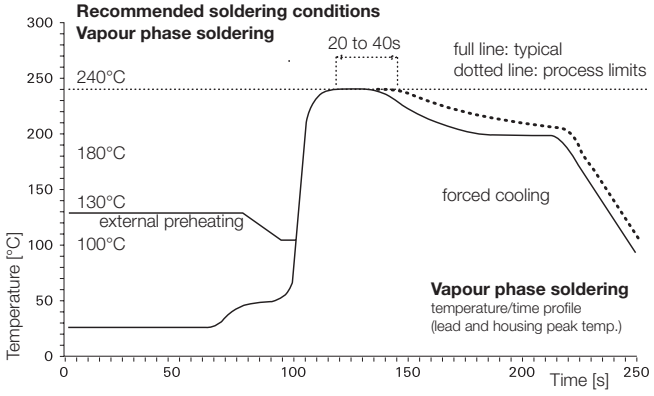
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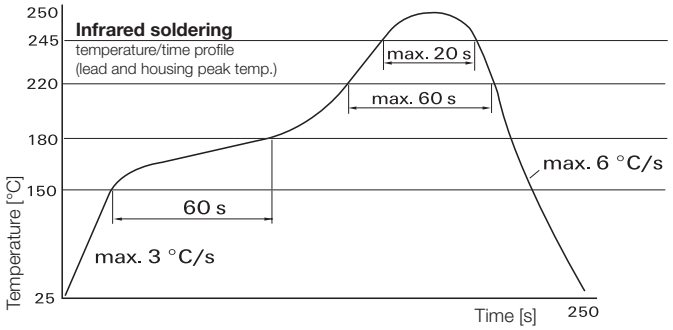
HF3 Relay (Continued)

Processing

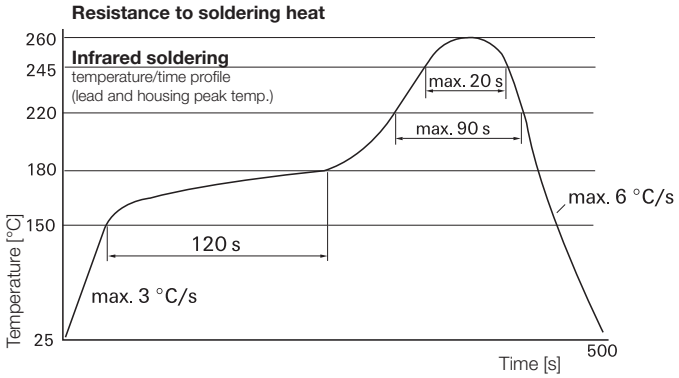
Recommended soldering conditions
Vapour phase soldering



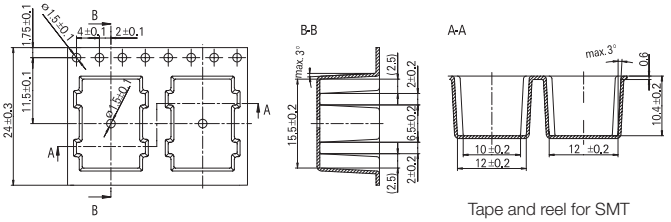
Recommended reflow soldering profile



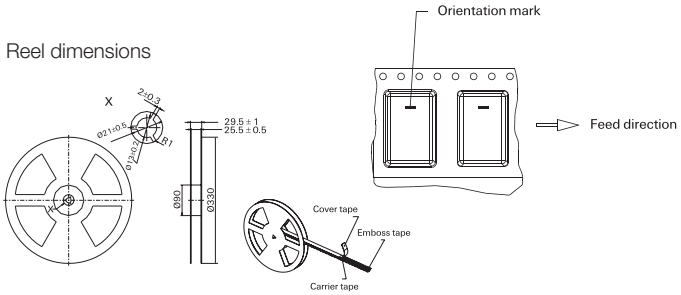
Resistance to soldering heat



Packing



Reel dimensions



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HF3 Relay (Continued)

Product code structure

Typical product code **HF3** **53**

Type

HF3 Signal Relays HF3 Series
1 form C, 1 CO

Coil

Coil code: please refer to coil versions table
Performance type

5x	50Ω version, monostable 1coil	**0x**	75Ω version, monostable 1coil
7x	50Ω version, bistable 1coil	**2x**	75Ω version, bistable 1coil
9x	50Ω version, bistable 2coils	**4x**	75Ω version, bistable 2coils

Product code	Arrangement	Version	Coil	Coil type	Part number
HF3 51	1 form C (1 CO)	50ohm	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)	50ohm	3VDC	Bistable 1 coil	1462051-6
HF3 72			4.5VDC		1-1462051-8
HF3 73			5VDC		1462051-7
HF3 76			12VDC		1462051-9
HF3 91	1 form C (1 CO)	50ohm	3VDC	Bistable 2 coils	1-1462051-1
HF3 92			4.5VDC		2-1462051-0
HF3 93			5VDC		1-1462051-2
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)	75ohm	3VDC	Monostable	1462050-1
HF3 02			4.5VDC		1-1462050-6
HF3 03			5VDC		1462050-2
HF3 06			12VDC		1462050-4
HF3 07			24VDC		1462050-5
HF3 21	1 form C (1 CO)	75ohm	3VDC	Bistable 1 coil	1462050-6
HF3 23			5VDC		1462050-7
HF3 26			12VDC		1462050-9
HF3 41	1 form C (1 CO)	75ohm	3VDC	Bistable 2 coils	1-1462050-1
HF3 43			5VDC		1-1462050-2
HF3 46			12VDC		1-1462050-4
HF3 47			24VDC		1-1462050-5

This list represents the most common types and does not show all variants covered by this data sheet.
Other types on request

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