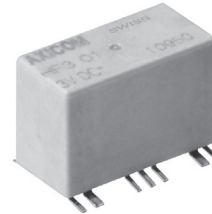


**HF3 Relay**

- 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



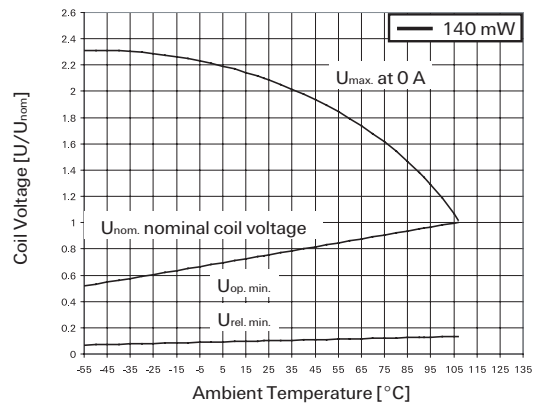
| Contact Data                      |                              |
|-----------------------------------|------------------------------|
| Contact arrangement               | 1 form C, 1 CO               |
| Max. switching voltage            | 220VDC, 250VAC               |
| Rated current                     | 2A                           |
| Limiting continuous current, 23°C | 2A                           |
| Switching power                   | 60W, 62.5VA,<br>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.

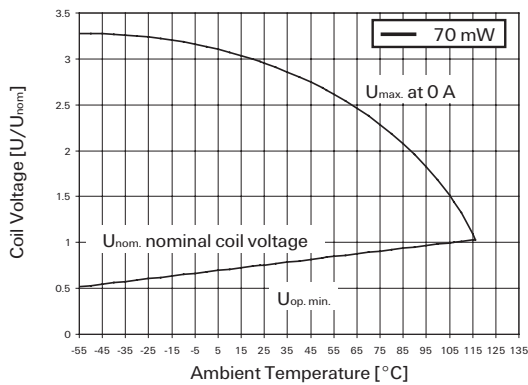
**HF3 Relay** (Continued)

**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                  |
| <b>75<math>\Omega</math> version, bistable, 2 coils</b> |                   |                 |                      |                   |                                   |                     |
| 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                |

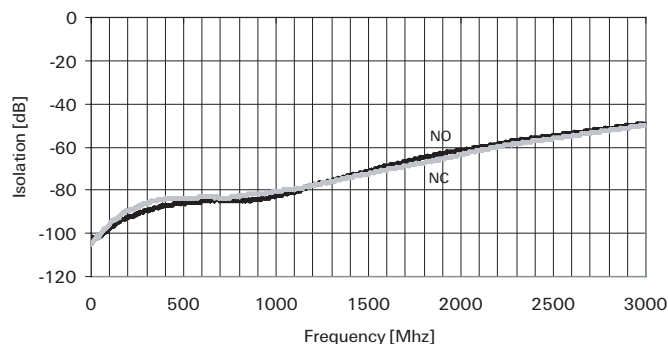
**RF Data**

|                                    |                 |                 |
|------------------------------------|-----------------|-----------------|
| 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  |

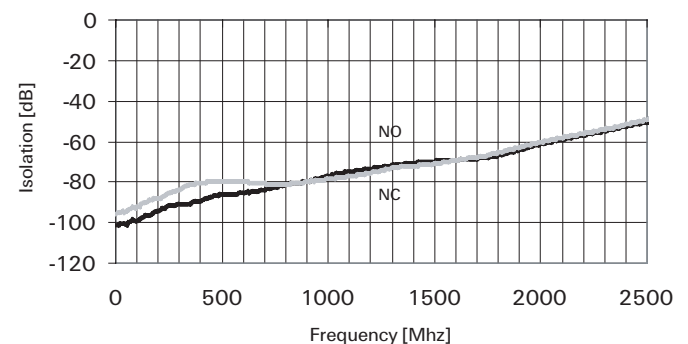
**Other Data**

|   |                                     |
|---|-------------------------------------|
| Material compliance: EU RoHS/ELV, China RoHS, REACH, Halogen content refer to the Product Compliance Support Center at <a href="http://www.te.com/customer-support/rohssupportcenter">www.te.com/customer-support/rohssupportcenter</a> |                                     |
| 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**

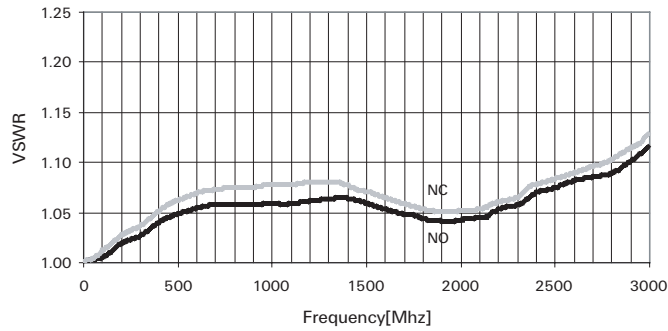
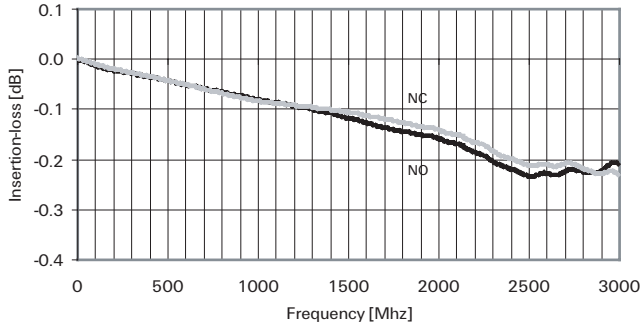


**Typical RF performance, 75 $\Omega$  version**

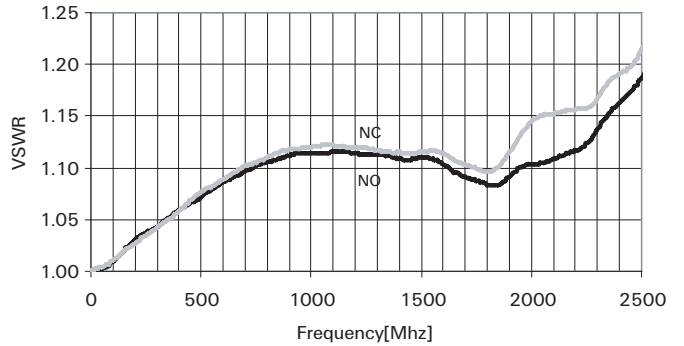
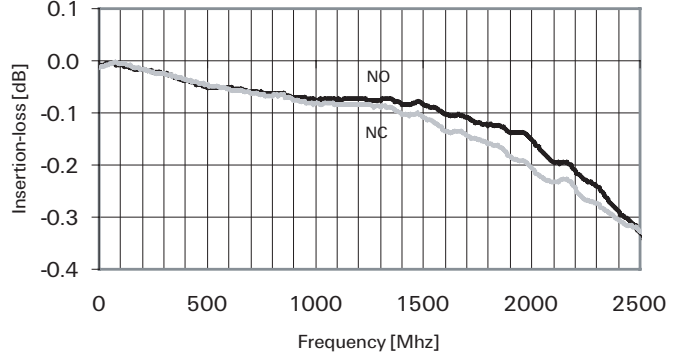


**HF3 Relay** (Continued)

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



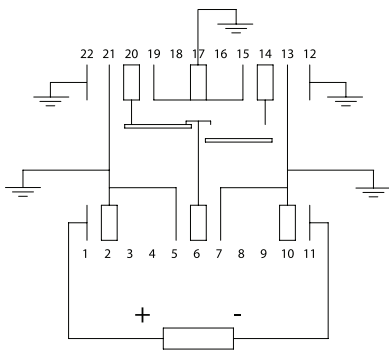
**Typical RF performance, 75Ω version** (continued)



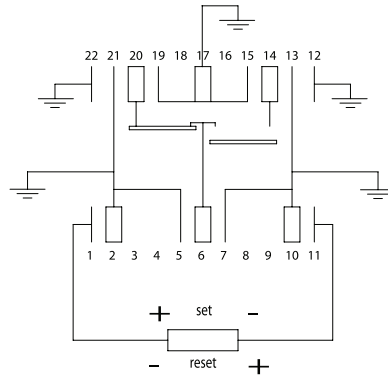
**Terminal assignment**

TOP view on component side of PCB

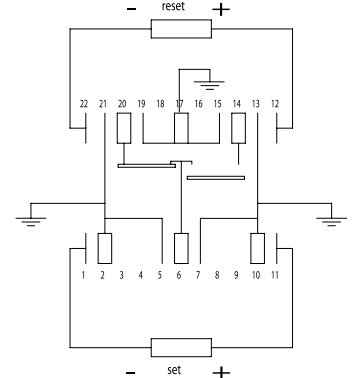
Monostable



Bistable, 1 coil



Bistable, 2 coils

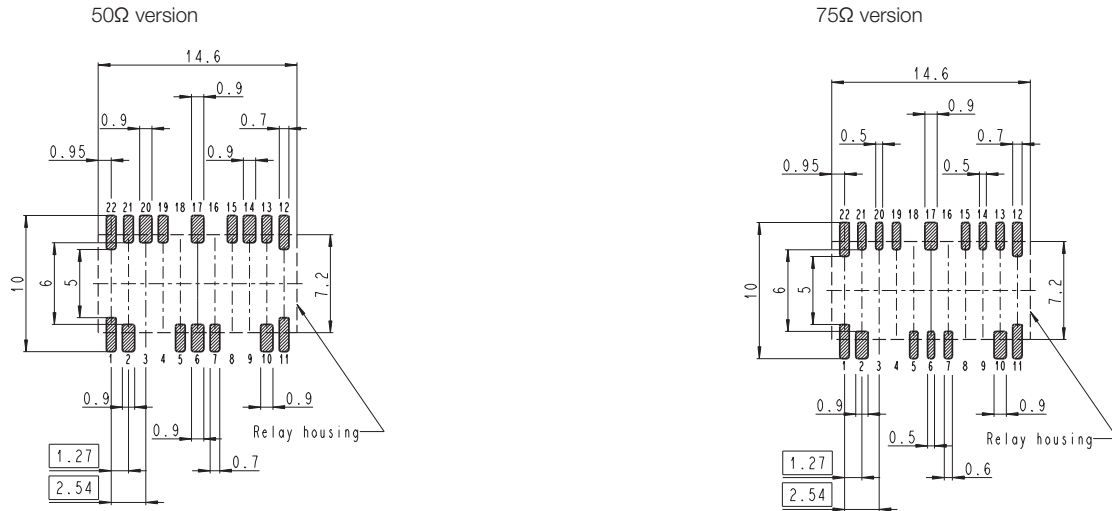


Contacts are shown in reset condition.  
Contact position might change during transportation and must be reset before use.

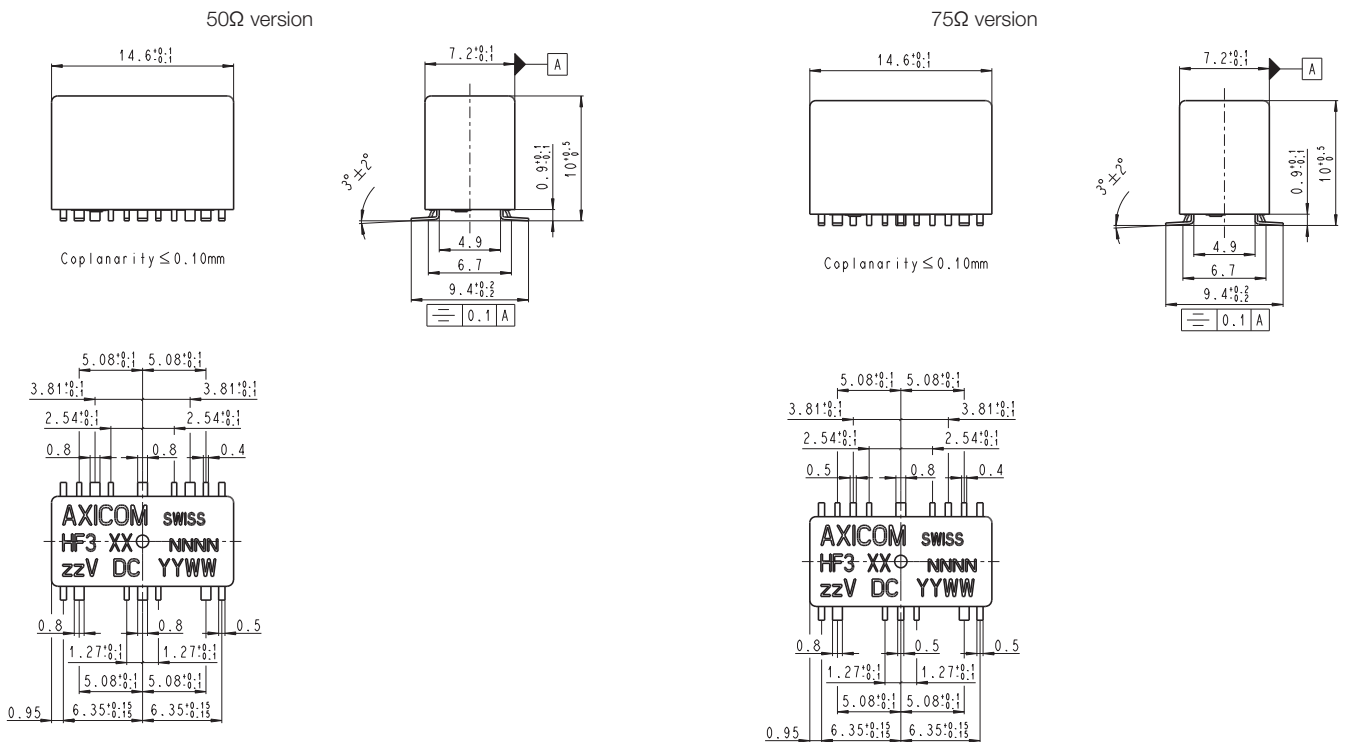
**HF3 Relay** (Continued)

**PCB layout**

TOP view on component side of PCB

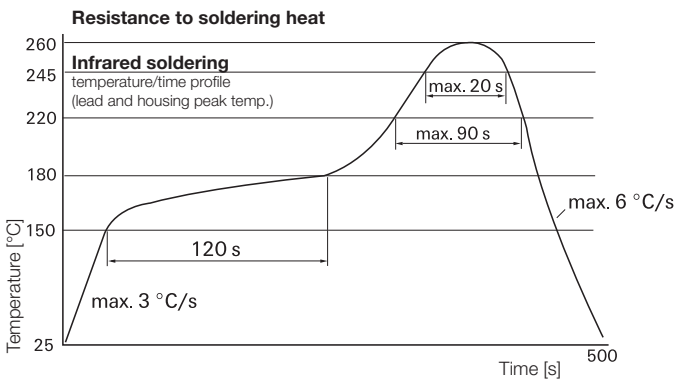
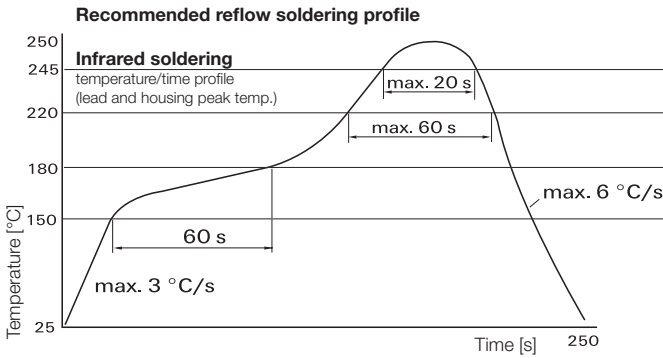
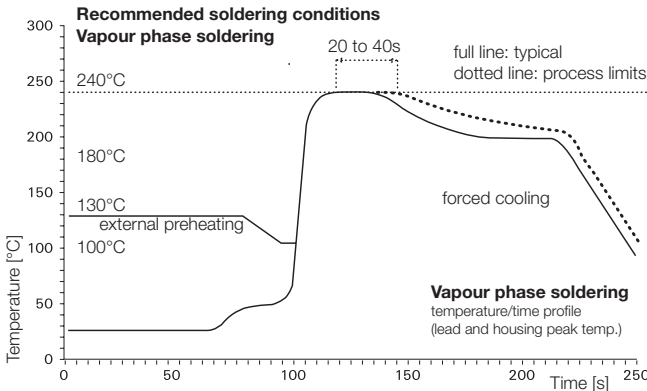


**Dimensions**

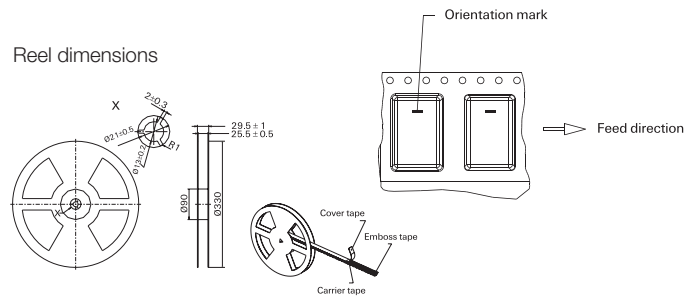
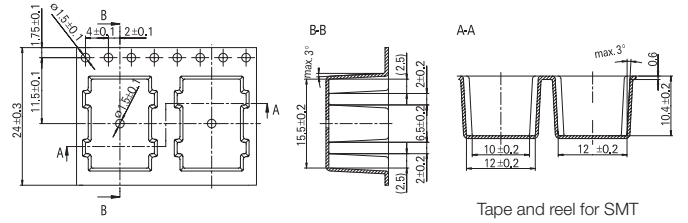


**HF3 Relay** (Continued)

**Processing**



**Packing**



**HF3 Relay** (Continued)

**Product code structure**

Typical product code **HF3 53**

|   |  |   |   |                                       |                                       |  |  |
|---|--|---|---|---------------------------------------|---------------------------------------|--|--|
| <b>Type</b>                             | <b>HF3</b> Signal Relays HF3 Series<br>1 form C, 1 CO  |   |   |                                       |                                       |  |  |
| <b>Coil</b>                             | Coil code: please refer to coil versions table<br>Performance type<br><table border="0"> <tr> <td><b>5x</b> 50Ω version, monostable 1coil</td> <td><b>0x</b> 75Ω version, monostable 1coil</td> </tr> <tr> <td><b>7x</b> 50Ω version, bistable 1coil</td> <td><b>2x</b> 75Ω version, bistable 1coil</td> </tr> <tr> <td><b>9x</b> 50Ω version, bistable 2coils</td> <td><b>4x</b> 75Ω version, bistable 2coils</td> </tr> </table> | <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 |
| <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) | 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