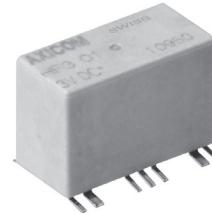


HF3 Relay

- 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, 30mV |
| 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 |

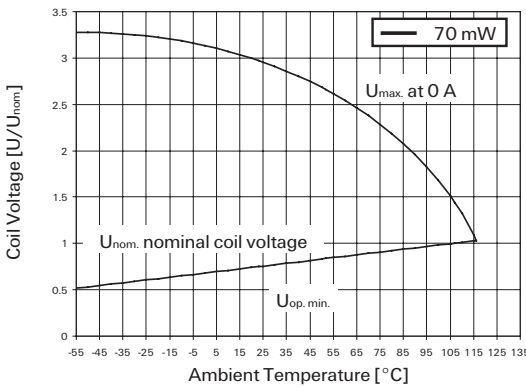
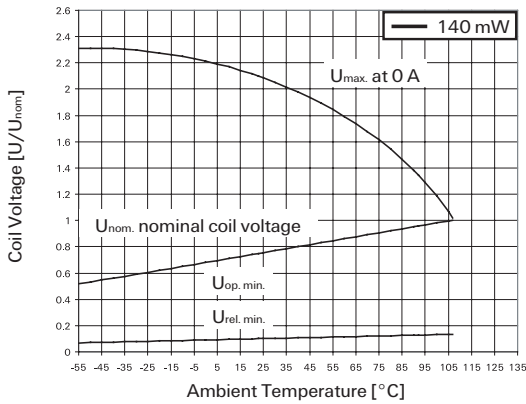
75Ω version, bistable, 2 coils

| | | | | | | |
|----|-----|-------|-------|-------|------|-----|
| 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.

HF3 Relay (Continued)

Coil operating Range



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/customer-support/rohssupportcenter

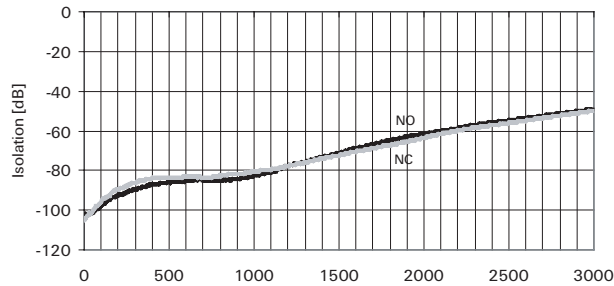
| | |
|--|-------------------------------------|
| Ambient temperature | -55°C to +85°C |
| Thermal resistance | <165K/W |
| Category of environmental protection | |
| IEC 61810 | RT III - wash tight |
| Degree of protection, IEC 60529 | IP 67, immersion cleanable |
| Vibration resistance (functional) | 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 | Peak Value |
| IEC 60068-2-58 | 265°C |
| Moisture sensitive level, JEDEC J-Std-020D | MSL3 |
| Ultrasonic cleaning | not recommended |
| Packaging/unit | reel/400 pcs., box/400 or 2000 pcs. |

Insulation Data **50Ω version** **75Ω version**

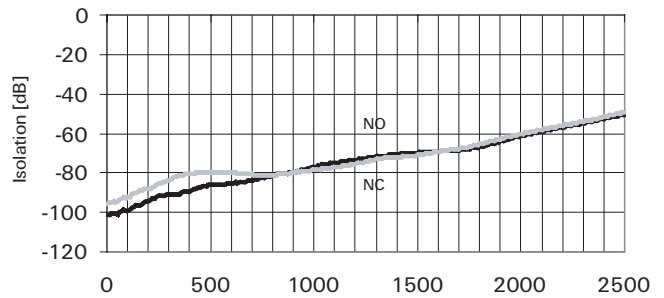
| | |
|---------------------------------|----------------------|
| Initial dielectric strength | |
| between open contacts | 600V _{rms} |
| between contact and coil | 1000V _{rms} |
| Initial surge withstand voltage | |
| between open contacts | 1000V |
| between contact and coil | 1500V |

HF3 Relay (Continued)

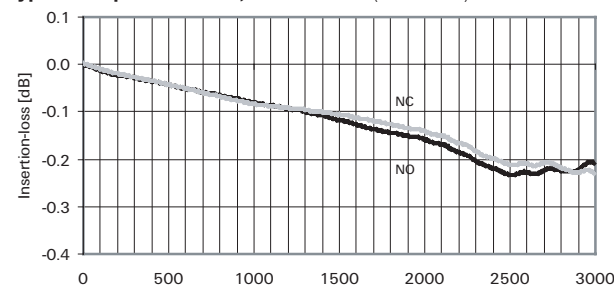
Typical RF performance, 50Ω version



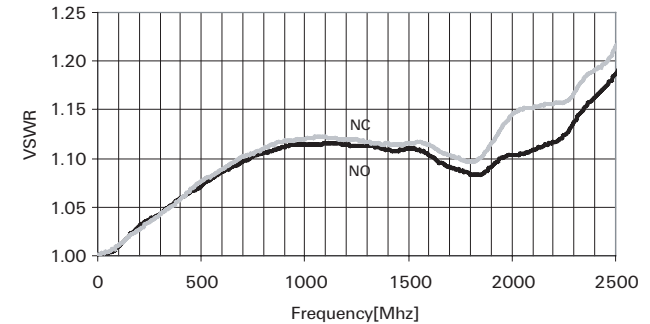
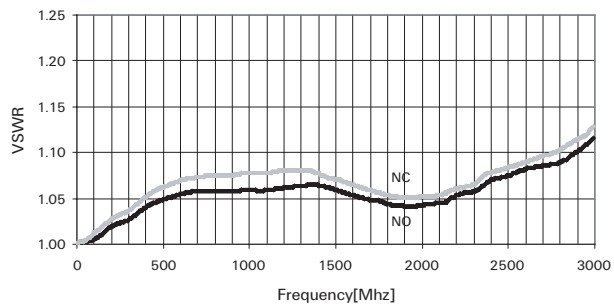
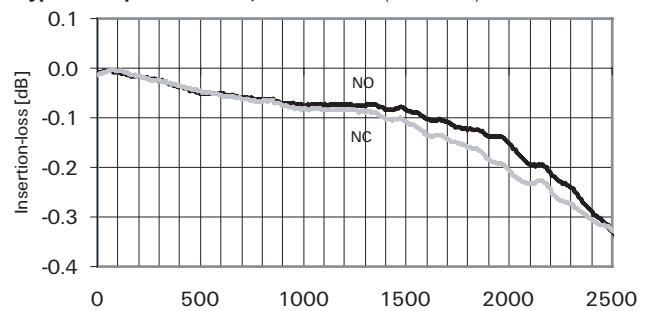
Typical RF performance, 75Ω version



Typical RF performance, 50Ω version (continued)



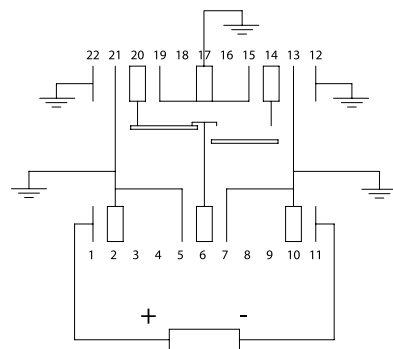
Typical RF performance, 75Ω version (continued)



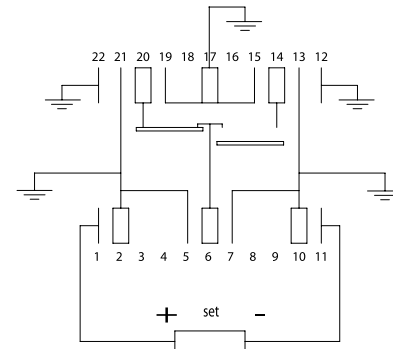
Terminal assignment

TOP view on component side of PCB

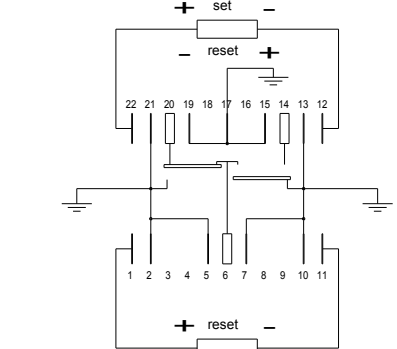
Monostable



Bistable, 1 coil



Bistable, 2 coils

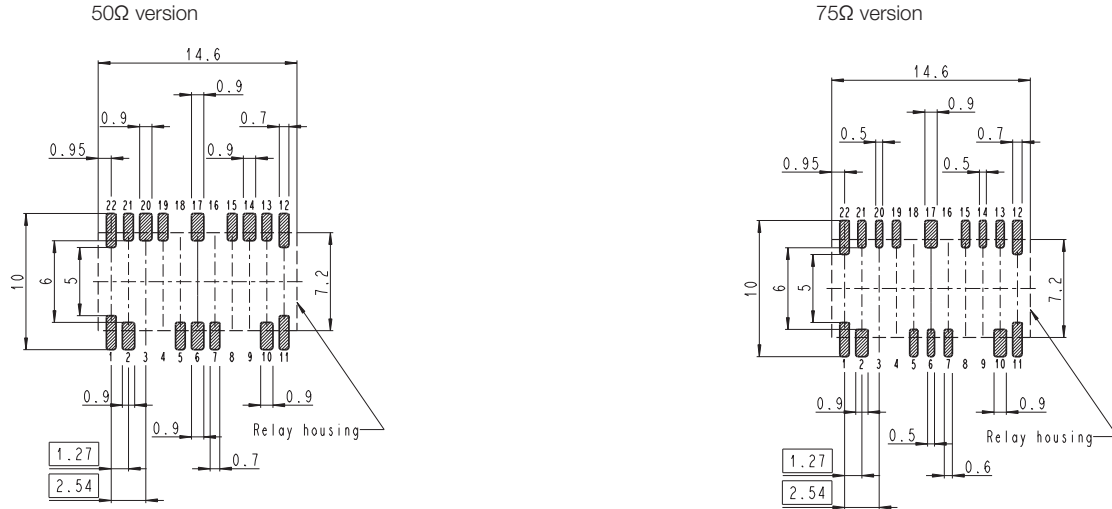


+ Contacts are shown in reset condition.
Contact position might change during transportation and must be reset before use.

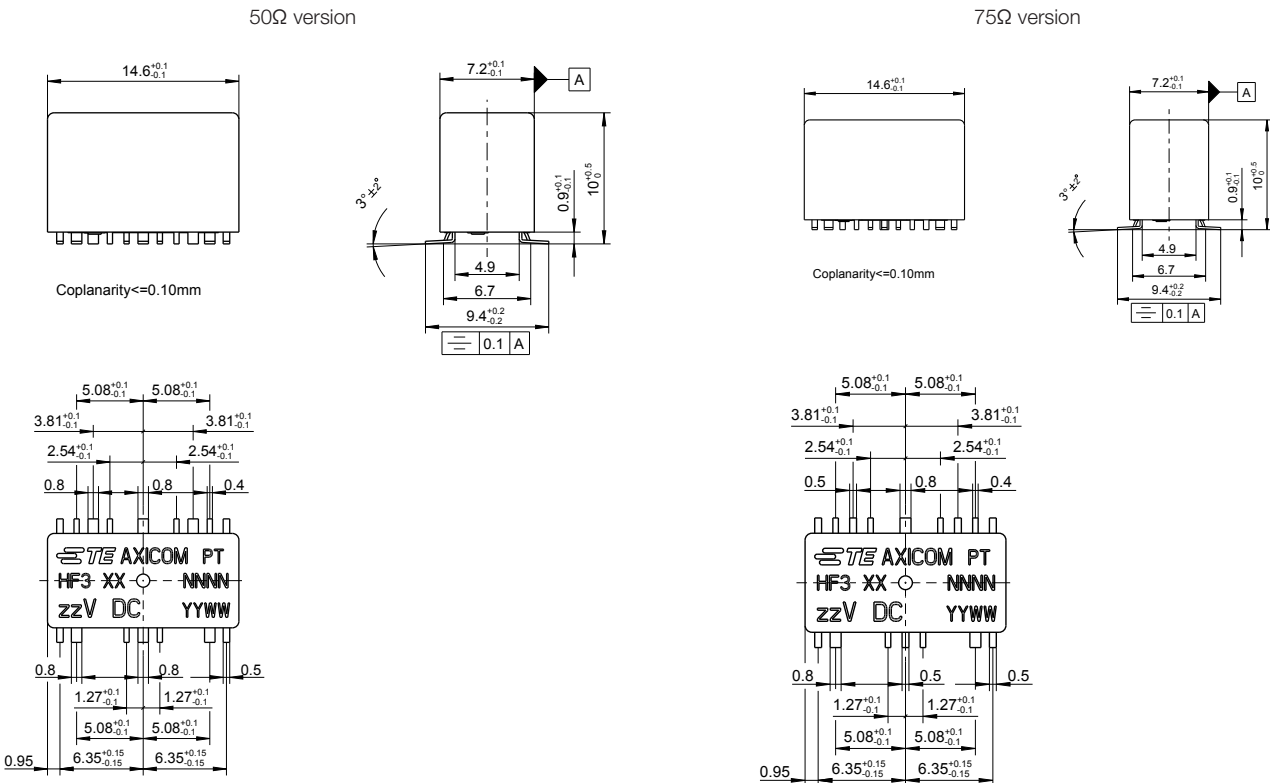
HF3 Relay (Continued)

PCB layout

TOP view on component side of PCB

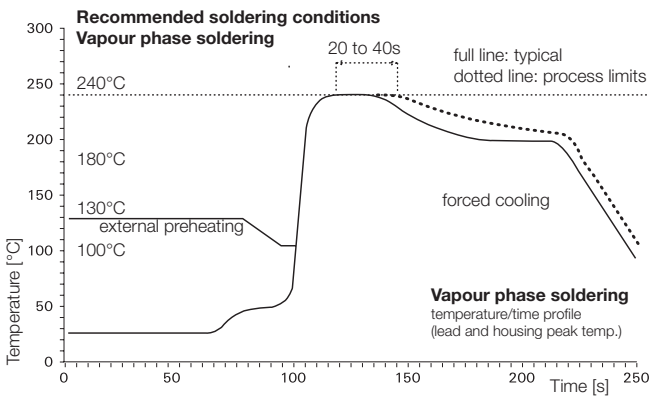
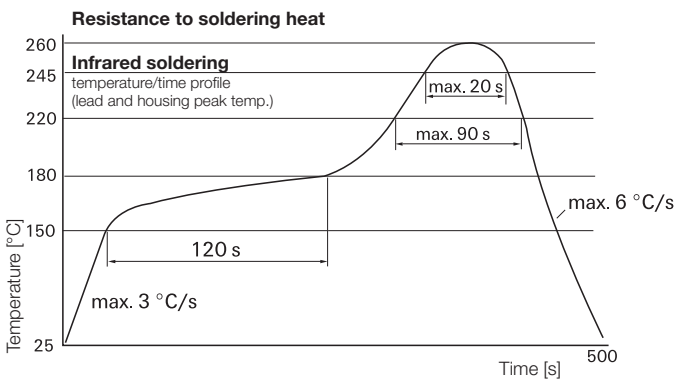
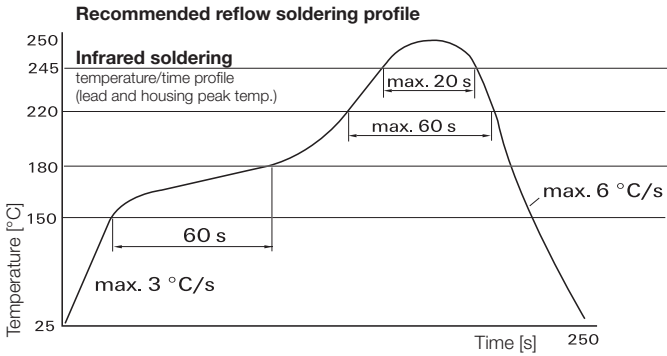


Dimensions

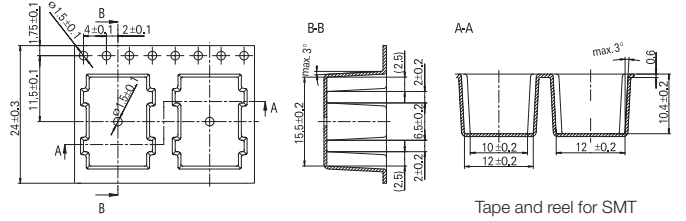


HF3 Relay (Continued)

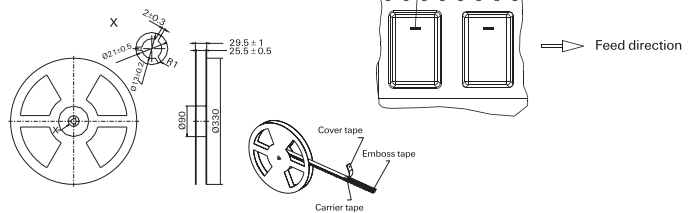
Processing



Packing



Reel dimensions



HF3 Relay (Continued)

Product code structure

Typical product code **HF3 53**

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