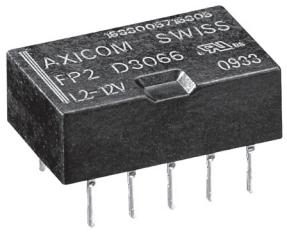
FP2 Relay

- **Telecom/signal relay (dry circuit, test access, ringing)**
- **Slim line 14x9mm (.551x.354")**
- **Switching current 2A**
- **2 form C bifurcated contacts (2 CO)**
- **High sensitivity results in low nominal power consumption, 80mW for high sensitive, 140mW for sensitive version**
- **High mechanical shock resistance, up to 300g functional, up to 1500g survival**



Typical applications
Communications equipment linecard application (ringing and test access), PABX, voice over IP, office equipment, measurement and control equipment, automotive equipment as CAN bus, keyless entry, speaker switch, medical equipment, consumer electronics, set top boxes, HiFi.

Approvals

UL 508 File No. E 111441, UL 60950,
Technical data of approved types on request

Contact Data

Contact arrangement	2 form C (CO)
Max. switching voltage	220VDC, 250VAC
Rated current	2A
Limiting continuous current, 85°C	2A
Switching Power	60W, 62.5VA
Contact material	AgNi, gold-covered
Contact style	bifurcated contact
Minimum switching voltage	100µV
Thermoelectrical potential	<10µV
Initial contact resistance	<50mΩ at 10mA, 20mV
Frequency of operation, without load	50 operations/s
Operate time	typ. 2ms, max. 4ms
Set/reset time	typ. 2ms, max. 4ms
Release time	
without diode in parallel	typ. 2ms, max. 4ms
with diode in parallel	typ. 4ms, max. 6ms
Bounce time	typ. 1ms, max. 3ms
Electrical endurance	
at 12V / 10mA	typ. $5x10^7$ operations
at 6V / 100mA	typ. $1x10^7$ operations
at 60V / 500mA	typ. $5x10^5$ operations
at 30V / 1000mA	typ. $1x10^6$ operations
at 30V / 2000mA	typ. $2x10^5$ operations
UL contact rating	50VDC / 2A - 100W 50VAC / 2A - 100W 30VDC / 2A - 60W
Mechanical endurance	typ. $100x10^6$ operations

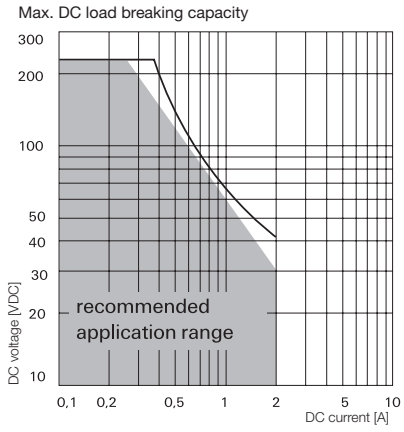
Coil Data

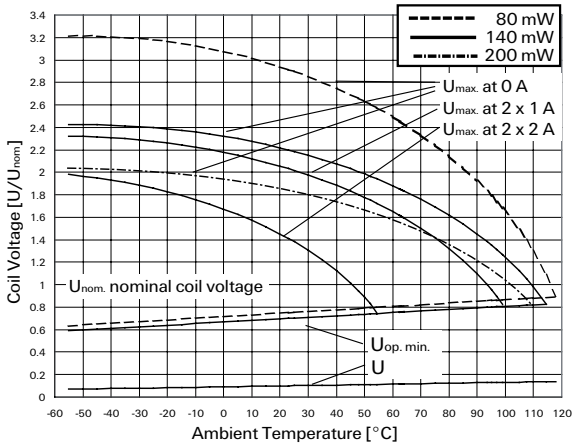
Magnetic system	polarized
Coil voltage range	2 to 24VDC
Max. coil temperature	125°C
Thermal resistance	< 125K/W

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
Standard version, monostable						
06	3	2.10	6.60	0.30	64	140
04	4.5	3.15	9.90	0.45	145	140
09	5	3.50	11.00	0.50	178	140
05	6	4.20	13.20	0.60	257	140
10	9	6.30	19.80	0.90	574	140
02	12	8.40	26.40	1.20	1028	140
12	24	16.80	44.30	2.40	2880	200
13	48	33.60	72.30	4.80	7680	300
High sensitive version, monostable						
High sensitive version, monostable						
21	3	2.10	8.70	0.30	113	80
22	4.5	3.15	13.10	0.45	353	80
23	5	3.50	14.60	0.50	313	80
24	6	4.20	17.50	0.60	450	80
25	9	6.30	24.20	0.90	1013	80
26	12	8.40	35.00	1.20	1800	80
27	24	16.80	52.80	2.40	4114	140
28	48	36.00	77.60	4.80	8882	260

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





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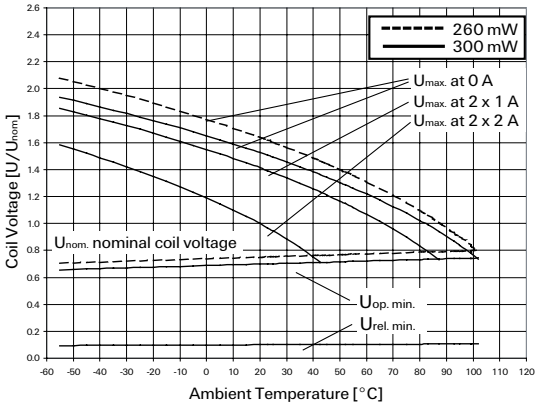
FP2 Relay (Continued)

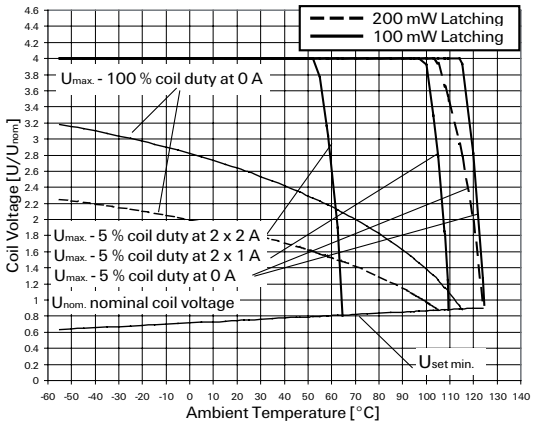
Coil Data (continued)



Coil versions, bistable

Coil code	Rated voltage VDC	Set voltage VDC	Max. set voltage VDC	Reset voltage VDC	Coil resistance Ω±10%	Rated coil power mW
Standard, bistable 1 coil						
41	3	2.25	7.80	-2.25	90	100
42	4.5	3.38	11.70	-3.38	203	100
43	5	3.75	13.00	-3.75	250	100
44	6	4.50	15.60	-4.50	360	100
45	9	6.75	23.50	-6.75	810	100
46	12	9.00	31.30	-9.00	1440	100
47	24	18.00	47.50	-18.00	3840	150
Standard, bistable 2 coils						
61	3	2.10	5.50	-2.10	45	200
62	4.5	3.15	8.30	-3.15	101	200
63	5	3.20	7.20	-3.20	125	200
64	6	4.20	11.10	-4.20	180	200
65	9	6.30	16.80	-6.30	405	200
66	12	8.40	28.10	-8.40	720	200
67	24	16.80	44.30	-16.80	1920	300

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



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

U_{max} upper limit of the operative range of the coil voltage (limiting voltage) when coils are continuously energized
$U_{op\ min}$ lower limit of the operative range of the coil voltage (reliable operate voltage)
$U_{rel\ min}$ lower limit of the operative range of the coil voltage (reliable release voltage)

Insulation

Initial dielectric strength	
between open contacts	750V_{rms}
between contact and coil	1000V_{rms}
between adjacent contacts	1000V_{rms}
Initial surge withstand voltage	
between open contacts	1100V
between contact and coil	1500V
between adjacent contacts	1500V
Initial insulation resistance	
between insulated elements	>10^9Ω
Capacitance	
between open contacts	max. 4pF
between contact and coil	max. 1pF
between adjacent contacts	max. 1pF
Cross talk at 100MHz/900MHz	-40.2dB/-22.3dB
Insertion loss at 100MHz/900MHz	0.03dB/0.25dB
Voltage standing wave ratio (VSWR)	
at 100MHz/900MHz	1.01/1.07

Other Data

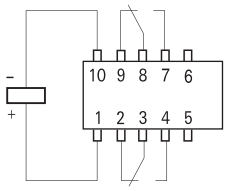
Material compliance: EU RoHS/ELV, China RoHS, REACH, Halogen content refer to the Product Compliance Support Center at www.te.com/customersupport/rohssupportcenter

Ambient temperature	-40°C to +85°C
Thermal resistance	<150K/W
Category of environmental protection	
IEC 61810	RT III - immersion cleanable
Degree of protection, IEC 60529	IP 67, immersion cleanable
Vibration resistance (functional)	20g, 10 to 500Hz
Shock resistance (functional), half sinus 11ms	50g
Shock resistance (destructive), half sinus 0.5ms	1500g
Terminal type	PCB-THT
Weight	max. 2g
Resistance to soldering heat THT	
IEC 60068-2-20	265°C/10s
Ultrasonic cleaning	not recommended
Packaging unit	tube/50 pcs., box/1000 pcs.

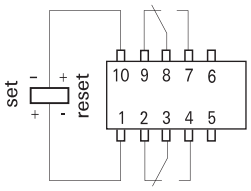
FP2 Relay (Continued)

Terminal assignment
TOP view on component side of PCB

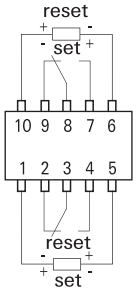
Monostable version



Bistable version, 1-coil

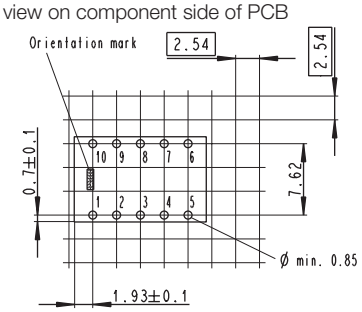


Bistable version, 2-coils

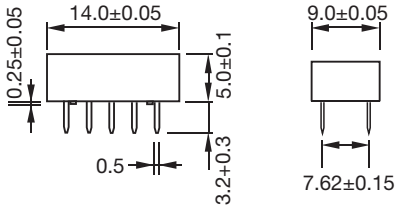


Contacts are shown in reset condition.
Both coils can be used as either set or reset coils.
Contact position might change during transportation and must be reset before use.

PCB layout
TOP view on component side of PCB

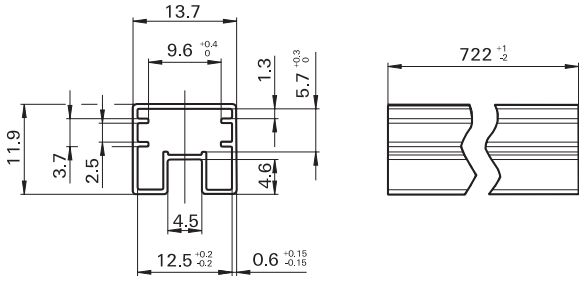


Dimensions



Packing

Tube for THT version
50 relays per tube, 1000 relays per box



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FP2 Relay (Continued)

Product code structure

Typical product code **D30** **02**

Type

D30 Signal Relays FP2
2 form C, 2 CO

Coil

Coil code: please refer to coil versions table
Performance and coil type
0x,1x Standard version, monostable
2x High sensitive version, monostable
4x Standard version, bistable 1 coil
6x Standard version, bistable 2 coils

Product code	Arrangement	Perf. type	Coil type	Coil	Part number
D3006	2 form C (2 CO)	Standard	Monostable	3VDC	1-1462033-3
D3004				4.5VDC	1462033-9
D3009				5VDC	1-1462033-4
D3010				9VDC	2-1462033-1
D3002				12VDC	1462033-5
D3012				24VDC	2-1462033-2
D3013				48VDC	2-1462033-6
D3021	2 form C (2 CO)	High sensitive	Monostable	3VDC	3-1462033-2
D3022				4.5VDC	3-1462033-3
D3023				5VDC	3-1462033-4
D3025				9VDC	3-1462033-6
D3026				12VDC	3-1462033-7
D3027				24VDC	3-1462033-8
D3041	2 form C (2 CO)	Standard	Bistable 1 coil	3VDC	4-1462033-0
D3042				4.5VDC	4-1462033-1
D3043				5VDC	4-1462033-2
D3046				12VDC	4-1462033-5
D3047				24VDC	4-1462033-6
D3061	2 form C (2 CO)	Standard	Bistable 2 coils	3VDC	4-1462033-7
D3062				4.5VDC	4-1462033-8
D3063				5VDC	4-1462033-9
D3066				12VDC	5-1462033-4
D3067				24VDC	5-1462033-6

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