# FX2 Relay

- **Slim line 15x7.3mm (.590x.287")**
- **2 form C bifurcated contacts (2 CO), switching current 2A**
- **High sensitivity for low power consumption, 80mW/140mW**
- **High dielectric characteristic, up to 2100Vrms between open contact**
- **High surge capability (1.2/50µs and 10/700µs) meets Telcordia GR 1089 and FCC Part 68, up to 2900V between open contacts, up to 6000V between coil and contacts**
- **High mechanical shock, up to 1500g survival**
- **Hermetically sealed (RT V)**
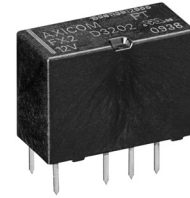
Typical applications
Communications equipment, linecard application - analog, ISDN, xDSL, PABX, voice over IP, office and business equipment, measurement and control equipment, consumer electronics, set top boxes, HiFi, medical equipment

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

Contact Data

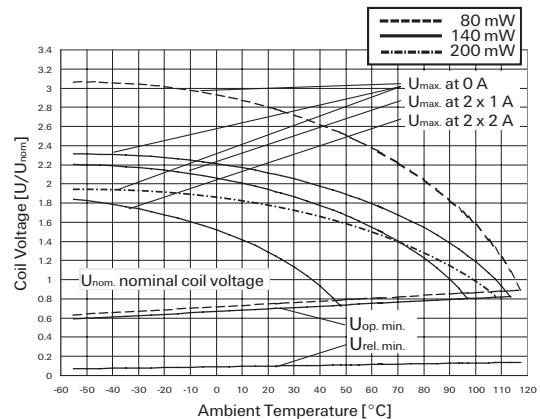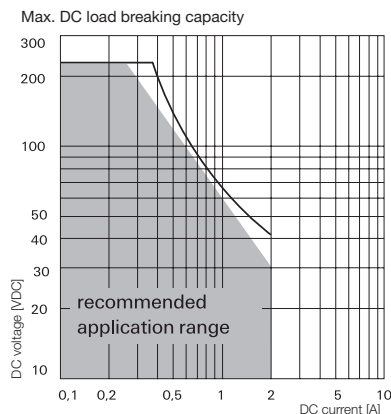|	
Contact arrangement	2 form C (CO)
Max. switching voltage	220VDC, 250VAC
Rated current	2A
Limiting continuous current	2A
Switching power	60W, 62.5VA
Contact material	PdRu, Au covered
Contact style	bifurcated contacts
Min. recommended contact load	100µV/1µA
Initial contact resistance	<70mΩ
Thermoelectric potential	<10µV
Operate time	typ. 3ms, max. 4ms
Release time	
without diode in parallel	typ. 1ms, max. 3ms
with diode in parallel	typ. 3ms, max. 4ms
Set/reset time min.	20ms
Bounce time max.	typ. 1ms, max. 5ms
Electrical endurance	
at contact application 0	
(≤ 30mV / ≤ 10mA)	min. 2.5×10^6 operations
cable load open end	min. 2.0×10^6 operations
resistive, 24V / 1.25A - 30W	min. 5×10^5 operations
resistive, 30VDC / 2A - 60W	min. 5×10^5 operations
resistive, 125VDC / 0.24A - 30W	min. 5×10^5 operations
UL contact rating	30VDC, 2A, 60W
	125VDC, 0.5A, 62,5W
	120VDC, 1.25A, 150W
Mechanical endurance	100×10^6 operations

Coil Data

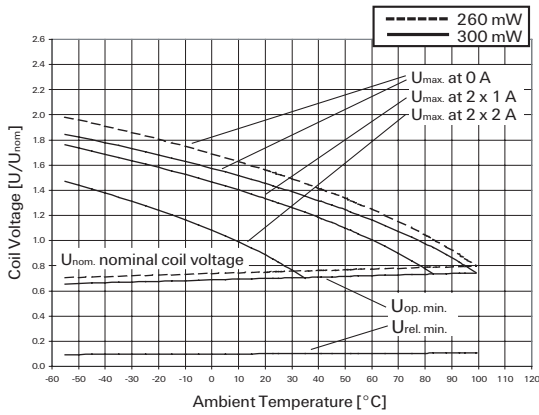|	
Magnetic system	polarized, monostable, bistable
Coil voltage range	3 to 48VDC
Max. coil temperature	125°C.
Thermal resistance	<165K/W

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, 1 coil						
06	3	2.10	6.30	0.30	64	140
07	4	2.80	8.40	0.40	114	140
04	4.5	3.15	9.40	0.45	145	140
09	5	3.50	10.50	0.50	178	140
05	6	4.20	12.60	0.60	257	140
10	9	6.30	18.90	0.90	574	140
02	12	8.40	25.20	1.20	1028	140
12	24	16.80	42.20	2.40	2880	200
13	48	33.60	68.90	4.80	7680	300
High sensitive version, monostable, 1 coil						
21	3	2.10	8.30	0.30	113	80
22	4.5	3.15	11.10	0.45	253	80
23	5	3.50	12.50	0.50	313	80
24	6	4.20	13.90	0.60	450	80
25	9	6.30	16.70	0.90	1013	80
26	12	8.40	33.40	1.20	1800	80
27	24	16.80	50.40	2.40	4114	140
28	48	36.00	70.00	4.80	8882	260
High dielectric version, monostable, 1 coil						
91	3	2.25	6.3	0.30	45	200
92	4.5	3.15	9.45	0.45	101	200
96	12	8.40	25.2	1.20	720	200

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

Max. DC load breaking capacity

FX2 Relay (Continued)

Coil Data (continued)

Legend: 260 mW (dashed), 300 mW (solid)
$U_{max.}$ at 0 A
$U_{max.}$ at 2 x 1 A
$U_{max.}$ at 2 x 2 A
$U_{nom.}$ nominal coil voltage
$U_{op. min.}$
$U_{rel. min.}$
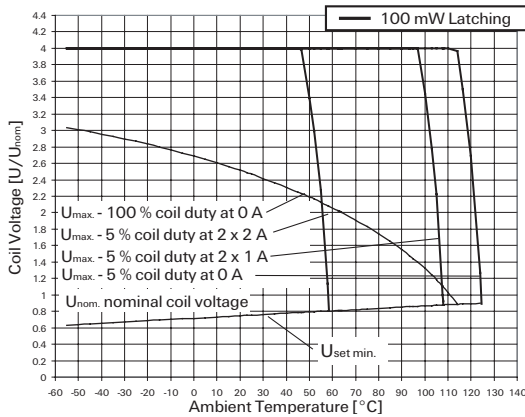
Coil Voltage [U/U_{nom}] vs Ambient Temperature [°C]

Coil versions, bistable 1 coil

Coil code	Rated voltage VDC	Set voltage VDC	Limiting voltage VDC	Reset voltage VDC	Coil resistance Ω±10%	Rated coil power mW
Standard, bistable 1 coil						
41	3	2.25	7.50	-2.25	90	100
42	4.5	3.38	11.20	-3.38	203	100
43	5	3.75	12.40	-3.75	250	100
44	6	4.50	14.90	-4.50	360	100
45	9	6.75	22.40	-6.75	810	100
46	12	9.00	29.80	-9.00	1440	100
47	24	18.00	48.70	-18.00	3840	150
High dielectric version, bistable 1 coil						
62	4.5	3.15	11.20	-3.15	203	100

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

Legend: 100 mW Latching
$U_{max.}$ - 100 % coil duty at 0 A
$U_{max.}$ - 5 % coil duty at 2 x 2 A
$U_{max.}$ - 5 % coil duty at 2 x 1 A
$U_{max.}$ - 5 % coil duty at 0 A
$U_{nom.}$ nominal coil voltage
$U_{set min.}$

Coil Voltage [U/U_{nom}] vs Ambient Temperature [°C]

Other coil voltages on request.

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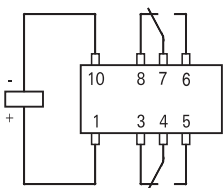
$U_{op min}$ lower limit of the operative range of the coil voltage (reliable operate voltage)

$U_{rel min}$ lower limit of the operative range of the coil voltage (reliable release voltage)
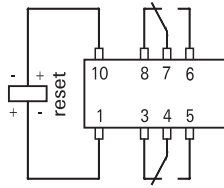
Terminal assignment
TOP view on component side of PCB
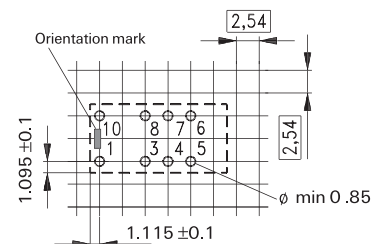
Monostable

Bistable, 1 coil

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.

Insulation

Insulation	standard*	high dielectric*
Initial dielectric strength		
between open contacts	1800V$_{rms}$	2100V$_{rms}$
between contact and coil	1800V$_{rms}$	4000V$_{rms}$
between adjacent contacts	1800V$_{rms}$	2100V$_{rms}$
Initial surge withstand voltage		
between open contacts	2500V	2900V
between contact and coil	3500V	6000V
between adjacent contacts	2500V	2900V
Initial insulation resistance		
between insulated elements	>$10^9\Omega$	>$10^9\Omega$
Capacitance		
between open contacts	max. 4pF	
between contact and coil	max. 2pF	
between adjacent contacts	max. 2pF	
Cross talk at 100MHz/900MHz	-34.0dB/-15.1dB	
Insertion loss at 100MHz/900MHz	0.03dB/0.60dB	
Voltage standing wave ratio (VSWR)		
at 100MHz/900MHz	1.07/1.45	

*this relay contains SF6 (Sulfur hexafluoride, CAS number: 2551-62-4) for dielectric strength enhancement, SF6 is hermetically sealed in relay without leaks to air during normal application as recommended per the applicable product specification. It is clarified that the usage of SF6 in mini signal relay is not prohibited by related regulations. Please contact TE local sales or field engineer for further information and detailed material declaration.
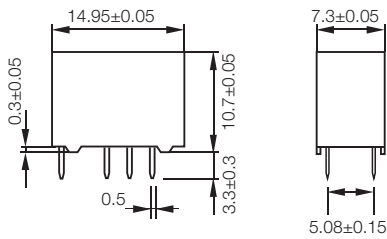
Other Data

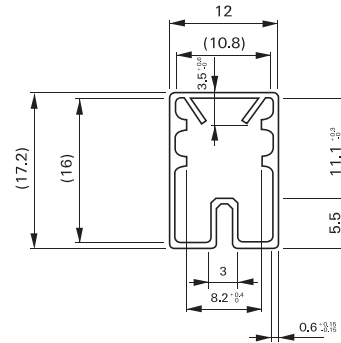|	
Material compliance: EU RoHS/ELV, China RoHS, REACH, Halogen content refer to the Product Compliance Support Center at www.te.com/customersupport/rohssupportcenter	
Ambient temperature	-40°C to +85°C
Category of environmental protection	
IEC 61810	RT V - immersion cleanable
Degree of protection, IEC 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
Weight	max. 2.5g
Resistance to soldering heat THT	Peek value
IEC 60068-2-20	265°C/10s
Ultrasonic cleaning	not recommended
Packaging/unit	tube/50 pcs., box/1000 pcs.

PCB layout
TOP view on component side of PCB

Orientation mark
2,54
1.095 ±0.1
2,54
ø min 0.85
1.115 ±0.1

FX2 Relay (Continued)

Dimensions

Packing

Product code structure

Type		
D32	Signal Relays FX2 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	
	9x High dielectric version, monostable	
	6x High dielectric version, bistable	

Product code	Arrangement	Perf. type	Coil type	Coil	Part number
D3206	2 form C (2 CO)	Standard	Monostable	3VDC	1462034-6
D3207				4VDC	1462034-8
D3204				4.5VDC	1462034-2
D3209				5VDC	1462034-9
D3205				6VDC	1462034-5
D3210				9VDC	1-1462034-3
D3202				12VDC	1462034-1
D3212				24VDC	1-1462034-4
D3213				48VDC	1-1462034-5
D3221	2 form C (2 CO)	High sensitive	Monostable	3VDC	1-1462034-9
D3222				4.5VDC	2-1462034-0
D3223				5VDC	2-1462034-1
D3225				9VDC	2-1462034-3
D3226				12VDC	2-1462034-4
D3227				24VDC	2-1462034-5
D3228				48VDC	2-1462034-6
D3241	2 form C (2 CO)	Standard	Bistable	3VDC	2-1462034-8
D3242				4.5VDC	2-1462034-9
D3243				5VDC	3-1462034-0
D3246				12VDC	3-1462034-3
D3247				24VDC	3-1462034-4
D3291	2 form C (2 CO)	High dielectric	Monostable	3VDC	6-1462034-6
D3292				4.5VDC	6-1462034-8
D3296				12VDC	6-1462034-7
D3262	2 form C (2 CO)	High dielectric	Bistable	4.5VDC	6-1462034-3

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