# for DC operations, polarised, monostable or bistable

Features

- Permits optimum matching to an extremely wide variety of circuit conditions

- Complies with the requirements of LSI semiconductor technology

- Applications include measuring and control systems, process control engineering, entertainment electronics telecommunication, signalling systems and medical equipment

- Very high level of shock resistance
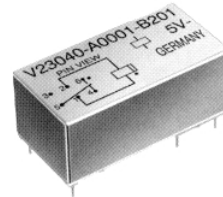
ECR0984-9

Picture approx. 1,5 x actual size

Typical applications

- Coupling and linking element in electronic modules

- Interface relay element for microcomputer systems

- Storage element for input and output equipment

- Data and communications technology

- Medical equipment

- Measurement and control equipment

Versions

- Relay types: monostable, 1 winding or bistable, 2 windings or bistable, 1 winding

- Standard- and sensitive versions

- With 1 changeover contact

- With bifurcated contacts

- For printed circuit assembling

- Metal cover for screening against interference fields; optionally with earth terminal for reducing coupling capacitances

- Immersion cleanable
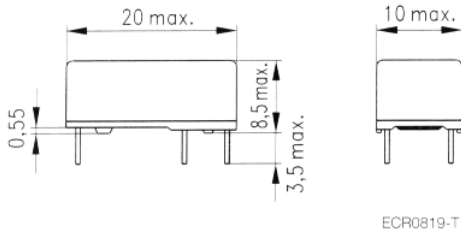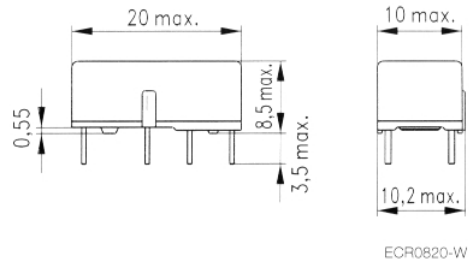
- Cleaning agent resistant

Approvals

CSA	File LR 45064-2
UL	File E 48393

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Miniature Relay D1

Without earth terminal

Dimensions (in mm)

ECR0819-T

Mounting hole layout
View onto the terminals

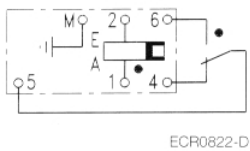Earth terminal

2,5

2,5

1,25

ø 1 +0,1

1,05

ECR0821-5
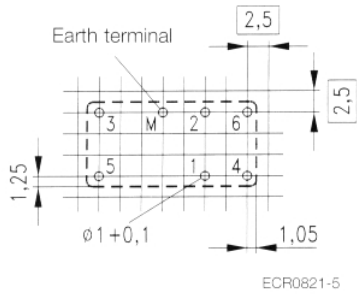
Pin arrangement suits 2,5 mm and 2,54 mm in acc. with DIN EN 60097 and DIN 40803

Base terminals
View onto the terminals

Monostable und bistable,
1 winding

ECR0822-D

M= Earth terminal
Circuit symbols drawn in the release condition
If a positive potential is applied to the start of the winding, the relay changes to operate position.

With earth terminal

ECR0820-W

10,2 max.

Bistable,
2 windings

ECR0823-L
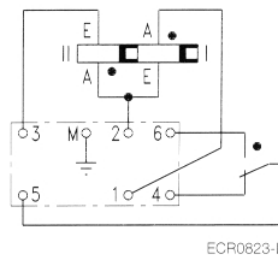
M= Earth terminal
The contact position illustrated shows the release condition. If a negative potential is applied to terminal 1 or a positive potential to terminal 3 as against terminal 2, the relay changes to release condition. If a positive potential is applied to terminal 1 or a negative potential to terminal 3 as against terminal 2, the relay changes to operate condition.

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Miniature Relay D1

Contact data

Number of contacts and type	1 changeover contact
Contacts assembly	Bifurcated contacts
Contact material	Pd Ni, Au Rh coated
Limiting continuous current at max. ambient temperature	2 A
Maximum switching current	2 A
Maximum switching voltage	125 V~
	150 V-
Minimum switching voltage	3 mV
Maximum switching capacity	
DC Voltage	35...60 W, (see load limit curve)
AC Voltage	60 VA
Contact resistance (initial value) / measuring current / driver voltage	100 mΩ / 10 mA / 20 mV

Load limit curve
(12,5 Operations/s)
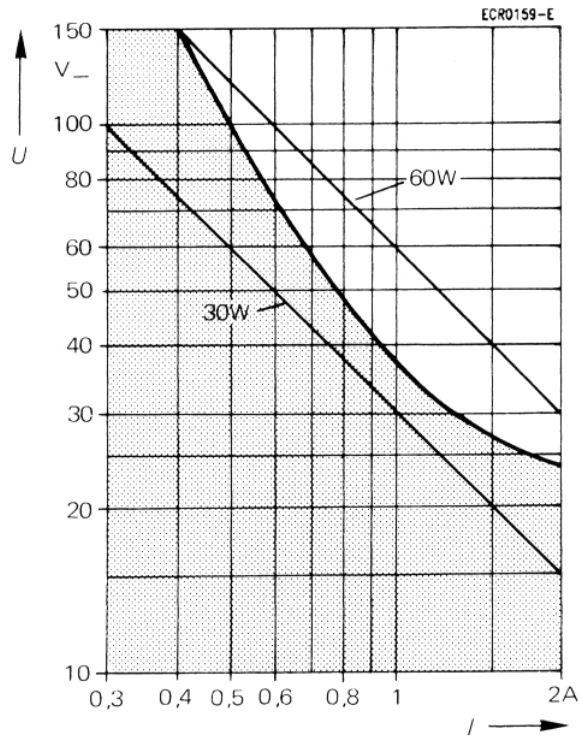
/ = switching current
U = switching voltage
▨ = recommended application field

Load limit curve: Safe shutdown, no stationary arc > 10 ms

Coil data

Nominal voltage	From 5 V- to 24 V-
Nominal power consumption	
monostable, 1 winding	65...130 mW
bistable, 2 windings	80...200 mW
bistable, 1 winding	35...100 mW
	depending on relay version and winding (see table)
Operative range/pick-up class according to DIN IEC 255 Part 1-00 and VDE 0435 Part 201	1/a
Maximum operate voltage	76 % of nominal voltage
Maximum release voltage (bistable)	76 % of nominal voltage
Minimum release voltage (monostable)	10 % of nominal voltage

U_I = Minimum voltage at 20 °C after pre-energising with nominal voltage without contact current

U_{II} = Maximum continuous voltage at 20 °C

The operating voltage limits UI and UII are dependent on the temperature according to the formulae:

$$U_{I\,tamb} = k_I \cdot U_{I\,20\,°C}$$
and
$$U_{II\,tamb} = k_{II} \cdot U_{II\,20\,°C}$$

T_{amb} = Ambient temperature
$U_{I\,tamb}$ = Minimum voltage at ambient temperature t_{amb}
$U_{II\,tamb}$ = Maximum voltage at ambient temperature t_{amb}
k_I and k_{II} = Factors (dependant on temperature), see diagram

The sum of the ambient temperature and coil over temperature must not exceed 85 °C.

The maximum voltage is calculated such that with factor k_{II} taken into account the maximum permissible temperature of the relay will not be exceeded during continuous operation.

ECR0814−M

Ambient temperature t_{amb} [°C]
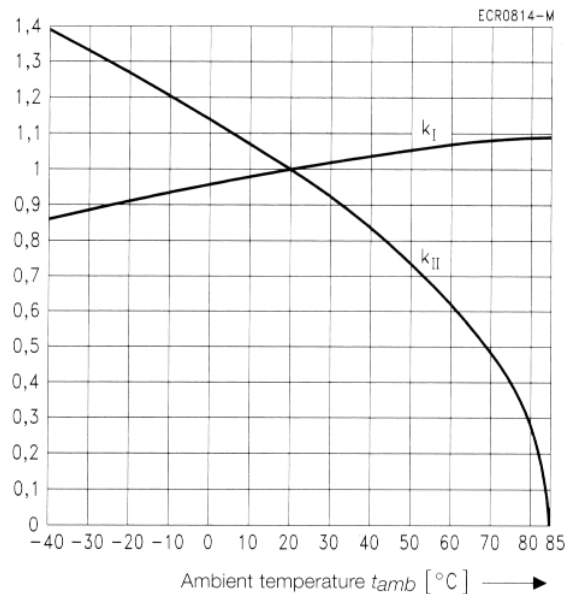
Miniature Relay D1

Coil versions

Nominal voltage U_{nom}	Operating voltage range at 20°C		Resistance at 20°C	Coil number Ordering code
	Minimum voltage U_I	Maximum voltage U_{II}		
V–	V–	V–	Ω	
Standard version				
monostable, 1 winding				A0∗∗∗/-A2∗∗∗
5	3,75	16,5	320 ± 32	001
12	9	30	1140 ± 170	002
24	18	60	4370 ± 650	004
bistable, 2 windings				B0 ∗∗∗/-B2∗∗∗
5	3,75	16	315 ± 47	101
12	9	30	1110 ± 165	102
15	11,25	37	1760 ± 265	103
24	18	46	2800 ± 420	104
bistable, 1 winding				-C0∗∗∗/-C2∗∗∗
5	3,75	20	500 ± 75	051
12	9	38	1850 ± 275	052
24	18	67	5650 ± 845	054

Coil versions for sensitive versions are available on request.
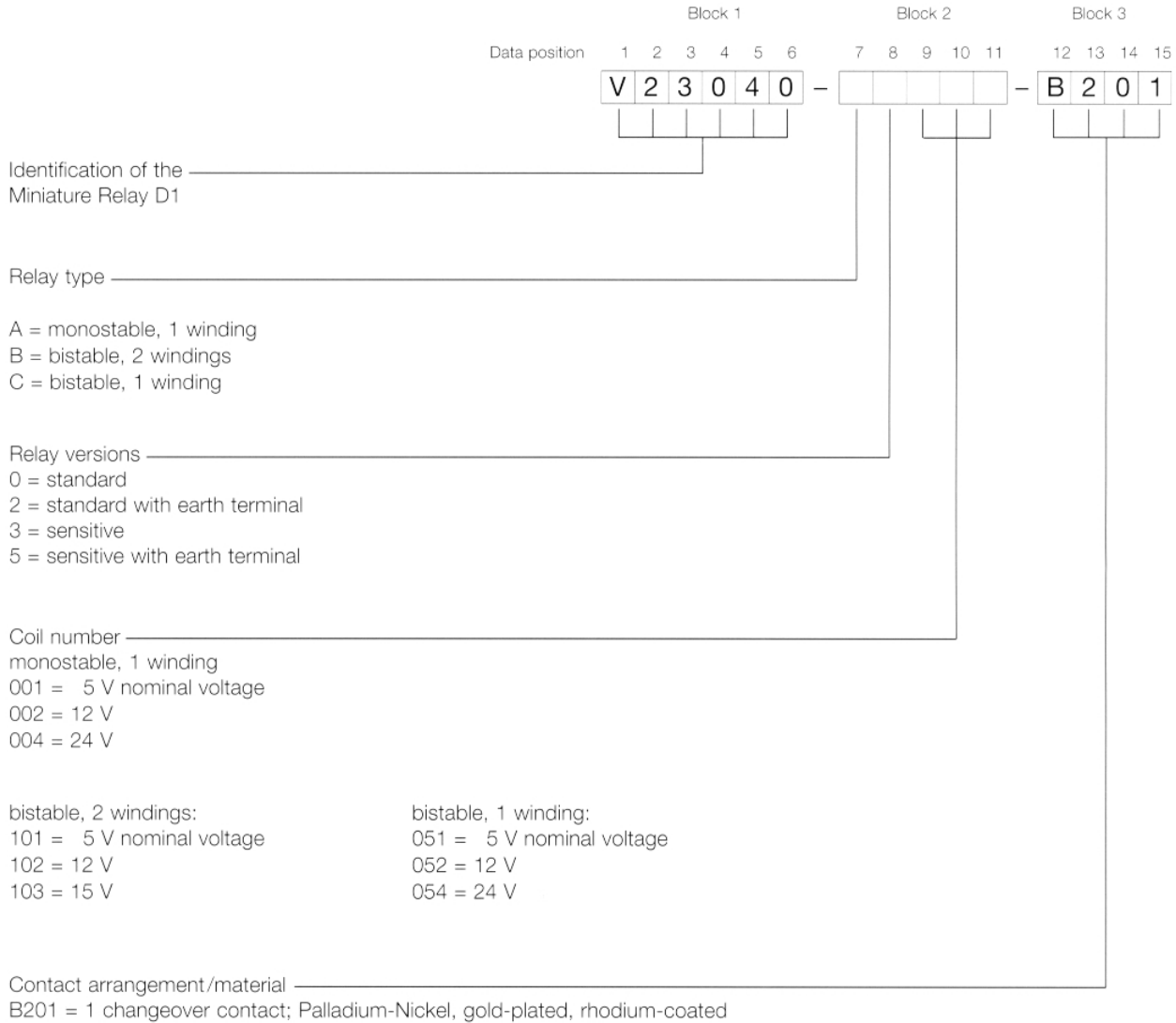
Gerneral data

Operate time at U_{nom} and at 20 °C, typ.	2 ms
Release time at U_{nom} and at 20 °C (bistable), typ.	2 ms
Release time without diode in parallel (monostable), typ.,	0,6 ms
Bounce time	≤ 1 ms
Maximum switching rate without load	100 operations/s
Ambient temperature according to DIN IEC 255 Part 1-00 and VDE 0435 Part 201	-40 °C...+70 °C
Maximum permissible coil temperature	85 °C
Continuous thermal load	850 mW
Vibration resistance (function), frequency range according to ICE 68-2-6	20 g, 200 to 2000 Hz40 g, 10 to 200 Hz
Shock resistance (function), half sinus, 11 ms according to IEC 68-2-27	100 g
Degree of protection according to DIN VDE 0470 Part 1/IEC 529	Immersion cleanable IP 67 Sealing corresponds to DIN IEC 68 Part 2-17, method Qc
Electrical endurance for resistive load: 6 V-, 100 mA 24 V-, 1 A	Approx. 10^8 operations Approx. 10^7 operations
Mechanical endurance	Approx. 10^9 operations
Flammability	Flame resistant according to DIN IEC 695 Part 2-2
Mounting position	Any
Processing information	Ultrasonic cleanable Cleaning agent resistant according to DIN IEC 68 Part 2-45
Weight (mass)	Approx. 6 g

Insulation

Insulation resistance at 500 V	$\geq 10^9 \, \Omega$
Dielectric test voltage contact/winding (1 min)	
Contact/winding	1500 V~rms
Open contact	750 V~rms
Winding/cover	1000 V~rms
Contact/cover	1000 V~rms

Miniature Relay D1

Ordering code

	Block 1	Block 2	Block 3
Data position	1 2 3 4 5 6	7 8 9 10 11	12 13 14 15

V 2 3 0 4 0 – [   ] – B 2 0 1

Identification of the
Miniature Relay D1

Relay type

A = monostable, 1 winding
B = bistable, 2 windings
C = bistable, 1 winding

Relay versions
0 = standard
2 = standard with earth terminal
3 = sensitive
5 = sensitive with earth terminal

Coil number
monostable, 1 winding
001 = 5 V nominal voltage
002 = 12 V
004 = 24 V

bistable, 2 windings:
101 = 5 V nominal voltage
102 = 12 V
103 = 15 V

bistable, 1 winding:
051 = 5 V nominal voltage
052 = 12 V
054 = 24 V

Contact arrangement/material
B201 = 1 changeover contact; Palladium-Nickel, gold-plated, rhodium-coated

Ordering example:
V23040-C0052-B201
Miniature Relay D1, bistable, 1 winding, standard version, coil 12 V nominal voltage

Note:
Special designs can be carried out to meet customer specifications. Please contact your local representative for more information.