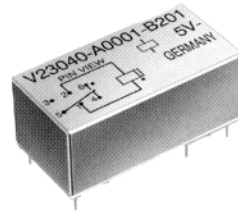

**for DC operations,
polarised, monostable or bistable****Features**

- 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



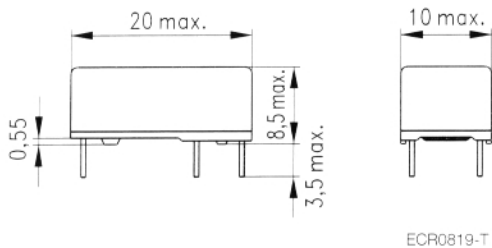
UL

File E 48393

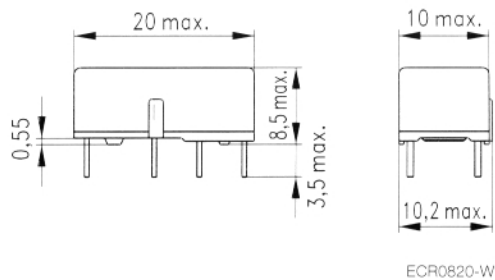
Miniature Relay D1

Without earth terminal

Dimensions (in mm)

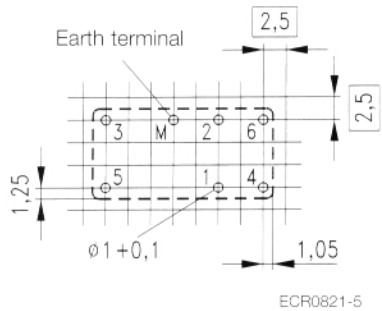


With earth terminal



Mounting hole layout

View onto the terminals

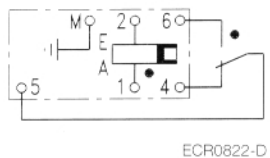


Pin arrangement suits 2,5 mm and 2,54 mm in acc. with DIN EN 60097 and DIN 40803

Base terminals

View onto the terminals

Monostable und bistable,
1 winding

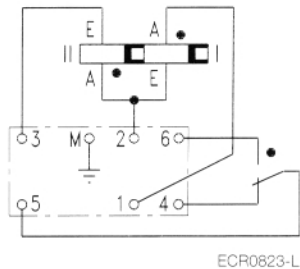


M= Earth terminal

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.

Bistable,
2 windings



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.

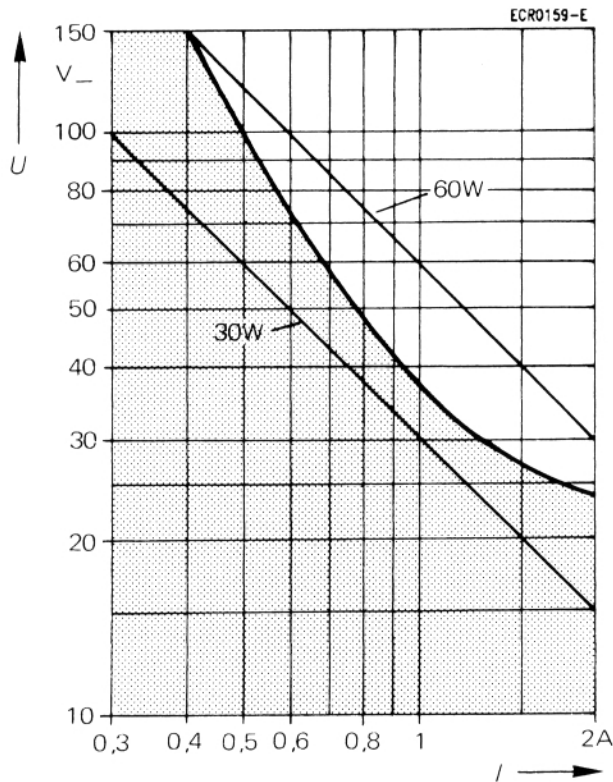
Miniature Relay D1

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)



- I = switching current
- U = switching voltage
- = recommended application field

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

Miniature Relay D1

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 U_I and U_{II} are dependent on the temperature according to the formulae:

$$U_{I\,tamb} = k_I \cdot U_{I\,20\,^{\circ}\text{C}}$$

and

$$U_{II\,tamb} = k_{II} \cdot U_{II\,20\,^{\circ}\text{C}}$$

T_{amb} = Ambient temperature

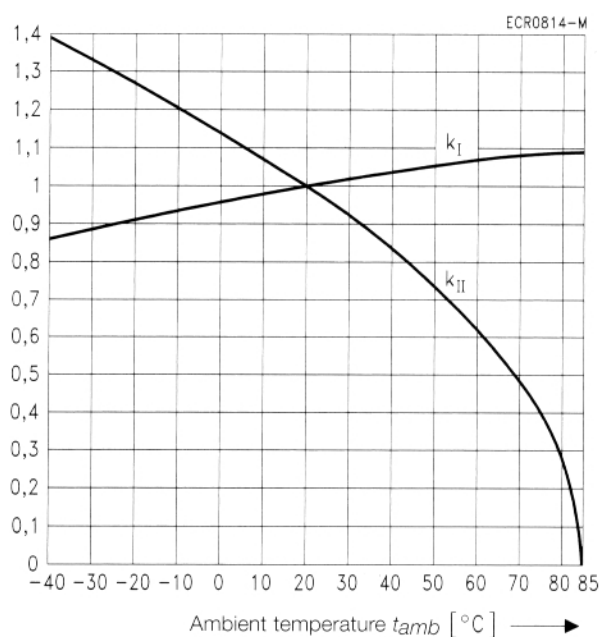
$U_{I\,tamb}$ = Minimum voltage at ambient temperature t_{amb}

$U_{II\,tamb}$ = 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.



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 $\pm$ 32	001
12	9	30	1140 $\pm$ 170	002
24	18	60	4370 $\pm$ 650	004
bistable, 2 windings				B0 ***/-B2***
5	3,75	16	315 $\pm$ 47	101
12	9	30	1110 $\pm$ 165	102
15	11,25	37	1760 $\pm$ 265	103
24	18	46	2800 $\pm$ 420	104
bistable, 1 winding				-C0***/-C2***
5	3,75	20	500 $\pm$ 75	051
12	9	38	1850 $\pm$ 275	052
24	18	67	5650 $\pm$ 845	054

Coil versions for sensitive versions are available on request.

Miniature Relay D1

Gernerl 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.