

## P1 Relay V23026

- Directly triggerable with TTL standard modules as ALS, HCT & ACT
- Slim line 13.5x7.85mm (0.531x0.309")
- Switching current 1 A
- Bifurcated 1 form C (CO) contact
- Immersion cleanable
- High sensitivity results in low nominal power consumption, 65 to 130mW for monostable and 30 to 150mW for bistable (latching)
- Initial surge withstand voltage  
2.5kV (2/10µs) meets the Bellcore Requirement GR-1089  
1.5kV (10/160µs) meets FCC Part 68

### Typical applications

Automotive equipment, CAN bus, immobilizer, office equipment, measurement and control equipment, medical equipment, safety equipment

### Approvals

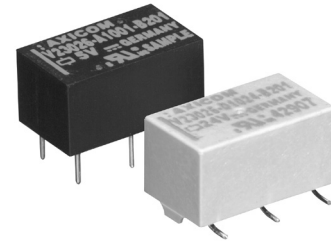
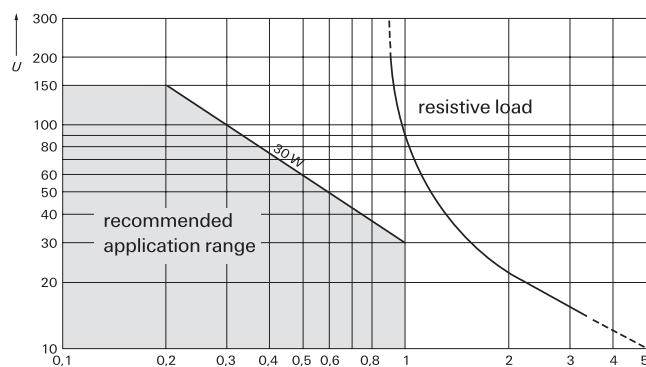
UL 508 File No. E 111441

Technical data of approved types on request

### Contact Data

|                                     |                                           |
|-------------------------------------|-------------------------------------------|
| Contact arrangement                 | 1 form C (CO)                             |
| Max. switching voltage              | 125VDC, 150VAC                            |
| Rated current                       | 1A                                        |
| Limiting continuous current, 85°C   | 1A                                        |
| Breaking capacity max.              | see max. DC load breaking capacity        |
| Contact material                    | Palladium nickel,<br>gold-rhodium covered |
| Contact style                       | bifurcated contact                        |
| Min. recommended contact load       | 10mA at 20mV                              |
| Initial contact resistance          | ≤50mΩ at 10mA/20mV                        |
| Frequency of operation without load | 200 ops./s                                |
| Operate/release time max.           | 2ms                                       |
| Set/reset time max.                 | 2ms                                       |
| Bounce time max.                    | 3ms                                       |
| Electrical endurance                |                                           |
| at 12V/10mA                         | typ. 50x10 <sup>6</sup> operations        |
| at 6V/100mA                         | typ. 10x10 <sup>6</sup> operations        |
| at 30V/1000mA                       | typ. 10x10 <sup>3</sup> operations        |
| Contact ratings                     |                                           |
| UL contact ratings                  | 30VDC/1A<br>65VDC/0.46A<br>150VAC/0.46A   |
| Mechanical endurance                | typ. 10 <sup>9</sup> operations           |

### Max. DC load breaking capacity



P1\_THTSMD



### Coil Data

|                            |                                              |
|----------------------------|----------------------------------------------|
| Magnetic system            | polarized                                    |
| Coil voltage range         | 3 to 24VDC<br>other coil voltages on request |
| Operative range, IEC 61810 | see coil operative range                     |
| Max. coil temperature      | 85°C                                         |
| Thermal resistance         | <130K/W                                      |

### Coil versions, THT, monostable

| Coil code | Rated voltage VDC | Operate voltage VDC <sub>min.</sub> | Release voltage VDC <sub>min.</sub> | Coil resistance Ω ±10% | Rated coil power mW |
|-----------|-------------------|-------------------------------------|-------------------------------------|------------------------|---------------------|
| 006       | 3                 | 2.25                                | 0.3                                 | 137                    | 66                  |
| 001       | 5                 | 3.75                                | 0.5                                 | 370                    | 68                  |
| 005       | 9                 | 6.75                                | 0.9                                 | 1165                   | 70                  |
| 002       | 12                | 9.00                                | 1.2                                 | 2250                   | 34                  |
| 004       | 24                | 18.00                               | 2.4                                 | 4500                   | 128                 |

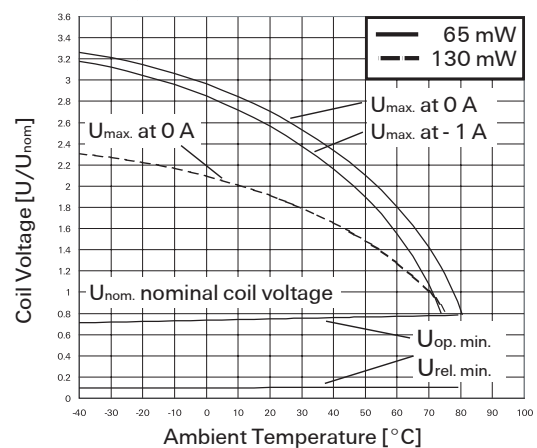
All figures are given for coil without pre-energization, at ambient temperature +23°C.

### Coil versions, SMT, monostable

| Coil code | Rated voltage VDC | Operate voltage VDC <sub>min.</sub> | Release voltage VDC <sub>min.</sub> | Coil resistance Ω ±10% | Rated coil power mW |
|-----------|-------------------|-------------------------------------|-------------------------------------|------------------------|---------------------|
| 026       | 3                 | 2.25                                | 0.3                                 | 113                    | 80                  |
| 021       | 5                 | 3.75                                | 0.5                                 | 313                    | 80                  |
| 025       | 9                 | 6.75                                | 0.9                                 | 1015                   | 80                  |
| 022       | 12                | 9.00                                | 1.2                                 | 1800                   | 80                  |
| 024       | 24                | 18.00                               | 2.4                                 | 4500                   | 128                 |

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

### Coil operative range, monostable DC coil



## P1 Relay V23026 (Continued)

### Coil data (continued)

#### Coil versions, THT and SMT, bistable 2 coils

| Coil code        | Rated voltage VDC | Set voltage VDC | Reset voltage VDC | Coil resistance $\Omega \pm 10\%$ | Rated coil power mW |
|------------------|-------------------|-----------------|-------------------|-----------------------------------|---------------------|
| 106              | 3                 | 2.25            | 2.25              | 130                               | 69                  |
| 101              | 5                 | 3.75            | 3.75              | 390                               | 64                  |
| 105              | 9                 | 6.75            | 6.75              | 1200                              | 68                  |
| 102              | 12                | 9.00            | 9.00              | 1500                              | 96                  |
| 24 <sup>1)</sup> |                   |                 |                   |                                   |                     |

All figures are given for coil without pre-energization, at ambient temperature +23°C.  
Coils I and II are identical.

<sup>1)</sup> A nominal voltage of 24VDC is feasible with a 12VDC coil with a series resistor (1500 $\Omega$ )

### Coil data (continued)

#### Coil versions, THT, bistable 1 coil

| Coil code | Rated voltage VDC | Set voltage VDC | Reset voltage VDC | Coil resistance $\Omega \pm 10\%$ | Rated coil power mW |
|-----------|-------------------|-----------------|-------------------|-----------------------------------|---------------------|
| 056       | 3                 | 2.25            | -2.25             | 300                               | 30                  |
| 051       | 5                 | 3.75            | -3.75             | 740                               | 34                  |
| 057       | 9                 | 6.75            | -6.75             | 2160                              | 38                  |
| 052       | 12                | 9.00            | -9.00             | 4500                              | 32                  |
| 054       | 24                | 18.00           | -18.00            | 4500                              | 128                 |

### Coil data (continued)

#### Coil versions, SMT, bistable 1 coil

| Coil code | Rated voltage VDC | Set voltage VDC | Reset voltage VDC | Coil resistance $\Omega \pm 10\%$ | Rated coil power mW |
|-----------|-------------------|-----------------|-------------------|-----------------------------------|---------------------|
| 051       | 5                 | 3.75            | -3.75             | 740                               | 34                  |
| 052       | 12                | 9.00            | -9.00             | 4500                              | 32                  |

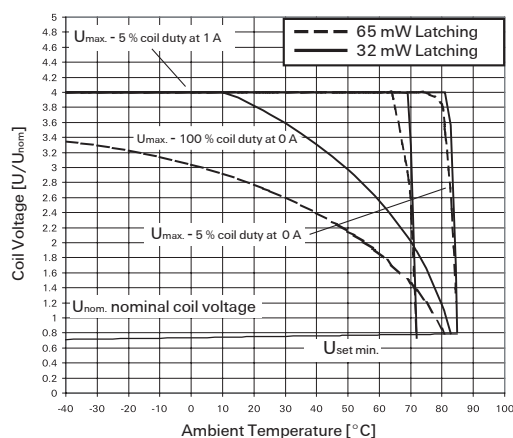
A nominal voltage of 24V is feasible with a 12V coil with a series resistor (4500 $\Omega$ )

Other coil voltages on request

All figures are given for coil without pre-energization, at ambient temperature +23°C.  
Coils I and II are identical.

### Coil operative range, bistable

$U_{max}$  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 Data

|                                 |                      |
|---------------------------------|----------------------|
| Initial dielectric strength     |                      |
| between open contacts           | 500V <sub>rms</sub>  |
| between contact and coil        | 1500V <sub>rms</sub> |
| Initial surge withstand voltage |                      |
| between contact and coil        | 2500V                |
| Capacitance                     |                      |
| between open contacts           | max. 5pF             |
| between contact and coil        | max. 6pF             |
| Clearance/creepage              |                      |
| between contact and coil        | 0.75mm               |
| between adjacent contacts       | 0.75mm               |

### RF Data

|                                    |                 |
|------------------------------------|-----------------|
| Isolation at 100MHz/900MHz         | -30.0dB/-18.0dB |
| Insertion loss at 100MHz/900MHz    | -0.12dB/-1.9dB  |
| Voltage standing wave ratio (VSWR) |                 |
| at 100MHz/900MHz                   | 1.06/1.75       |

### 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](http://www.te.com/customer-support/rohssupportcenter)

Ambient temperature -40 to +85°C

Category of environmental protection, IEC 61810 RT III - immersion cleanable

Vibration resistance (functional) 20g, 200 to 2000Hz  
40g, 10 to 200Hz

Shock resistance (functional) IEC 60068-2-27 (half sine) 50 g

Terminal type PCB terminals and SMT terminals  
Weight max. 2g

Resistance to soldering heat THT IEC 60068-2-20 265 °C/10s

Resistance to soldering heat SMT IEC 60068-2-58 see reflow profile

Moisture sensitive level, JEDEC J-Std-020D MSL3

Washing not recommended

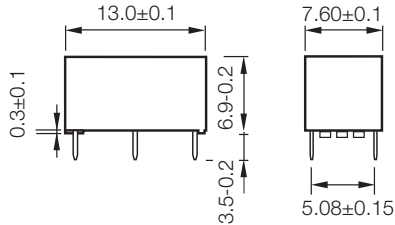
Ultrasonic cleaning possible

Packaging unit  
THT 2000 pcs.  
SMT 2400 pcs.

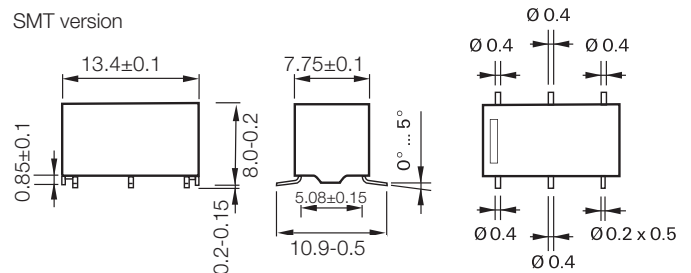
### P1 Relay V23026 (Continued)

## Dimensions

THT version



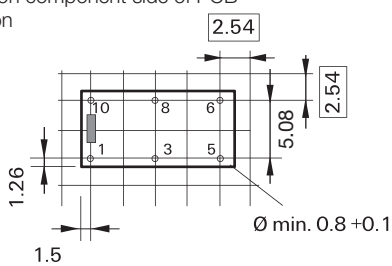
SMT version



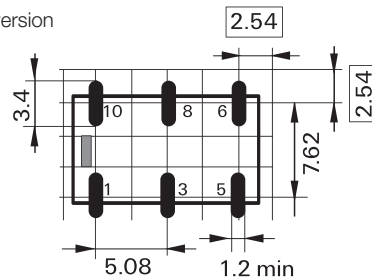
## PCB layout

TOP view on component side of PCB

THT version

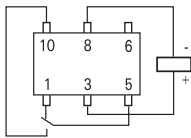


SMT version

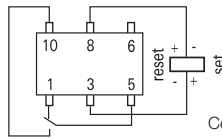


## Terminal assignment

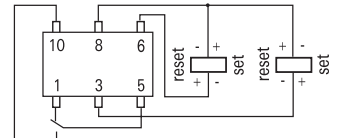
Monostable version  
rest condition



Bistable version, 1 coil  
reset condition



Bistable version, 2 coils  
reset condition



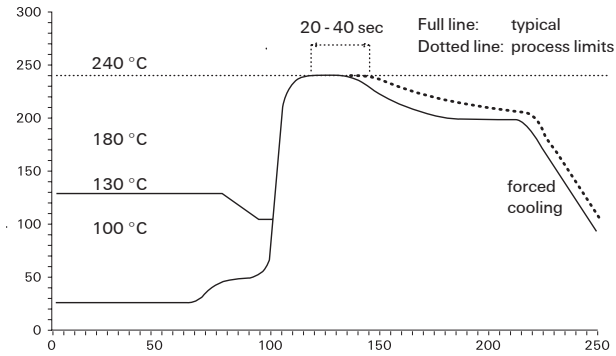
Contacts are shown in reset condition. Both coils can be used either as set or reset coil.  
Contact position might change during transportation and must be reset before use.

**P1 Relay V23026 (Continued)**

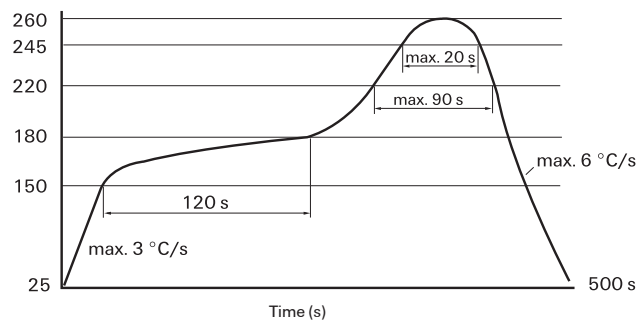
**Processing**

Recommended soldering conditions

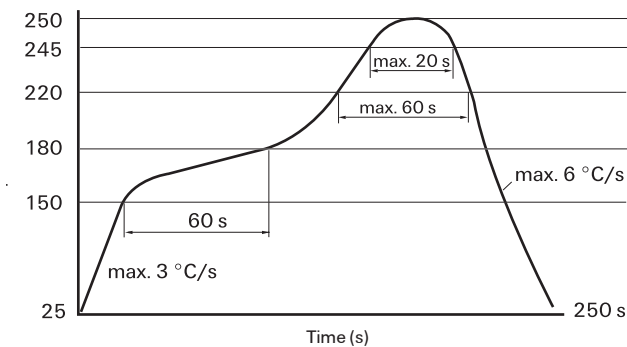
Soldering conditions according IEC 60058-2-58 and IPC/JEDEC J-STD-020B



Resistance to soldering heat - Reflow profile Vapor Phase Soldering: temperature/time profile (lead and housing peak temperature)

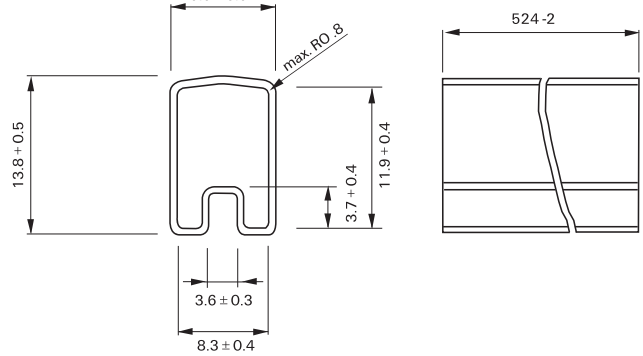


Recommended reflow soldering profile

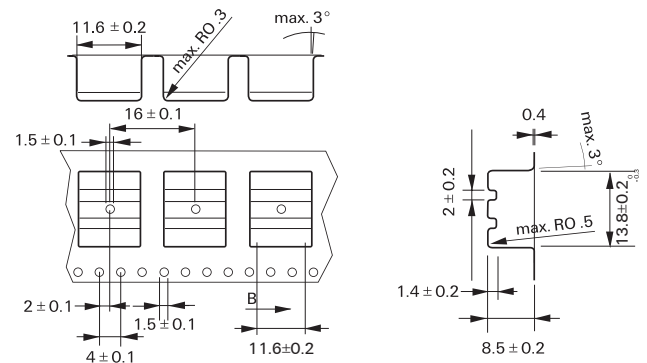


**Packing**

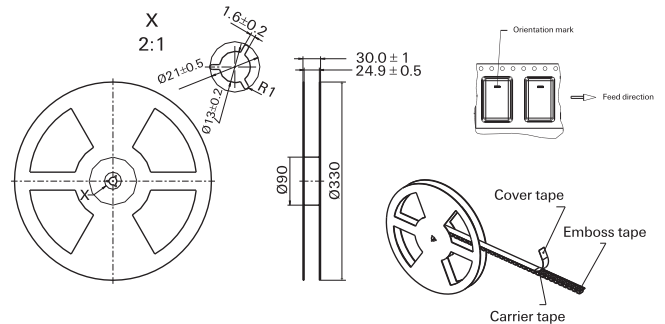
Tube for THT version  
40 relays per tube, 2000 relays per box



Tape and reel for SMT version  
480 relays per reel, 2400 relays per box



Reel dimensions



## P1 Relay V23026 (Continued)

### Product code structure

Typical product code **V23026** **A1** **002** **B201**

#### Type

**V23026** P1 Series Signal Relay

#### Version

**A1** THT, monostable      **D1** SMT, monostable  
**B1** THT, bistable (latching), 2 coils      **E1** SMT, bistable (latching), 2 coils  
**C1** THT, bistable (latching), 1 coil      **F1** SMT, bistable (latching), 1 coil

#### Coil

Coil code: please refer to coil versions table

#### Contacts

**B201** 1 form C, 1 CO

| Product Code    | Version     | Coil              | Coil voltage | Part Number |
|-----------------|-------------|-------------------|--------------|-------------|
| V23026A1006B201 | THT version | monostable        | 3VDC         | 1-1393774-7 |
| V23026A1001B201 |             |                   | 5VDC         | 1393774-1   |
| V23026A1005B201 |             |                   | 9VDC         | 1-1393774-5 |
| V23026A1002B201 |             |                   | 12VDC        | 1393774-8   |
| V23026A1004B201 |             |                   | 24VDC        | 1-1393774-2 |
| V23026B1106B201 |             | bistable, 2 coils | 3VDC         | 1393775-3   |
| V23026B1101B201 |             |                   | 5VDC         | 3-1393774-4 |
| V23026B1105B201 |             |                   | 9VDC         | 1393775-2   |
| V23026B1102B201 |             |                   | 12VDC        | 3-1393774-5 |
| V23026C1056B201 |             |                   | 3VDC         | 2-1393774-6 |
| V23026C1051B201 |             |                   | 5VDC         | 2-1393774-0 |
| V23026C1057B201 |             |                   | 9VDC         | 2-1393774-7 |
| V23026C1052B201 |             |                   | 12VDC        | 2-1393774-1 |
| V23026C1054B201 | SMT version | monostable        | 24VDC        | 2-1393774-4 |
| V23026D1026B201 |             |                   | 3VDC         | 1393776-8   |
| V23026D1021B201 |             |                   | 5VDC         | 1393776-3   |
| V23026D1025B201 |             |                   | 9VDC         | 1422015-9   |
| V23026D1022B201 |             |                   | 12VDC        | 1393776-4   |
| V23026D1024B201 |             |                   | 24VDC        | 1393776-7   |
| V23026E1106B201 |             | bistable, 2 coils | 3VDC         | 1393777-3   |
| V23026E1101B201 |             |                   | 5VDC         | 1422015-6   |
| V23026E1105B201 |             |                   | 9VDC         | 1393777-2   |
| V23026E1102B201 |             |                   | 12VDC        | 1393776-9   |
| V23026F1051B201 |             |                   | 9VDC         | 1422015-8   |
| V23026F1052B201 |             |                   | 12VDC        | 4-1393774-3 |