

AXICOM

Telecom-, Signal and RF Relays

P1 V23026 Relay

108-98009 • Aug. 08 Rev. F • ECOC: JM10

 **Tyco Electronics**

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P1 V23026 Relay

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The dimensions in this datasheet are for reference purpose only and are subject to change without notice. Specifications are subject to change without notice.

Index

Dimensions	4
Coil Operating Range	5
Coil Data and Ordering Information	6
Contact Data	7
Insulation	8
General Data	8
Packing	10



UL 508 File No. E 111441

P1 V23026 Relay

1 pole telecom / signal relay, polarized,
Through Hole Type (THT) or
Surface Mount Technology (SMT),

Relay types: non-latching with 1 coil
 latching with 2 coils
 latching with 1 coil

ROHS compliant (Directive 2002/95/EC) as per
product date code 0429.

Features

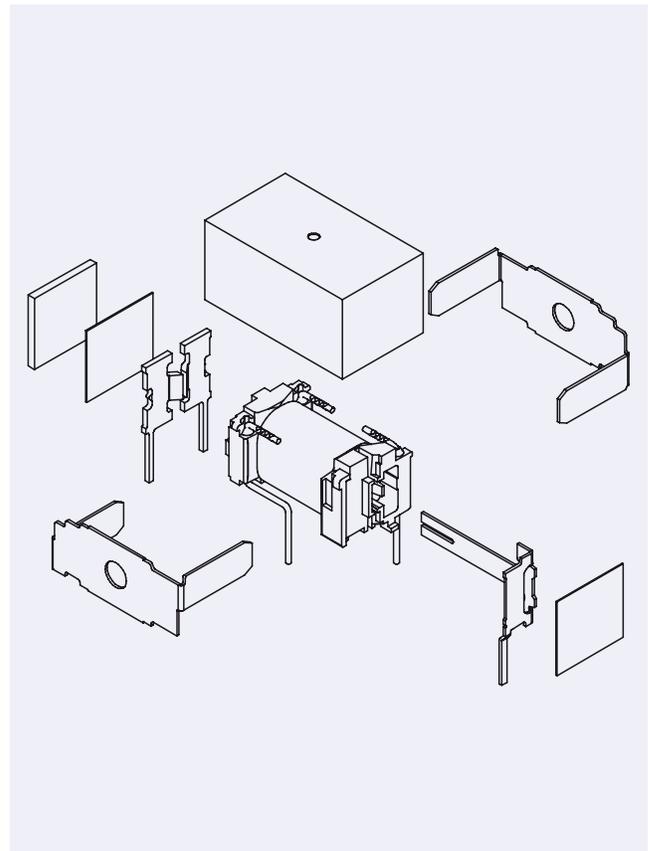
- Directly triggerable with TTL standard modules such as ALS, HCT and ACT
- Slim line 13.5 x 7.85 mm, 0.531 x 0.309 inch
- Switching current 1 A
- 1 changeover contact (1 form C / SPDT)
- Bifurcated contacts
- Immersion cleanable
- High sensitivity results in low nominal power consumption
 - 65 to 130 mW for non-latching
 - 30 to 150 mW for latching
- Surge voltage resistance between contact and coil:
 - 2.5 kV (2 / 10 μ s) meets the Bellcore Requirement GR-1089
 - 1.5 kV (10 / 160 μ s) meets FCC Part 68

Typical applications

- Automotive equipment
 CAN bus, immobilizer
- Office equipment
- Measurement and control equipment
- Medical equipment
- Safety equipment

Options

- FCC version on request. Testing of open contacts with surge voltage in accordance with FCC 68.302 (1.5 kV, 10/160 μ s)



Insulation category

Basic insulation coil/contacts according to IEC/EN 60950

Clearance	> 0.75 mm
Creepage distance	> 0.75 mm

P1 V23026 Relay

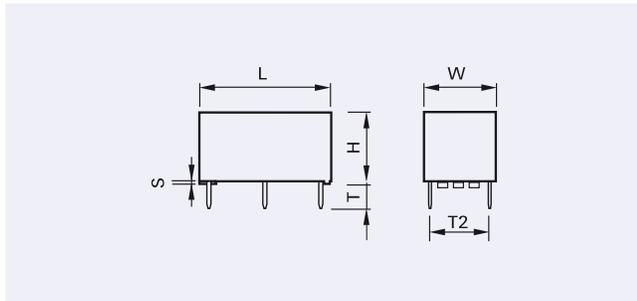
Dimensions

Dimensions in mm

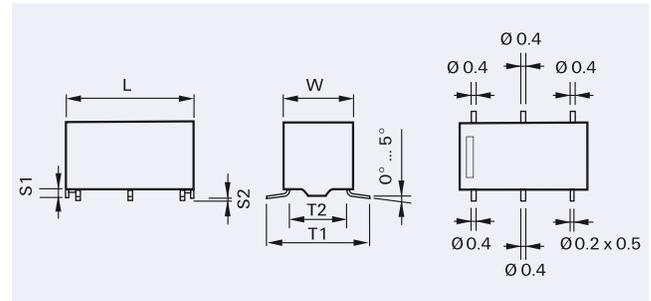
THT V23026-x1xxx-B201		
	mm	inch
L	13.00 ± 0.10	0.512 ± 0.004
W	7.60 ± 0.10	0.299 ± 0.004
H	6.90 – 0.20	0.272 – 0.008
T	3.50 – 0.20	0.138 – 0.008
T1	N/A	N/A
T2	5.08 ± 0.15	0.200 ± 0.006
S	0.30 ± 0.10	0.012 ± 0.004
S1	N/A	N/A
S2	N/A	N/A

SMT V23026-x1xxx-B201		
	mm	inch
L	13.40 ± 0.10	0.528 ± 0.004
W	7.75 ± 0.10	0.305 ± 0.004
H	8.00 – 0.20	0.315 – 0.008
T	N/A	N/A
T1	10.90 – 0.50	0.429 – 0.020
T2	5.08 ± 0.15	0.200 ± 0.006
S	N/A	N/A
S1	0.85 ± 0.10	0.033 ± 0.004
S2	0.20 – 0.15	0.008 – 0.006

THT Version



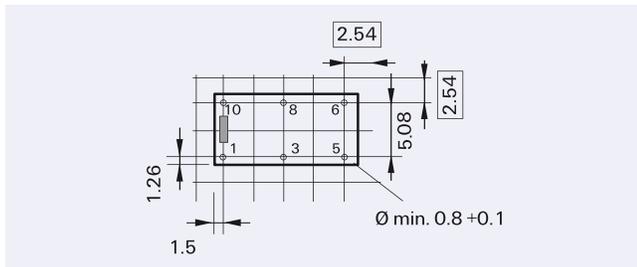
SMT Version



Coplanarity ≤ 0.1mm

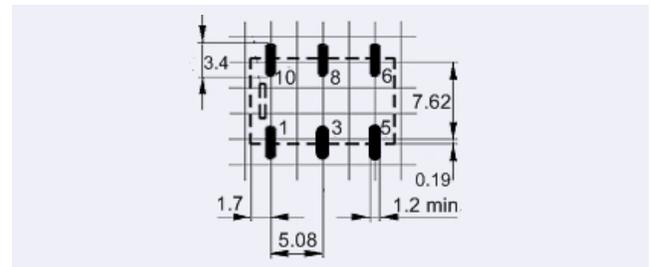
Mounting hole layout

View onto the component side of the PCB (top view)



Solder pad layout

View onto the component side of the PCB (top view)



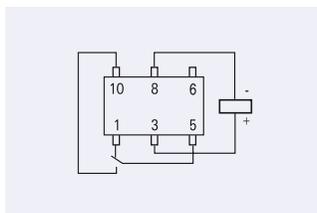
Terminal assignment

Relay – top view

Contact release or reset condition, coil polarity to set the relay

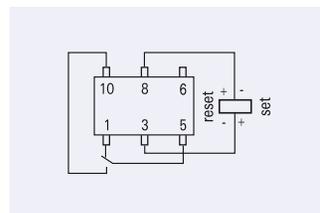
Non-latching type

not energized condition



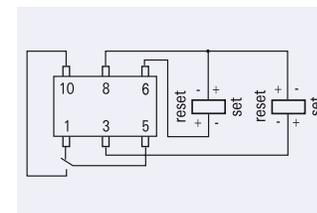
Latching type, 1 coil

reset condition



Latching type, 2 coils

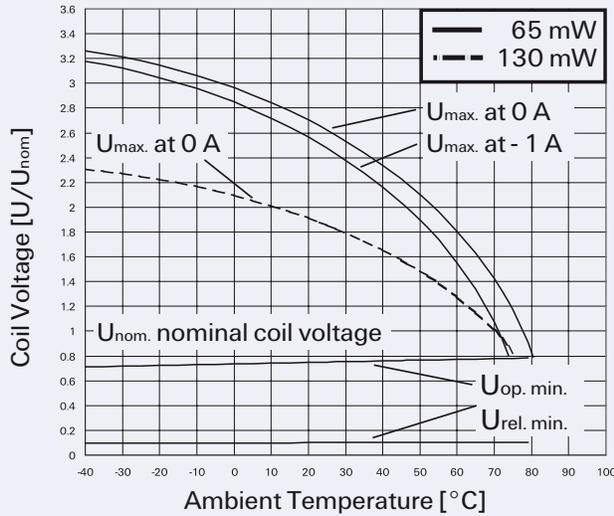
reset condition



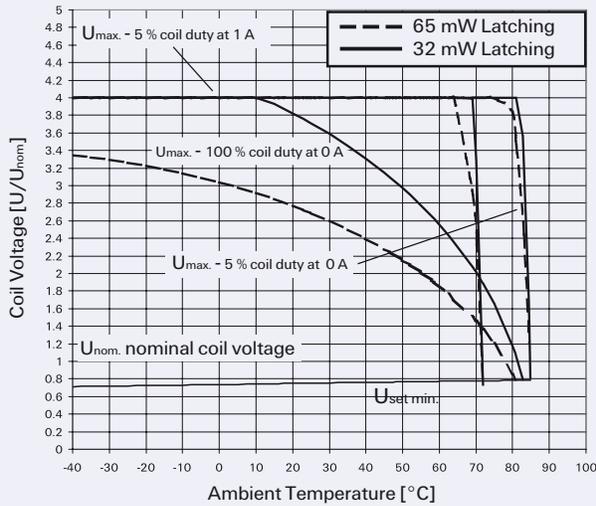
Contacts are shown in reset condition. Both coils can be used either as set or reset coil.

P1 V23026 Relay

Coil Operating Range



- U_{nom} = Nominal coil voltage
- $U_{max.}$ = 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)



P1 V23026 Relay

Coil Data (values at 23 °C)

Ordering Information

Nominal voltage U_{nom}	Operate/set voltage range		Release/ reset voltage Minimum	Coil power	Coil Resistance	Relay code	Tyco part number
	Minimum voltage U_{min}	Maximum voltage U_{max}					
Vdc	Vdc	Vdc	Vdc	mW	$\Omega / \pm 10 \%$		

THT, non-latching, 1 coil

3	2.25	8.80	0.30	66	137	V23026A1006B201	1-1393774-7
5	3.75	14.50	0.50	68	370	V23026A1001B201	1393774-1
9	6.75	25.50	0.90	70	1165	V23026A1005B201	1-1393774-5
12	9.00	35.00	1.20	64	2250	V23026A1002B201	1393774-8
24	18.00	50.00	2.40	128	4500	V23026A1004B201	1-1393774-2

THT, latching, 2 coils (coils I and II are identical)

3	2.25	8.55	2.25	69	130	V23026B1106B201	1393775-3
5	3.75	14.75	3.75	64	390	V23026B1101B201	3-1393774-4
9	6.75	26.00	6.75	68	1200	V23026B1105B201	1393775-2
12	9.00	29.00	9.00	96	1500	V23026B1102B201	3-1393774-5
24	A nominal voltage of 24 V is feasible with a 12 V coil with a series resistor (1500 Ω)						

THT, latching, 1 coil

3	2.25	13.00	-2.25	30	300	V23026C1056B201	2-1393774-6
5	3.75	20.00	-3.75	34	740	V23026C1051B201	2-1393774-0
9	6.75	35.00	-6.75	38	2160	V23026C1057B201	2-1393774-7
12	9.00	50.00	-9.00	32	4500	V23026C1052B201	2-1393774-1
24	18.00	50.00	-18.00	128	4500	V23026C1054B201	2-1393774-4

SMT, non-latching, 1 coil

3	2.25	8.00	0.30	80	113	V23026D1026B201	1393776-8
5	3.75	13.30	0.50	80	313	V23026D1021B201	1393776-3
9	6.75	24.00	0.90	80	1015	V23026D1025B201	1422015-9
12	9.00	35.00	1.20	80	1800	V23026D1022B201	1393776-4
24	18.00	50.00	2.40	128	4500	V23026D1024B201	1393776-7

SMT, latching, 2 coils (coils I and II are identical)

3	2.25	8.55	2.25	69	130	V23026E1106B201	1393777-3
5	3.75	14.75	3.75	64	390	V23026E1101B201	1422015-6
9	6.75	26.00	6.75	68	1200	V23026E1105B201	1393777-2
12	9.00	29.00	9.00	96	1500	V23026E1102B201	1393776-9
24	A nominal voltage of 24 V is feasible with a 12 V coil with a series resistor (1500 Ω)						

SMT, latching, 1coil

9	3.75	20.00	-3.75	34	740	V23026F1051B201	1422015-8
12	9.00	50.00	-9.00	32	4500	V23026F1052B201	4-1393774-3
24	A nominal voltage of 24 V is feasible with a 12 V coil with a series resistor (4500 Ω)						

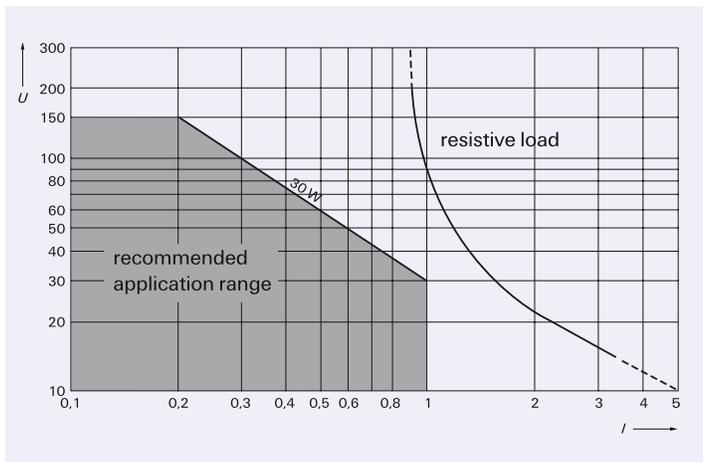
Further coil versions e.g. 1.5 V, 9 V and 15 V are available on request.

P1 V23026 Relay

Contact Data

Number of contacts and type	1 changeover contact
Contact assembly	Bifurcated contact
Contact material	Palladium nickel, gold-rhodium covered
Limiting continuous current at max. ambient temperature	1 A
Maximum switching current	1 A
Maximum switching voltage	125 Vdc 150 Vac
Maximum switching capacity	30 W, 60 VA
Thermoelectric potential	< 100 μ V
Initial contact resistance / measuring condition: 10 mA / 20 mV	< 50 m Ω
Electrical endurance at 12 V / 10 mA at 6 V / 100 mA at 30 V / 1000 mA	typ. 5×10^7 operations typ. 1×10^7 operations typ. 1×10^4 operations
Mechanical endurance	typ. 10^9 operations
UL contact ratings	30 Vdc / 1 A 65 Vdc / 0.46 A 150 Vac / 0.46 A

Max. DC Load Breaking Capacity



P1 V23026 Relay

Insulation

Insulation resistance at 500 Vdc	> 10 ⁹ Ω
Dielectric test voltage (1 min) between coil and contacts (Relay with 1 coil) between open contacts	1500 Vrms 500 Vrms
Surge voltage resistance according to Bellcore TR-NWT-001089 (2 / 10 μs) between coil and contacts (Relay with 1 coil) between open contacts according to FCC 68 (10 / 160 μs) between coil and contacts (Relay with 1 coil) between open contacts	2500 V on request 2000 V 1500 V on request 1500 V
Insulation according to IEC / EN 60950 Clearance Creepage distance	Basic insulation 0.75 mm 0.75 mm

High Frequency Data

Capacitance between coil and contacts between open contacts	max. 6 pF max. 5 pF
RF Characteristics Isolation at 100 / 900 MHz Insertion loss at 100 / 900 MHz V.S.W.R. at 100 / 900 MHz	- 30.0 dB / - 18.0 dB - 0.12 dB / - 1.9 dB 1.06 / 1.75

General Data

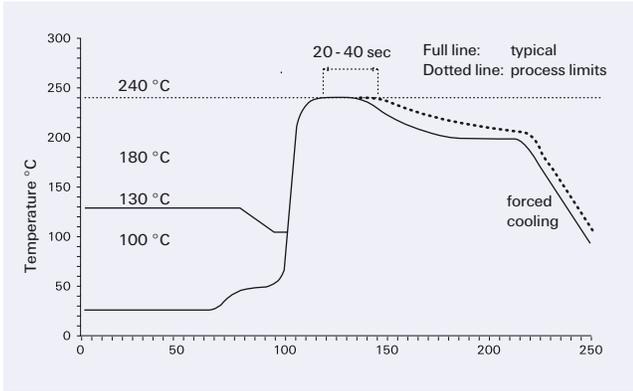
Operate time at U _{nom} typ. / max.	1 ms / 2 ms
Reset time (latching) at U _{nom} , typ. / max.	1 ms / 2 ms
Release time without diode in parallel (non-latching), typ. / max.	0.4 ms / 1 ms
Release time with diode in parallel (non-latching), typ. / max.	1.2 ms / 2 ms
Bounce time at closing contact, typ. / max.	1 ms / 3 ms
Maximum switching rate without load	200 operations/s
Ambient temperature	-40 °C ... +70 °C, +85 °C on request
Thermal resistance	< 130 K/W
Maximum permissible coil temperature	85 °C
Vibration resistance (function)	20 G, 200 to 2000 Hz 40 G, 10 to 200 Hz
Shock resistance, half sinus, 11 ms	50 G (function)
Degree of protection / Environmental protection	immersion cleanable, IP 67 / RT III
Needle flame test	application time 20 s, no burning < 15s
Mounting position	any
Processing information	Ultrasonic cleaning possible
Weight (mass)	max. 2 g
Terminal surface	SnCu 0.7
Moisture sensitive level (JEDEC J-STD-020B) - SMD types	MSL 3
Resistance to soldering heat	265 °C / 10 s

All data refers to 23 °C unless otherwise specified.

P1 V23026 Relay

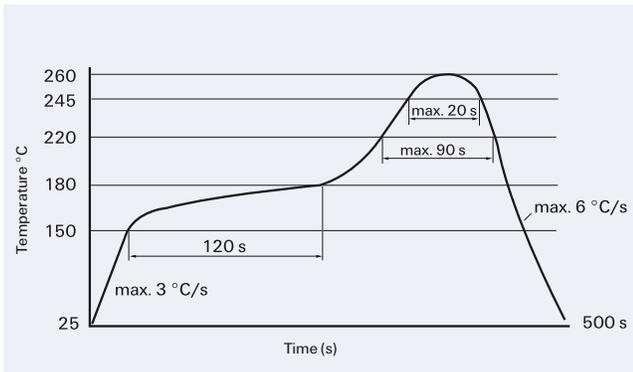
Recommended Soldering Conditions

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



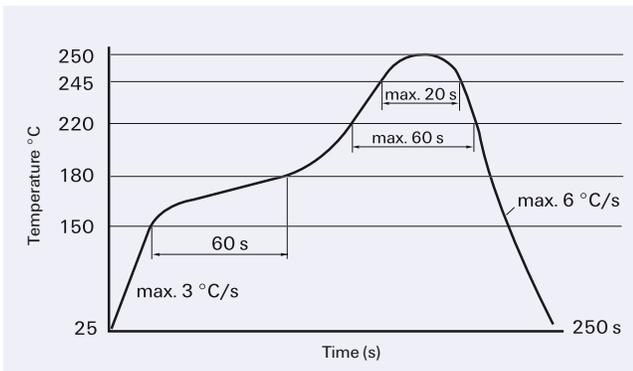
Vapor Phase Soldering: Temperature/Time Profile (Lead and Housing Peak Temperature)

Resistance to soldering heat - Reflow profile



Infrared Soldering: Temperature/Time Profile (Lead and Housing Peak Temperature)

Recommended reflow soldering profile

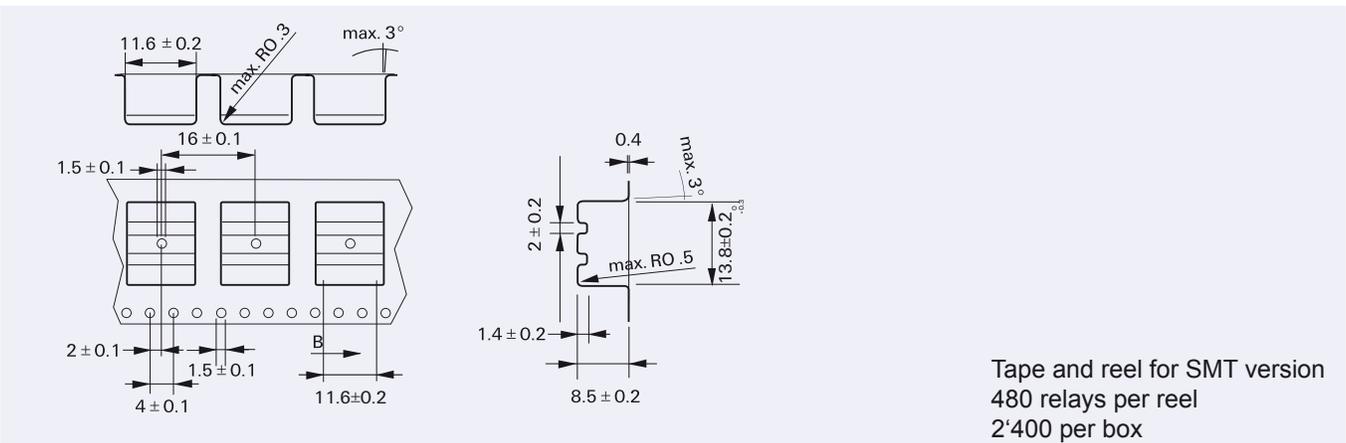
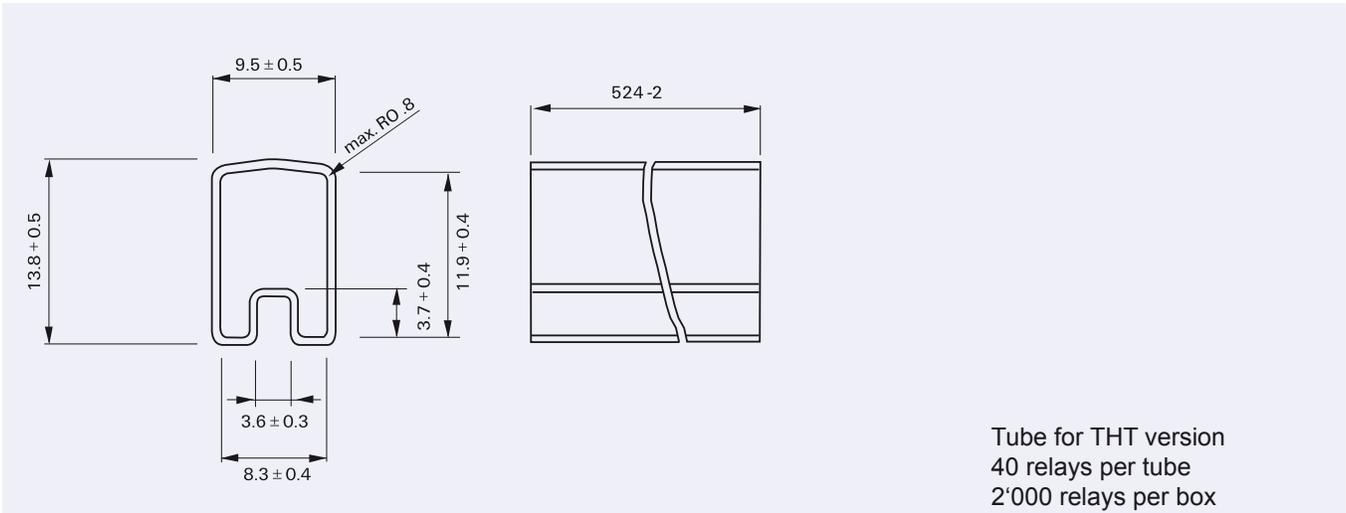


Infrared Soldering: Temperature/Time Profile (Lead and Housing Peak Temperature)

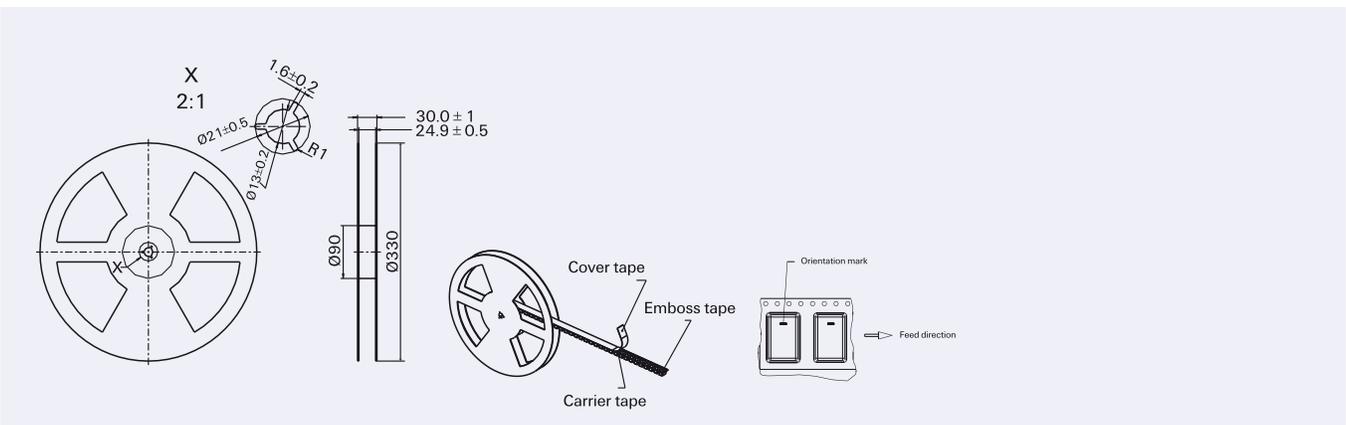
P1 V23026 Relay

Packing

Dimensions in mm



Reel dimension



P1 V23026 Relay

IM Relays

4th generation slim line – low profile polarized 2 c/o telecom signal relay with bifurcated contacts, available as non latching or latching relay with 1 coil. Nominal voltage range from 1.5 ... 24 V, coil power consumption of 50 ... 200 mW, latching relays with 1 coil 100 mW. The IM relay is available as through hole and surface mount type (J-Legs and Gull Wings) and capable to switch loads up to 60 W/62,5 VA. It is currently the only 2 A rated 4G relay on the market. Dielectric strength fulfills the Telcordia requirements according GR 1089 (2,5 kV – 2 / 10 μ s) and FCC part 68 (1,5 kV – 10 / 160 μ s). The IM relay is tested according CECC/IECQ and certified in accordance with IEC/EN 60950 and UL 60950. Dimensions approx. 10 x 6 mm board space and 5.65 mm height.

P2 Relays

3rd generation polarized 2 c/o telecom relay with bifurcated contacts, available as non latching or latching relay with 1 or 2 coils. Nominal voltage range from 3 ... 24 V, coil power consumption 140 mW, latching relays with 1 coil 70 mW. The P2 Relay is available as through hole or surface mount type and capable to switch currents up to 5 A. Dielectric strength fulfills the Telcordia requirements according GR 1089 (2,5 kV – 2 / 10 μ s) and FCC part 68 (1,5 kV – 10 / 160 μ s). The P2 relay is tested according CECC/IECQ and certified in accordance with IEC/EN 60950 and UL 60950. Dimensions approx. 15 x 7,5 mm board space and 10 mm height.

FX2 Relays

3rd generation polarized 2 c/o telecom relay with bifurcated contacts, available as non latching or latching relay with 1 coil. Nominal voltage range from 3 ... 48 V, coil power consumption of 80 ... 260 mW for the high sensitive version, 140... 300 mW for the standard version, latching relays with 1 coil 100 mW. The FX2 relay is available as through hole type and capable to switch loads up to 60 W/62,5 VA. Dielectric strength fulfills the Telcordia requirements according GR 1089 (2,5 kV – 2 / 10 μ s) and FCC part 68 (1,5 kV – 10 / 160 μ s). The FX2 relay is tested according CECC/IECQ and certified in accordance with IEC/EN 60950 and UL 60950. Dimensions approx. 15 x 7,5 mm board space and 10,7 mm height.

FT2 / FU2 Relays

3rd generation non polarized, non latching 2 c/o telecom relay with bifurcated contacts. Nominal voltage range from 3 ... 48 V, coil power consumption 200 ... 300 mW. Most sensitive 48 V relay. Available as through hole and surface mount type. Dielectric strength fulfills the Telcordia requirements according GR 1089 (2,5 kV – 2 / 10 μ s) and FCC part 68 (1,5 kV – 10 / 160 μ s). The FT2/FU2 relay is tested according CECC/IECQ and certified in accordance with IEC/EN 60950 and UL 60950. Dimensions approx. 15 x 7,5 mm board space and 10 mm height.

FP2 Relays

3rd generation polarized 2 c/o telecom relay with bifurcated contacts, available as non latching or latching relay with 1 or 2 coils. Nominal voltage range from 3 ... 48 V, coil power consumption of 80 ... 260 mW for the high sensitive version, 140... 300 mW for the standard version, latching relays with 1 coil 100 mW. The FP2 Relay is available as through hole type and capable to switch loads up to 60 W/62,5 VA. Dielectric strength fulfills FCC part 68 (1,5 kV – 10 / 160 μ s). The FP2 is tested according CECC/IECQ approved. Dimensions approx. 14 x 9 mm board space and 5 mm height.

MT2

2nd generation non polarized, non latching 2 c/o telecom and signal relay with bifurcated contacts. Nominal voltage range from 3 ... 48 V, coil power consumption 150/200/300/400 and 550 mW. Dielectric strength fulfills the requirements according FCC part 68 (1,5 kV – 10 / 160 μ s). Dimensions approx. 20 x 10 mm board space and 11 mm height.

D2n Relays

2nd generation non polarized 2 c/o relay for telecom and various other applications. Nominal voltage range from 3 ... 48 V, coil power consumption from 150 ... 500 mW. The D2n relay is capable to switch currents up to 3A. Dielectric strength fulfills the requirements according FCC part 68 (1,5 kV – 10 / 160 μ s). Dimensions approx. 20 x10 mm board space and 11 mm height.

P1 Relays

Extremely sensitive, polarized 1 c/o relay with bifurcated contacts for a wide range of applications, available as non latching or latching relay with 1 or 2 coils. Nominal voltage range from 3 ... 24 V, coil power consumption 65 mW, latching relays with 1 coil 30 mW. The P1 relay is available as through hole or surface mount type and capable to switch currents up to 1 A. Dielectric strength fulfills the requirements according FCC part 68 (1,5 kV – 10 / 160 μ s). Dimensions approx. 13 x 7,6 mm board space and 7 mm height for THT or 8 mm height for SMT version.

W11 Relays

Low cost, non polarized 1 c/o relay for various applications. Nominal voltage range from 3 ... 24 V, coil power consumption 450 mW, sensitive versions 200 mW. The W11 relay is capable to switch currents up to 3 A. Dielectric strength 1000 Vrms. Dimensions approx. 15,6 x 10,6 mm board space and 11,5 mm height.

Reed Relays

High sensitive, non polarized relay for telecom and various other applications, available with 1 n/o, 2 n/o or 1c/o contacts. Nominal voltage range from 5 ... 24 V, coil power consumption 50...280 mW for 1 n/o and 125 ... 280 mW for 2 n/o or 1 c/o versions. Reedrelays are available in DIP or SIL housing and capable to switch currents up to 0,5 A. Integrated diode and/or electrostatic shield optional. Dielectric strength 1500 Vdc. Dimensions approx. 19,3 x 7 mm board space and 5 ... 7,5 mm height for DIP or 19,8 x 5 mm board space and 7,8 mm height for SIL version.

Cradle Relays

Extremely reliable and mature relay family of 1st generation for various signal switching applications. Available as non polarized, polarized / latching and relay with AC coil. The benefit is the possibility of combining various contact sets from 1 up to 6 poles, single and bifurcated contacts, different contact materials with a coil voltage range from 1,5 Vdc to 220 Vac. Cradle relays are available as dust protected and hermetically sealed versions, with plug in or solder terminals and are capable to switch currents up to 5 A. Forcibly guided (linked) contact sets optional. Dielectric strength 500 Vrms. Dimensions from approx. 19 x 24 to 19x35 mm board space and 30 mm height.

Other Relays

We offer a variety of different relay families for maintenance and replacement purposes. These relays are up to 60 years old now, such as Card Relay SN (V23030 series), Small General Purpose Relay (V23006 series), Small Polarized Relay (V23063 ... V23067 and V23163 ... V23167 series). Accessories like sockets, hold down springs, etc. optional.

High Frequency Relays

HF3 / HF3S / HF6 series RF relays offering excellent RF characteristics in a small package. All HF series relays are suitable for SMD soldering processes. Available as non latching or latching versions with 1 or 2 coils and a nominal coil voltage range from 3 ... 24 V, a coil power consumption of 140 mW or 70 mW (single coil latching types).

HF3: Low cost RF relay suitable up to 3 GHz. Impedance 50 and 75 Ohm. 50 W hot switching and 50 W RF power carry capability. Dimensions 14.6 x 7.3 x 10.3 mm.

HF3S: High performance, high power RF relay suitable up to 3 GHz, 50 W hot switching and 150 W RF power carry capability. Dimensions 15 x 7.6 x 10.6 mm.

HF6: High performance, high power RF relay suitable up to 6 GHz, 50 W hot switching and 50 W RF power carry capability. Dimensions 15 x 7.6 x 10.6 mm.



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