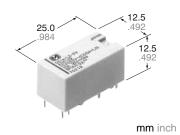




ideas for life



COMPACT HIGH-INSULATION POLARIZED POWER RELAY

DE RELAYS (ADE)

FEATURES

- Conforms to European safety standards (VDE0700 and VDE0631) Insulating distance between coil and contacts:
- Clearance Min. 8mm .315 inch Creepage distance Min. 8mm .315 inch
- Extensive product line-up
- Surge voltage between contact and coil 12 kV
- Low operating power
 Nominal operating power at 200 mW
 (Single side stable, 2 coil latching)
- Compact body saves space Size: 12.5(W) \times 25.0(L) \times 12.5(H) mm .492(W) \times .984(L) \times .492(H) inch
- UL/CSA, VDE approved

SPECIFICATIONS

Contact

Arrangement		1 Form A 1 Form A 2 Form					
Contact material		AgSnO ₂ type					
Initial contact resistance, max. (By voltage drop 6V DC 1A)		30mΩ					
	Nominal switching capacity	10A 250V AC, 10A 30V DC	8A 250V AC, 8A 30V DC	8A 250V AC, 8A 30V DC			
	Max. switching power	2,500 VA*, 300W	2,000 VA*, 240W	2,000 VA*, 240W			
Rating (resistive load)	Max. switching voltage	440V AC, 230V DC	440V AC, 230V DC	440V AC, 230V DC			
	Max. switching current	10A (16A)*	8A (16A)*	8A (16A)*			
	Min. switching capacity#1		<u> </u>				
	Mechanical (at 300cpm)	107					
Expected life (min. operations)	Electrical (at 20 cpm) (resistive load)	10 ⁵ 10 ⁵ (AC) 5 × 10 ⁴ (DC)					
	Electrical (16A / 230 V AC resistive)*	25000	000				

Coil (at 20°C, 68°F)

	Nominal operating power
Single side stable	200 mW
1 coil latching	100 mW
2 coil latching	200 mW

^{#1} This value can change due to the switching frequency, environmental conditions, and desired reliability level, therefore it is recommended to check this with the actual load.

Characteristics

Initial insulation resistance*1 Min. 1,000 MΩ (at 500 V DC)	Max. operating	ng speed	20 cpm (at rated load)			
Initial breakdown voltage*2 Between contact sets Between contact and coil Surge voltage between contact and coil*3 Operate time [Set time]*4 Release time (without diode) [Reset time]*4 Release time (without diode) [Reset time]*4 Temperature rise (at 70°C)*5 Shock resistance Functional*6 Destructive*7 Punctional*8 Conditions for operation, transport and storage*9 (Not freezing and condensing at low temperature) Between contact sets 4,000 Vrms (2 Form A, 1 Form B) Ambient temp. 4,000 Vrms (2 Form A, 1 Form B) 5,000 Vrms Min. 12,000 V (initial) Max. 10ms (typ. 5ms) [Max. 10ms (typ. 4ms)] (at 20°C 68°F) Max. 50°C Min. 196 m/s²{20 G} Destructive*7 Min. 980 m/s²{100 G} 10 to 55 Hz at double amplitude of 2 mm 10 to 55 Hz at double amplitude of 3 mm Ambient temp. -40°C to 70°C -40°F to 158°F Humidity 5 to 85% R.H.	Initial insulation	on resistance*1	•			
breakdown voltage*2 Between contact sets Between contact and coil Surge voltage between contact and coil*3 Min. 12,000 V (initial) Max. 10ms (typ. 5ms) [Max. 10ms (typ. 4ms)] (at 20°C 68°F) Max. 5ms (typ. 2ms) [Max. 10ms (typ. 4ms)] (at 20°C 68°F) Max. 5ms (typ. 2ms) [Max. 10ms (typ. 4ms)] (at 20°C 68°F) Max. 5ms (typ. 2ms) [Max. 10ms (typ. 4ms)] (at 20°C 68°F) Max. 50°C Functional*6 Destructive*7 Min. 196 m/s²{20 G} Min. 196 m/s²{100 G} Vibration resistance Destructive Destructive To to 55 Hz at double amplitude of 2 mm Conditions for operation, transport and storage*9 (Not freezing and condensing at low temperature) Humidity 5 to 85% R.H.	1.22.1	Between open	contacts	1,000 Vrms		
Between contact and coil 5,000 Vrms	breakdown	Between conta	act sets			
Operate time [Set time]*4 Operate time [Set time]*4 Release time (without diode) [Reset time]*4 Max. 5ms (typ. 2ms) [Max. 10ms (typ. 4ms)] (at 20°C 68°F) Max. 50°C Shock resistance Functional*6 Destructive*7 Min. 196 m/s²{20 G} Min. 980 m/s²{100 G} Functional*8 Destructive To to 55 Hz at double amplitude of 2 mm Destructive Conditions for operation, transport and storage*9 (Not freezing and condensing at low temperature) Ambient temp. Humidity 5 to 85% R.H.		Between conta	act and coil	5,000 Vrms		
Operate time [Set time]*4 [Max. 10ms (typ. 4ms)] (at 20°C 68°F) Max. 5ms (typ. 2ms) [Max. 10ms (typ. 4ms)] (at 20°C 68°F) Max. 5ms (typ. 2ms) [Max. 10ms (typ. 4ms)] (at 20°C 68°F) Temperature rise (at 70°C)*5 Max. 50°C Functional*6 Destructive*7 Min. 196 m/s²{20 G} Min. 980 m/s²{100 G} Tunctional*8 Punctional*8 Destructive Destructive Conditions for operation, transport and storage*9 (Not freezing and condensing at low temperature) [Max. 10ms (typ. 4ms)] (at 20°C 68°F) Max. 5ms (typ. 2ms) [Max. 10ms (typ. 4ms)] (at 20°C 68°F) And to 55 Hz at double amplitude of 2 mm 10 to 55 Hz at double amplitude of 2 mm	Surge voltage	e between conta	act and coil*3	Min. 12,000 V (initial)		
Release time (without diode) [Reset time]*4 [Max. 10ms (typ. 4ms)] (at 20°C 68°F) Temperature rise (at 70°C)*5 Max. 50°C Shock resistance Functional*6 Min. 196 m/s²{20 G} Destructive*7 Min. 980 m/s²{100 G} Functional*8 10 to 55 Hz at double amplitude of 2 mm Conditions for operation, transport and storage*9 (Not freezing and condensing at low temperature) Ambient temp. 10 to 55 Hz at double amplitude of 3 mm -40°C to 70°C -40°F to 158°F Humidity 5 to 85% R.H.	Operate time	[Set time]*4		[Max. 10ms (typ. 4ms)]		
Shock resistance Functional*6 Min. 196 m/s²{20 G} Destructive*7 Min. 980 m/s²{100 G} Functional*8 10 to 55 Hz at double amplitude of 2 mm Destructive 10 to 55 Hz at double amplitude of 3 mm Conditions for operation, transport and storage*9 (Not freezing and condensing at low temperature) Ambient temp. 5 to 85% R.H.	Release time	(without diode)	[Reset time]*4	[Max. 10ms (typ. 4ms)]		
Destructive*7 Min. 980 m/s²{100 G}	Temperature rise (at 70°C)*5			Max. 50°C		
Vibration resistance Destructive*7 Min. 980 m/s²{100 G}	Charle mariatanas		Functional*6	Min. 196 m/s ² {20 G}		
Vibration resistance Destructive Tunctional*8 amplitude of 2 mm	SHOCK TESISIA	ince	Destructive*7	Min. 980 m/s ² {100 G}		
Conditions for operation, transport and storage*9 (Not freezing and condensing at low temperature) Destructive 10 to 55 Hz at double amplitude of 3 mm -40°C to 70°C -40°F to 158°F Humidity 5 to 85% R.H.	Vibration resi	etanco	Functional*8			
transport and storage*9 (Not freezing and condensing at low temperature) Ambient temp. —40°F to 158°F Humidity 5 to 85% R.H.	VIDIALIONITESI	stance	Destructive			
ing at low temperature) Humidity 5 to 85% R.H.	transport and	storage*9	Ambient temp.			
Unit weight Approx. 7 g .25 oz			Humidity	5 to 85% R.H.		
	Unit weight		Approx. 7 g .25 oz			

Remarks

- * 16A possible for one contact set only with max. 4000 VA switching power.
- *1 Measurement at same location as "Initial breakdown voltage" section.
- *2 Detection current: 10mA
- *3 Wave is standard shock voltage of $\pm 1.2\times 50\mu s$ according to JEC-212-1981 *4 Nominal operating voltage applied to the coil, excluding contact bounce time.
- *5 By resistive method
 *6 Half-wave pulse of sine wave: 11ms, detection time: 10ms.
- *7 Half-wave pulse of sine wave: 6ms
- *8 Detection time: 10ms
- *9 Refer to "6. Usage, Storage and Transport Conditions" in AMBIENT ENVIRONMENT section in Relay Technical Information.

TYPICAL APPLICATIONS

- Temperature controller
- Automatic meter reading
- OA equipment
- FA equipment

Ex. DE 1a 3 V L Product name Coil voltage, V DC Contact arrangement Operating function 1.5, 3, 4.5, 5, 6, 9, 12, 24, 48** DE 1a: 1 Form A Nil: Single side stable 1a1b: 1 Form A 1 Form B L: 1 coil latching 2a: 2 Form A L2: 2 coil latching

Notes: 1) Standard packing; Carton (tube package) 20 pcs. Case 500 pcs.

ORDERING INFORMATION

**just for single side stable

2) UL/CSA, VDE approved type is standard.

TYPES AND COIL DATA (at 20°C 68°F)

• Single side stable type

1 Form A, 1 Form A 1 Form B, 2 Form A

Part No.	Nominal voltage, V DC	Pick-up voltage, V DC (max.) (initial)	Drop-out voltage, V DC (min.) (initial)	Coil resistance, Ω (±10%)	Nominal operating current, mA (±10%)	Nominal operating power, mW	Max. allowable voltage, V DC
DE □ -1.5V	1.5	1.05	0.15	11.3	132.7	200	1.95
DE□-3V	3	2.1	0.3	45	66.6	200	3.9
DE □ -4.5V	4.5	3.15	0.45	101	44.5	200	5.85
DE□-5V	5	3.5	0.5	125	40	200	6.5
DE□-6V	6	4.2	0.6	180	33.3	200	7.8
DE□-9V	9	6.3	0.9	405	22.2	200	11.7
DE□-12V	12	8.4	1.2	720	16.6	200	15.6
DE□-24V	24	16.8	2.4	2,880	8.3	200	31.2
DE□-48V	48	33.6	4.8	11,520	4.2	200	62.4

• 1 coil latching type

1 Form A

Part No.	Nominal voltage, V DC	Set voltage, V DC (max.) (initial)	Reset voltage, V DC (min.) (initial)	Coil resistance, Ω (±10%)	Nominal operating current, mA (±10%)	Nominal operating power, mW	Max. allowable voltage, V DC
DE□-L-1.5V	1.5	1.05	1.05	22.5	66.6	100	1.95
DE□-L-3V	3	2.1	2.1	90	33.3	100	3.9
DE□-L-4.5V	4.5	3.15	3.15	202	22.3	100	5.85
DE□-L-5V	5	3.5	3.5	250	20	100	6.5
DE□-L-6V	6	4.2	4.2	360	16.7	100	7.8
DE□-L-9V	9	6.3	6.3	812	11.1	100	11.7
DE□-L-12V	12	8.4	8.4	1,440	8.3	100	15.6
DE□-L-24V	24	16.8	16.8	5,760	4.2	100	31.2

• 2 coil latching type

1 Form A

Part No.	Nominal voltage,	Set voltage, V DC (max.) (initial)	Reset voltage, V DC (min.) (initial)	Coil resistance, Ω (±10%)		Nominal operating current, mA (±10%)		Nominal operating power, mW		Max. allowable voltage,
	V DC			Set coil	Reset coil	Set coil	Reset coil	Set coil	Reset coil	V DC
DE□-L2-1.5V	1.5	1.05	1.05	11.3	11.3	66.6	66.6	200	200	1.95
DE□-L2-3V	3	2.1	2.1	45	45	66.6	66.6	200	200	3.9
DE□-L2-4.5V	4.5	3.15	3.15	101	101	44.5	44.5	200	200	5.85
DE□-L2-5V	5	3.5	3.5	125	125	40	40	200	200	6.5
DE□-L2-6V	6	4.2	4.2	180	180	33.3	33.3	200	200	7.8
DE□-L2-9V	9	6.3	6.3	405	405	22.2	22.2	200	200	11.7
DE□-L2-12V	12	8.4	8.4	720	720	16.6	16.6	200	200	15.6
DE□-L2-24V	24	16.8	16.8	2,880	2,880	8.3	8.3	200	200	31.2

Note: Insert contact arrangement, e.g.1a, 1a1b, 2a, in \square for contact form required.

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