

FEATURES

1. Supports magnetron and heater loads.

Capable for switching magnetron and heater loads found in microwave ovens.

2. Excellent heat resistance

Ambient temperature: up to 85°C 185°F
Certified UL coil insulation class B and class F

3. High insulation resistance

Creepage distance and clearances between contact and coil:

Min. 8 mm .315 inch

Surge withstand voltage: 10,000V

4. Low operating power

Nominal operating power: 400mW/
200mW (High sensitive type)

5. A wide variety of types

Product line consists of 4 types with different shapes and pins

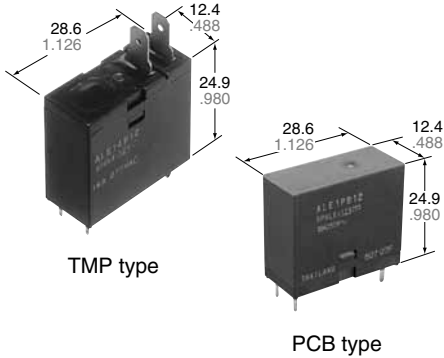
6. Conforms to the various safety standards:

UL/CSA, TÜV, VDE approved and SEMKO available (TMP type)

UL/CSA, VDE approved (PCB type)

TYPICAL APPLICATIONS

- Microwave ovens
- Refrigerators
- OA equipment



RoHS Directive compatibility information
<http://www.mew.co.jp/ac/e/environment/>

SPECIFICATIONS

Contact		Coil		Characteristics	
Arrangement		1 Form A		Max. operating speed (at rated load)	
Initial contact resistance, max. (By voltage drop 6 V DC 1 A)		100 mΩ		20 cpm	
Contact material		AgSnO ₂ type		Initial insulation resistance*1	
Rating (resistive load)	Nominal switching capacity	16 A 277 V AC		Initial breakdown voltage*2	Between open contacts
	Max. switching power	4,432 V A			Between contacts and coil
	Max. switching voltage	277 V AC		1,000 Vrms for 1 min.	
	Max. switching current	16 A		4,000 Vrms for 1 min.	
	Min. switching capacity*1 (Reference value)	100 mA, 5 V DC		Initial surge voltage between contact and coil*3	
Expected life (min. operations)	Mechanical (at 180 cpm)	2 × 10 ⁶		Operate time*4 (at nominal voltage) (at 20°C 68°F)	
	Electrical (at 20 cpm) (Resistive load)	10 ⁵		Max. 20ms	
				Release time (with diode)*4 (at nominal voltage) (at 20°C 68°F)	
				Temperature rise (at nominal voltage) (resistance method, contact current 16 A, 20°C 68°F)	
				Max. 55°C Max. 45°C (200 mW type)	
				Shock resistance	Functional*5
					Destructive*6
				200 m/s ² {20 G}	
				1,000 m/s ² {100 G}	
				Vibration resistance	Functional*7
					Destructive
				10 to 55Hz at double amplitude of 1.5mm	
				10 to 55Hz at double amplitude of 1.5mm	
				Conditions for operation, transport and storage*8 (Not freezing and condensing at low temperature)	Ambient temp.
					Humidity
				-40°C to +85°C -40°F to +185°F	
				5 to 85% R.H.	
				Unit weight	
				Approx. 17 g .60 oz Approx. 15 g .53 oz (PCB type)	

Remarks

- * Specifications will vary with foreign standards certification ratings.
- *1 Measurement at same location as "Initial breakdown voltage" section.
- *2 Detection current: 10mA
- *3 Wave is standard shock voltage of ±1.2 × 50μs according to JEC-212-1981
- *4 Excluding contact bounce time.
- *5 Half-wave pulse of sine wave: 11 ms; detection time: 10 μs
- *6 Half-wave pulse of sine wave: 6 ms
- *7 Detection time: 10 μs
- *8 Refer to 6. Conditions for operation, transport and storage mentioned in AMBIENT ENVIRONMENT .

ORDERING INFORMATION

Ex. A LE 1 2 B 12

Product name	Contact arrangement	Terminal shape	Coil insulation class	Coil voltage, V DC	
LE	1: 1 Form A (400 mW) 7: 1 Form A (200 mW)	2: TMP type/PCB side three terminals (includes one dummy terminal) 3: TMP type/PCB side three terminals 4: TMP type/PCB side four terminals P: PCB type (No tab terminals)	B: Class B insulation F: Class F insulation	05: 5 06: 6 09: 9 12: 12	18: 18 24: 24 48: 48

UL/CSA, TÜV, VDE approved type is standard (TMP type). SEMKO approved types are also available, please consult us.

UL/CSA, VDE approved type is standard (PCB type).

Note: Standard packing; Carton: 100 pcs. Case 500 pcs.

TYPES

1. Standard type

Contact arrangement	Coil voltage, V DC	TMP type/PCB side three terminals (includes one dummy terminal)	TMP type/PCB side three terminals	TMP type/PCB side four terminals	PCB type (No tab terminals)
		Part No.	Part No.	Part No.	Part No.
1 Form A	5	ALE12O05	ALE13O05	ALE14O05	ALE1PO05
	6	ALE12O06	ALE13O06	ALE14O06	ALE1PO06
	9	ALE12O09	ALE13O09	ALE14O09	ALE1PO09
	12	ALE12O12	ALE13O12	ALE14O12	ALE1PO12
	18	ALE12O18	ALE13O18	ALE14O18	ALE1PO18
	24	ALE12O24	ALE13O24	ALE14O24	ALE1PO24
	48	ALE12O48	ALE13O48	ALE14O48	ALE1PO48

○: Input the following letter. Class B: B, Class F: F

2. High sensitive type

Contact arrangement	Coil voltage, V DC	TMP type/PCB side three terminals (includes one dummy terminal)	TMP type/PCB side three terminals	TMP type/PCB side four terminals	PCB type (No tab terminals)
		Part No.	Part No.	Part No.	Part No.
1 Form A (High sensitivity: 200mW)	5	ALE72O05	ALE73O05	ALE74O05	ALE7PO05
	6	ALE72O06	ALE73O06	ALE74O06	ALE7PO06
	9	ALE72O09	ALE73O09	ALE74O09	ALE7PO09
	12	ALE72O12	ALE73O12	ALE74O12	ALE7PO12
	18	ALE72O18	ALE73O18	ALE74O18	ALE7PO18
	24	ALE72O24	ALE73O24	ALE74O24	ALE7PO24
	48	ALE72O48	ALE73O48	ALE74O48	ALE7PO48

○: Input the following letter. Class B: B, Class F: F

COIL DATA (at 20°C 68°F)

1. Standard type

Nominal voltage, V DC	Pick-up voltage, V DC (max.) (at 20°C 68°F)	Drop-out voltage, V DC (min.) (at 20°C 68°F)	Coil resistance, Ω (±10%) (at 20°C 68°F)	Nominal operating current, mA (±10%) (at 20°C 68°F)	Nominal operating power, mW (at 20°C 68°F)	Maximum allowable voltage, V DC (at 20°C 68°F)
5	3.75	0.25	63	80	400	7.25
6	4.5	0.3	90	66.7		8.7
9	6.75	0.45	203	44.4		13.05
12	9	0.6	360	33.3		17.4
18	13.5	0.9	810	22.2		26.1
24	18	1.2	1,440	16.7		34.8
48	36	2.4	5,760	8.3		69.6

LE (ALE)

2. High sensitive type

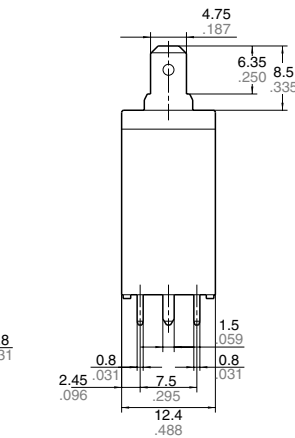
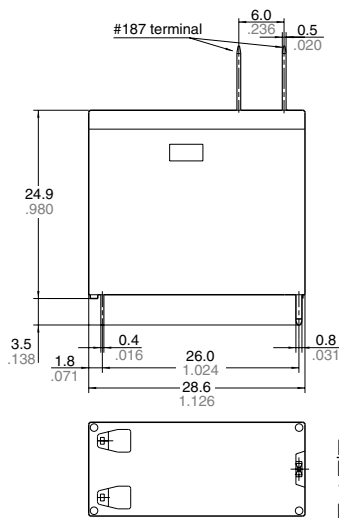
Nominal voltage, V DC	Pick-up voltage, V DC (max.) (at 20°C 68°F)	Drop-out voltage, V DC (min.) (at 20°C 68°F)	Coil resistance, Ω (±10%) (at 20°C 68°F)	Nominal operating current, mA (±10%) (at 20°C 68°F)	Nominal operating power, mW (at 20°C 68°F)	Maximum allowable voltage, V DC (at 20°C 68°F)
5	3.75	0.25	125	40	200	7.25
6	4.5	0.3	180	33.3		8.7
9	6.75	0.45	405	22.2		13.05
12	9	0.6	720	16.7		17.4
18	13.5	0.9	1,620	11.1		26.1
24	18	1.2	2,880	8.3		34.8
48	36	2.4	11,520	4.2		69.6

DIMENSIONS

mm inch

1. TMP type

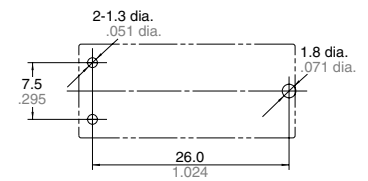
PCB side three terminals
(includes one dummy terminal)



Dimension:
 Max. 1mm .039 inch:
 1 to 3mm .039 to .118 inch:
 Min. 3mm .118 inch:

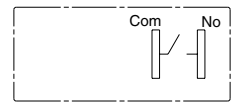
Tolerance
 ±0.1 ±.004
 ±0.2 ±.008
 ±0.3 ±.012

PC board pattern (Bottom view)

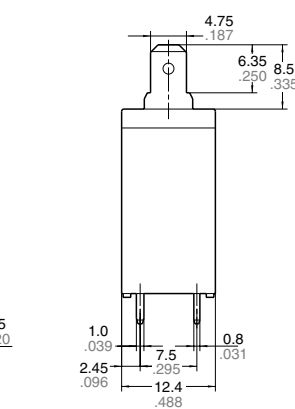
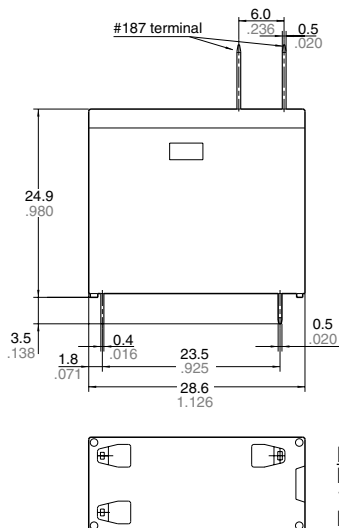


Tolerance : ±0.1 ±.004

Schematic (Bottom view)



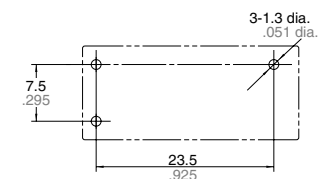
PCB side three terminals



Dimension:
 Max. 1mm .039 inch:
 1 to 3mm .039 to .118 inch:
 Min. 3mm .118 inch:

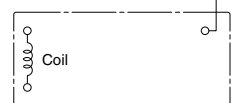
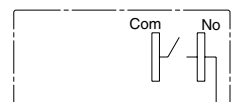
Tolerance
 ±0.1 ±.004
 ±0.2 ±.008
 ±0.3 ±.012

PC board pattern (Bottom view)



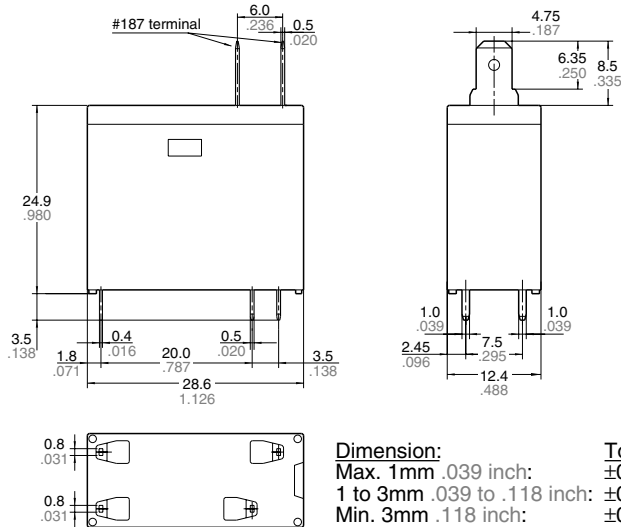
Tolerance : ±0.1 ±.004

Schematic (Bottom view)

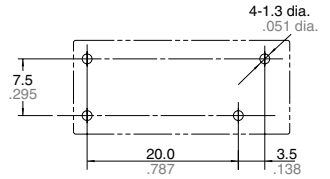


PCB side four terminals

mm inch

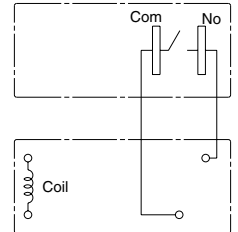


PC board pattern (Bottom view)

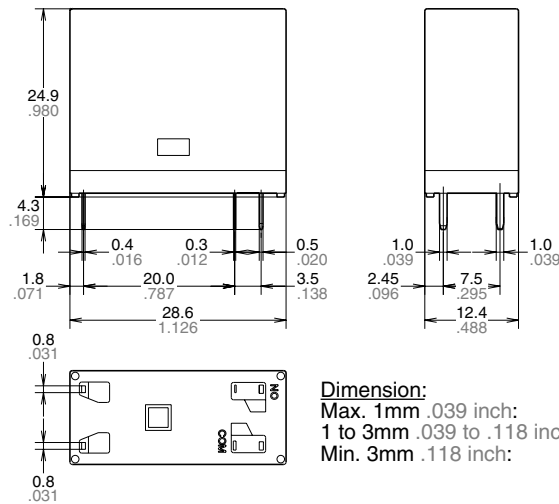


Tolerance : $\pm 0.1 \pm .004$

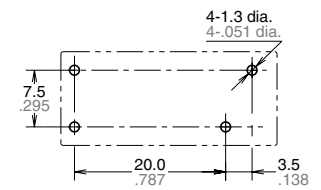
Schematic (Bottom view)



2. PCB type (No tab terminals)



PC board pattern (Bottom view)



Tolerance: $\pm 0.1 \pm .004$

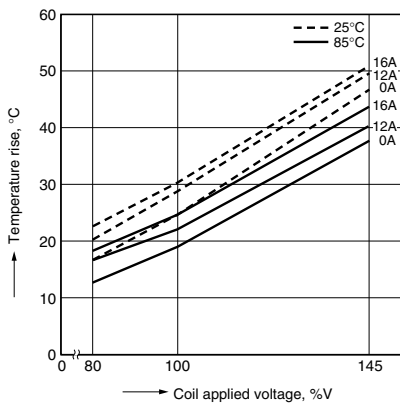
Schematic (Bottom view)



REFERENCE DATA

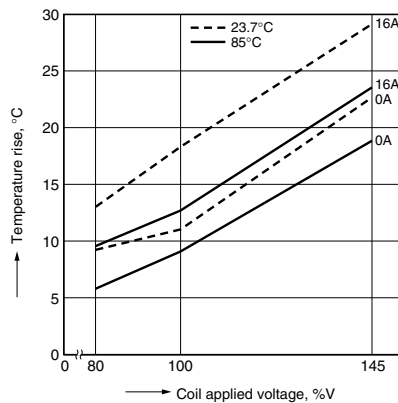
1-1. Coil temperature rise (400mW type)

Sample: ALE14B12, 6 pcs.
 Point measured: coil inside
 Ambient temperature: 25°C 77°F, 85°C 185°F

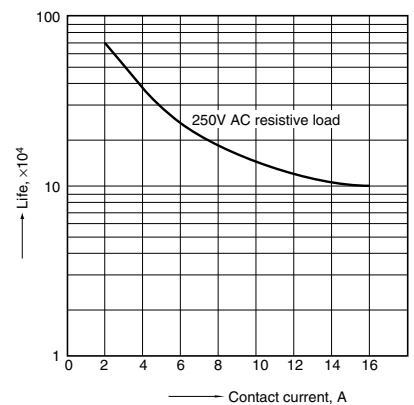


1-2. Coil temperature rise (200mW type)

Sample: ALE74B12, 6 pcs.
 Point measured: coil inside
 Ambient temperature: 23.7°C 74.66°F, 85°C 185°F



2. Life curve



LE (ALE)

3. Electrical life test (16 A 277 V AC, resistive load)

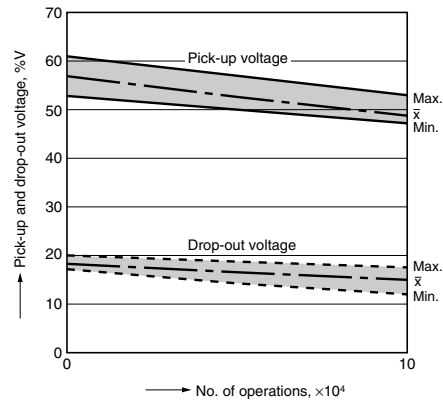
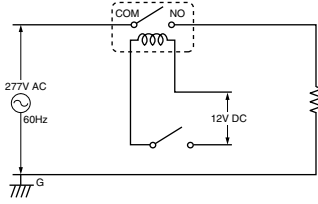
Sample: ALE14B12, 6 pcs.

Operation frequency: 20 times/min.

(ON/OFF = 1.5s: 1.5s)

Ambient temperature: Room temperature

Circuit:



For Cautions for Use, see Relay Technical Information.