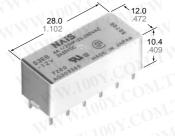


## 4 AMP POLARIZED HIGH DENSITY RELAY WITH HIGH SENSITIVITY



## FEATURES

• A variety of contact arrangements 2 Form A 2 Form B, 3 Form A 1 Form B, 4 Form A

• Latching types available

• High sensitivity in small size 100 mW pick-up and 200 mW nominal operating power

• High shock and vibration resistance Shock: 50 G Vibration: 10 to 55 Hz at double amplitude of 3 mm .118 inch

# S-RELAYS

D 1R

- Wide switching range From  $100\mu A$
- 100 mV DC to 4 A 250 V AC
- Low thermal electromotive force Approx. 3  $\mu\text{V}$
- Dual-In-Line packaging arrangement
- Amber types available

mm inch

## **SPECIFICATIONS**

#### Contacts

Arrangemen	t WY	2 Form A 2 Form B, 3 Form A 1 Form B, 4 Form A			
	t resistance, i drop 6 V DC 1	50 mΩ			
Initial contac	t pressure 🚿	Approx. 12 g .42 oz			
Contact mate	erial	Gold clad silver alloy			
Electrostatic	capacitance	Approx. 3pF			
Thermal electric (at nominal c	ctromotive for coil voltage)	Approx. 3μV			
Rating (resistive)	Nominal swi	tching capacity	4 A 250 V AC, 3 A 30 V DC		
	Maximum sw	vitching power	1,000 VA, 90 W		
	Maximum sv	vitching voltage	250 V AC, 30 V DC (48 VDC at less than 0.5 A		
	Max. switchi	ng current	4 A (AC), 3 A (DC)		
	Min. switchir	ng capacity**1	100µA 100 m V DC		
Expected	Mechanical	(at 50 cps)	108		
life (min.	Electrical	4 A 250 V AC	105		
operations)	(at 20 cpm)	3 A 30 V DC	2 × 10 <sup>5</sup>		

Coil (polarized) (at 20°C 68°F)

Single side	Minimum operating power	Approx. 100 mW
stable	Nominal operating power	Approx. 200 mW
Latching	Minimum set and reset	Approx. 100 mW
	Nominal set and reset	Approx. 200 mW

#### Notes:

\*\*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.

#### Remarks

- \* Specifications will vary with foreign standards certification ratings.
- \*1 Measurement at same location as "Initial breakdown voltage "section
- \*2 Detection current: 10mA
- \*3 Excluding contact bounce time
- $^{\star_4}$  Half-wave pulse of sine wave: 11ms; detection time: 10  $\mu s$
- \*5 Half-wave pulse of sine wave: 6ms
- \*6 Detection time: 10µs
- \*7 Refer to 5. Conditions for operation, transport and storage mentioned in AMBIENT ENVIRONMENT (Page 61).

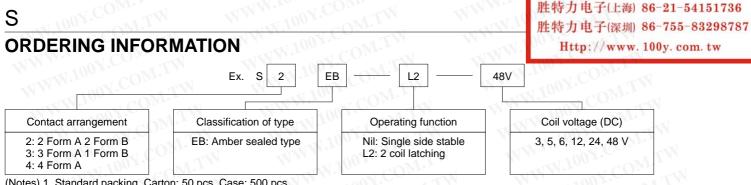
## **TYPICAL APPLICATIONS**

Telecommunications equipment, data processing equipment, facsimiles, alarm equipment, measuring equipment.

#### Characteristics (at 25°C 77°F 50% Relative humidity)

	· · · · · · · · · · · · · · · · · · ·					
Max. operating speed				20 cpm for maximum load, 50 cps for low-level load (1 mA 1 V DC)		
Initial insulation resistance*1				10,000 MΩ at 500 V DC		
WW.	Between	n oper	n contacts	750 Vrms		
Initial breakdown	Between contact sets			1,000 Vrms		
voltage*2	Between contacts and coil			1,500 Vrms		
Operate time (at nominal v		t 20°C	Max. 15 ms (Approx. 8 ms)			
Release time (at nominal v				Max. 10 ms (Approx. 5 ms)		
Set time*3 (la (at nominal v		t 20°C	Max. 15 ms (Approx. 8 ms)			
Reset time*3 (latching) (at nominal voltage)(at 20°C)				Max. 15 ms (Approx. 8 ms)		
Initial contact bounce, max.				1 ms		
Temperature rise (at nominal voltage)(at 20°C)			Max. 35°C with nominal coil voltage and at maximum switching current			
Shock resistance		ctional*4	Min. 490 m/s <sup>2</sup> {50 G}			
		Des	tructive*5	Min. 980 m/s <sup>2</sup> {100 G}		
WW WW		Functional*6		176.4 m/s <sup>2</sup> {18 G}, 10 to 55 Hz at double amplitude of 3 mm		
vibration res	istance	Destructive		235.2 m/s <sup>2</sup> {24 G}, 10 to 55 Hz at double amplitude of 4 mm		
transport and storage*7 temp.			Ambient temp.	-40°C to +65°C -40°F to +149°F		
			Humidity	5 to 85% R.H.		
Unit weight				Approx. 8 g .28 oz		
(at nominal voltage)(at Shock resistance Vibration resistance Conditions for operation transport and storage* (Not freezing and condi- ing at low temperature		Fund Des Fund Des On, *7 dens-	ctional*4 tructive*5 ctional*6 tructive Ambient temp.	voltage and at maxim switching current Min. 490 m/s <sup>2</sup> {50 C Min. 980 m/s <sup>2</sup> {100 176.4 m/s <sup>2</sup> {18 G}, 10 to at double amplitude of 235.2 m/s <sup>2</sup> {24 G}, 10 to at double amplitude of $-40^{\circ}$ C to +65°C $-40^{\circ}$ F to +149°F 5 to 85% R.H.		

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(Notes) 1. Standard packing Carton: 50 pcs. Case: 500 pcs.

2. 1 coil latching also available as option. Contact our sales office for details.

3. UL/CSA approved type is standard.

## TYPES AND COIL DATA at 20°C 68°F

#### Single side stable

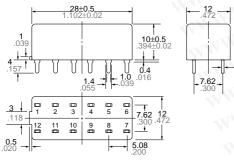
Туре	Nominal voltage, V DC	Pick-up voltage, V DC (max.)	Drop-out voltage, V DC (min.)	Nominal operating current, mA	Coil resistance, $\Omega$ (±10%)	Inductance, mH	Nominal operating power, mW	Maximum allowable voltage, V DC (40°C)
SDEB-3V	3	2.1	0.3	66.7	45	23	200	5.5
SDEB-5V	5	3.5	0.5	38.5	130	65	192	9.0
S□EB-6V	6	4.2	0.6	33.3	180	93	200	11.0
SDEB-12V	12	8.4	1.2	16.7 🔨	720	370	200	22.0
SDEB-24V	24	16.8	2.4	8.4	2,850	1,427	202	44.0
SDEB-48V	48	33.6	4.8	5.6	8,500	3,410	271	75.0

#### 2 coil latching

Туре	Nominal voltage, V DC	Set and reset voltage, V DC (max.)	Nominal operating current, mA	Coil resistance, $\Omega$ (±10%)		Inductance, mH		Nominal operating power,	Maximum allowable voltage,
				Coil I	Coil II	Coil I	Coil II	mW	V DC (40°C)
SDEB-L2-3V	3 📢	2.1	66.7	45	45	10	10	200	5.5
SDEB-L2-5V	5	3.5	38.5	130	130	31	31	192	9.0
SDEB-L2-6V	6	4.2	33.7	180	180	40	40	200	11.0
SDEB-L2-12V	12	8.4	16.7	720	720	170	170	200	22.0
SDEB-L2-24V	24	16.8	8.4	2,850	2,850	680	680	202	44.0
SDEB-L2-48V	48	33.6	7.4	6,500	6,500	1,250	1,250	355	65.0

Note: Insert 2, 3 or 4 in D for contact form reguired.

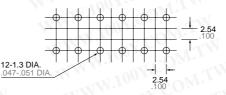
## DIMENSIONS



General tolerance:  $\pm 0.3 \pm .012$ 

0.5

### PC board pattern (Copper-side view)



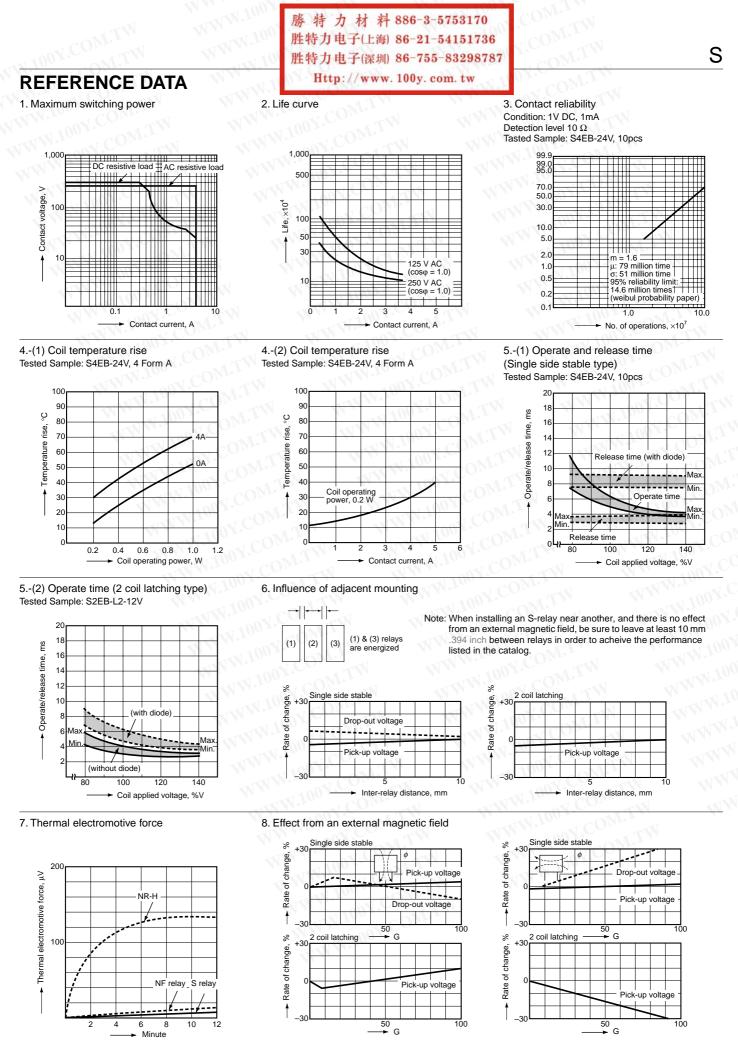
Tolerance: ±0.1 ±.003

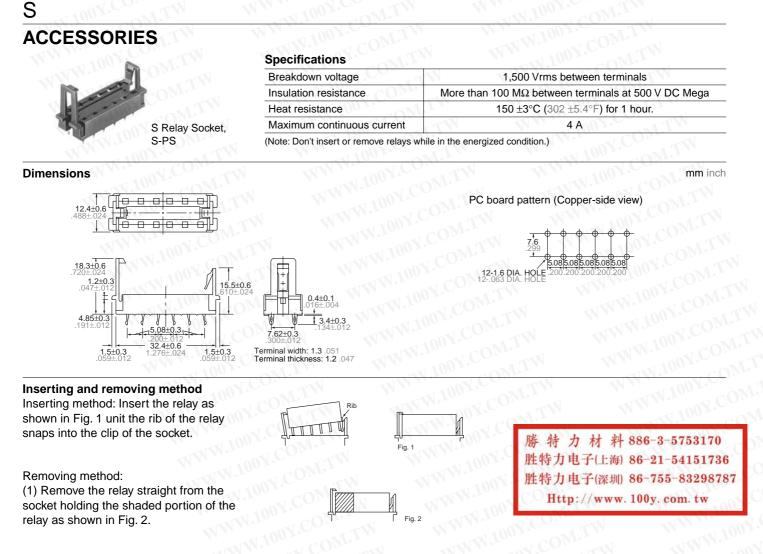
mm inch

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Schematic (Bottom v	view)		
Single side stable Deenergized position	2a2b 1 2 3 4 ↓ ↓ ↓ ↓ ↓ ↓	1  5  6  3a1b  1  2  3  4  5  6  1  -2  3  4  5  6  -1  -1  -1  -1  -1  -1  -1	4a 1 2 3 4 5 6
	$\begin{array}{c} \begin{array}{c} \begin{array}{c} \\ \\ \\ \end{array} \\ 12 \end{array} \begin{array}{c} \begin{array}{c} \\ \\ 11 \end{array} \begin{array}{c} \end{array} \begin{array}{c} \\ \\ \end{array} \\ 10 \end{array} \begin{array}{c} \\ 9 \end{array} \end{array}$	$\begin{array}{c} \bullet \\ \bullet $	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$
<b>2 coil latching</b> Diagram shows the "reset" position when terminals 6 and 7 are energized. Energize terminals 1 and 12 to transfer contacts.	2a2b $1 \\ 3 \\ 3 \\ 5 \\ 6 \\ 12 \\ 11 \\ 10 \\ 9 \\ 12 \\ 11 \\ 10 \\ 9 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 $		$\begin{array}{c} 4a & 1 & 2 & 3 & 4 & 5 & 6 \\ \hline Reset & Set & 1 & 1 & 0 & 9 & 8 & 7 \end{array}$

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(2) When sockets are mounted in close proximity, use a slotted screw driver as shown in Fig. 3.

## NOTES

 Special use of 2 coil latching types: 2 ways can be considered if 2 coil latching types are used as 1 coil latching types.
 (A) Reverse polarity is applied to the set coil of 2 coil latching type.

(B) By shorting terminals 12 and 7, apply plus to 1, minus to 6 at set and plus to 6, minus to 1 at reset. Applied coil voltage should be the same as the nominal. Operating power will be reduced to one-half.

# **CAUTIONS FOR USE**

Based on regulations regarding insulation distance, there is a restriction on same-channel load connections between terminals No. 2, 3 and 4, 5, as well as between No. 8, 9 and 10, 11. See the figure below for an example.

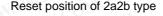
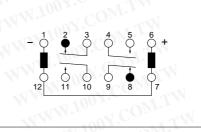
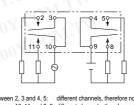
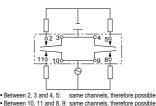


Fig. 3



2. Soldering operations should be accomplished as quick as possible; within 10 seconds at 250°C 482°F solder temperature or 3 seconds at 350°C 662°F. The header portion being sealed with epoxy resin, undue subjection to heat may cause loss of seal. Solder should not be permitted to remain on the header.





Between 2, 3 and 4, 5: different channels, therefore not possible
 Between 10, 11 and 8, 9: different channels, therefore not possible
 No good

Good

# For Cautions for Use, see Relay Technical Information (Page 48 to 76).

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