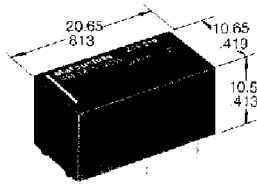


NAIS

Matsushita Automation Controls

BABT APPROVED RELAYS

DS-BT RELAYS



mm inch

BABT CR No.: 0104
UL File No.: E43149
CSA File No.: LR26550

- BABT (Certificate of Recognition)
- 4,000 V breakdown voltage
- Reinforced insulation between coil and contacts
- Surge voltage withstand: 1500 V FCC Parts 68

SPECIFICATIONS

Contact

Arrangement	2 Form C	2 Form D	
Initial contact resistance, max. (By voltage drop 6 V DC 1 A)	50 mΩ		
Contact material	Gold-clad silver		
Rating (resistive load)	Nominal switching capacity	2 A 30 V DC	1 A 30 V DC
	Max. switching power	60 W, 125 VA	30 W, 62.5 VA
	Max. switching voltage	220 V DC, 250 V AC	
	Max. switching current	2 A	1 A
	Min. switching capability	10 μA 10 mV DC	
UL/CSA rating	2 A 30 V DC	1 A 30 V DC	
	0.6 A 110 V DC 0.6 A 125 V AC		
Electrical life (min. ope.)	Mechanical (at 180 cpm)	2×10 ⁷	10 ⁶
	Electrical (at 20 cpm)	2×10 ⁵	

Coil

Arrangement	2 Form C	2 Form D
Nominal operating power	360 mW	540 mW

Characteristics

Arrangement	2 Form C	2 Form D	
Max. operating speed	60 cpm of rated load		
Operate time (at nominal voltage)	Approx. 3 msec.		
Release time (at nominal voltage)	Approx. 2 msec.		
Initial breakdown voltage	Between open contacts	750 Vrms for 1 min.	500 Vrms for 1 min.
	Between contacts and coil	4,000 Vrms for 1 min.	
Initial insulation resistance	Min. 100 MΩ (at 500 V DC)		
Fcc surge voltage between open contacts	1,500 V		
Temperature rise, max. (at nominal voltage)	65 deg.		
Ambient temperature	-40°C to +70°C -40°F to +158°F	-40°C to +60°C 40°F to +140°F	
Shock resistance	Functional	Min. 30 G	
	Destruction	Min. 100 G	
Vibration resistance	Functional	20 G, 10 to 55 Hz at double amplitude of 3.3 mm	
	Destruction	30 G, 10 to 55 Hz at double amplitude of 5 mm	
Unit weight	4.9 g 0.17 oz		

TYPICAL APPLICATION

Modem
 Facsimile
 Telecommunication equipment

ORDERING INFORMATION

DSBT	2	M	2D	DC3V
Contact arrangement	Sensitivity		MBB function	Coil voltage
2: 2 Form C or 2 Form D	S: 360 mW (2 Form C only) M: 540 mW (2 Form D only)		Nil: BBM (Form C) 2D: 2MBB (2 Form D)	DC 1.5, 3, 5, 6, 9, 12, 24 V

Note: Standard packing Tube: 25 pcs. Case: 1,000 pcs.

TYPES AND COIL DATA (at 20°C 68°F)

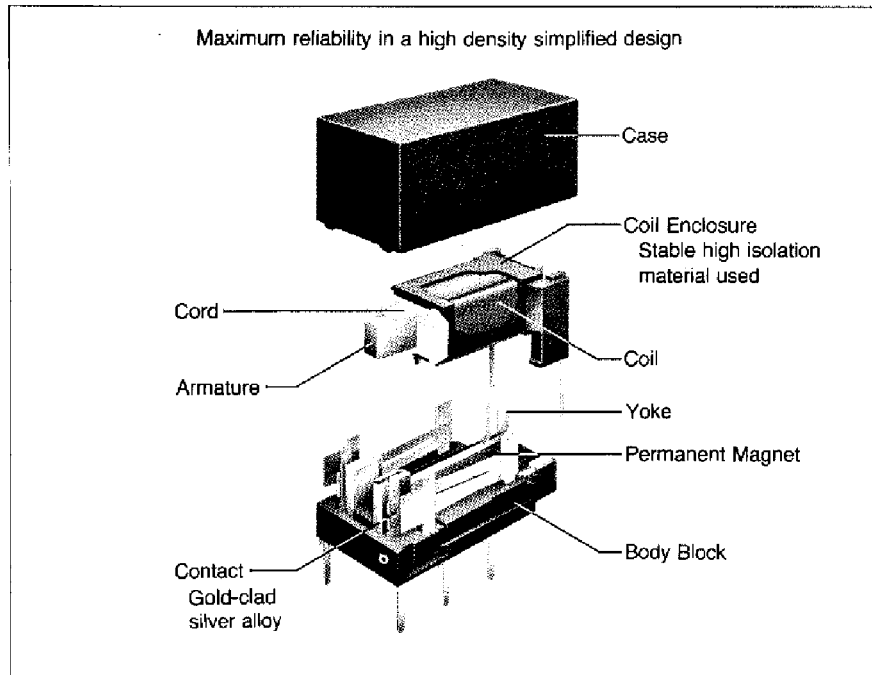
1) 2 Form C type

Operating function	Part No.	Coil voltage, V DC	Pick-up voltage, V DC (max.)	Drop-out voltage, V DC (min.)	Nominal operating current, mA ($\pm 10\%$)	Coil resistance, Ω ($\pm 10\%$)	Nominal operating power, mW	Max. allowable voltage, V DC (at 50°C 122°F)
Single side stable	DSBT2-S-DC1.5V	1.5	1.125	0.15	240	6.25	360	2.25
	DSBT2-S-DC3V	3	2.25	0.3	120	25		4.5
	DSBT2-S-DC5V	5	3.75	0.5	72	69.5		7.5
	DSBT2-S-DC6V	6	4.5	0.6	60	100		9
	DSBT2-S-DC9V	9	6.75	0.9	40	225		13.5
	DSBT2-S-DC12V	12	9	1.2	30	400		18
	DSBT2-S-DC24V	24	18	2.4	15	1,600		36

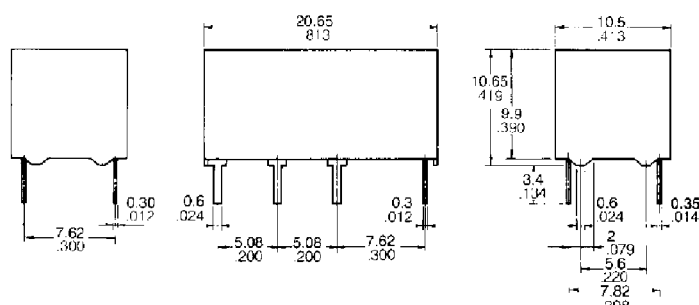
2) 2 Form D type

Operating function	Part No.	Coil voltage, V DC	Pick-up voltage, V DC (max.)	Drop-out voltage, V DC (min.)	Nominal operating current, mA ($\pm 10\%$)	Coil resistance, Ω ($\pm 10\%$)	Nominal operating power, mW	Max. allowable voltage, V DC (at 50°C 122°F)
Single side stable	DSBT2-M-2D-DC1.5V	1.5	1.125	0.15	360	4.17	540	1.8
	DSBT2-M-2D-DC3V	3	2.25	0.3	180	16.7		3.6
	DSBT2-M-2D-DC5V	5	3.75	0.5	108	46.3		6
	DSBT2-M-2D-DC6V	6	4.5	0.6	90	66.7		7.2
	DSBT2-M-2D-DC9V	9	6.75	0.9	60	150		10.8
	DSBT2-M-2D-DC12V	12	9	1.2	45	266.7		14.4
	DSBT2-M-2D-DC24V	24	18	2.4	22.5	1,066.7		28.8

CONSTRUCTION



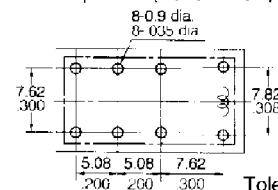
DIMENSIONS



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

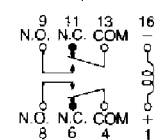
PC board pattern (Bottom view)

mm inch



Tolerance: $\pm 0.1 \pm .004$

Schematic (Bottom view)

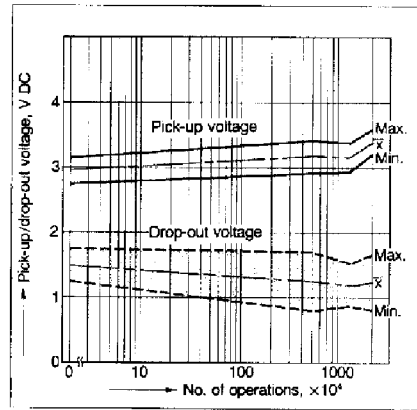


DATA

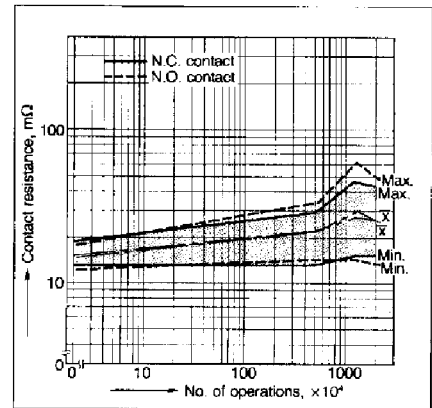
1. Mechanical life test

Tested sample: DSBT-S-DC5V, 10 pcs.
 Coil applied voltage: 5 V DC
 Operating frequency: 30 cpm

Change of pick-up and drop-out voltage



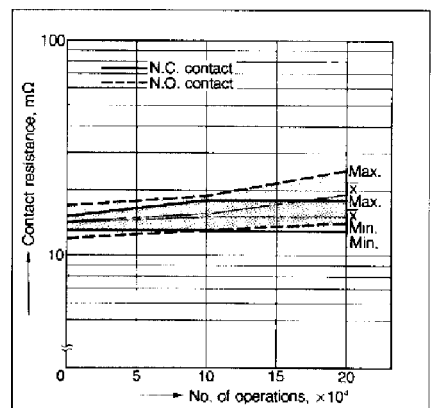
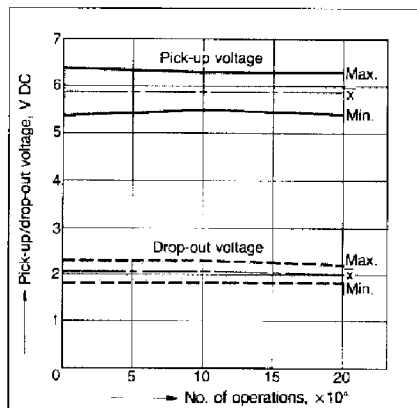
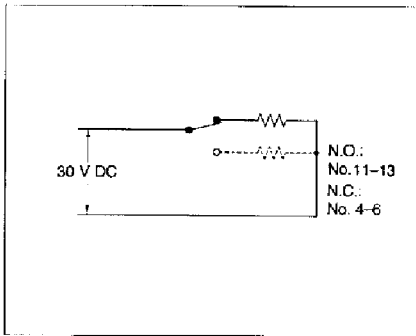
Change of contact resistance



2. Electrical life test (resistive)

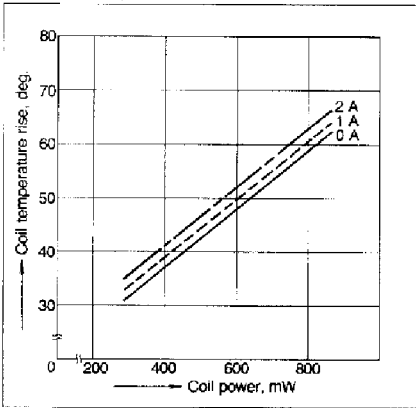
Tested sample: DSBT-S-DC12V, 6 pcs
 Condition: 2 A 30 V DC resistive load, 30 cpm

Circuit



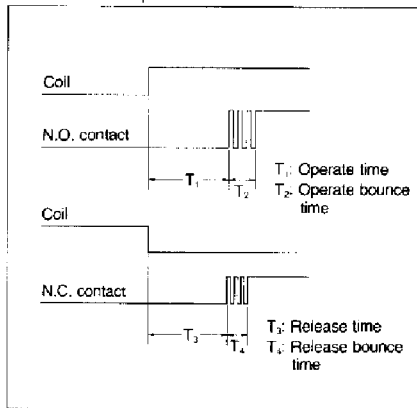
3. Coil temperature rise

Tested sample: DSBT-S-DC12V, 5 pcs.
 Measured portion: Inside the coil

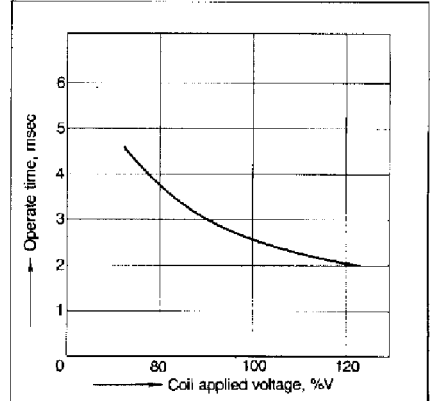


4. Operate and release time characteristics

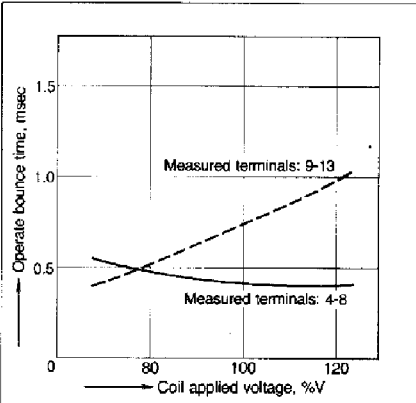
Tested sample: DSBT-S-DC5V, 10 pcs.
 Ambient temperature: 23°C 73°F



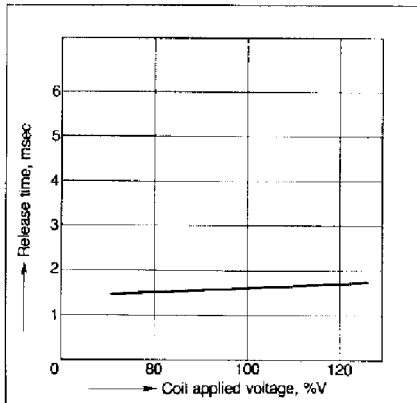
Without diode (T₁)



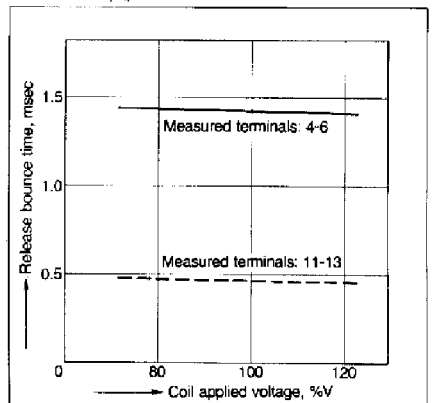
Without diode (T₂)



Without diode (T₃)



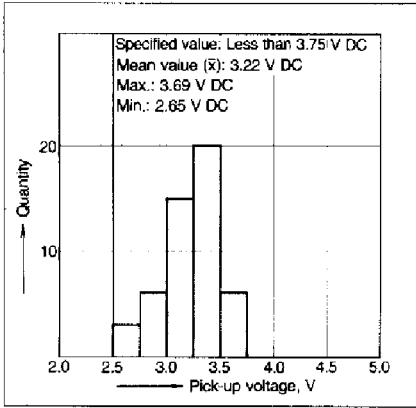
Without diode (T₄)



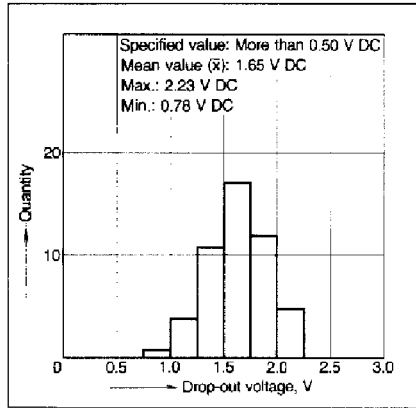
5. Distribution of pick-up and drop-out voltage

Tested sample: DSBT-S-DC5V, 50 pcs.

Pick-up voltage

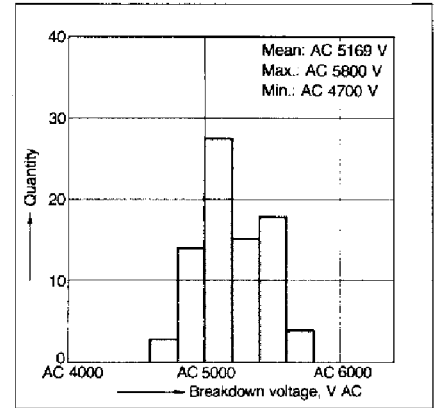


Drop-out voltage



6. Distribution of breakdown voltage (between contacts and coil)

Tested sample: DSBT-S-DC5V, 100 pcs.



NOTES

1. Coil operating power

Pure DC current should be applied to the coil. And wave form should be rectangular. If it includes ripple, the ripple factor should be less than 5%. However, check it with the actual circuit since the characteristics are slightly different.

2. Coil connection

DSBT relay does not operate with the opposite polarity because DSBT relay is polarized.

3. External magnetic field

Since DSBT relay is polarized relay, its characteristics will be affected by a strong external magnetic field. So avoid using relays under that condition.

4. Cleaning

In automatic cleaning, cleaning with the boiling method is recommended. Avoid ultrasonic cleaning for relays.