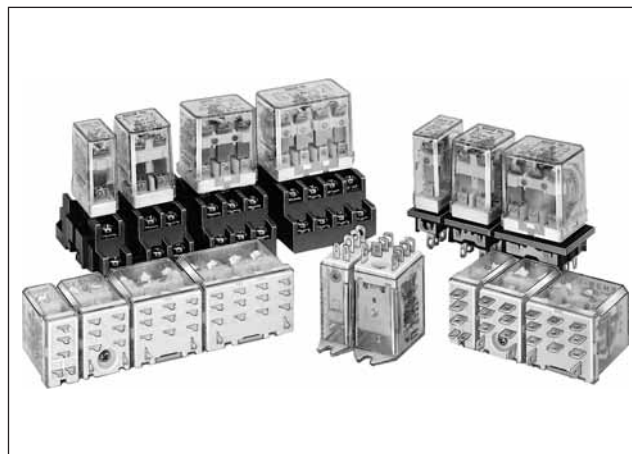


RH series Power Relays

SPDT through 4PDT, 10A contacts Midget power type relays

The RH series are miniature power relays with a large capacity. The RH relays feature 10A contact capacity as large as the RR series and the same size as IDEC's miniature relays. The compact size saves space.



Types

Termination	Type	SPDT		DPDT	
		Type No.	Coil Voltage Code *	Type No.	Coil Voltage Code *
Plug-in Terminal	Basic	RH1B-U* ★	AC6, AC12, AC24, AC50, AC100, AC110, AC115, AC120, AC200, AC220, AC230, AC240	RH2B-U* ★	AC6, AC12, AC24, AC50, AC100-110, AC110-120, AC200-220, AC220-240
	With Indicator	RH1B-UL* ★		RH2B-UL* ★	
	With Check Button	—		RH2B-UC* ★	
	With Indicator and Check Button	—		RH2B-ULC* ★	
	Top Bracket Mounting	RH1B-UT* ★	DC6, DC12, DC24, DC48, DC100, DC110	RH2B-UT* ★	DC6, DC12, DC24, DC48, DC100-110
	With Diode (DC coil only)	RH1B-UD* ★	DC6, DC12, DC24, DC48, DC100, DC110	RH2B-UD* ★	DC6, DC12, DC24, DC48, DC100-110
	With Indicator and Diode (DC coil only)	—	—	RH2B-ULD* ★	
	With Resistor and Capacitor (100V AC and over)	—	—	RH2B-R*	AC100-110, AC110-120, AC200-220, AC220-240
	With Indicator and RC (100V AC and over)	—	—	RH2B-LR*	
PC Board Terminal	Basic	RH1V2-U* ★	AC6, AC12, AC24, AC50, AC100, AC110, AC115, AC120, AC200, AC220, AC230, AC240	RH2V2-U* ★	AC6, AC12, AC24, AC50, AC100-110, AC110-120, AC200-220, AC220-240
	With Indicator	—	DC6, DC12, DC24, DC48, DC100, DC110	RH2V2-UL* ★	DC6, DC12, DC24, DC48, DC100-110
	With Diode (DC coil only)	RH1V2-UD* ★	DC6, DC12, DC24, DC48, DC100, DC110	RH2V2-UD* ★	DC6, DC12, DC24, DC48, DC100-110

Type numbers marked with ★ in the table above are UL-recognized, CSA-certified, and TÜV-approved.

Ordering Information

When ordering, specify the Type No. and coil voltage code.

(Example) **RH2B-U** **AC100-110**
 Type No. Coil Voltage Code

RH series Power Relays

Types

Termination	Type	3PDT		4PDT	
		Type No.	Coil Voltage Code *	Type No.	Coil Voltage Code *
Plug-in Terminal	Basic	RH3B-U* ★	AC6, AC12, AC24, AC50, AC100, AC110, AC115, AC120, AC200, AC220, AC230, AC240 DC6, DC12, DC24, DC48, DC100, DC110	RH4B-U* ★	AC6, AC12, AC24, AC50, AC100, AC110, AC115, AC120, AC200, AC220, AC230, AC240 DC6, DC12, DC24, DC48, DC100, DC110
	With Indicator	RH3B-UL* ★		RH4B-UL* ★	
	With Check Button	RH3B-UC* ★		RH4B-UC* ★	
	With Indicator and Check Button	RH3B-ULC* ★		RH4B-ULC* ★	
	Top Bracket Mounting	RH3B-UT* ★		RH4B-UT* ★	
	With Diode (DC coil only)	RH3B-D*	DC6, DC12, DC24, DC48, DC100, DC110	RH4B-UD* ★	DC6, DC12, DC24, DC48, DC100, DC110
	With Indicator and Diode (DC coil only)	RH3B-LD*		RH4B-LD*	
PC Board Terminal	Basic	RH3V2-U* ★	AC6, AC12, AC24, AC50, AC100, AC110, AC115, AC120, AC200, AC220, AC230, AC240 DC6, DC12, DC24, DC48, DC100, DC110	RH4V2-U* ★	AC6, AC12, AC24, AC50, AC100, AC110, AC115, AC120, AC200, AC220, AC230, AC240 DC6, DC12, DC24, DC48, DC100, DC110
	With Indicator	RH3V2-UL* ★		RH4V2-UL* ★	
	With Diode (DC coil only)	RH3V2-D*	DC6, DC12, DC24, DC48, DC100, DC110	RH4V2-UD* ★	DC6, DC12, DC24, DC48, DC100, DC110

Type numbers marked with ★ in the table above are UL-recognized, CSA-certified, and TÜV-approved.

Ordering Information

When ordering, specify the Type No. and coil voltage code.

(Example) **RH3B-U** **AC110**
 Type No. Coil Voltage Code

Coil Ratings

Rated Voltage (V)					Rated Current (mA) ±15% at 20°C								Coil Resistance (Ω) ±10% at 20°C				Operation Characteristics (against rated values at 20°C)		
	SPDT	DPDT	3PDT	4PDT	50Hz				60Hz				SPDT	DPDT	3PDT	4PDT	Max. Continuous Applied Voltage	Min. Pickup Voltage	Dropout Voltage
					SPDT	DPDT	3PDT	4PDT	SPDT	DPDT	3PDT	4PDT							
AC (50/60Hz)	6	6	6	6	170	240	330	387	150	200	280	330	18.8	9.4	6.4	5.4	110%	80% maximum	30% minimum
	12	12	12	12	86	121	165	196	75	100	140	165	76.8	39.3	25.3	21.2			
	24	24	24	24	42	60.5	81	98	37	50	70	83	300	153	103	84.5			
	50	50	50	50	20.5	28.9	39.5	47	18	24	34	40	1,280	680	460	340			
	100	100-110	100	100	10.5	10.3-11.8	20	23.5	9	9.1-10.0	17	20	5,220	3,360	1,940	1,560			
	110	—	110	110	9.6	—	18.1	21.6	8.4	—	15.5	18.2	6,950	—	2,200	1,800			
	115	110-120	115	115	8.9	9.4-10.8	17.1	20.8	7.8	8.0-9.2	14.8	17.5	7,210	4,290	2,620	1,910			
	120	—	120	120	8.6	—	16.4	19.5	7.5	—	14.2	16.5	8,100	—	2,770	2,220			
	200	200-220	200	200	5.6	5.1-5.9	9.8	11.8	4.9	4.3-5.0	8.5	10	21,442	13,690	8,140	6,360			
	220	—	220	220	4.7	—	8.8	10.7	4.1	—	7.7	9.1	25,892	—	10,800	7,360			
	230	220-240	230	230	4.7	4.7-5.4	8.5	10.3	4.1	4.0-4.6	7.4	8.7	26,710	18,820	11,500	8,520			
	240	—	240	240	4.9	—	8.2	9.8	4.3	—	7.1	8.3	26,710	—	12,100	9,120			
DC	SPDT	DPDT	3PDT	4PDT	SPDT		DPDT		3PDT		4PDT		SPDT	DPDT	3PDT	4PDT	110%	80% maximum	10% minimum
	6	6	6	6	128		150		240		250		47	40	25	24			
	12	12	12	12	64		75		120		125		188	160	100	96			
	24	24	24	24	32		36.9		60		62		750	650	400	388			
	48	48	48	48	18		18.5		30		31		2,660	2,600	1,600	1,550			
	100	100-110	100	100	10		8.2-9.0		14.5		15		10,000	12,250	6,900	6,670			
	110	—	110	110	8		—		12.8		15		13,800	—	8,600	7,340			

Contact Ratings

Maximum Contact Capacity						
Type	Continuous Current	Allowable Contact Power		Rated Load		
		Resistive Load	Inductive Load	Voltage (V)	Res. Load	Ind. Load
SPDT	10A	1540VA AC 300W DC	990VA AC 210W DC	110 AC	10A	7A
				220 AC	7A	4.5A
				30 DC	10A	7A
DPDT 3PDT 4PDT	10A	1650VA AC 300W DC	1100VA AC 225W DC	110 AC	10A	7.5A
				220 AC	7.5A	5A
				30 DC	10A	7.5A

Note: Inductive load for the rated load — $\cos \theta = 0.3$, $L/R = 7$ ms

•TÜV Ratings

Voltage	RH1	RH2	RH3	RH4
240V AC	10A	10A	7.5A	7.5A
30V DC	10A	10A	10A	10A

AC: $\cos \theta = 1.0$, DC: $L/R = 0$ ms

•UL Ratings

Voltage	Resistive			General use			Horse Power Rating		
	RH1 RH2	RH3	RH4	RH1 RH2	RH3	RH4	RH1 RH2	RH3	RH4
240V AC	10A	7.5A	7.5A	7A	6.5A	5A	1/3 HP	1/3 HP	—
120V AC	—	10A	10A	—	7.5A	7.5A	1/6 HP	1/6 HP	—
30V DC	10A	10A	—	7A	—	—	—	—	—
28V DC	—	—	10A	—	—	—	—	—	—

•CSA Ratings

Voltage	Resistive				General use				Horse Power Rating
	RH1	RH2	RH3	RH4	RH1	RH2	RH3	RH4	
240V AC	10A	10A	—	7.5A	7A	7A	7A	5A	1/3 HP
120V AC	10A	10A	10A	10A	7.5A	7.5A	—	7.5A	1/6 HP
30V DC	10A	10A	10A	10A	7A	7.5A	—	—	—

Specifications

Contact Material		Silver cadmium oxide	
Contact Resistance *1		50 mΩ maximum	
Minimum Applicable Load		24V DC, 30 mA; 5V DC, 100 mA (reference value)	
Operate Time *2	SPDT DPDT	20 ms maximum	
	3PDT 4PDT	25 ms maximum	
Release Time *2	SPDT DPDT	20 ms maximum	
	3PDT 4PDT	25 ms maximum	
Power Consumption (approx.)	SPDT	AC: 1.1 VA (50 Hz), 1 VA (60 Hz) DC: 0.8W	
	DPDT	AC: 1.4 VA (50 Hz), 1.2 VA (60 Hz) DC: 0.9W	
	3PDT	AC: 2 VA (50 Hz), 1.7 VA (60 Hz) DC: 1.5W	
	4PDT	AC: 2.5 VA (50 Hz), 2 VA (60 Hz) DC: 1.5W	
Insulation Resistance		100 MΩ minimum (500V DC megger)	
Dielectric Strength	SPDT	Between live and dead parts: Between contact and coil: Between contacts of the same pole:	2000V AC, 1 minute 2000V AC, 1 minute 1000V AC, 1 minute
	DPDT 3PDT 4PDT	Between live and dead parts: Between contact and coil: Between contacts of different poles: Between contacts of the same pole:	2000V AC, 1 minute 2000V AC, 1 minute 2000V AC, 1 minute 1000V AC, 1 minute
Operating Frequency		Electrical: Mechanical:	1800 operations/h maximum 18,000 operations/h maximum
Vibration Resistance		Damage limits: Operating extremes:	10 to 55 Hz, amplitude 0.5 mm 10 to 55 Hz, amplitude 0.5 mm
Shock Resistance		Damage limits: Operating extremes:	1000 m/s ² 200 m/s ² (SPDT, DPDT) 100 m/s ² (3PDT, 4PDT)
Mechanical Life		50,000,000 operations minimum	
Electrical Life	DPDT	500,000 operations minimum (110V AC, 1A)	
	SPDT 3PDT 4PDT	200,000 operations minimum (110V AC, 1A)	
Operating Temperature *4	SPDT	−25 to +50°C (no freezing)	
	DPDT 3PDT 4PDT	−25 to +40°C (no freezing)	
Operating Humidity		45 to 85% RH (no condensation)	
Weight (approx.)		SPDT: 24g, DPDT: 37g, 3PDT: 50g, 4PDT: 74g	

Note: Above values are initial values.

*1: Measured using 5V DC, 1A voltage drop method

*2: Measured at the rated voltage (at 20°C), excluding contact bouncing
Release time of relays with diode: 40 ms maximum

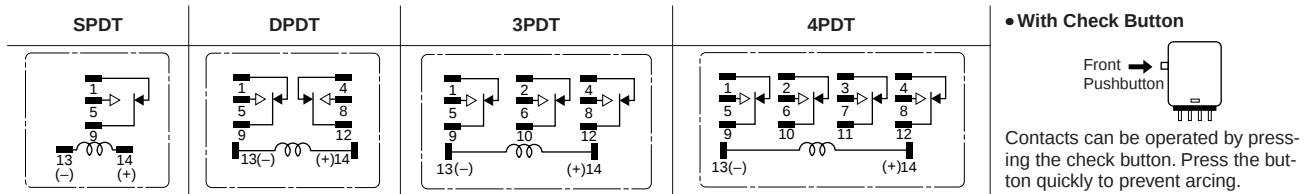
*3: Relays with indicator or diode: 1000V AC, 1 minute

*4: For use under different temperature conditions, refer to Continuous Load Current vs. Operating Temperature Curve. The operating temperature range of relays with indicator or diode is −25 to +40°C.

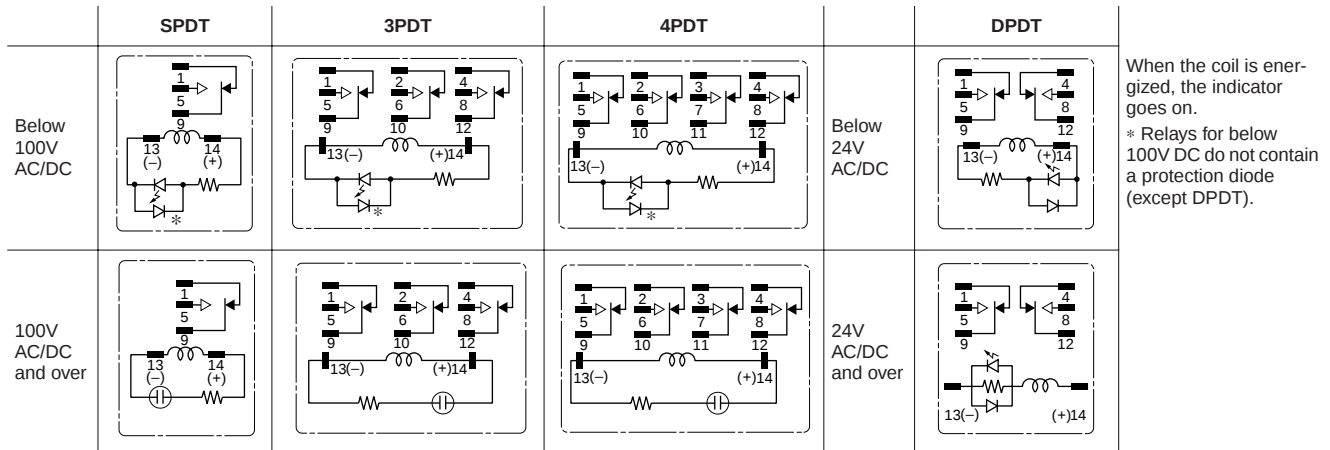
RH series Power Relays

Internal Connection (Bottom View)

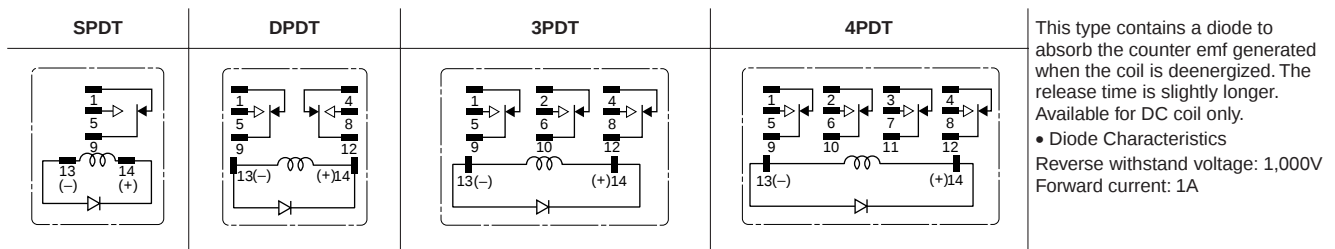
• Basic Type



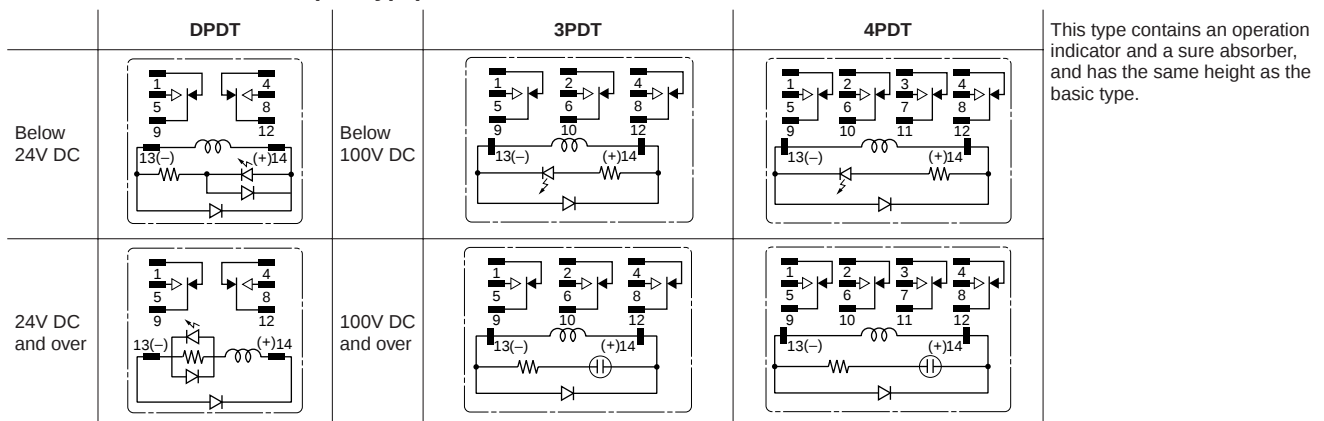
• With Indicator (-L type)



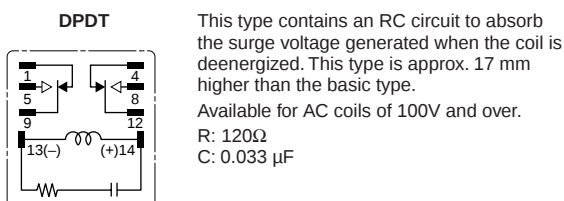
• With Diode (-D type)



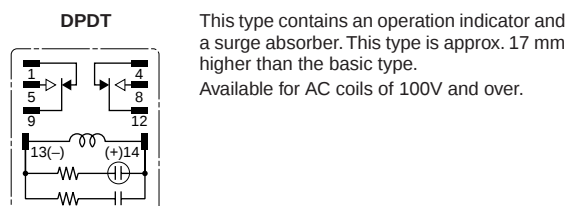
• With Indicator and Diode (-LD type)



• With Resistor and Capacitor (-R type)

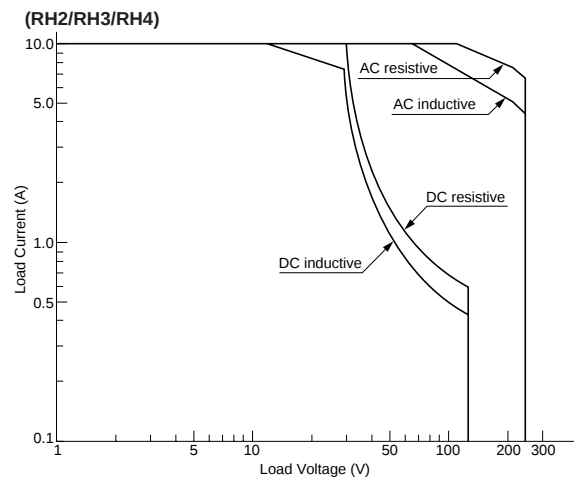
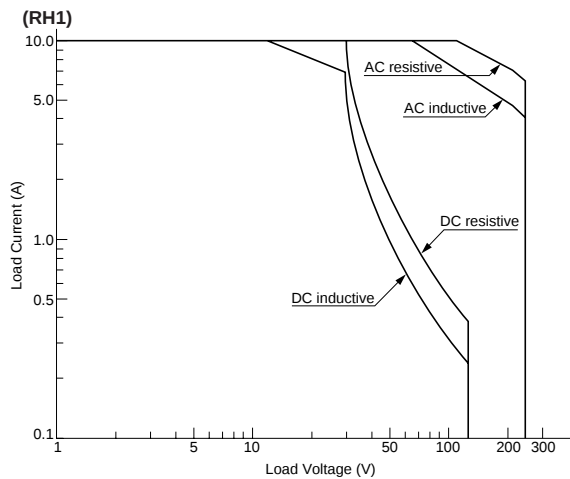


• With Indicator and RC (-LR type)



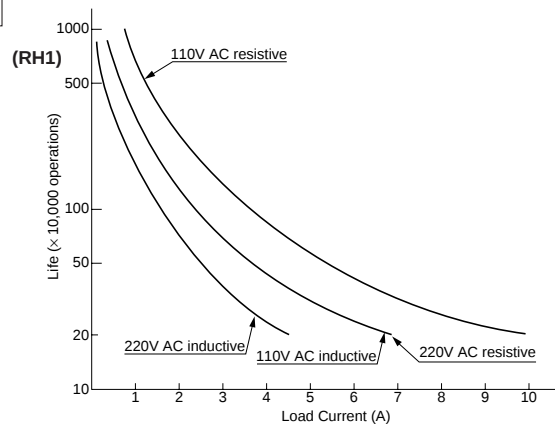
Characteristics (Reference Data)

• Maximum Switching Capacity

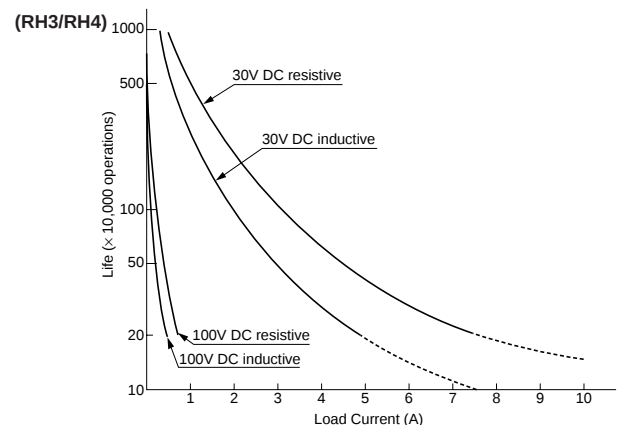
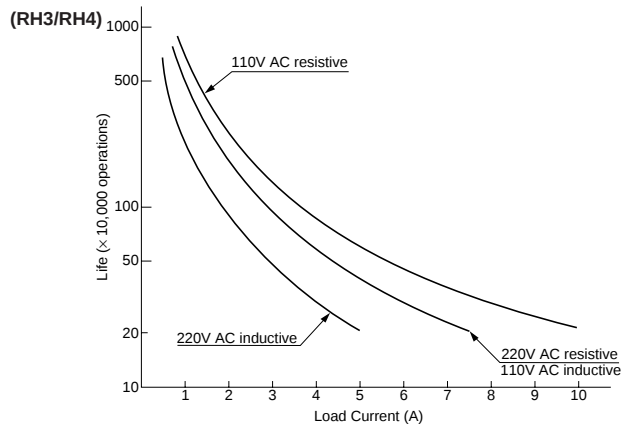
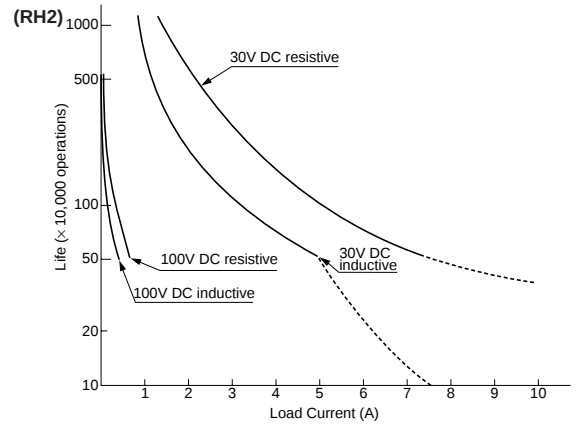
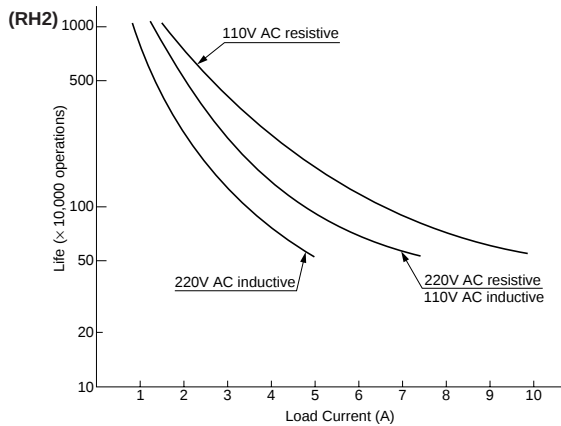
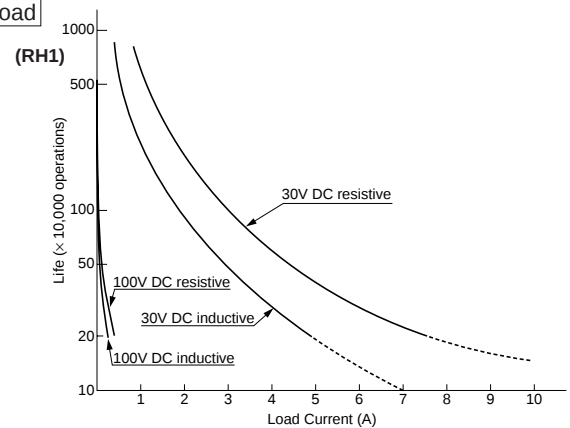


• Electrical Life Curve

AC Load



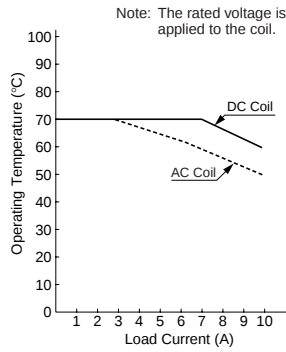
DC Load



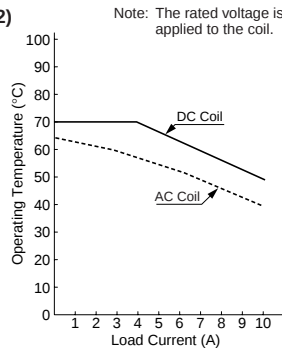
RH series Power Relays

• Continuous Load Current vs. Operating Temperature Curve (Basic Type, With Check Button, and Top Bracket Mounting Type)

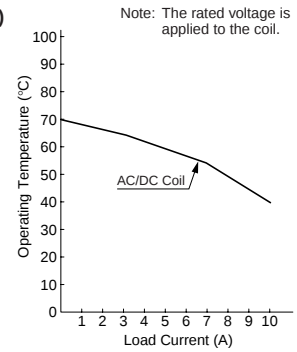
(RH1)



(RH2)



(RH3/RH4)

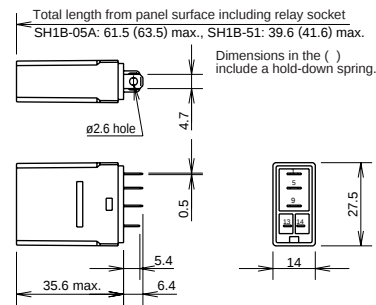


Dimensions

RH1B-U/RH1B-UL/RH1B-UD



(Photo: RH1B-U)



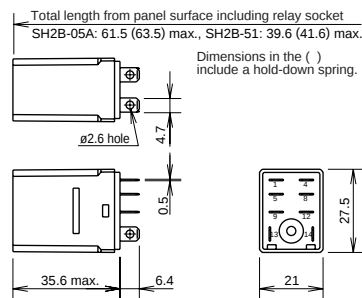
• Applicable Socket and Hold-down Spring

Socket		Hold-down Spring
Mounting Style	Type No.	
DIN Rail Mount Socket	SH1B-05A	SY2S-02F1
	SH1B-05C	SFA-101 SFA-202
Panel Mount Socket	SH1B-51	SY4S-51F1 SFA-301 SFA-302
PC Board Mount Socket	SH1B-62	

RH2B-U/RH2B-UL/RH2B-UD/RH2B-ULD



(Photo: RH2B-U)



• Applicable Socket and Hold-down Spring

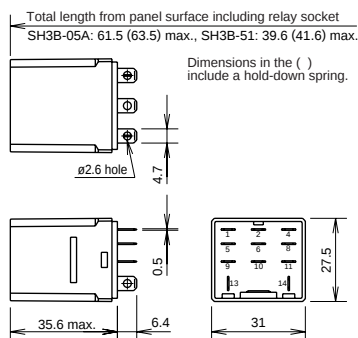
Socket		Hold-down Spring
Mounting Style	Type No.	
DIN Rail Mount Socket	SH2B-05A SH2B-05C	SY4S-02F1 SFA-101 SFA-202
	SH2B-05D	SFA-502
Panel Mount Socket	SH2B-51	SY4S-51F1 (SY4S-02F1) SFA-301 SFA-302
PC Board Mount Socket	SH2B-62	SY4S-51F1 (SY4S-02F1)

Note: (SY4S-02F1) is for the relay with check button.

RH3B-U/RH3B-UL/RH3B-D/RH3B-LD



(Photo: RH3B-U)



• Applicable Socket and Hold-down Spring

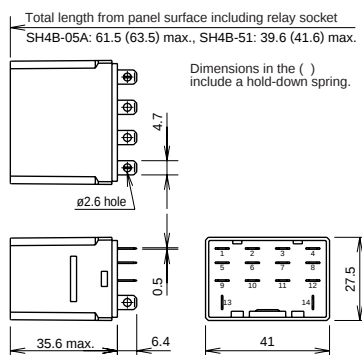
Socket		Hold-down Spring
Mounting Style	Type No.	
DIN Rail Mount Socket	SH3B-05A SH3B-05C	SH3B-05F1 SFA-101 SFA-202
	SH3B-51	SY4S-51F1 (SH3B-05F1) SFA-301 SFA-302
PC Board Mount Socket	SH3B-62	

Note: (SH3B-05F1) is for the relay with check button.

RH4B-U/RH4B-UL/RH4B-UD/RH4B-LD



(Photo: RH4B-U)



• Applicable Socket and Hold-down Spring

Socket		Hold-down Spring
Mounting Style	Type No.	
DIN Rail Mount Socket	SH4B-05A SH4B-05C	SH4B-02F1 SFA-101 SFA-202
	SH4B-51	SY4S-51F1 (SH4B-02F1) SFA-301 SFA-302
PC Board Mount Socket	SH4B-62	

Note 1: Use two SY4S-51F1 hold-down springs for the SH4B-51 and SH4B-62 sockets.

Note 2: (SH4B-02F1) is for the relay with check button.

