

Automotive Relays



TB2-160

High Capacity H-Bridge
Miniature PCB Mount Relay

Applications:

Power Windows
Door Locks
Power Seat
Memory Seat Module
Sun Roof
ASCD
Adjustable Foot Pedal
Auto Antenna
Power Tilt Steering

Features:

Compact H-Bridge Design
Allows for bi-directional control of motor

High Capacity
Rated for 25A motor load (locked rotor condition)

Washable

Focus on Safety
In the event of an over-current condition, the relay fails safe, allowing the contacts to open

勝特力材料 886-3-5753170
胜特力电子(上海) 86-21-34970699
胜特力电子(深圳) 86-755-83298787
[Http://www.100y.com.tw](http://www.100y.com.tw)

Contact Data

Arrangement	2x1FormC (H-Bridge)		
Contact Material	AgSnO ₂		
Initial Contact Resistance (Voltage drop 6V _{DC} 1A)	50mΩ Max.		
Contact Ratings	Maximum Switching Capacity	30A, 16V _{DC} Normally Open	20A, 16V _{DC} Normally Closed
	Switching Voltage	16V _{DC} Max.	
	Maximum Carrying Current	25A, 14V _{DC} @ 20°C for 10 minutes	
Expected life (minimum number of operations)	Mechanical (@ 300 cpm) 10x10 ⁶		
	Electrical	Motor	1x10 ⁵⁽¹⁾

Remarks: ⁽¹⁾25A, 14V_{DC}, 10% Duty Cycle (1s on / 9s of f)

Characteristics

Dielectric Strength	Between open contacts	500V _{AC} 1 minute
	Between contacts and coil	500V _{AC} 1 minute
Initial Insulation Resistance		100MΩ Min. @ 500V _{DC}
Operate Time (max.)		10ms
Release Time (max.)		10ms
Shock Resistance	Functional (min.)	10G (11ms shock wave)
	Destructive (min.)	100G (11ms shock wave)
Vibration Resistance	Functional	4.4G 10 to 500Hz
	Destructive	4.8G 10 to 500Hz
Ambient Operating Temperature		-40°C to +85°C
Ambient Storage Temperature		-40°C to +85°C
Relative Humidity Range		5 ~ 85% RH
Unit Weight		9.5g

Coil Data

Temperature (°C)	Nominal Rated Voltage (V _{DC})	Coil Resistance ±10% (Ω)	Maximum Pull-In Voltage (V _{DC})	Minimum Drop-Out Voltage (V _{DC})
-40	12	122	4.95	0.60
+20	12	160	6.50	0.80
+85	12	202	8.20	1.00

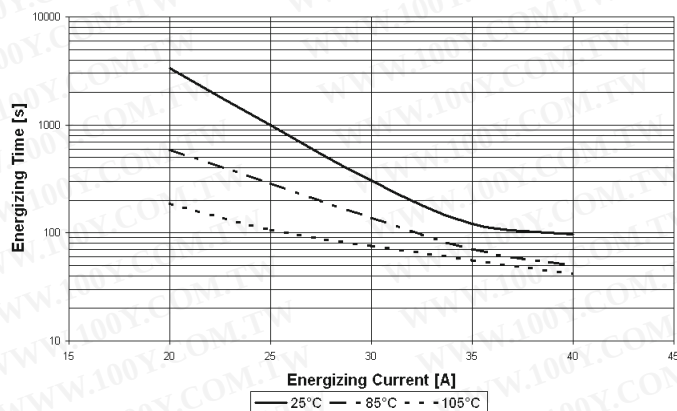
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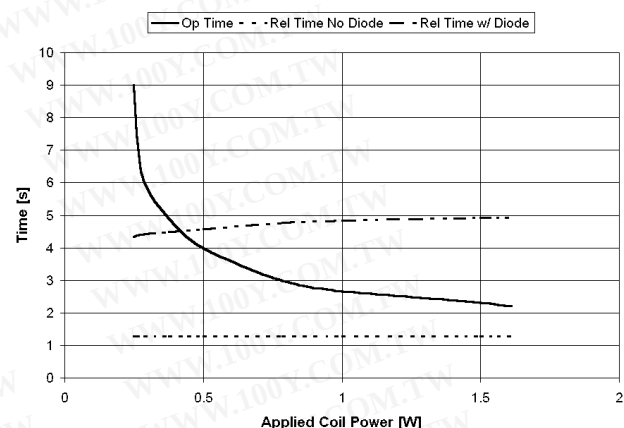
TB2-160

Over-Current Energizing

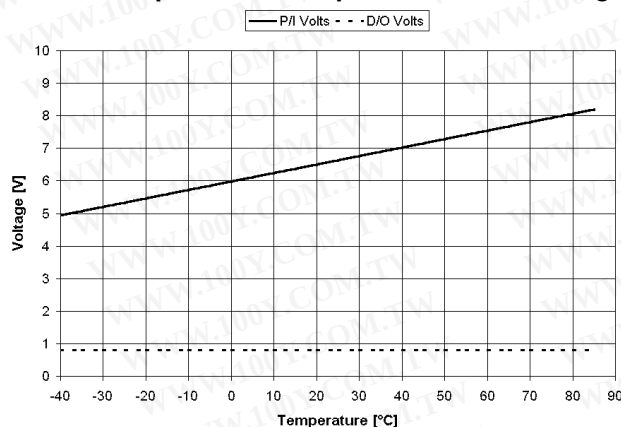
Over-current Energizing



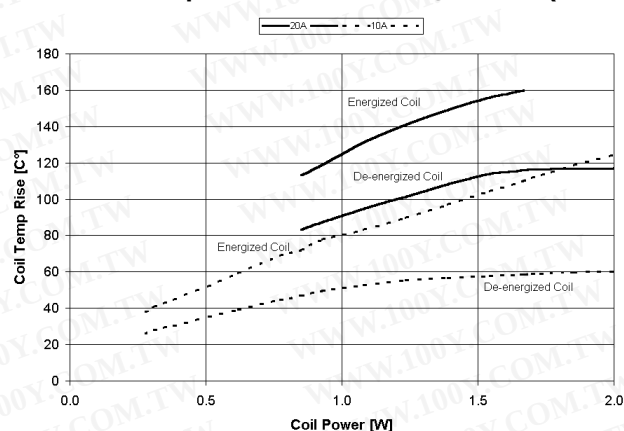
Operate / Release



Ambient Temperature vs. Operate/Release Voltage

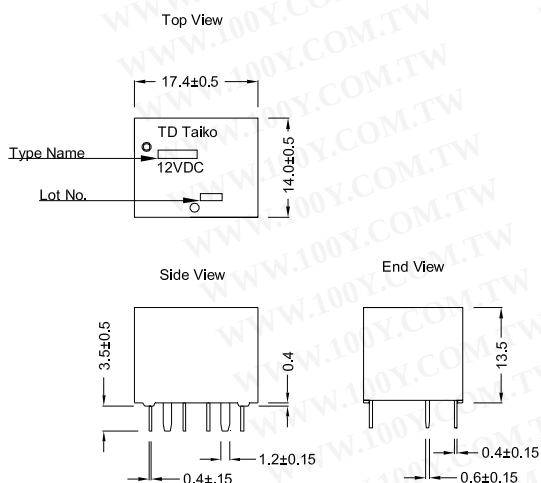


Coil Rise Temperature vs Power @ Loads (10 + 20A)

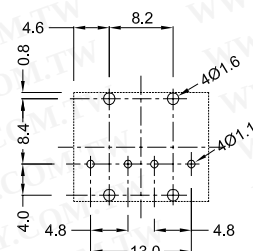


Mechanical Data - Dimensions (mm)

External Dimensions and Markings

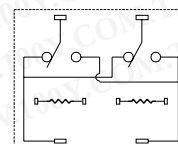


P.C. Board Drilling Design
(Bottom View) (Reference Material)



Hole Punching Tolerance ±0.1

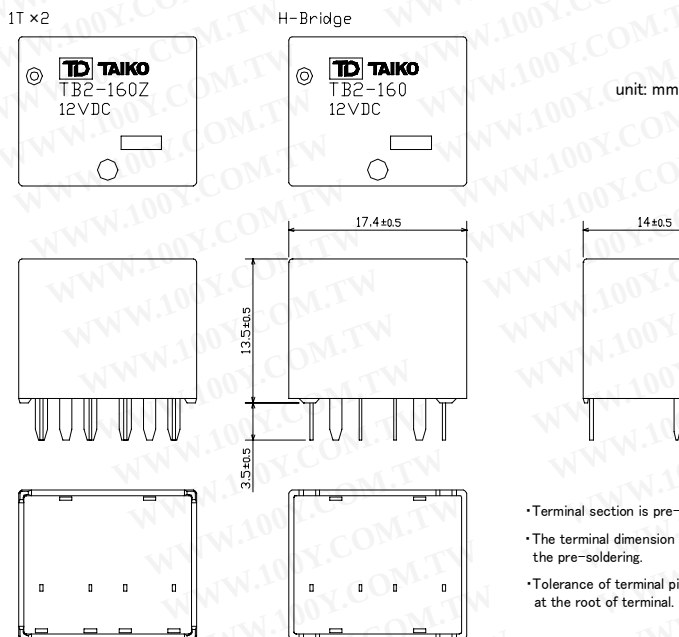
Wiring Diagram
(Bottom View)



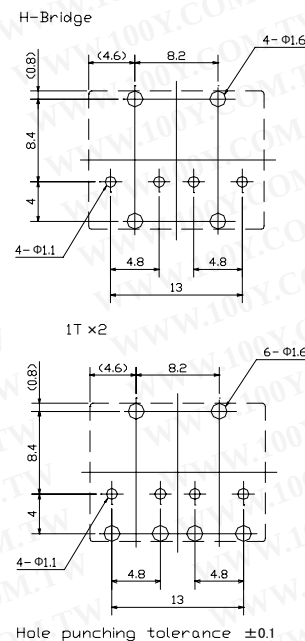
RELAY A RELAY B

ITEM		SPECIFICATION			
Contact Arrangement		1Form C x 2 (H-Bridge)			
(TB2-Z / HTB2-Z type)		1Form C x 2 (1T x 2 ; Separate type)			
Contact Material		AgSnO ₂ Alloy			
Contact Resistance		Max 50mΩ (6VDC 1A voltage drop method)			
Contact Rated Load		25A @ 14VDC Motor load/ Locked Rotor			
Max. Switching Current/ Voltage		30 A 16VDC			
Max. Carrying Current		25 A @ 14VDC for 10 minutes at 2°C			
Min. Switching Current		1A 12VDC			
Dielectric Strength		500VAC for 1minute (between coil and contact) 500VAC for 1minute (between open contacts)			
Insulation Resistance		Min 100MΩ (at 500VDC)			
Operate Time		Max 10ms (at rated voltage)			
Release Time		Max 10ms (at rated voltage)			
Shock	False Operation	Min 98m/s ² (10G) :Shock wave 11ms			
	Endurance	Min 980m/s ² (100G) :Shock wave 11ms			
Vibration	False Operation	10 to 500Hz 43m/s ² (4.4G)			
	Endurance	10 to 500Hz 43m/s ² (4.4G)			
Mechanical Life		10×10 ⁶ Operations or more (300 cycles/minute)			
Electrical Life		0.1 x 10 ⁶ Operations or more 14VDC 25A P/W Motor Load/ Locked Rotor (0.5 sec. ON/ 9.5 sec. OFF)			
Coil Rating at 20°C Ambient Temperature	Part Number	Rated Voltage	Coil Resistance (+ - 10%)	Pull-in Voltage	Drop-out Voltage
	(H)TB2-160(Z)	12VDC	160Ω	6.5V	0.8V
	(H)TB2-100(Z)	12VDC	100Ω	5.5V	0.5V
	(H)TB2-225(Z)	12VDC	225Ω	7.7V	0.8V
Ambient Temperature/ Humidity		-40°C to +85°C, 85%RH or less			
Weight		Approx. 9.5grms			
External Dimensions / Wiring Diagram / PCB Pin		Layout			

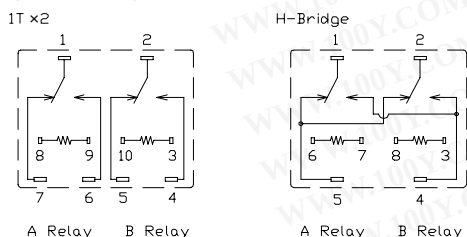
Fig.1. External dimensions



**Fig.3. PCB pin layout (Reference figure)
(BOTTOM VIEW)**



**Fig.2. Wiring diagram
(BOTTOM VIEW)**



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* The above specifications are tentative and subject to change.