ETR ST RELAY

1. MAIN FEATURE :

1-1. Miniature size with lightweight.
1-2. Low power consumption with various types of coil sensitivity for design flexibility.
1-3. Plastic sealed type available for washing protective.
1-4. Wide operation coil voltage range.
1-5. Comply with RoHS and REACH regulations.
1-6. Safety standard & File number: UL&C-UL E141060

2. SPECIFICATION:

2-1. Contact Specification:

2-1-1.Contact Resistance: Maximum 100mΩ at initial value.
Test Current: 1A, Open Circuit Test Voltage: 6VDC.
By using Voltage Drop Method.

2-1-2. Contact Capacity: 2 Amps at 120VAC Cosφ=1.
2 Amps at 24VDC L/R=0.

2-1-3. Operate Time: 5 mSec. Max.

2-1-4. Release Time: 3 mSec. Max.

2-2. Coil Specification at 20ºC:

Coil Sensitivity	Nominal Voltage (VDC)	Nominal Current(mA)	Coil Resistance (Ω±10%)	Power Consumption (W)	Pull-In Voltage (VDC)	Drop-Out Voltage (VDC)	Maximum Allowable Voltage (VDC)
ST-D1	3	120	25	Abt. 0.36	75% Maximum	5% Minimum	130%
	5	71.4	70				
	6	60	100				
	9	40	225				
	12	30	400				
	24	15	1600				
ST-T1	3	67	45	Abt. 0.2			
	5	40	125				
	6	33.3	180				
	9	22.5	400				
	12	16.7	720				
	24	8.3	2880				
ST-L1	3	50	60	Abt. 0.15	80% Maximum		
	5	29.9	167				
	6	25.0	240				
	9	16.7	540				
	12	12.5	960				
	24	6.3	3800				

3.Electrical Characteristics:

3-1. Life Expectancy:	
3-1-1. Electrical Life:	100,000 operations Minimum at 2A/120VAC Cosφ=1. 30,000 operations Minimum at 2A/24VDC L/R=0 Rated Voltage is applied.
3-1-2. Mechanical Life:	10,000,000 operations Minimum at No Load condition. Rated Voltage is applied.
3-1-3. Maximum Operating Frequency:	Electrical: 30 operations/minute. Mechanical: 300 operations/minute.
3-2. Dielectric Strength:	
3-2-1. Between Contacts:	400VAC at Test Frequency 50/60 Hz, Leakage Current: 5mA for 1 minute.
3-2-2. Between Coil & Contact:	1,000VAC at Test Frequency 50/60 Hz, Leakage Current: 5mA for 1 minute.
3-2-3. Surge Strength	1,500V (between coil & contact1.2x50μSec)
3-3. Insulation Resistance:	≧100 MΩ Minimum A Voltage of 500VDC should be applied after which measurement shall be made.
3-4. Vibration	
3-4-1. Endurance I:	The Coil shall be maintained under not energized condition, double amplitude 1.5 mm, the entire frequency range changes from 10 to 55 Hz then returns to 10 Hz shall be made in 1 minute. This motion shall be applied for a period of 2 hours in each of 3 mutually perpendicular axis (a total of 6 hours) There should not be any deformations in construction and in appearance, while the Electrical Specifications should be fulfilled after the test.
3-4-2. Endurance II (Error Operation):	The Coil shall be maintained under energized condition, double amplitude 1.5 mm, the entire frequency range changes from 10 to 55 Hz then returns to 10 Hz shall be made in 1 minute. This motion shall be applied for a period of 5 minutes in 3 mutually perpendicular axis. Malfunction is not allowed during the test (contact breaking time should be less than 1 millisecond) In addition, there should not be any deformations in construction and in appearance while the Electrical Specifications should be fulfilled after the test.

3-5. Shock:

3-5-1. Endurance I: Peak Acceleration: 1000m/s^2
The Coil shall be maintained under not energized condition, 5 successive shocks shall be applied in 3 mutually perpendicular axis. There should not be any deformations in construction and in appearance while the Electrical Specifications should be fulfilled after the test.

3-5-2. Endurance II (Error Operation): Peak Acceleration: 100m/s^2
The Coil should be maintained under energized condition, 2 successive shocks shall be applied in 3 mutually perpendicular axis. Malfunction is not allowed during the test (contact breaking time should be less than 1 millisecond) In addition, there should not be any deformations in construction and in appearance while the Electrical Specifications should be fulfilled after the test.

4.Environmental Characteristics:

4-1. Temperature Range:

4-1-1. Operating Temperature Range: -30 to + 85°C
Operating temperature range is the range of ambient temperature of which the Relay can be operated continuously within operative voltage range of coil (no condensation of water drops under low temperature condition)

4-1-2. Storage Temperature Range: -40 to + 85°C
Storage temperature range is the range of ambient temperature of which the Relay can be stored without damages (no condensation of water drops under low temperature condition). Conditions are as specified elsewhere in these specifications.

4-2. Humidity Range: 35~85% RH.

4-3. Coil Temperature Rise 40℃ Max.

4-4. Cold Resistance:

4-4-1. Cold Resistance in Use: Relay should be kept in temperature chamber at -30 ± 2°C for two hours that no current or voltage shall be supplied to Relay. Such condition shall be maintained while the rated voltage is supplied to Relay, then the Relay shall operate normally. (No condensation of water drops under low temperature condition)

4-4-2. Storage Cold Resistance:	Relay should be kept in temperature chamber at -40 ± 2°C for 72 hours. Then the Relays shall be maintained at standard atmospheric condition for 1 to 2 hours after which measurement shall be made. Construction, Relay operation, Insulation Resistance and Dielectric Strength shall satisfy the specification requirements. (No condensation of water drops under low temperature condition)
4-5. Heat Resistance:	
4-5-1. Heat Resistance in Use:	Relay should be kept in temperature chamber at 85 ± 2°C for two hours that rated Voltage should be supplied to Coil while rated Current should be supplied to Contacts. Such condition shall be maintained while the rated voltage is supplied to Relay, then Relay shall operate normally.
4-5-2. Storage Heat Resistance	Relay should be kept in temperature chamber at 85 ± 2°C for 16 hours. Then the Relays shall be maintained at standard atmospheric condition for 1 to 2 hours after which measurement shall be made. Construction, Relay operation, Insulation Resistance and Dielectric Strength shall satisfy the specification requirements.
4.6 Moisture Resistance:	Relay should be kept in temperature chamber at 40 ± 2°C (90~95% RH) for 48 hours. Then the Relays shall be maintained at standard atmospheric condition for 1 to 2 hours after which measurement shall be made. Construction, Relay operation, Insulation Resistance, Dielectric Strength shall satisfy the specification requirements.
5.Terminal Characteristics:	
5-1. Soldering Dip Test:	The front 3 mm of Terminal should be immersed for 3 ± 0.5 seconds at 245 ± 5°C. Soldered area must be minimum 90% of the soldering surface.
5-2. Soldering Heat Resistance:	When the Terminal are immersed into soldering bath at 260 °C for 3 seconds, the Relay shall satisfy all electrical and mechanical specifications and must not have excessive change in outside appearance.

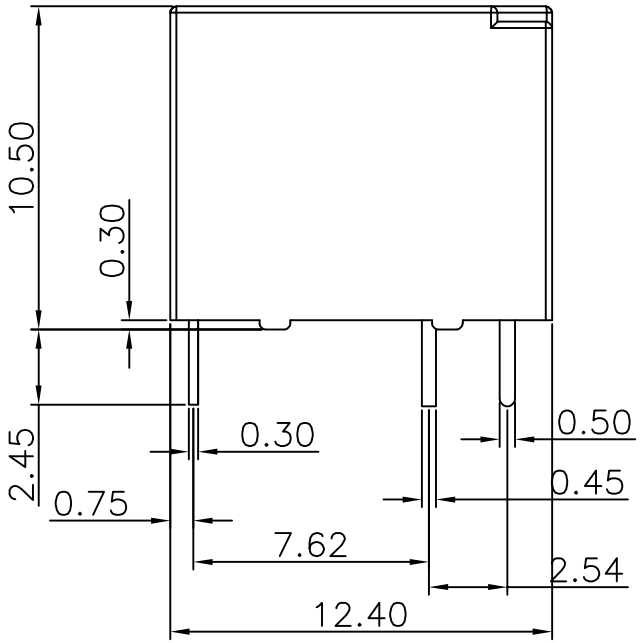
6. PART NUMBERING SYSTEM

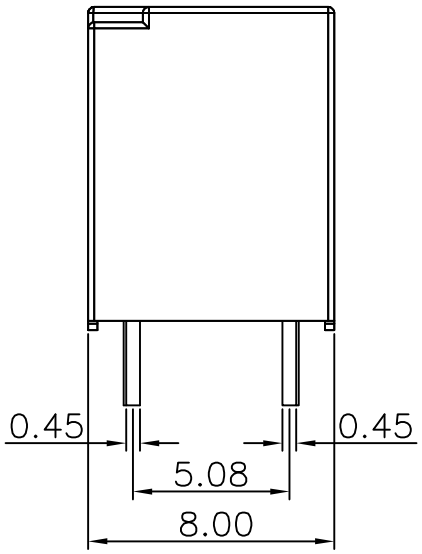
ETR - ST - SH - 1 05 L 1 Z

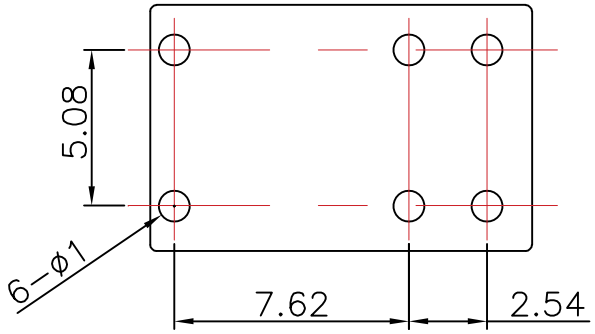
- **Z:** RoHS Compliant
- **Insulation System:**
  - Nil: Class A
  - F: Class F
- **Contact Type:**
  - 1: Spot Welding Contact
- **Coil Type:**
  - D: Standard DC Coil
  - T: Medium Sensitivity DC Type
  - L: High Sensitivity DC Type
- **Coil Voltage:**
  - 03:3V,05:5V,06:6V,09:9V,12:12V,24:24V
- **Number of Pole:**
  - 1:One Pole
- **Type of Sealing:**
  - SS:Flow Solder Type
  - SH:Plastic Sealed Type
- **Model Name:** ST
- **Series Name:** ETR

*** Marking without: “ETR” & “Z” .**

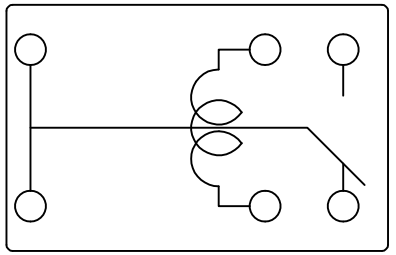
Dimension







P.C.B Layout
Bottom View



Bottom View

				NORMAL TOLERANCE		PART NUMBER	-----			UNIT	MM(INCH)	PART NAME	ETR
				RANGE	TOLERANCE	MATERIAL	-----			SCALE	4 : 1	TYPE	ST SS/SH
				0 – 1	±0.1	CHECK	CCY	DESIGN	WINNIE	QUANTITY	-----	FILE NAME	ST-SS.DWG
				1 – 4	±0.3					PROCESSING	-----	EDITION	A
				4 – 16	±0.5			DRAWN	WINNIE	PROJECTION		SURFACE TREATMENT	-----
				16 – 63	±0.8								
				63 – 250	±1.0								
NO.	DETAILS	ALTERED BY	DATE										

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