ETR EMI-1P RELAY

1. FEATURES:

1-1. Slim size with 12A rated loaded.
1-2. Low power consumption; AC/DC coil available.
1-3. Proper insulation distance with 5,000VAC dielectric strength.
1-4. UL Class F insulation available.
1-5. In accordance with IEC 60335-1 and IEC 60730-1.
1-6. Halogen Free series available.
1-7. Comply with RoHS and REACH regulations.
1-8. Safety standard & File unmber: UL&C-UL E141060 / TUV R5006688 /VDE 40009648

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: 12 Amps at 250VAC Cosφ=1.
12 Amps at 30VDC L/R=0.

2-1-3. Operate Time 12 mSec. Max. (DC coil only)
20 mSec. Max (AC coil only)

2-1-4. Release Time 8 mSec. Max. (DC coil only)
20 mSec. Max (AC coil only)

2-2. Coil Specification at 20ºC:

Coil Sensitivity	Nominal Voltage (VAC/VDC)	Nominal Current (mA)		Coil Resistance (Ω±10%)	Power Consumption (DC:W AC VA)		Pull-In Voltage	Drop-Out Voltage	Maximum Allowable Voltage
		50HZ	60HZ		50HZ	60HZ			
EMI DC Coil	6	66.7		90	Abt. 0.40		80% Maximum	5% Minimum	130%
	9	44.6		202					
	12	33.3		360					
	15	26.6		560					
	18	22.3		810					
	24	16.7		1,440					
	48	8.7		5,520					
	60	8.2		7,340					
	110	4.1		26,530					
EMI AC Coil	24	29.75	25.35	350	0.71	0.61	80% Maximum	15% Minimum	130%
	115	7.65	6.3	8,100	0.88	0.73			
	230	3.42	2.72	32,500	0.79	0.63			

3. Electrical Characteristics:

3-1. Life Expectancy:	100,000 operations Minimum. 12A/250VAC Cosφ=1 12A/30VDC 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: 20 operations/minute. Mechanical: 300 operations/minute.
3-2. Dielectric Strength:	
3-2-1. Between Contacts:	1,000VAC at Test Frequency 50/60 Hz, Leakage Current: 5mA for 1 minute.
3-2-2. Between Coil & Contact:	5,000VAC at Test Frequency 50/60 Hz, Leakage Current: 5mA for 1 minute.
3-2-3. Surge Strength	10,000V (between coil & contact 1.2x50μSec)
3-3. Insulation Resistance:	≧100 MΩ Minimum. At 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: -40 to + 85℃
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℃.
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: 45~85% RH.

4-3. Coil Temperature Rise 30℃ Max

4-4. Cold Resistance:

4-4-1. Cold Resistance in Use: Relay should be kept in temperature chamber at -40 ± 2℃ 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)

4-5. Heat Resistance:

4-5-1. Heat Resistance in Use: Relay should be kept in temperature chamber at 85 ± 2℃ 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℃ for 16 hours. Then the Relays shall be maintain ed 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℃ (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℃. 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 ℃ for 3 seconds, the Relay shall satisfy al l electrical and mechanical specifications and must not have excessive change in outside appearance.

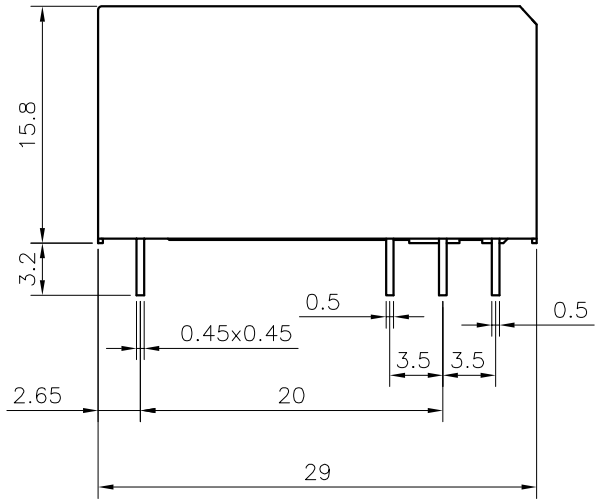
6. PART NUMBERING SYSTEM

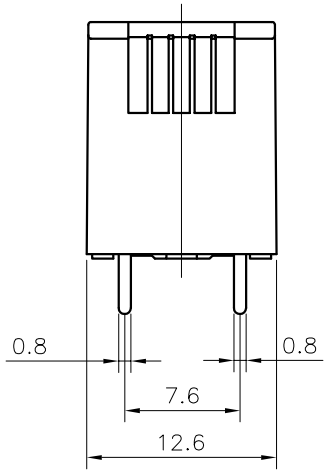
ETR - EMI - SH - 1 12 D M F Z

- **Z:** RoHS Compliant
- **Insulation System:**
  - Nil: Standard Class
  - F: F Class
- **Contact Meterial:**
  - Nil: AgNi
  - G: AgNi Gilded
  - O: AgNi Plated
  - N: $AgSnO_2$ Plated
  - S: $AgSnO_2$ Gilded
- **Contact Form:**
  - Nil: One Form C
  - M: One Form A
  - B: One Form B
- **Coil Type:**
  - D: Standard DC
  - A: Standard AC
- **Coil Voltage:**
  - VDC (06:6V, 09: 9V, 12: 12V, 15: 15V, 18: 18V, 24: 24V, 48: 48V, 60: 60V, 110: 110V)
  - VAC (24: 24V, 115: 115V, 230: 230V)
- **Number of Pole:**
  - 1:One Pole
- **Type of Sealing:**
  - SS:Flow Solder Type
  - SH:Plastic Sealed Type
- **Model Name:** EMI
- **Series Name: ETR**

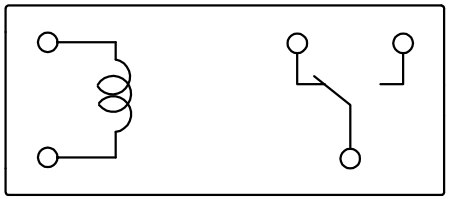
***Marking without: "ETR" & "Z"** .

Dimension





Two Form C



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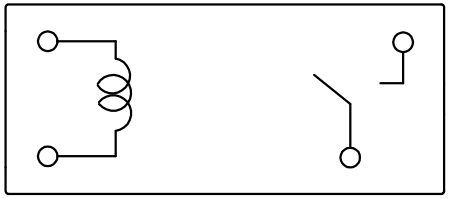
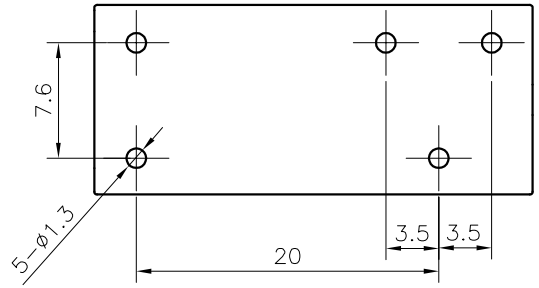
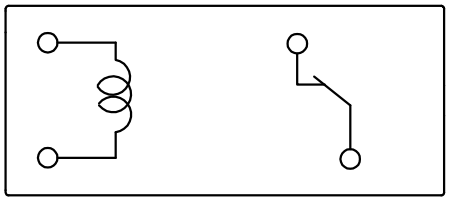




P.C.B LAYOUT

Two Form B



BOTTOM VIEW

NO.	DETAILS	ALTERED BY	DATE

NORMAL TOLERANCE	
RANGE	TOLERANCE
0 – 1	±0.1
1 – 4	±0.3
4 – 16	±0.5
16 – 63	±0.8
63 – 250	±1.0

PART NUMBER	------					UNIT	MM(INCH)	PART NAME	ETR
MATERIAL	------					SCALE	2 : 1	TYPE	EMI-1P SS/SH
CHECK	CCY	DESIGN	WINNIE	DRAWN	WINNIE	QUANTITY	------	FILE NAME	EMI-1P-SS.DWG
						PROCESSING	------	EDITION	A
						PROJECTION		SURFACE TREATMENT	------