

# MINIATURE RELAY

## 1 POLE - 1 to 2 A (For Signal Switching)

### MZ Series

#### ■ FEATURES

- Subminiature size
  - Standard and high sensitivity types available
  - UL, CSA recognized
  - FCC rules and regulations part 68
    - Dielectric strength 1,500 V between coil and contacts
  - High reliability-bifurcated contacts available
  - DIL pitch terminals
  - Plastic sealed type
  - RoHS compliant.
- Please see page 7 for more information



#### ■ PARTNUMBER INFORMATION

[Example]     MZ   F   -   12   W   HG   -   K   -   U  
                   (a)   (b)   (\*)   (c)   (d)   (e)   (f)   (g)

(a)	Relay type	MZ	: MZ Series
(b)	Dielectric funtion	Nil F	: Standard type : High dielectric strength type
(c)	Coil rated voltage	12	: 1.5...48VDC Coil rating table at page 3
(d)	Contact configuration	Nil D W	: 1A single : 2A single (without MZF) : 1A bifurcated
(e)	Coil type	HG HS	: Standard type (without MZ-D) (450-500mW) : High sensitive type (without MZF/MZ-D) (190-270mW)
(f)	Enclosure	Nil K	: Flux free type : Plastic sealed type
(g)	UL, CSA, standard	Nil U	: Non UL, CSA approved : UL, CSA approved

Note: For movable and stationary contact with gold overlay type, add suffix “-OH”.

# MZ SERIES

## ■ SPECIFICATION

Item			Standard type			High Sensitive type		
			Single		Bifurcated	Single	Bifurcated	
			MZ - ( ) D	MZ- ( ) HG	MZ-( ) WHG	MZ - ( ) HS	MZ-( ) WHS	
Contact Data	Configuration		1 form C (SPDT)					
	Material		Gold-overlay silver nickel	Gold overlay silver-palladium				
	Resistance (initial)		Max. 100 mΩ at 6 VDC, 1A					
	Contact rating (resistive)		2A, 24VDC 1A, 120VAC	1A, 24VDC 0.5A, 120VAC				
	Max. carrying current		2A					
	Max. switching voltage		120VAC, 60VDC					
	Max. switching power		120VA / 48WA	60AV / 24W				
	Max. switching current		2A	1A				
	Min. switching load*		1mA, 1 VDC		0.1mA, 100 mVDC	1mA, 1VDC	0.1mA, 100 mVDC	
	Capacitance (at 10 MHz)		Approximately 0.8 pF (between open contacts, adjacent contacts) Approximately 7.5 pF (between coil and contacts)					
Life	Mechanical		Min. 20 x 10 <sup>6</sup> operations					
	Electrical		1A, 120VAC: min. 100 x 10 <sup>3</sup> ops. 2A, 24VDC: min. 200 x 10 <sup>3</sup> ops. min.	0.5A, 120VAC: min. 200 x 10 <sup>3</sup> operations 1A, 24VAC: min. 500 x 10 <sup>3</sup> operations				
Coil Data	Rated power		450 mW - 500 mW			190mW - 270 mW		
	Operate power		220 - 250 mW			100 mW - 130 mW		
	Operating temperature range		-30 °C to +55 °C (no frost)			30 °C to +75 °C		
Timing Data	Operate (at nominal voltage)		Max. 6 ms					
	Release (at nominal voltage)		Max. 3 ms					
Insulation	Resistance (initial)		Min. 1,000MΩ at 500VDC					
	Dielectric strength	Open contacts	Standard: 500VAC (50/60Hz) 1min. High Isolation: 1,000VAC (50/60Hz) 1min.					
		Contacts to coil	Standard: 500VAC (50/60Hz) 1min. High Isolation: 1,500VAC (50/60Hz) 1min.					
	Surge strength		Coil to contacts	1,500V / 1 x 40μs standard wave				
Other	Vibration resistance	Misoperation	10 to 55Hz double amplitude 3.28 mm					
		Endurance	10 to 55Hz double amplitude 3.28 mm					
	Shock	Misoperation	Min. 100m/s² (11 ± 1ms)					
		Endurance	Min. 1,000m/s² (6 ± 1ms)					
	Weight		Approximately 3.5 g					

\* Minimum switching loads mentioned above are reference values. Please perform the confirmation test with actual load before production since reference values may vary according to switching frequencies, environmental conditions and expected reliability levels.

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## ■ COIL RATING

Standard type

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance +/- 10% (Ohm)	Must Operate Voltage (VDC) *	Must Release-Voltage (VDC) *	Rated Power (mW)
1.5	1.5	5	1.05	0.08	450
3	3	20	2.1	0.15	
4.5	4.5	45	3.15	0.23	
5	5	56	3.5	0.25	
6	6	80	4.2	0.3	
9	9	180	6.3	0.45	
12	12	320	8.4	0.6	
18	18	720	12.6	0.9	
24	24	1,280	16.8	1.2	500
48	48	4,600	33.6	2.4	

High sensitive type

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance +/- 10% (Ohm)	Must Operate Voltage (VDC) *	Must Release-Voltage (VDC) *	Rated Power (mW)
1.5	1.5	12	1.05	0.08	190
3	3	45	2.1	0.15	200
4.5	4.5	100	3.15	0.23	
5	5	120	3.5	0.25	
6	6	180	4.2	0.3	
9	9	400	6.3	0.45	
12	12	700	8.4	0.6	
15	15	1,100	10.5	0.75	
18	18	1,600	12.6	0.9	
24	24	2,800	16.8	1.2	270
48	48	8,500	33.6	2.4	

Note: All values in the table are valid for 20°C and zero contact current.

\* Specified operate values are valid for pulse wave voltage.

## ■ SAFETY STANDARDS

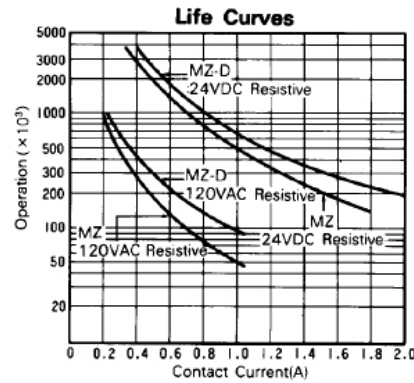
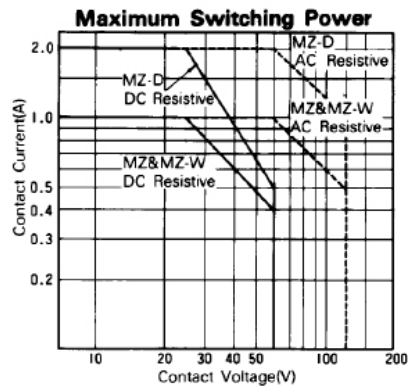
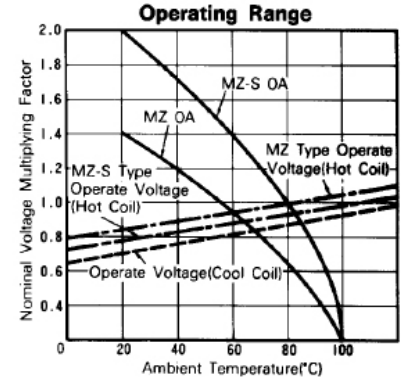
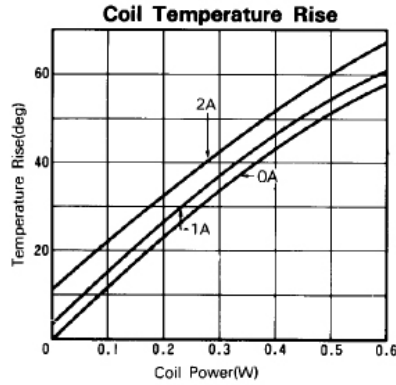
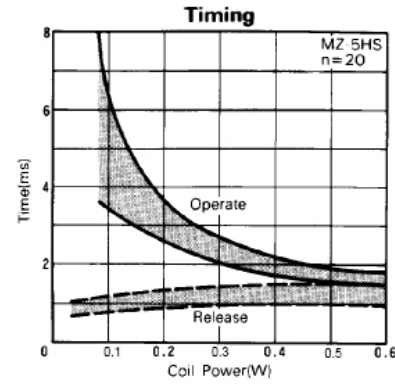
Type	Compliance	Contact rating
UL	UL 508, UL 60950-1	Flammability: UL 94-V0 (plastics)
	E 45026	[1A] 0.5A, 120VAC (resistive)
CSA	C22.2 No. 14	1A, 24VDC (resistive)
	LR 35579	[2A] 1A, 120VAC (resistive) 2A, 30VDC (resistive)

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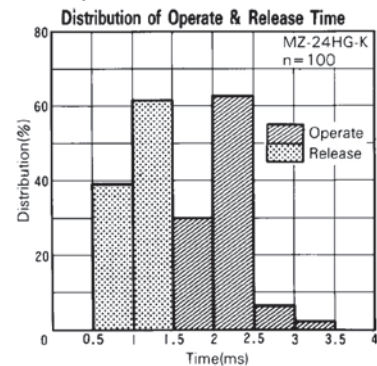
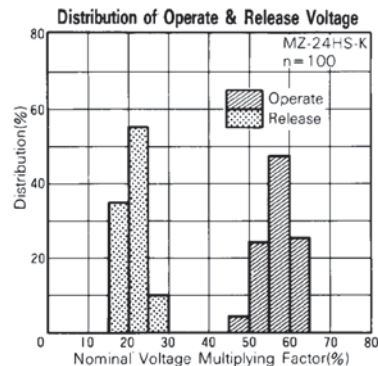
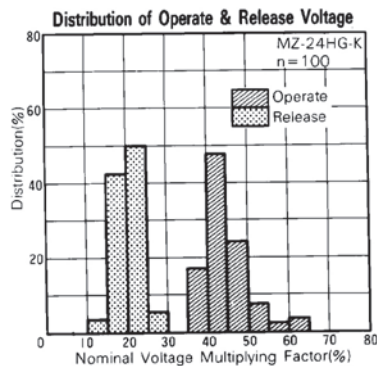
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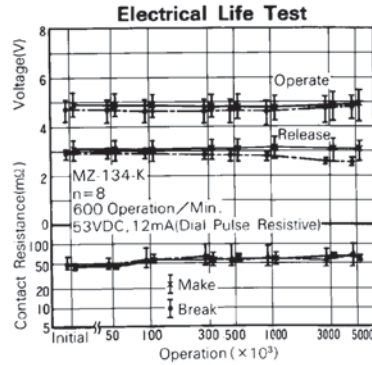
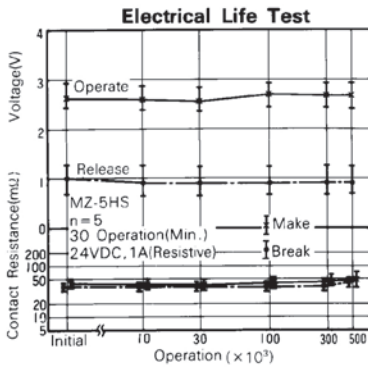
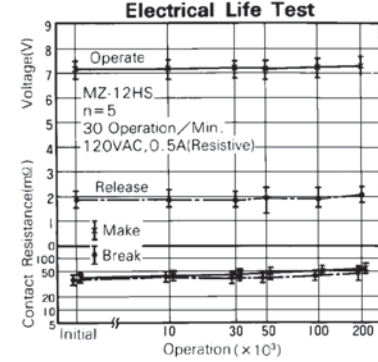
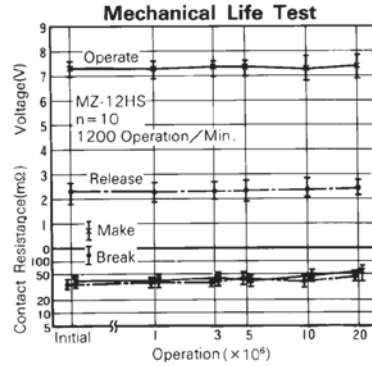
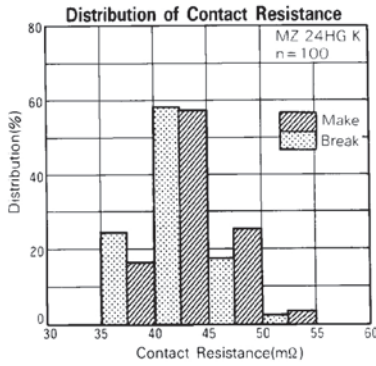
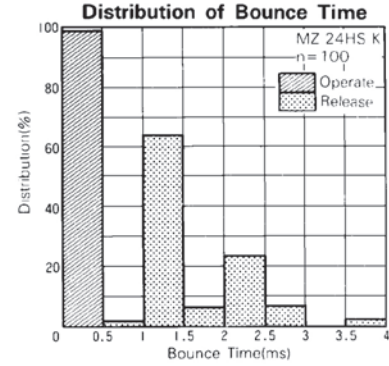
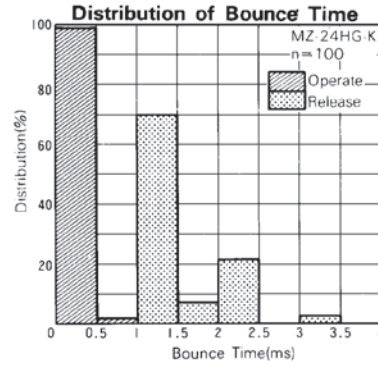
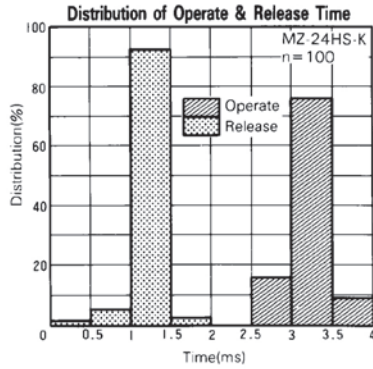
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## ■ CHARACTERISTIC DATA



## ■ REFERENCE DATA

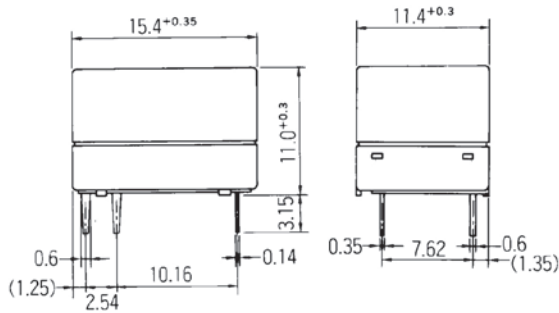




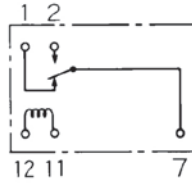
## ■ DIMENSIONS

### ● Dimensions

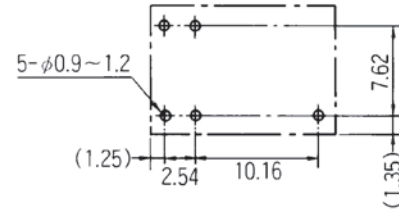
MZ (F) type (Flux free type)



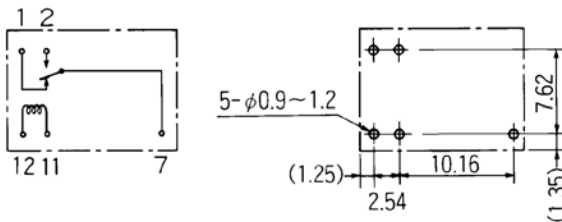
### ● Schematics (BOTTOM VIEW)



### ● PC board mounting hole layout (BOTTOM VIEW)



MZ (F)-K type (Plastic sealed type)



Unit: mm

## RoHS Compliance and Lead Free Information

### 1. General Information

- All signal and power relays produced by Fujitsu Components are compliant with RoHS directive 2002/95/EC including amendments.
- Cadmium as used in electrical contacts is exempted from the RoHS directives on October 21st, 2005. (Amendment to Directive 2002/95/EC)
- All of our signal and power relays are lead-free. Please refer to Lead-Free Status Info for older date codes at: <http://www.fujitsu.com/us/downloads/MICRO/fcai/relays/lead-free-letter.pdf>
- Lead free solder plating on relay terminals is Sn-3.0Ag-0.5Cu, unless otherwise specified. This material has been verified to be compatible with PbSn assembly process.

### 2. Recommended Lead Free Solder Profile

- Recommended solder Sn-3.0Ag-0.5Cu.

**Flow Solder condition:**

Pre-heating: maximum 120°C  
Soldering: dip within 5 sec. at  
260°C solder bath

**Solder by Soldering Iron:**

Soldering Iron  
Temperature: maximum 360°C  
Duration: maximum 3 sec.

**We highly recommend that you confirm your actual solder conditions**

### 3. Moisture Sensitivity

- Moisture Sensitivity Level standard is not applicable to electromechanical relays, unless otherwise indicated.

### 4. Tin Whiskers

- Dipped SnAgCu solder is known as presenting a low risk to tin whisker development. No considerable length whisker was found by our in house test.

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