Discontinued in March 2019

FUJITSU

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

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

(a)	Relay type	MZ	: MZ-Series
(b)	Dielectric function	Nil F	: Standard type : High dielectric strength type
(c)	Coil rated voltage	12	: 1.5.....48 VDC 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 sensitivity 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".

■ SPECIFICATION

Item			Standard type			High sensitivity 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 / 48W	60VA / 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 10^6 operations				
	Electrical		1A, 120VAC: min. 100 x 10^3 ops. 2A, 24VDC: min. 200 x 10^3 ops. min.	0.5A, 120VAC: min. 200 x 10^3 operations 1A, 24VAC: min. 500 x 10^3 operations			
Coil Data	Rated power (at 20 °C)		450 - 500 mW			190 - 270 mW	
	Operate power (at 20 °C)		220 - 250 mW			100 - 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	Isolation (initial)		Min. 100MΩ at 500VDC				
	Dielectric strength	Open contacts	Standard: 500VAC, 1min. High Isolation: 1,000VAC, 1min.				
		Contacts to coil	Standard: 500VAC, 1min. High Isolation: 1,500VAC, 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.

■ 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	
48	48	4,600	33.6	2.4	500

High sensitive type

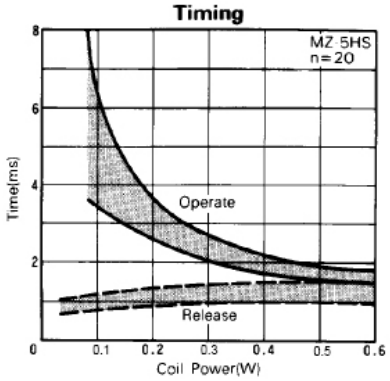
Coil Code	Rated Coil Voltage (VDC)	Coil Resistance +/- 10% (Ohm)	Must Operate Voltage (VDC) *	Must Release Voltage (VDC) *	Rated Power (mW)
1.5	1.5	12	1.05	0.08	190
3	3	45	2.1	0.15	200
4.5	4.5	100	3.15	0.23	
5	5	120	3.5	0.25	
6	6	180	4.2	0.3	
9	9	400	6.3	0.45	
12	12	700	8.4	0.6	
15	15	1,100	10.5	0.75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

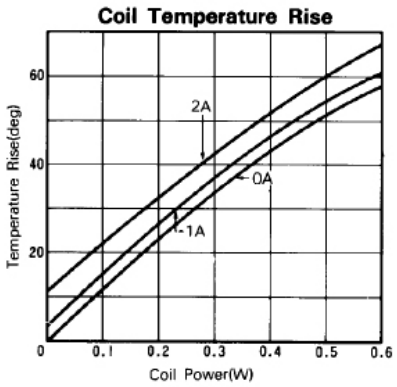
Note: All values in the table are valid for 20°C and zero contact current.
* Specified operate values are valid for pulse wave voltage.

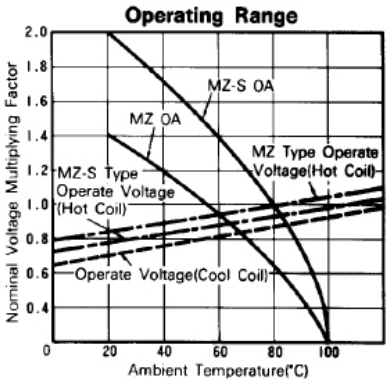
■ SAFETY STANDARDS

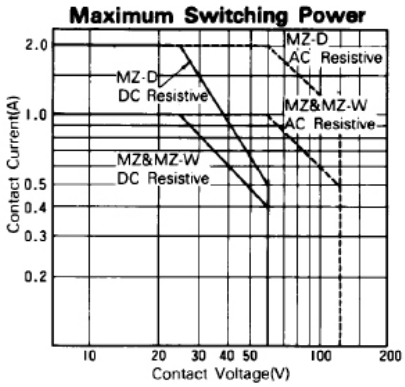
Type	Compliance	Contact rating
UL	UL 508, UL 60950-1 E 45026	Flammability: UL 94-V0 (plastics) [1A] 0.5A, 120VAC (resistive) 1A, 24VDC (resistive) [2A] 1A, 120VAC (resistive) 2A, 30VDC (resistive)
CSA	C22.2 No. 14 LR 35579	

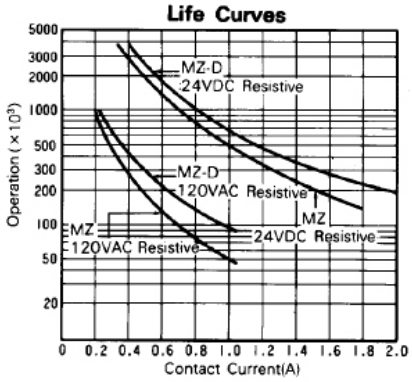
■ CHARACTERISTIC DATA



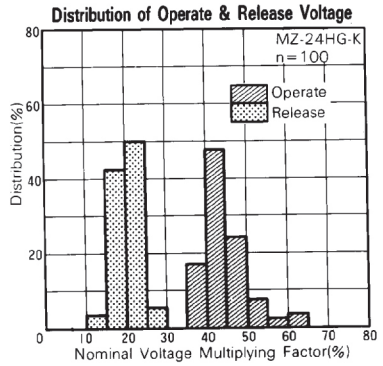


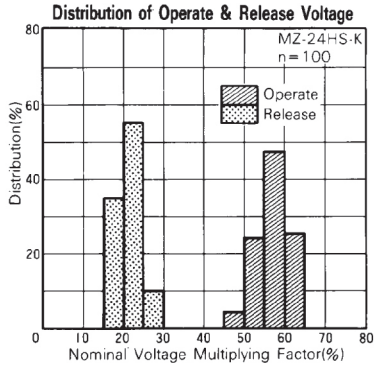


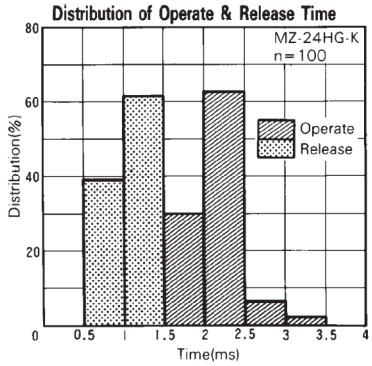


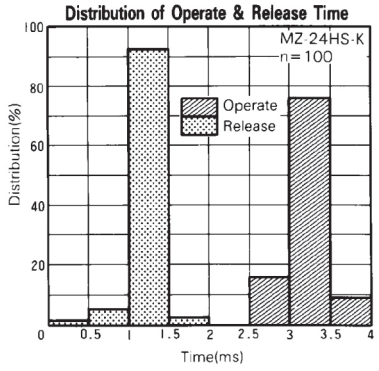


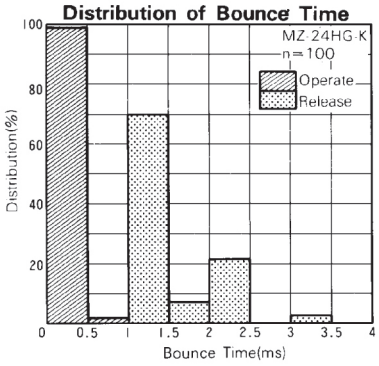
■ REFERENCE DATA

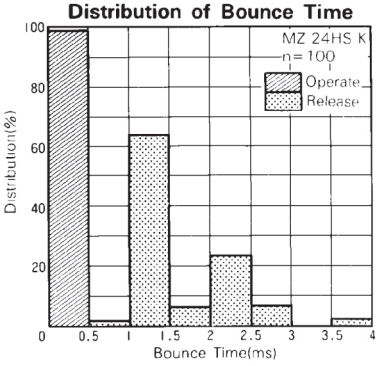


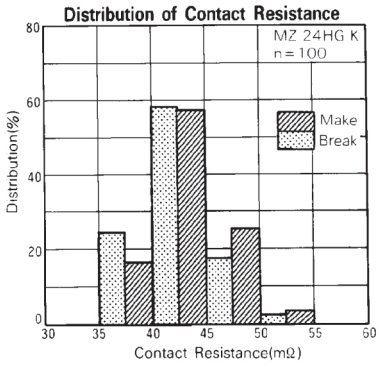


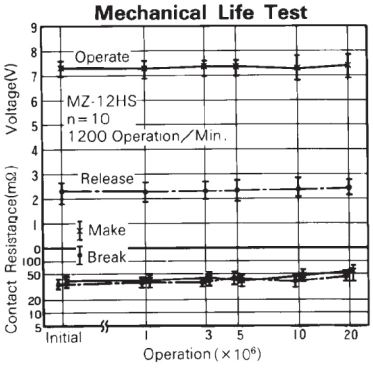


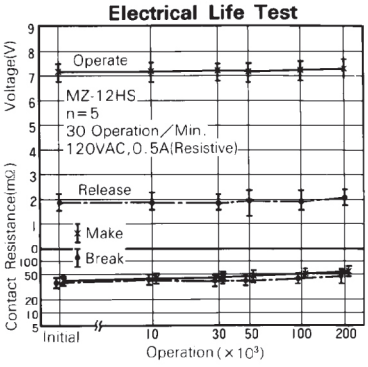

Distribution of Operate & Release Time
MZ-24HS-K
n=100
Operate
Release
Distribution(%)
Time(ms)

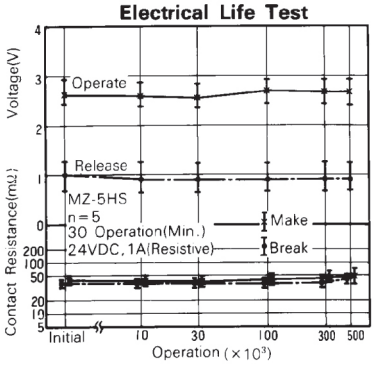

Distribution of Bounce Time
MZ-24HG-K
n=100
Operate
Release
Distribution(%)
Bounce Time(ms)

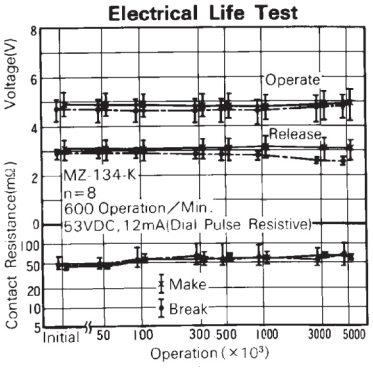

Distribution of Bounce Time
MZ 24HS K
n=100
Operate
Release
Distribution(%)
Bounce Time(ms)


Distribution of Contact Resistance
MZ 24HG K
n=100
Make
Break
Distribution(%)
Contact Resistance(mΩ)


Mechanical Life Test
Operate
MZ-12HS
n=10
1200 Operation/Min.
Release
Make
Break
Voltage(V)
Contact Resistance(mΩ)
Operation (×10⁶)


Electrical Life Test
Operate
MZ-12HS
n=5
30 Operation/Min.
120VAC, 0.5A(Resistive)
Release
Make
Break
Voltage(V)
Contact Resistance(mΩ)
Operation (×10³)

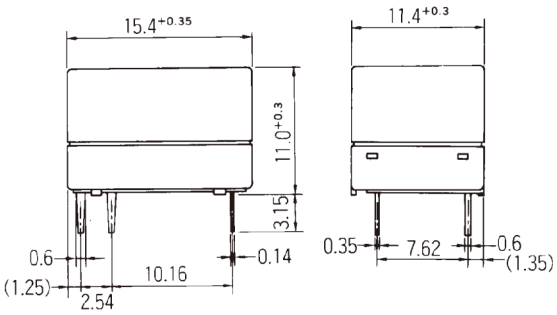

Electrical Life Test
Operate
Release
MZ-5HS
n=5
30 Operation(Min.)
24VDC, 1A(Resistive)
Make
Break
Voltage(V)
Contact Resistance(mΩ)
Operation (×10³)


Electrical Life Test
Operate
Release
MZ-134-K
n=8
600 Operation/Min.
53VDC, 12mA(Dial Pulse Resistive)
Make
Break
Voltage(V)
Contact Resistance(mΩ)
Operation (×10³)

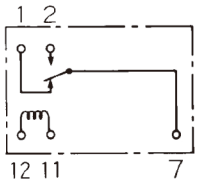
■ DIMENSIONS

- **Dimensions**

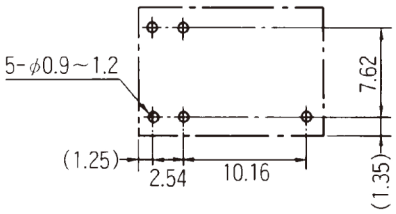
MZ (F) type (Flux free type)



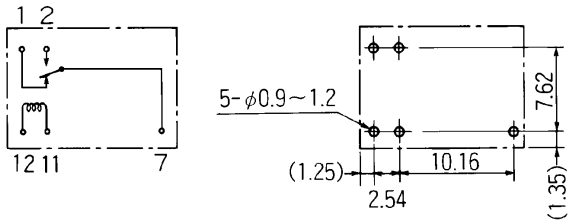
- **Schematics** (BOTTOM VIEW)



- **PC board mounting hole layout** (BOTTOM VIEW)



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



Unit: mm

Note: This datasheet provide only + tolerance for outer dimensions.

RoHS Compliance and Lead Free Information

1. General Information

- All relays produced by Fujitsu Components are compliant with RoHS directive 2011/65/EU including amendments.
- Cadmium as used in electrical contacts is exempted from the RoHS directives.
  As per Annex III of directive 2011/65/EU.
- All relays are lead-free. Please refer to Lead-Free Status Info for older date codes at:
  http://www.fujitsu.com/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 Condition

- Recommended solder Sn-3.0Ag-0.5Cu.

Flow Solder Condition:

Pre-heating:	maximum 120˚C within 90 sec.
Soldering:	dip within 5 sec. at 255˚C ± 5˚C solder bath

Relay must be cooled by air immediately after soldering

Solder by Soldering Iron:

Soldering Iron	30-60W
Temperature:	maximum 350-360˚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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