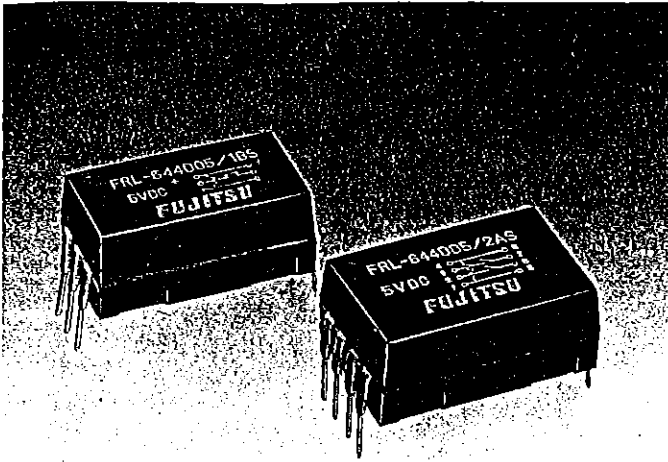


# REED RELAYS

## FRL-640 series



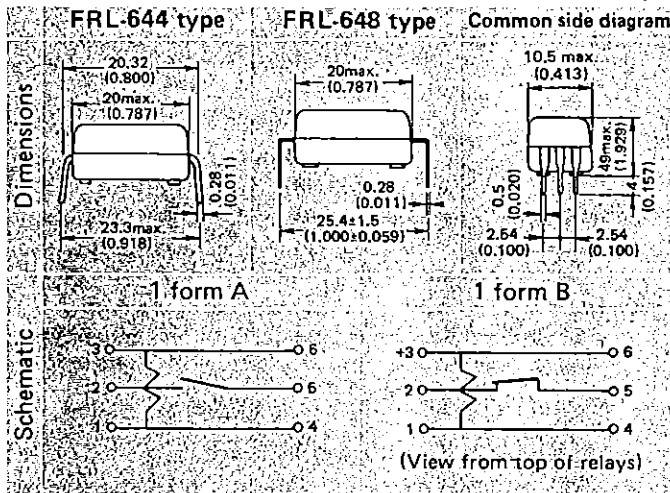
### Features

- The relay is molded in epoxy resin, giving low switching noise and allowing solder flux cleaning after PC board mounting.
- The relay has the magnetic shield inside the mold. An outer shield case can also be available to be used even in strong magnetic fields.
- The relay is 9 mm (0.354 in.) high.
- Because of its highly sensitive coil, the relay can be driven directly by ICs.
- The terminal pitch conforms to international specifications (multiples of 2.54 mm (1 in.)).
- The switch is the highly acclaimed FDR-4, giving superior contact performance and low contact noise. Switching from small voltages and currents (S type) to heavy loads (K type) is possible.

### Dimensions and Schematics

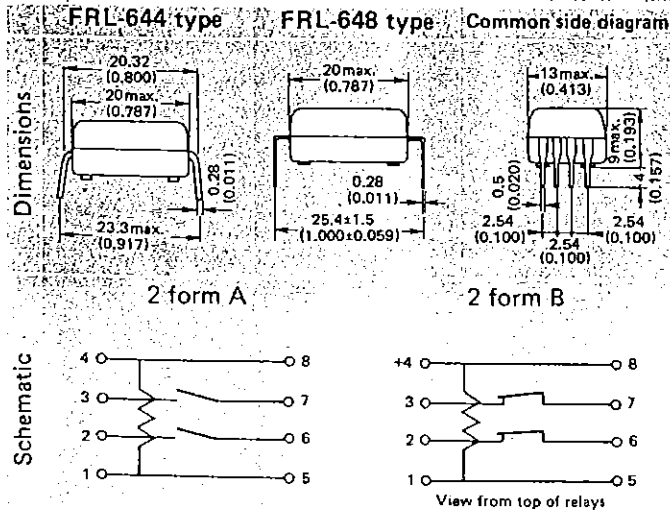
1 form A or 1 form B type

Unit: mm (in.)



2 form A or 2 form B type

Unit: mm (in.)



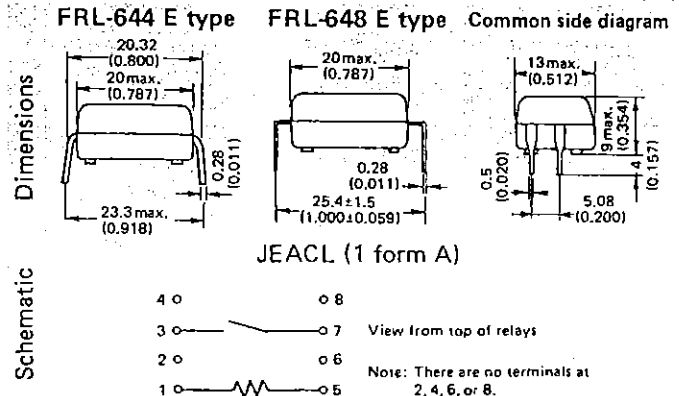
### Specifications

Item	Specification
Contact arrangement	1 form A, 1 form B, 2 form A, 2 form B
Contact rating	K type: 50 VA (100V max., 1A max.) S type: 10 VA (100V max., 0.5A max.)
Contact resistance	150 mΩ max. (measured at 6V DC, 0.1A) initial value
Insulation resistance	100 MΩ min. (measured at 100V DC) initial value
Dielectric withstand voltage	Between open contacts: 200V DC for 1 minute Other: 500V DC for 1 minute
Vibration	10 Hz to 55 Hz (1.5 mm dual amplitude)
Shock	30G (11 msec)
Operate time	1 ms max. (including bounce time at rated current)
Release time	Form A: 0.1 ms max. Form B: 1 ms max. (including bounce time after rated current)
Service life	Mechanical: 1 × 10 <sup>9</sup> ops., min. Electrical: 1 × 10 <sup>6</sup> ops., min. (at rated contact load)
Operating temperature	-10°C to +70°C (form A) -10°C to +50°C (form B)
Weight	Approx. 6g

### Dimensions and Schematics

1 form A (conformed to JEACL type)

Unit: mm (in.)



# REED RELAYS

## FRL-640 series

### Coil Ratings

Part number	Contact arrangement	Rated current (VDC)	Pickup voltage (VDC) (20°C)	Coil resistance $\pm 15\%$ ( $\Omega$ ) (20°C)	Coil power consumption (mW)
FRL-644D05/1AS, K (E)	1 form A	5	3.8	550	45
FRL-648D05/1AS, K (E)		5	3.8	550	45
FRL-644D06/1AS, K (E)		6	4.5	550	65
FRL-648D06/1AS, K (E)		6	4.5	550	65
FRL-644D12/1AS, K (E)		12	9.0	1,050	140
FRL-648D12/1AS, K (E)		12	9.0	1,050	140
FRL-644D24/1AS, K (E)		24	18.0	2,800	200
FRL-648D24/1AS, K (E)		24	18.0	2,800	200
FRL-644D05/1BS, K	1 form B	5	3.8	300	85
FRL-648D05/1BS, K		5	3.8	300	85
FRL-644D06/1BS, K		6	4.5	300	120
FRL-648D06/1BS, K		6	4.5	300	120
FRL-644D12/1BS, K		12	9.0	1,300	110
FRL-648D12/1BS, K		12	9.0	1,300	110
FRL-644D24/1BS, K		24	18.0	3,800	150
FRL-648D 4/1BS, K		24	18.0	3,800	150
FRL-644D05/2AS, K	2 form A	5	3.8	210	120
FRL-648D05/2AS, K		5	3.8	210	120
FRL-644D06/2AS, K		6	4.5	210	170
FRL-648D06/2AS, K		6	4.5	210	170
FRL-644D12/2AS, K		12	9.0	800	180
FRL-648D12/2AS, K		12	9.0	800	180
FRL-644D24/2AS, K		24	18.0	2,600	220
FRL-648D24/2AS, K		24	18.0	2,600	220
FRL-644D05/2BS, K	2 form B	5	3.8	80	300
FRL-648D05/2BS, K		5	3.8	80	300
FRL-644D06/2BS, K		6	4.5	105	340
FRL-648D06/2BS, K		6	4.5	105	340
FRL-644D12/2BS, K		12	9.0	460	310
FRL-648D12/2BS, K		12	9.0	460	310
FRL-644D24/2BS, K		24	18.0	1,500	380
FRL-648D24/2BS, K		24	18.0	1,500	380

Note 1: The form B type has polarity in the coil.

Note 2: Select contact type S or K (letter at the end of the designation) according to the type of contact load.

Note 3: This relay has a magnetic shield inside the mold. Relays with iron cases are also available. (Add -2 to the designation if you require the relay with an iron case.)

\* See "REED RELAYS-NOTES ON USE" for more details.

Part Numbers

FRL - 64     /     
 (A) (B) (C) (D) (E) (F)

- (A) Terminal row pitch
  - 4: 20.32 mm (0.8 in.)
  - 8: 25.40 mm (1 in.)
- (B) Standard and JEACL products
  - D: Standard product
  - E: Product conforming to JEACL (1 form A type only)
- (C) Rated coil voltage
  - 05: 5V DC
  - 06: 6V DC
  - 12: 12V DC
  - 24: 24V DC

- (D) Number of contacts
    - 1: Single contact
    - 2: Bifurcated contact
  - (E) Contact arrangement
    - A: Form A
    - B: Form B
  - (F) Type of contact
    - S: For switching under low voltage and current to medium voltage and current
    - K: For switching under heavy load
- Note: To order a relay with a magnetically shielded case, add -2 to the end of the designation.

Reference Data

Example of distribution of electrical characteristics

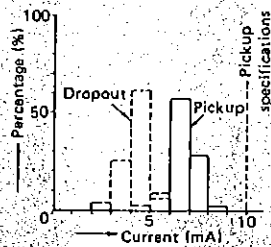


Figure 1 Example of distribution of dropout and pickup currents.

Trial materials: FRL-644D12/2AS: 100 pieces

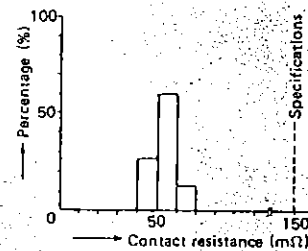


Figure 2 Example of distribution of contact resistances

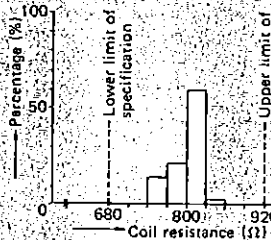


Figure 3 Example of distribution of coil resistances

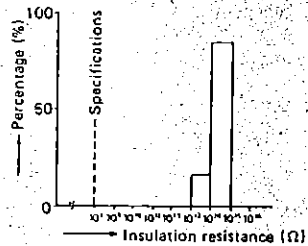
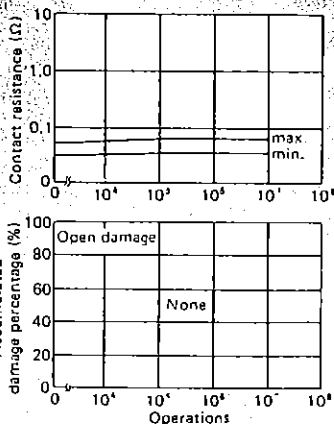


Figure 4 Example of distribution of insulation resistances

Example of service life

1. S type load: 6V DC, 100 mA, 60Ω resistive load



2. K type load: 100V AC, 500 mA, 200Ω resistive load

