

D-c 100 v

D-c 24 v

3) Contact arrangement

With 2 C contact (having two switching contact point)

4) Switching capacity

Charging capacity ac, dc 8 amp

Switch on capacity, switch off capacity

Voltage	Switch-on	Switch-off	Life time
A-c	1.25 amp	0.25 amp $\cos \varphi=0.4$	1 million
200 v	2	0.4 "	0.5 "
	4	0.8 "	0.2 "

5) Dielectric strength A-c 2000 v for 1 min.

6) Outer dimensions  $36 \times 36 \times 55$  (mm)

7) Weight Relay : approx. 125 g

Socket : approx. 12 g

(By O. Tsuchiya, Tokyo Factory)

## SILICON RECTIFIER ELEMENTS FOR COMPONENT PARTS, MODEL FR 1 & DS 1

The Fuji Silicon Rectifier Element has been exceptionally well received and is being used extensively in every field of industry. We, Fuji Electric Co., Ltd., manufacturers of high efficiency silicon rectifier elements, have produced more than 1/3 of all the silicon rectifiers used in Japan. Here we take pride in introducing the new silicon rectifier elements FR1M and DS1M, suitable for use in electronic equipment such as communication apparatus, sound instruments, etc. Fuji Electric's proven techniques and years of high standing as an integrated electrical equipment manufacturer, guarantee the high efficiency, excellent quality and reliability of both FR1M and DS1M with their double advantage of small size and low cost. DS1M is constructed of hermetic seal made of metal case, whereas that of FR1 is of resin seal made of special synthetic resin. Both are designed for maximum durability and to withstand moisture, vibration and shock.

### Applications

- Acoustic products...TV set, radio, hi-fi device, tape recorder, etc.
- Communication apparatus
- Measuring instruments

### Features

1) Large current capacity

Because of an excellent forward directional characteristic, forward watt loss is very small and current capacity is large.

2) Small size

Large current capacity and high inverse voltage allow the rectifier to be small but high in efficiency.

3) High inverse voltage

Because of the high purity single silicon crystal used, the rectifier can withstand high inverse voltage.

4) High application temperature

The silicon itself has a high fusion point, thus the maximum permissible temperature for the junction is  $120^{\circ}\text{C}$  for the FR type and  $140^{\circ}\text{C}$  for the DS type.

5) Long life

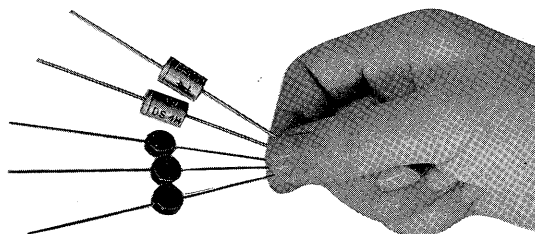
Service life is indefinite if used correctly.

6) Perfect air-tightness

The rectifier is perfectly sealed to prevent exterior defective effects.

7) Uniformity

The Fuji silicon rectifier element is manufactured under strict process control, its characteristics tested by many rigid testing processes to ensure uniformity and high dependability.



## Characteristics

Item	Type	FR	DS
1. Max. allowable transient peak reverse voltage		300, 1000, 1500 1800 v	300, 1000, 1500, 1800 v
2. Max. allowable peak reverse voltage		250, 800, 1000 1200 v	250, 800, 1000, 1200 v
3. Max. allowable RMS voltage		175, 560, 700, 850 v	175, 560, 700, 850 v
4. Recommended a-c input RMS voltage		75, 250, 380 450 v	75, 250, 380, 450 v
5. Max. mean forward current		500 ma	1000 ma
6. Max. allowable one cycle surge current		40 amp	60 amp
7. Max. forward voltage drop at d-c forward current		1.1 v at 1.5 amp	1.1 v at 2 amp
8. Max. peak reverse current at PRV		30 $\mu$ a	30 $\mu$ a
9. Max. operating frequency		1000 c/s	1000 c/s
10. Ambient temperature rating		60°C	60°C
11. Allowable continuous junction temperature		120°C	140°C

## Note : Item

1. Non repetitive, consists of a single phase half wave 60 cycle sinusoidal pulse of these peak values.
2. Repetitive, consists of a single phase half wave 60 cycle sinusoidal pulse of these peak values.
3. To decide max. allowable peak reverse voltage by  $\sqrt{2}$ .
4. If single phase half wave condenser load used, a-c input voltage should be halved.
5. Average value of half sinusoidal wave current.
6. Starts from no load state.
7. By direct current measuring method.
8. Instantaneous reverse current value at repetitive reverse voltage peak point.

(By K. Uekuri, Foregin Trade Dep't.)

# Outline of Our Products

## (I) Power Station

- a) Generators :  
Synchronous generators up to 150,000 kva  
Direct current generators up to 10,000 kw  
Other generators of all kinds
- b) Water Turbines & Pump Turbines :  
Francis type, Pelton type, Kaplan type turbines and pump turbines up to 150,000 kw
- c) Steam Turbines up to 150,000 kw
- d) Gas Turbines :  
Closed-cycle type up to 50,000 kw

## (II) Nuclear Reactor

Power Reactors, Experimental Reactors, Sub-critical Assemblies

## (III) Transmission & Distribution

- a) Transformers :  
Power transformers up to 300 Mva, 480 kv  
Furnace transformers up to 60 Mva, 154 ka  
Measuring transformers up to 287 kv  
Other transformers of all kinds
- b) Standard Transformers (for general use), Single-phase & Three-phase Distribution Transformers from 3 kva to 1000 kva
- c) Rotary Condensers up to 75,000 kva
- d) Static Condensers
- e) Circuit Breakers :  
Expansion circuit breakers up to 287 kv  
Oil circuit breakers up to 154 kv
- f) Switchboards :  
Sheet iron made switchboards for all kinds of service
- g) Switch Equipment :  
Disconnecting switches up to 480 kv
- h) Induction Voltage Regulators up to 1000 kva
- i) Lightning Arresters up to 161 kv

## (IV) Rectifier

- a) Mercury-arc Rectifiers :  
Single-anode or multi-anode type, air-cooled pump-less up to 6000 amp
- b) Selenium Rectifiers
- c) Silicon Rectifiers
- d) Rotary Converters up to 3000 kw, 1500 v

## (V) Motor & Application

- a) Motors :  
Three-phase synchronous motors up to 150,000 kw  
Three-phase induction motors up to 10,000 kw  
Three-phase commutator motors up to 300 kw  
Direct current motors up to 10,000 kw  
Other motors of all kinds
- b) Standard Motors (for general use):  
Three-phase squirrel cage motors from 0.4 kw to 75 kw  
Three-phase wound motors from 20 kw to 75 kw  
Single-phase split-phase start induction motors, 100 & 200 w  
Single-phase repulsion start induction motors from 200 to 750 w  
Single-phase condenser start induction motors from 200 to 750 w
- c) Ventilating Fans for radial & axial types

- d) Mine Winder Set for vertical shaft & inclined shaft
- e) All kinds of Winches for cargo boat use
- f) Steering Engines for boat use
- g) Fuji-Voith Schneider Propellers
- h) Torque Converters
- i) Steam Converting Valves

## (VI) Control

- a) Regulating Apparatus :  
Motor starters, controllers, speed regulators, voltage regulators & other regulating apparatus for all kinds of service
- b) Circuit Breakers :  
Air circuit breakers up to 500 v, 3000 amp  
High speed air circuit breakers up to 1500 v 6000amp
- c) Switch Equipment :  
Knife switches, magnetic switches & other kinds of switch equipment

## (VII) Instrument

- a) Watt-hour Meters :  
Single-phase WhM for low tension circuit use  
Three-phase WhM for low & high tension circuit use
- b) Relays :  
All kinds of relays for power & industry use
- c) Electric Measuring Instruments :  
Switchboard meters, portable type meters, precision meters, recording meters, telemetering & telecontrolling equipment
- d) Industrial Measuring Instruments :  
Thermometers, pyrometers, gas analysers, hydrometers, salinometers, pH meters, pressure gauges, flow meters (for water, steam, gas & air), level meters, indicators and recorders
- e) Automatic Controlling Equipment :  
Electro-pneumatic controllers for temperature, pressure, flow, liquid level etc.; ratio controllers for gas & liquid mixing  
Magnetic controllers, electrical indicating controllers with on-off contacts

## (VIII) Radiation Equipment

Linear accelerators, synchrotron, Cockcroft-Walton type d-c high voltage generators

## (IX) Household Appliances

- a) Electric Washing Machines & Spin Dryers
- b) Vacuum Cleaners
- c) Electric Refrigerators
- d) Electric Fans
- e) Air Conditioners
- f) Transistor Radios
- g) Tape Recorders
- h) Television Sets
- i) Stereo Players
- j) Electric Juicers
- k) Toasters, Hot Plates & Irons
- l) Heating Apparatus :  
Electric foot warmers, bed warmers, body warmers, electric stoves, etc.
- m) Electric Home Pumps for deep or shallow well
- n) Dry Batteries
- o) Flashlights & Gas Lighters
- p) Electric Illuminating Apparatus