FUJITSU Component Relay
FTR-E3 series
Automotive relays

Fujitsu high voltage switching relay

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**Features**

- 150A, 450VDC, Higher voltage switching
- Plastic sealed relay
- No hydrogen gas
- Non-polarization in the main contact circuit

**Applications**

- Battery junction box in HEV, PHEV and EV
- Quick battery charger in PHEV and EV
- Quick stationary charger station
- Inverter (solar and industrial)
- Energy storage system DC line

**Part numbers**

<table>
<thead>
<tr>
<th>Example</th>
<th>FTR-E3</th>
<th>V</th>
<th>A</th>
<th>012</th>
<th>Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b)</td>
<td></td>
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<tr>
<td>(c)</td>
<td></td>
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<tr>
<td>(d)</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>(e)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Series name FTR-E3 series
- Terminal form V Screw terminal type
- Typical applications A Standard type
- Nominal voltage 012 12 VDC 024 24VDC
- Contact material Y Silver alloy
## Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact</td>
<td>1a (1 form X)</td>
</tr>
<tr>
<td>Material</td>
<td>Under development</td>
</tr>
<tr>
<td>Rating</td>
<td>150A, 450VDC, resistive load</td>
</tr>
<tr>
<td>Max. carrying current</td>
<td>150A Continuity, 250A 4min., 370A 1min. (at AWG 00 (67.4mm²) wire, 85°C)</td>
</tr>
<tr>
<td>Contact voltage drop</td>
<td>Max. 0.078V (at 150 A, initial)</td>
</tr>
<tr>
<td>Contact voltage drop</td>
<td></td>
</tr>
<tr>
<td>Coil</td>
<td></td>
</tr>
<tr>
<td>Nominal voltage</td>
<td>12VDC</td>
</tr>
<tr>
<td>Operate voltage</td>
<td>7.2VDC</td>
</tr>
<tr>
<td>+20°C</td>
<td>7.2VDC</td>
</tr>
<tr>
<td>+85°C</td>
<td>9.0VDC</td>
</tr>
<tr>
<td>Release voltage</td>
<td>0.2VDC</td>
</tr>
<tr>
<td>+20°C</td>
<td>0.2VDC</td>
</tr>
<tr>
<td>Holding voltage*1</td>
<td>3.6VDC</td>
</tr>
<tr>
<td>Nominal power (at 20°C)</td>
<td>48W (at nominal voltage, approx. 100ms)</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-40 to +85°C (no frost)</td>
</tr>
<tr>
<td>Time value</td>
<td></td>
</tr>
<tr>
<td>Operate</td>
<td>Max. 50ms (at nominal voltage, without bounce)</td>
</tr>
<tr>
<td>Release</td>
<td>Max. 30ms (at nominal voltage, without diode)</td>
</tr>
<tr>
<td>Insulation</td>
<td></td>
</tr>
<tr>
<td>Resistance (at 1000 VDC)</td>
<td>Min. 1,000 MΩ</td>
</tr>
<tr>
<td>Dielectric Strength</td>
<td></td>
</tr>
<tr>
<td>Between contacts</td>
<td>2,500VAC, 1 minute</td>
</tr>
<tr>
<td>Between coil and contacts</td>
<td>2,500VAC, 1 minute</td>
</tr>
<tr>
<td>Life</td>
<td></td>
</tr>
<tr>
<td>Mechanical</td>
<td>Min. 300 × 10³ operations</td>
</tr>
<tr>
<td>Electrical</td>
<td>150A, 450VDC</td>
</tr>
<tr>
<td></td>
<td>100 operations*2</td>
</tr>
<tr>
<td>Break 200A, 450VDC</td>
<td>100 operations*2</td>
</tr>
<tr>
<td>Make 150A, 450VDC / Break 5A, 450VDC</td>
<td>30 × 10³ operations*2</td>
</tr>
<tr>
<td>Vibration resistance</td>
<td></td>
</tr>
<tr>
<td>Functional</td>
<td>5 to 200 Hz, acceleration 30 m/s², constant acceleration</td>
</tr>
<tr>
<td>Destructive</td>
<td>Destructive 5 to 200 Hz, acceleration 45 m/s², constant acceleration</td>
</tr>
<tr>
<td>Shock resistance</td>
<td></td>
</tr>
<tr>
<td>Functional</td>
<td>Min. 294 m/s (11±1 ms)(De-energized, direction X1: Min. 98 m/s)*3</td>
</tr>
<tr>
<td>Destructive</td>
<td>Min. 490 m/s (6±1 ms)</td>
</tr>
</tbody>
</table>

*1: FTR-E3 relay needs to be used at holding voltage drive as shown in the figure below. (FTR-E3 relay does not have holding voltage control circuit.) Please apply nominal voltage for 100ms or more so that relay operates properly.

*2: Please use a varistor as a protective circuit against reverse surge in the relay coil. The varistor is connected in parallel to the coil. The reverse blocking voltage should be about 3 times the value of the power source voltage. The life will be down when a diode is used in relay drive circuit.

*3: Shock direction of shock resistance.

Please always use a varistor. Use of other protection element may shorten relay life excessively.

Varistor shall be connected in parallel to the relay coil. Varistor voltage shall have 3 times as high as applied coil voltage.
### Dimensions

Unit: mm
Dimensions do not include tolerance.
Please ask for specifications in case you need the tolerance values.

### Schematics
Data Sheet  FUJITSU Component Relays  FTR-E3

- **Characteristic data**
  Characteristic data is not guaranteed value but measured values of samples from production line.

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