Thermal Overcurrent Circuit Breaker 1658-...

Description

Very cost effective design to meet international requirements. No exposed metal parts which are, or could become, current-carrying except for terminals. R-type TO CBE to EN 60934.
- Manual reset, cycling trip free mechanism
- Extremely small and lightweight
- UL, CSA, VDE and EN 60934 (IEC 60934) approved

Typical applications

Battery chargers, consumer products, power supplies, motors.

Ordering information

Table: Standard current ratings and typical voltage drop values

<table>
<thead>
<tr>
<th>Current rating (A)</th>
<th>Voltage drop values (mV)</th>
<th>Current rating (A)</th>
<th>Voltage drop values (mV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>≤ 250</td>
<td>5</td>
<td>≤ 250</td>
</tr>
<tr>
<td>6</td>
<td>≤ 250</td>
<td>6</td>
<td>≤ 250</td>
</tr>
<tr>
<td>7</td>
<td>≤ 250</td>
<td>7</td>
<td>≤ 250</td>
</tr>
<tr>
<td>8</td>
<td>≤ 250</td>
<td>8</td>
<td>≤ 250</td>
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<tr>
<td>9</td>
<td>≤ 250</td>
<td>9</td>
<td>≤ 250</td>
</tr>
<tr>
<td>10</td>
<td>≤ 250</td>
<td>10</td>
<td>≤ 250</td>
</tr>
</tbody>
</table>

Technical data

For further details please see: http://www.e-t-a.de/ti_e

Voltage rating
AC 240 V; DC 28 V

Current ratings
5...30 A

Typical life
AC + DC
5...16 A 1,000 operations at 2 x I_N, inductive
17...25 A 1,000 operations at 2 x I_N, resistive

Behaviour at rated switching capacity (EN 60934; test sequence D)

<table>
<thead>
<tr>
<th>Operat.</th>
<th>I_N</th>
<th>U_N</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>5...16 A</td>
<td>AC 240 V, 6 x I_N ind</td>
</tr>
<tr>
<td>40</td>
<td>5...16 A</td>
<td>DC 28 V, 4 x I_N ind</td>
</tr>
<tr>
<td>40</td>
<td>17...25 A</td>
<td>AC 240 V, 120 A resistive</td>
</tr>
<tr>
<td>40</td>
<td>17...25 A</td>
<td>DC 28 V, 120 A resistive</td>
</tr>
</tbody>
</table>

Ambient temperature
-20...+60 °C (-4...+140 °F), ≤ 7 A max. +40 °C (+104 °F)

Insulation co-ordination (IEC 60664 and 60664 A)
Rated impulse withstand voltage reinforced insulation in operating area
2.5 kV

Dielectric strength (IEC 6664 and 6664A)
Test voltage operating area AC 3,000 V

Insulation resistance
> 100 MΩ (DC 500 V)

Interrupting capacity I_{on}
5...7 A 180 A
8...30 A 200 A

Interrupting capacity (UL 1077/EN 60934 PC1)
I_N 5...16 A 1000 A, C, 1
5...30 A 2000 A, C, 1
5...30 A DC 32 V 2000 A, C, 1
5...30 A AC 125 V 2 DC 28 V

Degree of protection (IEC 60529/DIN 40050)
Operating area IP40 Terminal area IP00

Vibration
8 g (57-500 Hz) ± 0.61 mm (10-57 Hz), to IEC 6068-2-6, test Fc, 10 frequency cycles/axis

Shock
30 g (11 ms) to IEC 6068-2-27, test Ea

Corrosion
96 hours at 5 % salt mist, to IEC 6068-2-11, test Ka

Humidity
240 hours at 95 % RH to IEC 6068-2-78, test Cab

Mass
Approx. 16 g
The time/current characteristic curve depends on the ambient temperature prevailing. In order to eliminate nuisance tripping, please multiply the circuit breaker current ratings by the derating factor shown below. See also section Technical information.

<table>
<thead>
<tr>
<th>Ambient temp. °F</th>
<th>Ambient temp. °C</th>
<th>Derating factor IN &gt; 7A</th>
<th>Derating factor IN &lt; 7A</th>
</tr>
</thead>
<tbody>
<tr>
<td>-4</td>
<td>-20</td>
<td>0.83</td>
<td>0.74</td>
</tr>
<tr>
<td>+14</td>
<td>+32</td>
<td>0.86</td>
<td>0.76</td>
</tr>
<tr>
<td>+32</td>
<td>+73.4</td>
<td>0.9</td>
<td>0.82</td>
</tr>
<tr>
<td>+104</td>
<td>+140</td>
<td>1.1</td>
<td>1.23</td>
</tr>
<tr>
<td>+122</td>
<td>+140</td>
<td>1.18</td>
<td>-</td>
</tr>
<tr>
<td>+140</td>
<td>+140</td>
<td>1.25</td>
<td>-</td>
</tr>
</tbody>
</table>

This is a metric design and millimeter dimensions take precedence (mm) over inch.
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Accessories

PAL nut 3/8", 27-thread
Y 306 671 01

Knurled nut 3/8", 27-thread
plastic (standard)
Y 307 117 02

Knurled nut 3/8", 27-thread
nickel-plated brass
Y 300 190 03

Hex nut 3/8", 27-thread
nickel-plated brass
Y 300 192 01

Press to Reset Plate for 3/8"
thread, aluminium
Y 301 059 02

Reset button seal for 3/8", 27-thread,
short X 201 285 01 (IP64)
X 200 799 01 (IP64)

Panel cut out

1658-3/8-27 UNS-2A

Approvals

<table>
<thead>
<tr>
<th>Authority</th>
<th>Standard</th>
<th>Rated voltage</th>
<th>Current ratings</th>
<th>Approval mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1658-G</td>
<td>VDE IEC/EN 60934</td>
<td>AC 240 V DC 28 V</td>
<td>5 A…25 A 5 A…25 A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>UL 1077 CSA C22.2</td>
<td>AC 240 V DC 32 V</td>
<td>5 A…30 A 5 A…30 A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No 235 UL 1500 Ignition Protected</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CSA CSA C22.2 No 235</td>
<td>AC 240 V DC 32 V</td>
<td>5 A…30 A 5 A…30 A</td>
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<tr>
<td>1658-A</td>
<td>VDE IEC/EN 60934</td>
<td>AC 240 V DC 28 V</td>
<td>5 A…25 A 5 A…25 A</td>
<td></td>
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<tr>
<td></td>
<td>UL 244A</td>
<td>AC 125 V DC 28 V</td>
<td>5 A…30 A 5 A…30 A</td>
<td></td>
</tr>
</tbody>
</table>

This is a metric design and millimeter dimensions take precedence.

All dimensions without tolerances are for reference only. In the interest of improved design, performance and cost effectiveness the right to make changes in these specifications without notice is reserved. Product markings may not be exactly as the ordering codes. Errors and omissions excepted.