To our customers,

Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: http://www.renesas.com

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (http://www.renesas.com)
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BCR8KM-12LA

Triac
Medium Power Use

Features

- $I_{TRMS}$ : 8 A
- $V_{DRM}$ : 600 V
- $I_{FT1}, I_{FT2}, I_{FT3}$ : 30 mA (20 mA)\(^{\text{Note5}}\)
- $V_{ISO}$ : 2000 V

- Insulated Type
- Planar Passivation Type
- UL Recognized : Yellow Card No. E223904
  File No. E80271

Outline

TO-220FN

1. $T_1$ Terminal
2. $T_2$ Terminal
3. Gate Terminal

Applications

Switching mode power supply, washing machine, motor control, heater control, and other general purpose control applications

Maximum Ratings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Voltage class</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repetitive peak off-state voltage(^{\text{Note1}})</td>
<td>$V_{DRM}$</td>
<td>12</td>
<td>V</td>
</tr>
<tr>
<td>Non-repetitive peak off-state voltage(^{\text{Note1}})</td>
<td>$V_{DSM}$</td>
<td>600</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>720</td>
<td>V</td>
</tr>
</tbody>
</table>
### Electrical Characteristics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Unit</th>
<th>Test conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repetitive peak off-state current</td>
<td>$I_{DRM}$</td>
<td>—</td>
<td>—</td>
<td>2.0</td>
<td>mA</td>
<td>$T_j = 125°C$, $V_{DRM}$ applied</td>
</tr>
<tr>
<td>On-state voltage</td>
<td>$V_{TM}$</td>
<td>—</td>
<td>—</td>
<td>1.6</td>
<td>V</td>
<td>$T_c = 25°C$, $I_{TM} = 12$ A, instantaneous measurement</td>
</tr>
<tr>
<td>Gate trigger voltage</td>
<td>$V_{FGT_1}$</td>
<td>—</td>
<td>—</td>
<td>1.5</td>
<td>V</td>
<td>$T_j = 25°C$, $V_D = 6$ V, $R_L = 6$ Ω, $R_G = 330$ Ω</td>
</tr>
<tr>
<td>Gate trigger current</td>
<td>$I_{RG1}$</td>
<td>—</td>
<td>—</td>
<td>1.0</td>
<td>mA</td>
<td>$T_j = 25°C$, $V_D = 6$ V, $R_L = 6$ Ω, $R_G = 330$ Ω</td>
</tr>
<tr>
<td>Gate non-trigger voltage</td>
<td>$V_{GD}$</td>
<td>0.2</td>
<td>—</td>
<td>—</td>
<td>V</td>
<td>$T_j = 125°C$, $V_D = 1/2 V_{DRM}$</td>
</tr>
<tr>
<td>Thermal resistance</td>
<td>$R_{th(j-c)}$</td>
<td>—</td>
<td>—</td>
<td>3.6</td>
<td>°C/W</td>
<td>Junction to case $R_{th(c-f)}$ in case of greasing is 0.5°C/W.</td>
</tr>
<tr>
<td>Critical-rate of rise of off-state commutating voltage</td>
<td>$I_{RG1}$</td>
<td>—</td>
<td>—</td>
<td>1.0</td>
<td>mA</td>
<td>$T_j = 125°C$, $V_D = 1/2 V_{DRM}$</td>
</tr>
</tbody>
</table>

Notes:
2. Measurement using the gate trigger characteristics measurement circuit.
3. The contact thermal resistance $R_{th(c-f)}$ in case of greasing is 0.5°C/W.
4. Test conditions of the critical-rate of rise of off-state commutating voltage is shown in the table below.
5. High sensitivity ($I_{GT} \leq 20$ mA) is also available. ($I_{GT}$ item: 1)
Performance Curves

Maximum On-State Characteristics

On-State Voltage (V)

On-State Current (A)

Rated Surge On-State Current

Conduction Time (Cycles at 60Hz)

Gate Characteristics (I, II and III)

Gate Voltage (V)

Gate Current (mA)

Gate Trigger Voltage vs. Junction Temperature

Gate Trigger Current vs. Junction Temperature

Maximum Transient Thermal Impedance Characteristics (Junction to case)

Conduction Time (Cycles at 60Hz)
Maximum Transient Thermal Impedance Characteristics (Junction to ambient)

Transient Thermal Impedance (°C/W)

Conduction Time (Cycles at 60Hz)

Allowable Case Temperature vs. RMS On-State Current

Curves apply regardless of conduction angle

Allowable Ambient Temperature vs. RMS On-State Current

All fins are black painted aluminum and greased

Repetitive Peak Off-State Current vs. Junction Temperature

Typical Example
Gate Trigger Characteristics Test Circuits

Test Procedure I

6Ω

6V

Test Procedure II

6Ω

6V

330Ω

Test Procedure III

6Ω

6V

330Ω

Not recommend for new design
Package Dimensions

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Dimension in Millimeters</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>+3.2 ± 0.2</td>
</tr>
<tr>
<td>A₁</td>
<td>1.1 ± 0.2</td>
</tr>
<tr>
<td>a</td>
<td>2.54 ± 0.25</td>
</tr>
<tr>
<td>A₂</td>
<td>3.4 ± 0.2</td>
</tr>
<tr>
<td>b</td>
<td>0.75 ± 0.15</td>
</tr>
<tr>
<td>D</td>
<td>2.8 ± 0.2</td>
</tr>
<tr>
<td>e</td>
<td>0.75 ± 0.15</td>
</tr>
<tr>
<td>x</td>
<td>10 ± 0.3</td>
</tr>
<tr>
<td>y₁</td>
<td>2.6 ± 0.2</td>
</tr>
<tr>
<td>ZD</td>
<td>4.5 ± 0.2</td>
</tr>
<tr>
<td>y</td>
<td>3.6 ± 0.2</td>
</tr>
<tr>
<td>z</td>
<td>3.2 ± 0.2</td>
</tr>
<tr>
<td>AE</td>
<td>6.5 ± 0.3</td>
</tr>
</tbody>
</table>

Note 1) The dimensional figures indicate representative values unless otherwise the tolerance is specified.

Order Code

<table>
<thead>
<tr>
<th>Lead form</th>
<th>Standard packing</th>
<th>Quantity</th>
<th>Standard order code</th>
<th>Standard order code example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Straight type</td>
<td>Plastic Magazine (Tube)</td>
<td>50</td>
<td>Type name</td>
<td>BCR8KM-12LA</td>
</tr>
<tr>
<td>Lead form</td>
<td>Plastic Magazine (Tube)</td>
<td>50</td>
<td>Type name – Lead forming code</td>
<td>BCR8KM-12LA-A8</td>
</tr>
</tbody>
</table>

Note: Please confirm the specification about the shipping in detail.
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