DC to DC Converters  
Non-insulation Type, Wide Input, SMD
CE-1050 Series

FEATURES
• Wide input voltage range (DC.12 to 24V).
• A thickness dimension is a low height of 54.5mm.
• It is available in the wide temperature range from –20 to +85°C.
• Equipped with ON/OFF control feature
• Available with a wide-range +3.3 to +12.6V output voltage variation feature
• Equipped with overcurrent protection feature
• Due to the shielding structure of five-side in metal, this series feature low EMI.
• SMD type is available for feeding with both tray and taping.
• It is a product conforming to RoHS directive.

SPECIFICATIONS AND STANDARDS

<table>
<thead>
<tr>
<th>Part No.</th>
<th>CE-1050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input voltage range Vin V</td>
<td>+9 to +26.4</td>
</tr>
<tr>
<td>Output current range A</td>
<td>2.5max.</td>
</tr>
<tr>
<td>Output voltage setting range Vout V</td>
<td>+3.3 to +12.6</td>
</tr>
<tr>
<td>Output voltage total variation %</td>
<td>±3.5max.</td>
</tr>
<tr>
<td>Oscillating frequency kHz</td>
<td>380typ.</td>
</tr>
<tr>
<td>Output ripple noise voltage mVp-p</td>
<td>50max.</td>
</tr>
<tr>
<td>Efficiency %</td>
<td>90typ.</td>
</tr>
<tr>
<td>ON/OFF control voltage</td>
<td>ON V 6max./3min.</td>
</tr>
<tr>
<td></td>
<td>OFF V 0.6max/0min.</td>
</tr>
<tr>
<td>Overcurrent protection A</td>
<td>3.5yp.</td>
</tr>
</tbody>
</table>

- Input/output potential difference must be at least 4V.
- When output voltage is set at 12V, it is ±5% max.
- When output voltage is set at 12V, it is 100mV max.
- With 18V input voltage, 5V output voltage, 2.5A output current.
- Derating may occur depending upon the output voltage.

COMMON SPECIFICATIONS

Operating temperature range –20 to +85°C
Storage temperature range –20 to +85°C
Humidity range 10 to 90(%)RH

PRECAUTIONS
• Since this product uses a multilayered board, it has moisture-proof packaging. After opening, if the injector value is 30% or more, defects such as pattern breaking may occur during reflow, so be sure to perform baking procedures (JEDEC MSL level 3).
• Recommended baking conditions: once at 120°C, 120minutes
• This product cannot be cleaned. Use low-residue or non-cleaning type flux and refrain from cleaning.
• The packaging type of this product is solely taping packaging.
• Packaging amount is 400 items/reel.

OUTPUT VOLTAGE SETTING METHOD

By connecting a Rex external resistor, output voltage can be altered.
It is not necessary to attach a Rex when using at a 5V output voltage.

- To raise the output voltage: insert the Rex between pin 7 and 8
- To lower the output voltage: insert the Rex between pin 8 and 9

Output can be started and stopped by controlling terminal 5.
Since this terminal is pulled up via a 2µA internal current source, by connecting a condenser, the start up time can be delayed.
The delay time is approximately 0.3ms per 1000pF.

• Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.
All specifications are subject to change without notice.

SHAPES AND DIMENSIONS

CIRCUIT DIAGRAM

TERMINAL CONNECTIONS

<table>
<thead>
<tr>
<th>No.</th>
<th>Symbol</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Vin</td>
<td>Input voltage</td>
</tr>
<tr>
<td>2</td>
<td>Vin</td>
<td>Input voltage</td>
</tr>
<tr>
<td>3</td>
<td>GND</td>
<td>Input GND</td>
</tr>
<tr>
<td>4</td>
<td>GND</td>
<td>Input GND</td>
</tr>
<tr>
<td>5</td>
<td>ON/OFF</td>
<td>Output ON/OFF terminal</td>
</tr>
<tr>
<td>6</td>
<td>GND</td>
<td>Output GND</td>
</tr>
<tr>
<td>7</td>
<td>GND</td>
<td>Output GND</td>
</tr>
<tr>
<td>8</td>
<td>Vset</td>
<td>Output voltage variable terminal</td>
</tr>
<tr>
<td>9</td>
<td>Vout</td>
<td>Output voltage</td>
</tr>
<tr>
<td>10</td>
<td>Vout</td>
<td>Output voltage</td>
</tr>
</tbody>
</table>

* When does not use ON/OFF control, please make it opening.

Input start-up time: less than 5ms
(When it cannot satisfy this condition, please use ON/OFF terminal. And start with the conditions that input voltage was applied.)

Added input inductor: less than 2.2µH if added
Added input condenser: added capacity 10 times or more of input inductor
Added output capacity: Less than 100µF If capacity is large, it may not start up.

OUTPUT POWER - AMBIENT TEMPERATURE (DERATING)

Vout=3.3V

Vout=5.0V

Vout=9.0V

Vout=12V

Dimensions in mm

P=2x0.2
Connect the case and GND using solder
Tolerance: ±0.2