

DC to DC Converters

Non-insulation Type, Wide Input, SMD

Conformity to RoHS Directive

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 $+85^{\circ}\text{C}$.
- Equipped with ON/OFF control feature
- Available with a wide-range $+3.3$ to $+12.6\text{V}$ 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

| Part No. | CE-1050 | | |
|----------------------------------|---------|-------|----------------|
| Input voltage range | Vin | V | +9 to +26.4 |
| Output current range*1 | Iout | A | 2.5max. |
| Output voltage setting range*2 | Vout | V | +3.3 to +12.6 |
| Output voltage total variation*3 | | % | ± 3.5 max. |
| Oscillating frequency | | kHz | 380typ. |
| Output ripple noise voltage*4 | | mVp-p | 50max. |
| Efficiency*5 | | % | 90typ. |
| ON/OFF control voltage | ON | V | 6max./3min. |
| | OFF | V | 0.6max./0min. |
| Overcurrent protection | | A | 3.5typ. |

*1 Input/output potential difference must be at least 4V.

*2 When output voltage is set at 12V, it is $\pm 5\%$ max.

*3 When output voltage is set at 12V, it is 100mV max.

*4 With 18V input voltage, 5V output voltage, 2.5A output current.

*5 Derating may occur depending upon the output voltage.

COMMON SPECIFICATIONS

| | |
|-----------------------------|--------------------------------|
| Operating temperature range | -20 to $+85^{\circ}\text{C}$ |
| Storage temperature range | -20 to $+85^{\circ}\text{C}$ |
| 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.

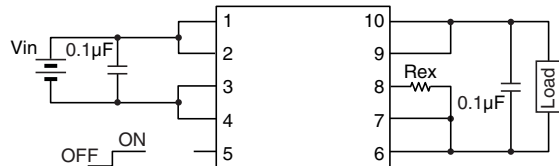
OUTPUT VOLTAGE SETTING METHOD

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.

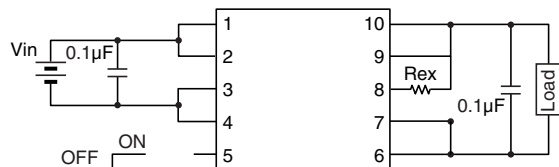
- To raise the output voltage: insert the Rex between pin 7 and 8

$$\text{Rex} = \frac{13.31 - \text{Vout}}{\text{Vout} - 5} \quad \text{Unit: V, k}\Omega$$



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

$$\text{Rex} = \frac{7.8 \times \text{Vout} - 13.31}{5 - \text{Vout}} \quad \text{Unit: V, k}\Omega$$

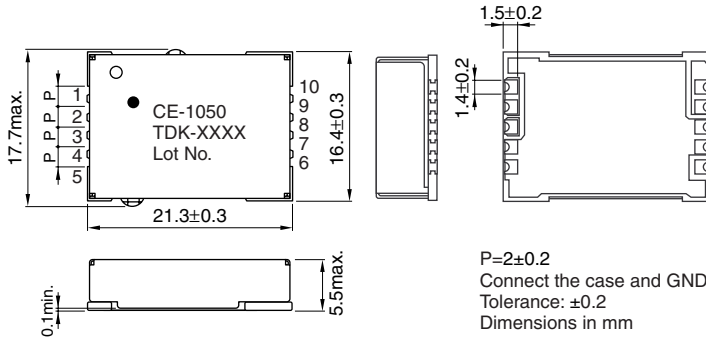


Output can be started and stopped by controlling terminal 5. Since this terminal is pulled up via a $2\mu\text{A}$ internal current source, by connecting a condenser, the start up time can be delayed. The delay time is approximately 0.3ms per 1000pF.

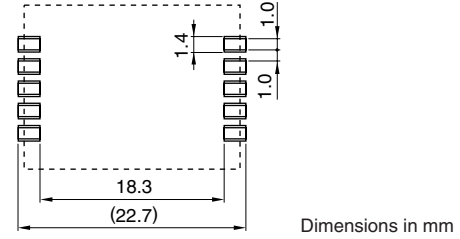
- Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.

- All specifications are subject to change without notice.

SHAPES AND DIMENSIONS



RECOMMENDED PC BOARD PATTERN [TOP VIEW]



CIRCUIT DIAGRAM



* 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 $2.2 \mu H$ if added

Added input condenser: added capacity 10 times or more of input inductor

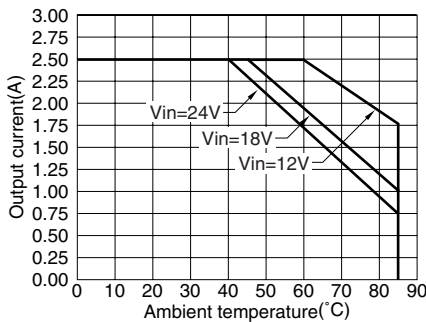
Added output capacity: Less than $100 \mu F$ If capacity is large, it may not start up.

TERMINAL CONNECTIONS

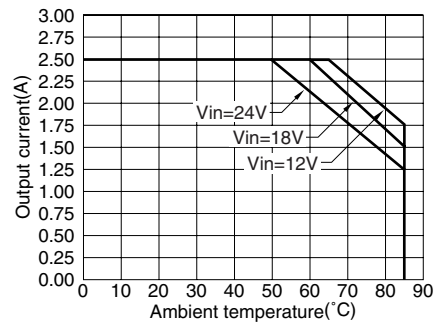
| No. | Symbol | Function |
|-----|----------|----------------------------------|
| 1 | V_{in} | Input voltage |
| 2 | V_{in} | Input voltage |
| 3 | GND | Input GND |
| 4 | GND | Input GND |
| 5 | ON/OFF | Output ON/OFF terminal |
| 6 | GND | Output GND |
| 7 | GND | Output GND |
| 8 | Vset | Output voltage variable terminal |
| 9 | Vout | Output voltage |
| 10 | Vout | Output voltage |

OUTPUT POWER - AMBIENT TEMPERATURE (DERATING)

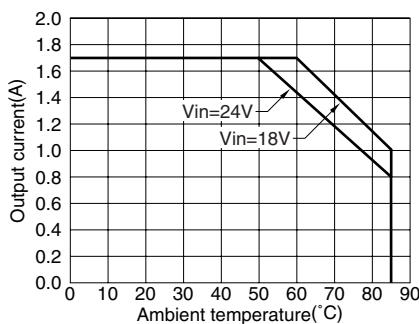
Vout=3.3V



Vout=5.0V



Vout=9.0V



Vout=12V

