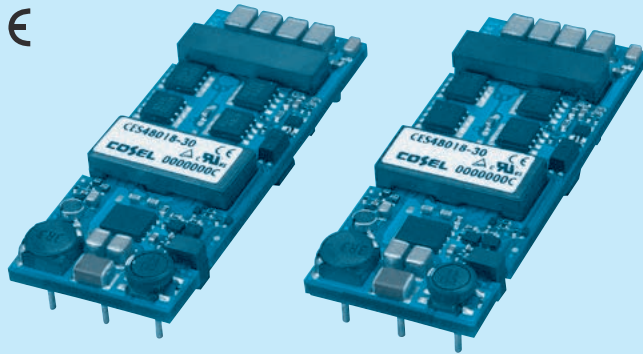
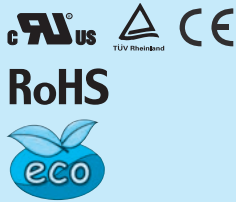


# CES

**CE S 48 018 -30 -**

① ② ③ ④ ⑤ ⑥



- ① Series name  
② Single output  
③ Input voltage  
24:DC18 - 36V  
48:DC36 - 76V  
④ Output voltage  
015:1.5V  
018:1.8V  
025:2.5V  
033:3.3V  
050:5V  
060:6V  
120:12V  
150:15V  
⑤ Output current  
⑥ Optional  
S : SMD  
R : with Remote ON/OFF  
Positive logic control  
V : Output voltage setting  $\pm 1\%$   
N : Auto restart from thermal protection

| MODEL                 | CES24033-25 | CES24050-16 | CES24120-6 | CES24150-4 |
|-----------------------|-------------|-------------|------------|------------|
| MAX OUTPUT WATTAGE[W] | 82.5        | 80.0        | 72.0       | 60.0       |
| DC OUTPUT             | 3.3V 25A    | 5V 16A      | 12V 6A     | 15V 4A     |

## SPECIFICATIONS

|                               | MODEL                           | CES24033-25                                                                         | CES24050-16 | CES24120-6  | CES24150-4 |
|-------------------------------|---------------------------------|-------------------------------------------------------------------------------------|-------------|-------------|------------|
| INPUT                         | VOLTAGE[V]                      | DC18 - 36                                                                           |             |             | DC20 - 33  |
|                               | CURRENT[A]                      | 3.78typ                                                                             | 3.67typ     | 3.30typ     | 2.75typ    |
|                               | EFFICIENCY[%]                   | 91typ                                                                               | 91typ       | 91typ       | 91typ      |
|                               | START-UP VOLTAGE[V]             | DC16 - 18                                                                           |             |             | DC18 - 20  |
|                               | HYSTERESIS VOLTAGE[V]           | DC1 min                                                                             |             |             |            |
| OUTPUT                        | VOLTAGE[V]                      | 3.3                                                                                 | 5           | 12          | 15         |
|                               | CURRENT[A]                      | 25                                                                                  | 16          | 6           | 4          |
|                               | LINE REGULATION[mV]             | 10max                                                                               | 10max       | 24max       | 30max      |
|                               | LOAD REGULATION[mV]             | 10max                                                                               | 10max       | 24max       | 30max      |
|                               | RIPPLE                          | 20max                                                                               | 20max       | 40max       | 40max      |
|                               |                                 |                                                                                     |             |             |            |
|                               |                                 | [mVrms]                                                                             |             |             |            |
|                               |                                 | [mVp-p]                                                                             |             |             |            |
|                               | RIPPLE NOISE[mVp-p]             | 100max                                                                              | 120max      | 150max      | 150max     |
|                               | TEMPERATURE REGULATION[mV]      | 66max                                                                               | 100max      | 240max      | 300max     |
| PROTECTION CIRCUIT AND OTHERS | DRIFT[mV]                       | 16max                                                                               | 20max       | 40max       | 50max      |
|                               | START-UP TIME[ms]               | 200max (DCIN 24V, Io=100%)                                                          |             |             |            |
|                               | OUTPUT VOLTAGE ADJUSTMENT RANGE | Fixed (TRM pin open), adjustable by external resistor                               |             |             |            |
|                               |                                 | -15% / +15%                                                                         | -20% / +20% | -20% / +10% | -20% / +5% |
|                               | OUTPUT VOLTAGE SETTING          | $\pm 1.6\%$                                                                         |             |             |            |
|                               | OVERCURRENT PROTECTION          | Works over 105% of rating, low voltage protection (shut down) function is built-in. |             |             |            |
|                               | OVERVOLTAGE PROTECTION          | 125% - 135%                                                                         | 125% - 135% | 117% - 127% |            |
| PROTECTION CIRCUIT AND OTHERS | REMOTE SENSING                  | Provided                                                                            |             |             |            |
|                               | REMOTE ON/OFF                   | Provided (Negative logic L : ON, H : OFF)                                           |             |             |            |

|                       | Standard type |             |             |             |             |            |            | High wattage type |             |             |
|-----------------------|---------------|-------------|-------------|-------------|-------------|------------|------------|-------------------|-------------|-------------|
| MODEL                 | CES48015-30   | CES48018-30 | CES48025-25 | CES48033-25 | CES48050-16 | CES48120-6 | CES48150-4 | CES48033-30       | CES48050-20 | CES48060-17 |
| MAX OUTPUT WATTAGE[W] | 45.0          | 54.0        | 62.5        | 82.5        | 80.0        | 72.0       | 60.0       | 99.0              | 100.0       | 102.0       |
| DC OUTPUT             | 1.5V 30A      | 1.8V 30A    | 2.5V 25A    | 3.3V 25A    | 5V 16A      | 12V 6A     | 15V 4A     | 3.3V 30A          | 5V 20A      | 6V 17A      |

## SPECIFICATIONS

|                               | MODEL                           | CES48015-30                                                                         | CES48018-30 | CES48025-25 | CES48033-25 | CES48050-16 | CES48120-6 | CES48150-4  | CES48033-30 | CES48050-20 | CES48060-17 |
|-------------------------------|---------------------------------|-------------------------------------------------------------------------------------|-------------|-------------|-------------|-------------|------------|-------------|-------------|-------------|-------------|
| INPUT                         | VOLTAGE[V]                      | DC36 - 76                                                                           |             |             |             |             |            | DC40 - 60   | DC36 - 76   |             |             |
|                               | CURRENT[A]                      | 1.1typ                                                                              | 1.3typ      | 1.45typ     | 1.89typ     | 1.84typ     | 1.65typ    | 1.37typ     | 2.29typ     | 2.32typ     | 2.36typ     |
|                               | EFFICIENCY[%]                   | 86typ                                                                               | 87typ       | 90typ       | 91typ       | 91typ       | 91typ      | 91typ       | 90typ       | 90typ       | 92typ       |
|                               | START-UP VOLTAGE[V]             | DC32 - 36                                                                           |             |             |             |             |            | DC36 - 40   | DC32 - 36   |             |             |
|                               | HYSTERESIS VOLTAGE[V]           | DC2 min                                                                             |             |             |             |             |            |             |             |             |             |
| OUTPUT                        | VOLTAGE[V]                      | 1.5                                                                                 | 1.8         | 2.5         | 3.3         | 5           | 12         | 15          | 3.3         | 5           | 6           |
|                               | CURRENT[A]                      | 30                                                                                  | 30          | 25          | 25          | 16          | 6          | 4           | 30          | 20          | 17          |
|                               | LINE REGULATION[mV]             | 10max                                                                               | 10max       | 10max       | 10max       | 10max       | 24max      | 30max       | 10max       | 10max       | 10max       |
|                               | LOAD REGULATION[mV]             | 10max                                                                               | 10max       | 10max       | 10max       | 10max       | 24max      | 30max       | 10max       | 10max       | 10max       |
|                               | RIPPLE                          | 20max                                                                               | 20max       | 20max       | 20max       | 25max       | 40max      | 40max       | 20max       | 25max       | 25max       |
|                               |                                 |                                                                                     |             |             |             |             |            |             |             |             |             |
|                               |                                 | [mVrms]                                                                             |             |             |             |             |            |             |             |             |             |
|                               |                                 | [mVp-p]                                                                             |             |             |             |             |            |             |             |             |             |
|                               | RIPPLE NOISE[mVp-p]             | 100max                                                                              | 100max      | 100max      | 100max      | 120max      | 150max     | 150max      | 100max      | 150max      | 150max      |
|                               | TEMPERATURE REGULATION[mV]      | 66max                                                                               | 66max       | 66max       | 66max       | 100max      | 240max     | 300max      | 66max       | 100max      | 100max      |
| PROTECTION CIRCUIT AND OTHERS | DRIFT[mV]                       | 16max                                                                               | 16max       | 16max       | 16max       | 20max       | 40max      | 50max       | 16max       | 20max       | 20max       |
|                               | START-UP TIME[ms]               | 200max (DCIN 48V, Io=100%)                                                          |             |             |             |             |            |             |             |             |             |
|                               | OUTPUT VOLTAGE ADJUSTMENT RANGE | Fixed (TRM pin open), adjustable by external resistor                               |             |             |             |             |            |             |             |             |             |
|                               |                                 | -20% / +10%                                                                         |             | -15% / +15% | -20% / +10% |             | -20% / +5% | -15% / +15% | -20% / +10% |             |             |
|                               | OUTPUT VOLTAGE SETTING          | $\pm 1.6\%$                                                                         |             |             |             |             |            |             |             |             |             |
| PROTECTION CIRCUIT AND OTHERS | OVERCURRENT PROTECTION          | Works over 105% of rating, low voltage protection (shut down) function is built-in. |             |             |             |             |            |             |             |             |             |
|                               | OVERVOLTAGE PROTECTION          | 117% - 127%                                                                         |             | 125% - 135% | 117% - 127% |             |            | 125% - 135% | 117% - 127% |             |             |
|                               | REMOTE SENSING                  | Provided                                                                            |             |             |             |             |            |             |             |             |             |
|                               | REMOTE ON/OFF                   | Provided (Negative logic L : ON, H : OFF)                                           |             |             |             |             |            |             |             |             |             |

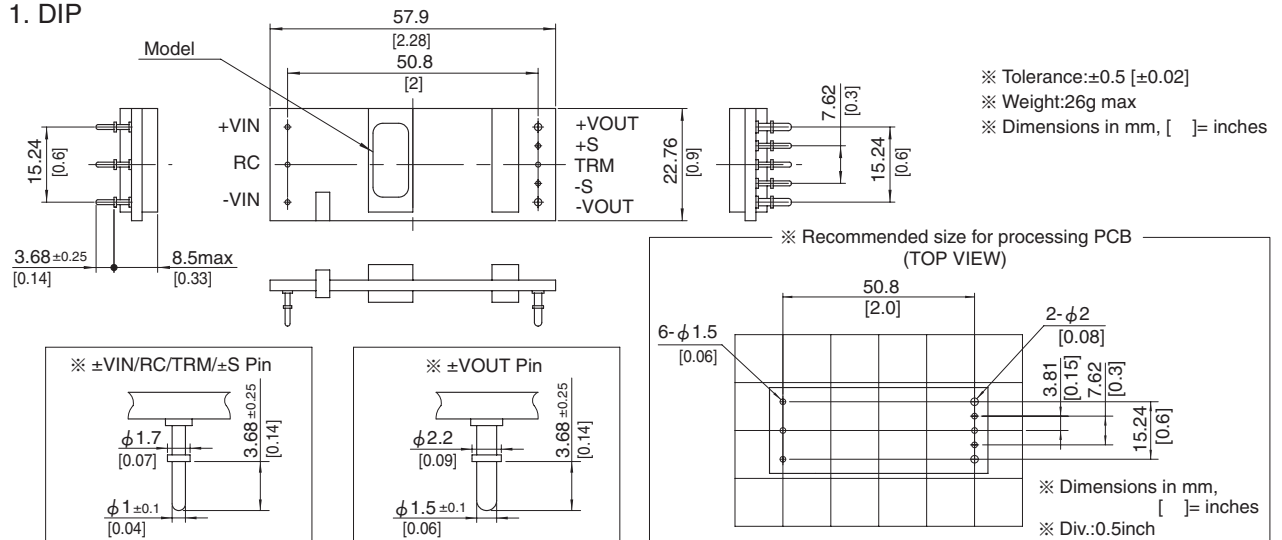
## GENERAL SPECIFICATIONS

|                    |                                             |                                                                                                                            |
|--------------------|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| <b>ISOLATION</b>   | <b>INPUT-OUTPUT</b>                         | DC1,500V or AC1,000V 1minute, Cutoff current = 10mA, DC500V 50M $\Omega$ min (20 $\pm$ 15 $^{\circ}$ C)                    |
| <b>ENVIRONMENT</b> | <b>OPERATING TEMP., HUMID. AND ALTITUDE</b> | -40 to +85 $^{\circ}$ C, 20 - 95%RH (Non condensing) (Refer to DERATING CURVE), 3,000m (10,000feet) max                    |
|                    | <b>STORAGE TEMP., HUMID. AND ALTITUDE</b>   | -40 to +100 $^{\circ}$ C, 20 - 95%RH (Non condensing), 9,000m (30,000feet) max (Option S: Refer to the instruction Manual) |
|                    | <b>VIBRATION</b>                            | 10 - 55Hz, 49.0m/s $^2$ (5G), 3minutes period, 60minutes each along X, Y and Z axis                                        |
| <b>SAFETY</b>      | <b>IMPACT</b>                               | 196.1m/s $^2$ (20G), 11ms, once each along X, Y and Z axis                                                                 |
| <b>SAFETY</b>      | <b>AGENCY APPROVALS</b>                     | UL60950-1, C-UL (CSA60950-1), EN60950-1                                                                                    |
| <b>OTHERS</b>      | <b>CASE SIZE/WEIGHT</b>                     | 57.9 $\times$ 8.5 $\times$ 22.76mm [2.28 $\times$ 0.33 $\times$ 0.9 inches] (W $\times$ H $\times$ D) / 26g max            |
|                    | <b>COOLING METHOD</b>                       | Convection / Forced air                                                                                                    |

- \*1 At rated input(DC24V, DC48V) and rated load and 25 $^{\circ}$ C, 2m/s.
- \*2 Ripple and ripple noise is measured by using measuring board with ceramic capacitor 22 $\mu$ F. Refer to the Instruction Manual.
- \*3 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25 $^{\circ}$ C, with the input voltage held constant at the rated input/output.
- \*4 Refer to the instruction manual for input voltage derating.

### External view

#### 1. DIP



#### 2. SMD(optionS)

