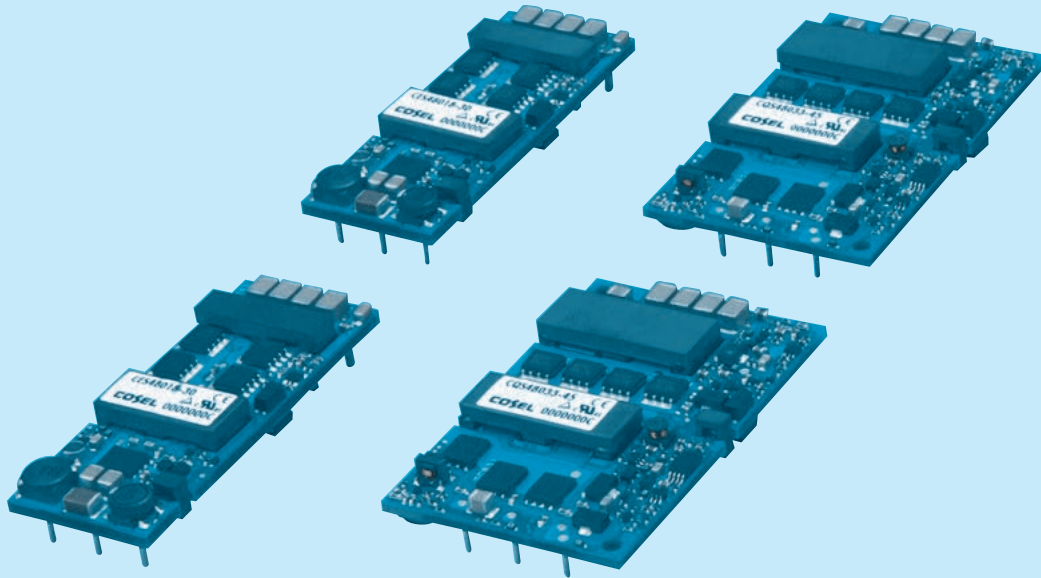




CES/CQS-series



Feature

Compact DC - DC Converter, "BRICK SIZE" which has been standard size for Telecommunication Market
 High efficiency
 High density
 High reliability : not built-in aluminum and tantalum electrolytic capacitor
 Built-in overcurrent, overvoltage and thermal protection circuits
 Built-in remote ON/OFF

CE marking

Low Voltage Directive
 RoHS Directive

UKCA marking

Electrical Equipment Safety Regulations
 RoHS Regulations

Safety agency approvals

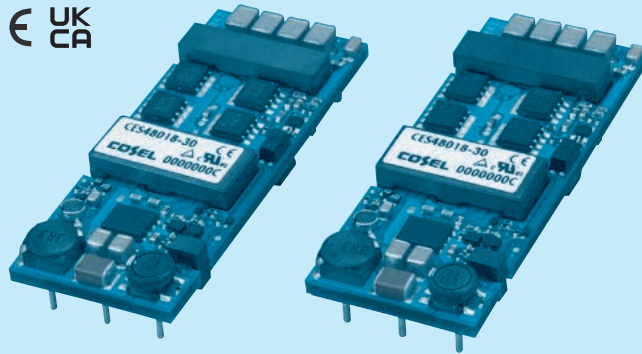
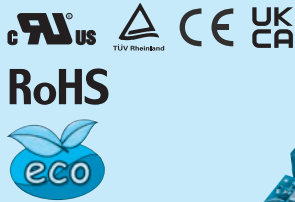
UL60950-1, C-UL recognized, TÜV approved

5-year warranty

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
	RIPPLE NOISE[mVp-p]	100max	120max	150max	150max
	TEMPERATURE REGULATION[mV]	66max	100max	240max	300max
	DRIFT[mV]	16max	20max	40max	50max
	START-UP TIME[ms]	200max (DCIN 24V, Io=100%)			
PROTECTION CIRCUIT AND OTHERS	OUTPUT VOLTAGE ADJUSTMENT RANGE	Fixed (TRM pin open), adjustable by external resistor			
	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%	
	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
	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
	DRIFT[mV]	16max	16max	16max	16max	20max	40max	50max	16max	20max	20max
	START-UP TIME[ms]	200max (DCIN 48V, Io=100%)									
PROTECTION CIRCUIT AND OTHERS	OUTPUT VOLTAGE ADJUSTMENT RANGE	Fixed (TRM pin open), adjustable by external resistor									
	OUTPUT VOLTAGE SETTING	$\pm 1.6\%$									
	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)									

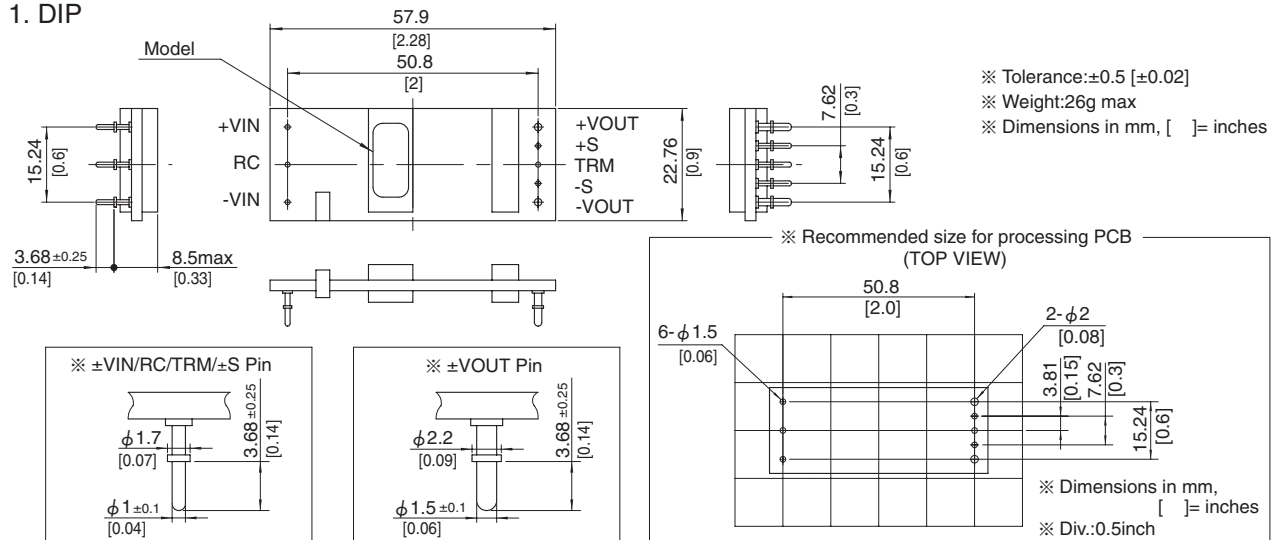
GENERAL SPECIFICATIONS

ISOLATION	INPUT-OUTPUT	DC1,500V or AC1,000V 1minute, Cutoff current = 10mA, DC500V 50M Ω min (20 $\pm$ 15 $^{\circ}$ C)
ENVIRONMENT	OPERATING TEMP., HUMID. AND ALTITUDE	-40 to +85 $^{\circ}$ C, 20 - 95%RH (Non condensing) (Refer to DERATING CURVE), 3,000m (10,000feet) max
	STORAGE TEMP., HUMID. AND ALTITUDE	-40 to +100 $^{\circ}$ C, 20 - 95%RH (Non condensing), 9,000m (30,000feet) max (Option S: Refer to the instruction Manual)
	VIBRATION	10 - 55Hz, 49.0m/s 2 (5G), 3minutes period, 60minutes each along X, Y and Z axis
SAFETY	IMPACT	196.1m/s 2 (20G), 11ms, once each along X, Y and Z axis
SAFETY	AGENCY APPROVALS	UL60950-1, C-UL (CSA60950-1), EN62368-1
OTHERS	CASE SIZE/WEIGHT	57.9 $\times$ 8.5 $\times$ 22.76mm [2.28 $\times$ 0.33 $\times$ 0.9 inches] (W $\times$ H $\times$ D) / 26g max
	COOLING METHOD	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 μ 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)

