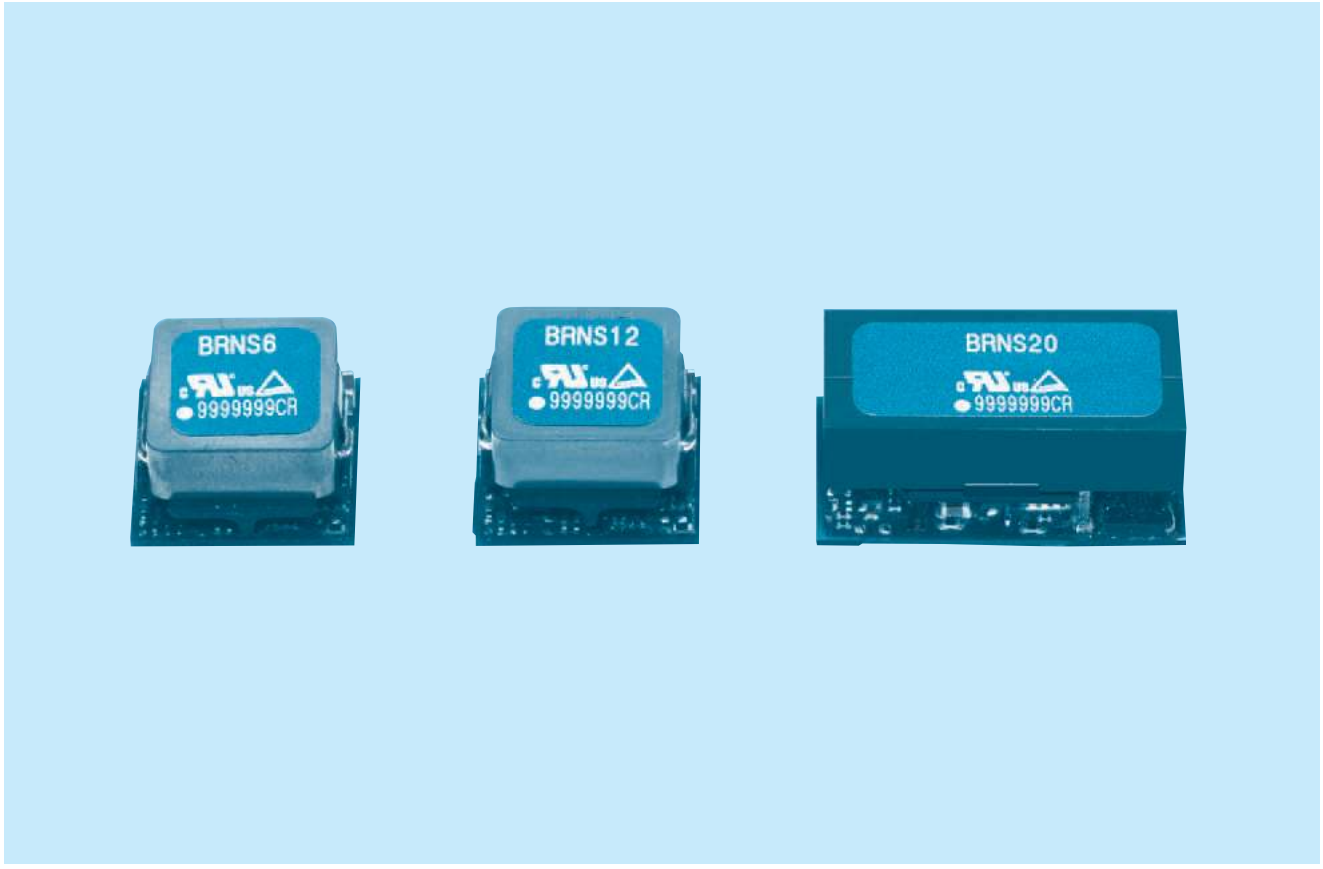
Low Profile | Safety Approvals | OCP | Remote ON/OFF

BRNS-series



Feature

Small size and high efficiency non-isolated DC-DC converter.
Wide input voltage 3.0V to 14.4V.
Adjustment of the gain control depending on external capacitor is unnecessary.
Built-in remote ON/OFF,Power good,Frequency synchronization.
Built-in overcurrent and thermal protection (auto recovery type) functions.

CE marking

Low Voltage Directive
RoHS Directive

UKCA marking

Electrical Equipment Safety Regulations
RoHS Regulations

Safety agency approvals

UL60950-1, C-UL, EN62368-1

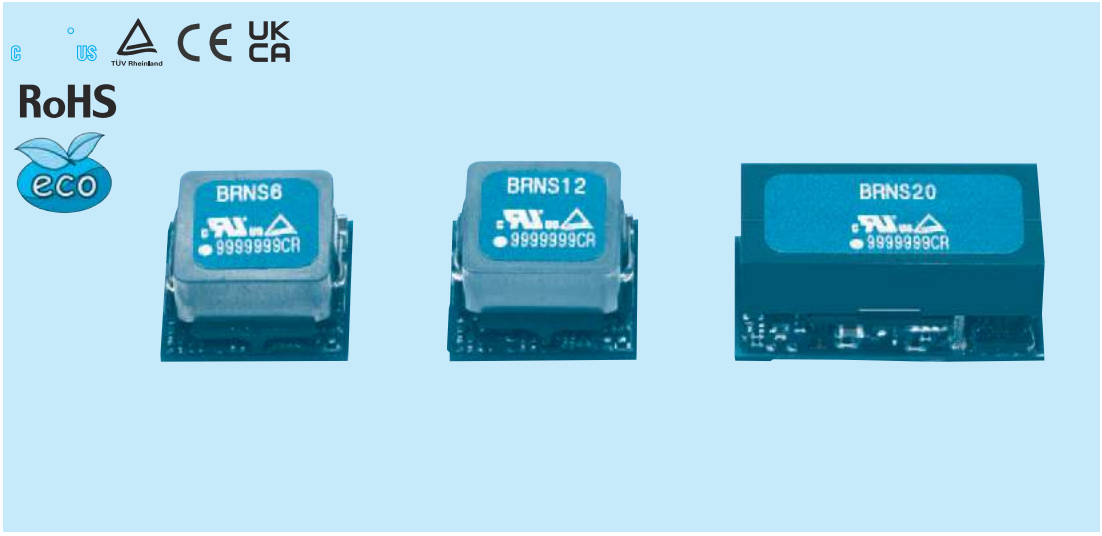
5-year warranty

COSEL DC-DC Converters POL Type

BRNS

Ordering information

BRN ① S ② 20 ③ -□ ④



①Series name
②Single output
③Output current
6: 6A
12:12A
20:20A
④Optional
R : Positive logic remote on/off
I : No clock output for frequency synchronization
Y1 : Suitable control for external capacitor over 470μF

MODEL	BRNS6	BRNS12	BRNS20
MAX OUTPUT CURRENT[A]	6.0	12.0	20.0
DC OUTPUT	0.6 - 5.5		

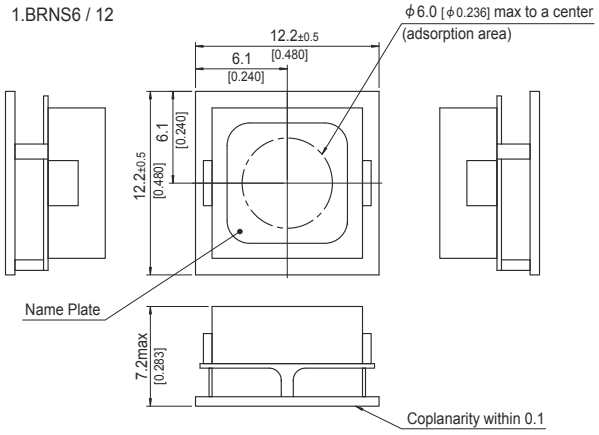
SPECIFICATIONS

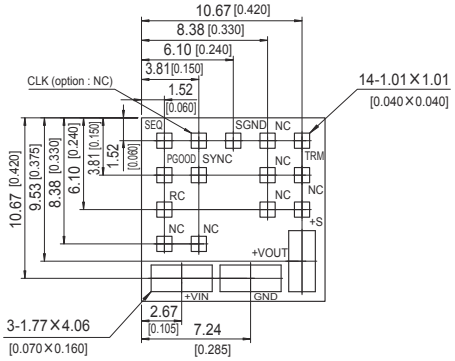
	MODEL	BRNS6	BRNS12	BRNS20
INPUT	VOLTAGE[V]	DC3.0 - 14.4		
	CURRENT[A] *1	0.70 typ	1.40 typ	2.30 typ
	EFFICIENCY[%] *1	86 typ	86 typ	87 typ
OUTPUT	VOLTAGE[V] *2	0.6 - 5.5	0.6 - 5.5	0.6 - 5.5
	CURRENT[A]	6	12	20
	LINE REGULATION1[mV] Vo≦1.8V	10		
	LINE REGULATION2[%Vo] Vo>1.8V	0.5		
	LOAD REGULATION1[mV] Vo≦1.8V	10		
	LOAD REGULATION2[%Vo] Vo>1.8V	0.5		
	OUTPUT VOLTAGE SETTING [%Vo]	±1.0		
	RIPPLE[mVp-p] *3	25		
	RIPPLE NOISE[mVp-p] *3	50		
	DRIFT[%Vo] *4	±0.5		
	START-UP TIME[ms]	4.5 typ		
	OUTPUT VOLTAGE ADJUSTMENT RANGE [V]	Adjustable by external resistor		
		0.6 - 5.5		
	OUTPUT VOLTAGE REGULATION [%Vo]*5	±3.0		
PROTECTION CIRCUIT AND OTHERS	OVERCURRENT PROTECTION	Works over 105% of rating (auto recovery type)		
	REMOTE SENSING	Available (+S only)		Available
	REMOTE ON/OFF	Available Negative logic L:ON, H:OFF		
ISOLATION	INPUT-OUTPUT	non-isolated		
ENVIRONMENT	OPERATING TEMP.,HUMID.AND ALTITUDE	-40 to +85℃, 20-95%RH (Non condensing) (Refer to “Derating”) 3,000m (10,000feet) max		
	STORAGE TEMP.,HUMID.AND ALTITUDE	-40 to +100℃, 20-95%RH (Non condensing), 9,000m (30,000feet) max		
	VIBRATION	10-55Hz, 49.0m/s²(5G), 3minutes period, 60minutes each along X, Y and Z axis		
	IMPACT	196.1m/s²(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	12.2×7.2×12.2mm [0.48×0.28×0.48 inches] (W×H×D) / 4g max		20.3×8.5×11.4mm [0.80×0.35×0.45 inches] (W×H×D) / 6g max
	COOLING METHOD	Convection / Forced air		

*1 At rated input (DC12V) and rated output (1.2V) Ta=25℃.
*2 Output voltage is adjusted to the minimum when TRM is opend.
*3 Ripple and ripple noise is measured by using measuring board with ceramic capacitor at 25mm from output pin. At rated input (DC12V) and rated output (1.2V).
*4 Drift is the change in DC output for an eight hour period after a half - hour warm - up at 25℃, with the input voltage held.
*5 Output voltage setting is added line regulation and load regulation and temperature regulation used resistance of the 0.5% tolerance.

External view

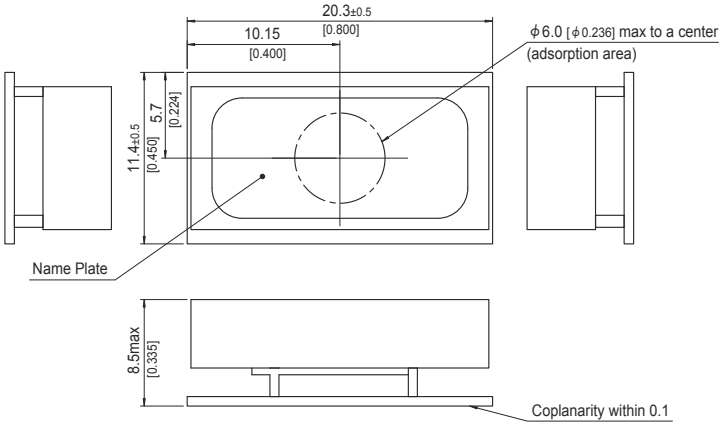
1.BRNS6 / 12

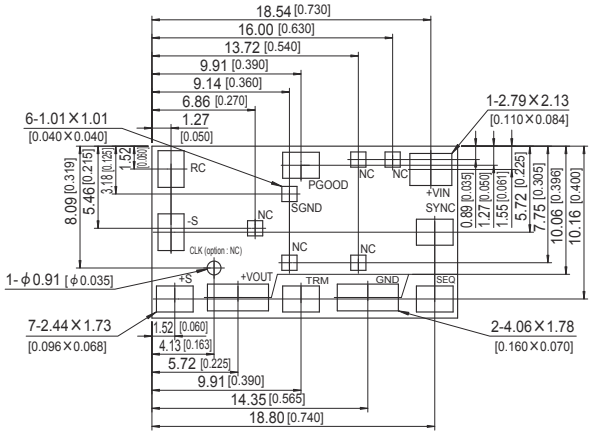




※ Tolerance : ±0.3
※ Dimensions in mm, [ ]=inches
※ Weight : 4.0g max
※ Terminal material : PCB pattern
※ Plating treatment of terminal
: Gold flashing

2.BRNS20

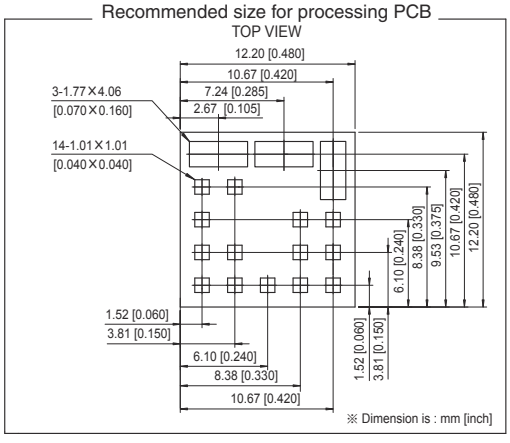




※ Tolerance : ±0.3
※ Dimensions in mm, [ ]=inches
※ Weight : 6.0g max
※ Terminal material : PCB pattern
※ Plating treatment of terminal
: Gold flashing

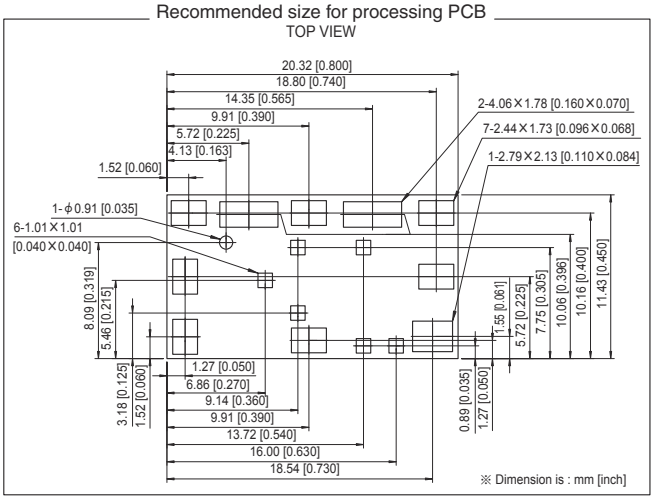
Recommended size for processing PCB

TOP VIEW



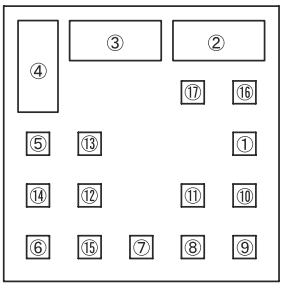
Recommended size for processing PCB

TOP VIEW



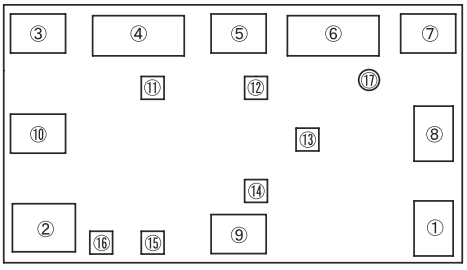
Pin Configuration

● BRNS6/12



*BOTTOM VIEW

● BRNS20



*BOTTOM VIEW

Pin No.		Pin Connection	Function
BRNS 6/12	BRNS 20		
①		RC	Remote ON/OFF
②		+VIN	+DC input
③	④	GND	GND(-DC input, -DC output)
④	⑥	+VOUT	+DC output
⑤	⑦	+S	+Remote sensing
⑥	⑤	TRM	Adjustment of output voltage
⑦	⑭	SGND	Signal GND
⑧	⑰	CLK(NC)	Clock output
⑨	③	SEQ	Control of Start up time and turn
⑩	⑨	PGOOD	Power good
⑪	⑩	SYNC	Input for frequency synchronization
⑫	⑧	-S	NC : BRNS6/12 -Remote sensing : BRNS20
⑬	⑪	NC	NC
⑭	⑬	NC	NC
⑮	⑫	NC	NC
⑯	⑯	NC	NC
⑰	⑮	NC	NC

Implementation・Mounting Method

Mounting method

■The unit can be mounted in any direction. When two or more power supplies are used side by side, position them with proper intervals to allow enough air ventilation. The temperature around each power supply should not exceed the temperature range shown in “Derating”.

Automatic Mounting

■To mount BRNS series automatically, use the coil area near the center of the PCB as an adsorption point. Please see the External View for details of the adsorption point.

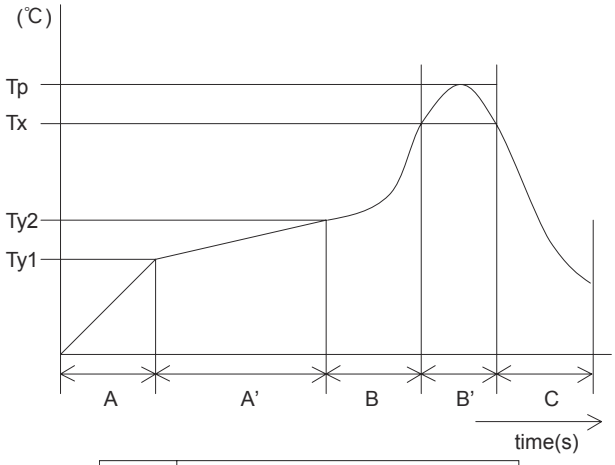
Soldering

■Right figure shows condition for reflow of BRNS series. Please make sure that the temperature of board’s pattern near by +VOUT and GND terminal.

■While soldering, having vibration or impact on the unit should be avoided, because of solder melting.

■Please do not do the implementation except the reflow.

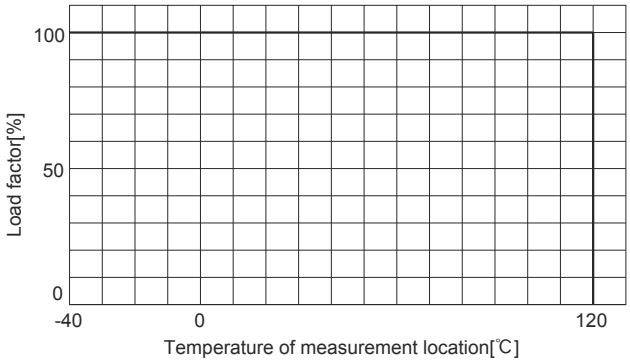
■Because some parts drops, please do not do reflow of the back side.



A	1.0 - 5.0℃/ s
A’	Ty1 : 160±10℃ Ty2 : 180±10℃ Ty1 - Ty2 : 120s max
B	1.0 - 5.0℃/ s
B’	Tp : Max245℃ 10s max Tx : 220℃ or more : 70s max
C	1.0 - 5.0℃/ s

Derating

■Make sure the temperatures measurement locations shown from Instruction Manual 8 are on or under the derating curve in right figure. Ambient temperature must be kept at 85℃ or under.



Instruction Manual

◆ It is neccessary to read the “Instruction Manual” and “Before using our product” before you use our product.

Instruction Manual	https://www.cosel.co.jp/redirect/catalog/en/BRNS/
Before using our product	https://en.cosel.co.jp/technical/caution/index.html

BRNS NOTICE

Basic Characteristics Data

Model	Circuit method	Switching frequency [kHz] (reference)	Input current [A]	Inrush current protection	PCB/Pattern			Series/Parallel operation	
					Material	Single sided	Double sided	Series operation	Parallel operation
BRNS6	Buck Converter	600	✻1	-	glass fabric base,epoxy resin	-	Multilayer	-	-
BRNS12	Buck Converter	600	✻1	-	glass fabric base,epoxy resin	-	Multilayer	-	-
BRNS20	Buck Converter	600	✻1	-	glass fabric base,epoxy resin	-	Multilayer	-	-

✻1 Refer to Specification.