CQB200 SERIES
200 WATT 2:1 INPUT ISOLATED DC-DC CONVERTER

Features

- Efficiency Up to 92%
- Fixed Switching Frequency
- Regulated Outputs
- Remote On/Off
- Low No Load Power Consumption
- Fully protected (OTP/OCP/OVP/UVLO)
- 2250Vdc I/O Isolation
- Operating Case Temperature -40 to +105℃
- Quarter Brick Size Meet Industrial Standard 2.28"x1.45"x0.5"
- Meet UL62368-1 2nd (Functional Insulation)
- Meet Shock & Vibration MIL-STD-810F/EN61373
- Fire & Smoke EN45545-2 Compliant
- 3000m Operating Altitude



MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT		INPUT CURRENT		% EFF.	CAPACITOR LOAD MAX.
			MIN.	MAX.	NO LOAD	FULL LOAD		
CQB200-24S24	18-36 VDC	24 VDC	0 mA	8.33 A	10 mA	9100 mA	91.5	6600uF
CQB200-24S28	18-36 VDC	28 VDC	0 mA	7.14 A	10 mA	9100 mA	92	5400uF

NOTE:

1. Nominal Input Voltage 24 VDC
2. An External Input Capacitor 220uF KY 47mΩmax. for All Models are Recommended to Reduce Input Ripple Voltage

PART NUMBER

Series	Nominal Input Voltage	Number of Outputs	Nominal Output Voltage	Remote On/Off Logic	Mounting Inserts
CQB200-	II	O	XX	L	-Y (Option)
CQB200	24: 24 VDC	S: Single	24: 24VDC 28: 28VDC	None: Positive N: Negative	None: M3x0.5 Mounting Inserts -C: Clear Mounting Insert (3.2mm DIA.)

Part Number Example:

CQB200-24S24N-C: Quarter Brick, 200W, 2:1 18-36Vdc Input, Single 24Vdc Output, Negative Logic, Clear Mounting Insert

TECHNICAL SPECIFICATIONS

(All specifications are typical at nominal input, full load at 25°C unless otherwise noted.)

ABSOLUTE MAXIMUM RATINGS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Input Voltage	Continuous	All	-0.3		36	V_{dc}
Input Surge Voltage	100ms max.	All			50	V_{dc}
Operating Case Temperature	At the Center Part of Base Plate	All	-40		105	°C
Storage Temperature		All	-55		125	°C

INPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Operating Input Voltage		All	18	24	36	V_{dc}
Input Under Voltage Lockout						
Turn-On Voltage Threshold		All	16.5	17	17.5	V_{dc}
Turn-Off Voltage Threshold		All	15.5	16	16.5	V_{dc}
Lockout Hysteresis Voltage		All		1.0		V_{dc}
Maximum Input Current	V_{in}=18V, Full Load.	All		14		A
No-Load Input Current	V_{in}=24V, Io=0A	See Model Number Table				mA
Input Filter	Pi filter.	All				
Inrush Current (I^2t)	As per ETS300 132-2.	All			0.1	A^2s
Input Reflected Ripple Current	P-P thru 12uH inductor, 5Hz to 20MHz.	All		60		mA

OUTPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Voltage Set Point Accuracy	V_{in}=24V, Full Load, T_C=25°C	All	-1.0		+1.0	%
Output Voltage Regulation						
Load Regulation	Full Load to No Load	All			±0.2	%
Line Regulation	V_{in}=High Line to Low Line, Full Load	All			±0.2	%
Temperature Coefficient	T_C=-40°C to 105°C	All			±0.02	%/°C
Output Voltage Ripple and Noise (5Hz to 20MHz bandwidth)						
Peak-to-Peak	Full load, 10uF tantalum capacitor and 1uF ceramic capacitors	24Vo			280	mV
		28Vo			280	
RMS.		24Vo			100	mV
		28Vo			100	
Output Current Range	V_{in}= 18 to 36V	See Model Number Table				A
Over Current Protection	Hiccup Mode. Auto Recovery.	All	110	130	150	%
Short Circuit Protection		All	Continuous, Auto Recovery.			
External Load Capacitance	Full load (resistive)	See Model Number Table				uF
Output Voltage Trim Range	Po≦max rated power, $I_o \leqq I_{o_max}$	All	-10		+10	%
Output Voltage Remote Sense Range	Po≦max rated power, $I_o \leqq I_{o_max}$ % of nominal Vo	All			+10	%
Over Voltage Protection	Limited Voltage, % of Nominal Vo	All	115	125	140	%

EFFICIENCY

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
100% Load	Vin=24V	See Model Number Table				%

DYNAMIC CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Output Voltage Current Transient						
Error Band	75% to 100% of I_{o_max} step load change d_i/d_t=0.1A/us (within 1% Vout nominal)	All			±5	%
Recovery Time		All			250	us
Turn-On Delay and Rise Time	Full load (Constant resistive load)					
Turn-On Delay Time, From On/Off Control	$V_{on/off}$ to 10%V_{o_set}, Remote On	All		35		ms
Turn-On Delay Time, From Input	V_{in_min} to 10%V_{o_set}, Power Up	All		30		ms
Output Voltage Rise Time	10%V_{o_set} to 90%V_{o_set}	All		15		ms

ISOLATION CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Isolation Voltage (100% factory Hi-Pot tested @2sec.)	1 minute; Input to Output,	All			2250	V_{dc}
	1 minute; Input to Case (Base Plate),	All			2250	V_{dc}
	1 minute; Output to Case (Base Plate)	All			2250	V_{dc}
Isolation Resistance	Input to Output	All	100			MΩ
Isolation Capacitance	Input to Output	All		1500		pF
	Input to Case (Base Plate)	All		None		
	Output to Case (Base Plate)	All		None		

FEATURE CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Switching Frequency	Pulse wide modulation (PWM), Fixed	All	225	250	275	KHz
On/Off Control, Positive Remote On/Off logic, Refer to –Vin pin.						
Logic Low (Module Off)	$V_{on/off}$ at $I_{on/off}$=1.0mA	All	0		1.2	V
Logic High (Module On)	$V_{on/off}$ at $I_{on/off}$=0.0uA, Pin open=On	All	3.5		75	V
On/Off Control, Negative Remote On/Off logic, Refer to –Vin pin						
Logic High (Module Off)	$V_{on/off}$ at $I_{on/off}$=0.0uA, Pin open=Off	All	3.5		75	V
Logic Low (Module On)	$V_{on/off}$ at $I_{on/off}$=1.0mA	All	0		1.2	V
On/Off Current (for both remote on/off logic)	$I_{on/off}$ at $V_{on/off}$=0V	All		0.3	1	mA
Leakage Current (for both remote on/off logic)	Logic High, $V_{on/off}$=15V	All			30	uA
Off Converter Input Current	Shutdown input idle current	All		5	10	mA
Over Temperature Shutdown	Temperature at the Center Part of Base Plate, Non-Latching	All		110		°C
Over Temperature Recovery		All		100		°C

GENERAL SPECIFICATIONS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
MTBF	I_o=100% of I_{o_max}; MIL-HDBK - 217F_Notice 1, GB, 25°C	24S24		730		K hours
		24S28		625		
Weight		All		68		grams
Case Material	Plastic, DAP, UL 94V-0					
Base plate Material	Aluminum					
Potting Material	UL 94V-0					
Pin Material	Base: Copper Plating: Nickel with Matte Tin					
Shock/Vibration	MEET MIL-STD-810F/EN61373					
Humidity	95% RH max. Non Condensing					

GENERAL SPECIFICATIONS

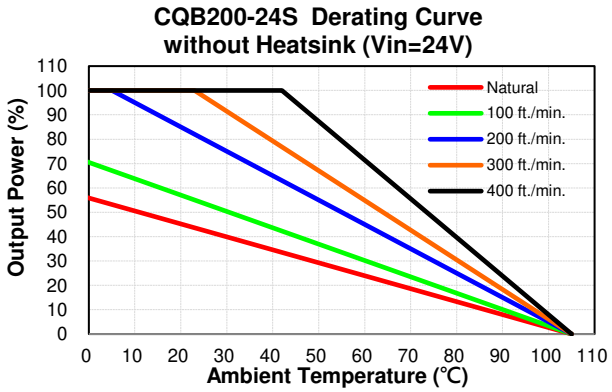
Altitude	3000m Operating Altitude, 12000m Transport Altitude	
Thermal Shock	MIL-STD-810F	
Fire & Smoke	EN45545-2 Compliant	
EMI	Meets EN55032 Compliant (with external filter)	Class A
Application Note Link		CQB200 Series App Notes
Packaging Information Link		Packaging Information

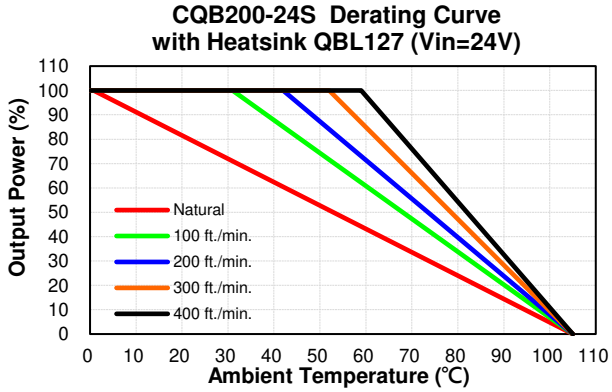
EN45545-2 Fire & Smoke Test Conditions.

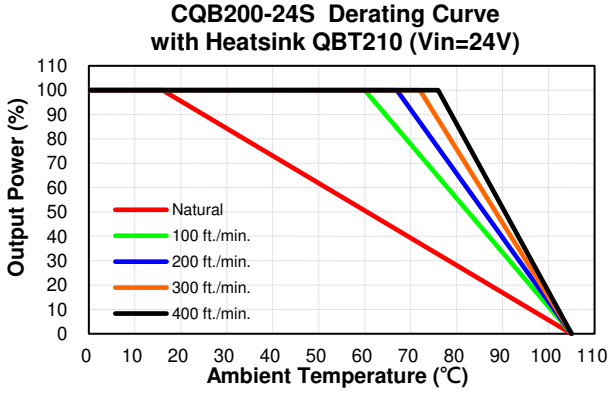
Item		Standard	Hazard Level
R22	Oxygen Index Test	EN 45545-2: 2013 EN ISO 4589-2: 2006	HL1, HL2, HL3
	Smoke Density Test	EN 45545-2: 2013 EN ISO 5659-2: 2013	HL1, HL2
	Smoke Toxicity Test	EN 45545-2: 2013 NF X70-100: 2006	HL1, HL2, HL3
R23	Oxygen Index Test	EN 45545-2: 2013 EN ISO 4589-2: 2006	HL1, HL2, HL3
	Smoke Density Test	EN 45545-2: 2013 EN ISO 5659-2: 2013	HL1, HL2, HL3
	Smoke Toxicity Test	EN 45545-2: 2013 NF X70-100: 2006	HL1, HL2, HL3
R24	Oxygen Index Test	EN45545-2: 2013 EN ISO 4589-2	HL1, HL2, HL3
R25	Glow - Wire Test	EN 45545-2:2013 EN 60695-2-11:2001	HL1, HL2, HL3
R26	Vertical Flame Test	EN 45545-2: 2013 EN 60695-11-10: 2013	HL1, HL2, HL3

CHARACTERISTIC CURVE

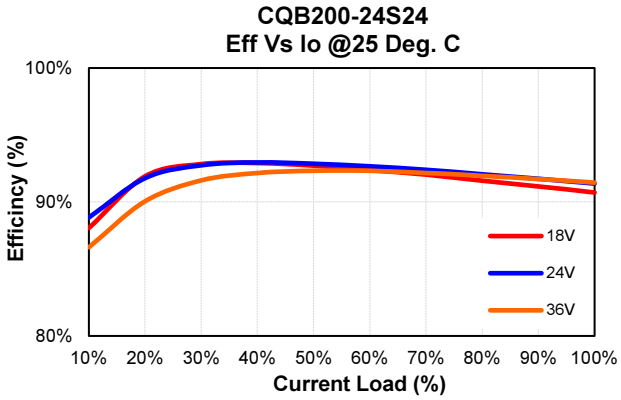
Power Derating Curve

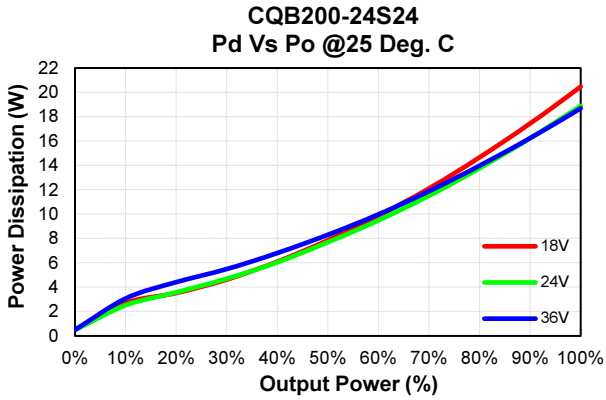


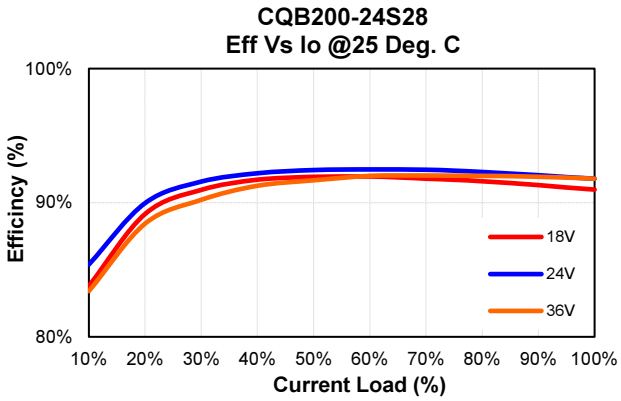


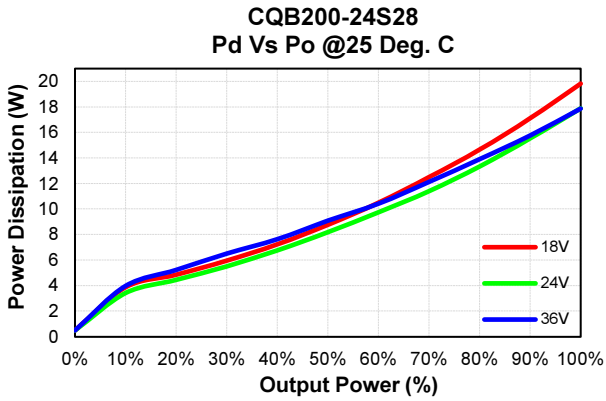


Performance Data

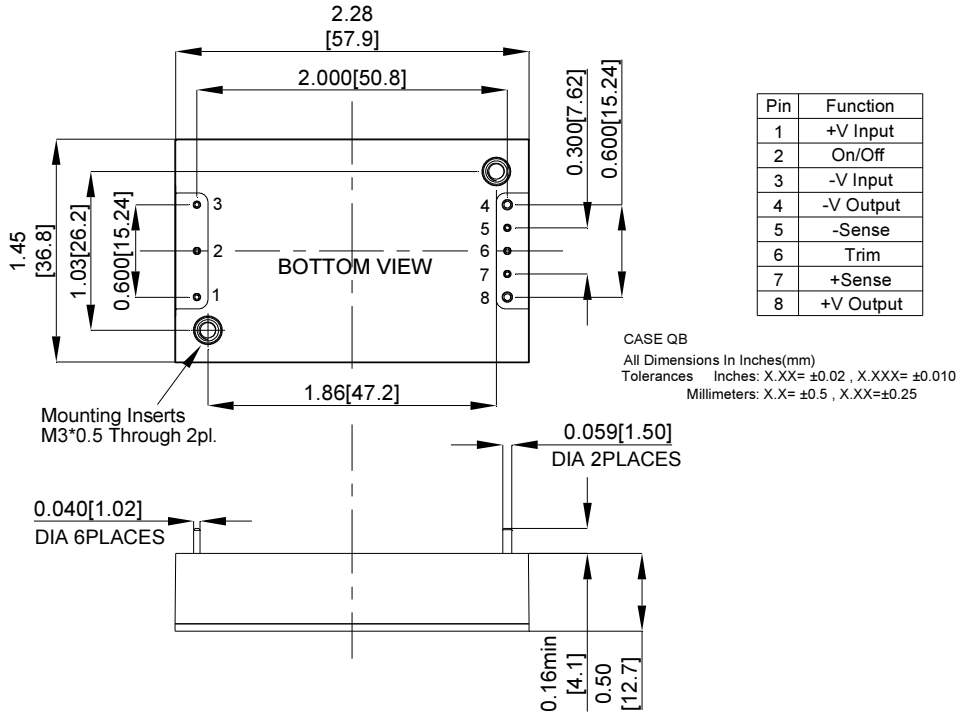








MECHANICAL SPECIFICATION



Pin	Function
1	+V Input
2	On/Off
3	-V Input
4	-V Output
5	-Sense
6	Trim
7	+Sense
8	+V Output

CASE QB
All Dimensions In Inches(mm)
Tolerances Inches: X.XX= ±0.02 , X.XXX= ±0.010
Millimeters: X.X= ±0.5 , X.XX=±0.25

CINCON Electronics Co. Ltd.
Add: 14F, No. 306, Sec.4, Hsin Yi Rd., Taipei, Taiwan
Tel: 886-2-27086210
Fax: 886-2-27029852
E-mail: sales@cincon.com.tw
Web: www.cincon.com.tw