

Features

- ◇ 2 Watt Output Power
- ◇ Regulated Output
- ◇ 2:1 Wide Range Input Voltage
- ◇ Efficiency up to 82%
- ◇ 1500VDC Isolation Voltage
- ◇ Operating Temperature Range -40°C~71°C
(Non-Derating)
- ◇ EMI EN55022 Class A Approval
(External Components required)
- ◇ Single-In-Line Package (SIP)
- ◇ Industrial Standard Pin-out
- ◇ UL94V-0 Package Material
- ◇ Remote ON/OFF Function- Enable-High
- ◇ Low Ripple and Noise
- ◇ 3 Years Warranty



Description

C12W series are isolated 2 Watt DC/DC converters with Remote ON/OFF function in miniature SIP-8pin package, and allow a wide 2:1 input voltage range of 5V, 12V, 24V and 48V to convert to a standard output voltage of 3.3V, 5V, 12V, 15V, ±5V, ±12V and ±15V.

Applications

- △ Automatic Control System
- △ Industry Computer
- △ Communication System
- △ Distribute Power System
- △ Movable/Portable Test Equipment
- △ Local Power System
- △ Other Applications meet Specifications.

General Specifications

Parameter	Condition	Min.	Typ.	Max.
Storage Temperature	Ambient,	-40	---	+125 °C
Operating Temperature	Ambient	-40	---	+71 °C
	Case	-40	---	+90 °C
Relative humidity		---	---	95 %
Isolation Voltage	Input to Output , 60 sec.	1.5 KV	---	---
Isolation Resistance	Input to Output	1 G ohm	---	---
Isolation Capacitance	Input to Output	---	---	120 pF
Switching Frequency	Max. Load	---	250 KHz	---
MTBF	Vin-N, Max. Load, 25°C	---	1 Mhrs	---
Weight	Epoxy	---	5.0 g	---
Case Material	Non-Conductive Black Plastic (Meets UL94V-0)			
Dimensions	0.86 x 0.37 x 0.44 inch (21.8 x 9.3 x 11.2 mm)			

Selection Guide

Part Number	Input				Output			Efficiency	Cap. Load ⁽⁸⁾
	Voltage	Current		Ref. Ripple ⁽⁷⁾	Voltage	Current			
	Nominal (Low ~ High)	No Load	Max. Load	Max. Load	Typ.	Min.	Max.	Max. Load	
		Typ.	Typ.	Typ.				Typ.	
VDC	mA	mA	mA	VDC	mA	mA	%	μF	
C12W-0503S	5 (4.5 ~ 9)	40	459	120	3.3	50	500	72	3300
C12W-0505S			541		5	40	400	74	2200
C12W-0512S			514		12	16.7	167	78	470
C12W-0515S			516		15	13.4	134	78	470
C12W-0505D			541		± 5	± 20	± 200	74	1000
C12W-0512D			524		± 12	± 8.4	± 84	77	220
C12W-0515D			522		± 15	± 6.7	± 67	77	220
C12W-1203S	12 (9 ~ 18)	25	184	80	3.3	50	500	75	3300
C12W-1205S			220		5	40	400	76	2200
C12W-1212S			207		12	16.7	167	81	470
C12W-1215S			207		15	13.4	134	81	470
C12W-1205D			220		± 5	± 20	± 200	76	1000
C12W-1212D			210		± 12	± 8.4	± 84	80	220
C12W-1215D			210		± 15	± 6.7	± 67	80	220
C12W-2403S	24 (18 ~ 36)	10	91	50	3.3	50	500	76	3300
C12W-2405S			109		5	40	400	77	2200
C12W-2412S			102		12	16.7	167	82	470
C12W-2415S			103		15	13.4	134	82	470
C12W-2405D			110		± 5	± 20	± 200	76	1000
C12W-2412D			104		± 12	± 8.4	± 84	81	220
C12W-2415D			104		± 15	± 6.7	± 67	81	220
C12W-4803S	48 (36 ~ 75)	7	46	30	3.3	50	500	76	3300
C12W-4805S			54		5	40	400	78	2200
C12W-4812S			51		12	16.7	167	82	470
C12W-4815S			51		15	13.4	134	82	470
C12W-4805D			55		± 5	± 20	± 200	78	1000
C12W-4812D			52		± 12	± 8.4	± 84	82	220
C12W-4815D			52		± 15	± 6.7	± 67	82	220

Note:

- 1) All specifications are measured at nominal input voltage, constant resistive load between Min. and Max. Output current, and probe bandwidth should be under 20MHz, Ta = +25°C.
- 2) When Load is lower than Min. Output Current or under no-Load, will not damage these devices; however, it may not meet all specifications.
- 3) Output Ripple & Noise Test please refer to E-Chin Technology Co., Ltd. proposed test-method.
- 4) Load Regulation and Line Regulation calculating please refer to E-Chin Technology Co., Ltd. proposed formula.
- 5) An external fuse is needed at the front end of DC/DC converters for protection based on surge current and maximum input current when settle it in recommended.
- 6) "Vin-H" means "Vin-High", "Vin-N" means "Vin-Nominal", and "Vin-L" means "Vin-Low".
- 7) "Reflected Ripple" means "Reflected Ripple of Input Current".
- 8) Total Capacitive Loads of output should be lower than this value.
- 9) Other Input Voltages, Output Voltages and Specifications may be available, please contact us.

Input Specifications

Parameter	Condition	Min.	Typ.	Max.
Input Voltage Range	5VDC models	4.5	5	9 V
	12VDC models	9	12	18 V
	24VDC models	18	24	36 V
	48VDC models	36	48	75 V
Power ON Voltage Range	5VDC models	3	4	4.5 V
	12VDC models	7	8	9 V
	24VDC models	14	16	18 V
	48VDC models	30	33	36 V
Power OFF Voltage Range	5VDC models	---	---	4 V
	12VDC models	---	---	8.5 V
	24VDC models	---	---	17 V
	48VDC models	---	---	35 V
Short Circuit Input Power	All models	---	---	1500 mW
Input Filter	Capacitor type	EMI EN55022 Class-A Approval (See the Extra Components Required at the bottom)		

Output Specifications

Parameter	Condition	Min.	Typ.	Max.
Output Voltage Accuracy	Vin-N, Max. Load	---	± 0.5	± 1.0 %
Line Regulation	Vin-L to Vin-H @ Max. Load	---	± 0.1	± 0.3 %
Load Regulation	Io = 10% to 100% Load @ Vin-N	---	± 0.3	± 0.5%
Balance Regulation	Vin-N, Max. Load, Dual Output	---	± 0.5	± 2.0 %
Temperature Drift	Lowest to Highest Temp.	---	± 0.01	± 0.02 %/°C
Ripple & Noise	Peak to Peak, Each Output, 20MHz	---	30	50 mV
Transient Recovery Time	Vin-N, 25% load step change	---	100	300 µSec
Transient Response Deviation		---	± 2.0	± 5.0 %Vo

Protection Specifications

Parameter	Condition	Min.	Typ.	Max.
Over Power Protection	Vin-L to Vin-H	110%Io	---	---
Output Short Circuit	Continuous, Auto-Recovery			

Input Fuse Selection Guide

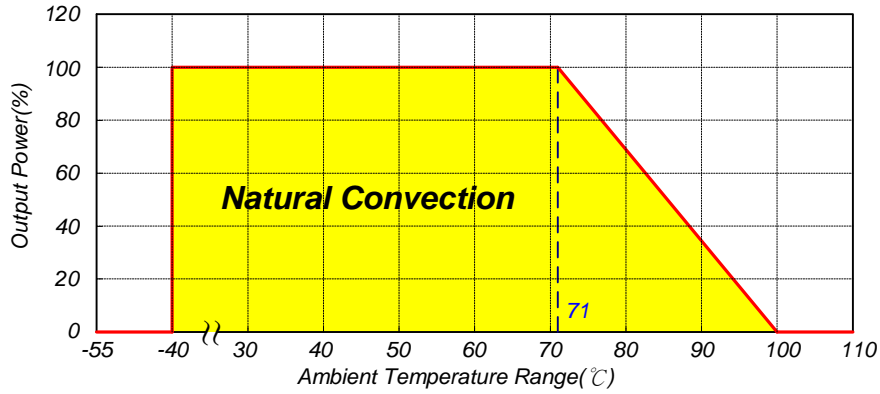
5VDC models	12VDC models	24VDC models	48VDC models
1200mA Slow - Blow Type	600mA Slow - Blow Type	300mA Slow - Blow Type	150mA Slow - Blow Type

External Functions

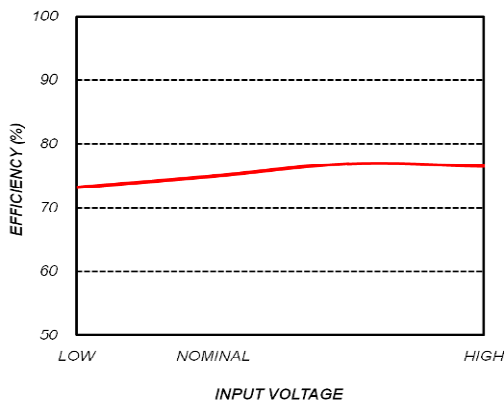
Remote Control Function ---Enable Low					Extra components for reaching EN55022 Class-A					
Parameter	Condition	Min.	Typ.	Max.						
System Disable	V-Remote	2.7V	---	Vin						
	I-Remote	---	---	1.5mA						
System Enable	V-Remote	---	---	0.6						
	I-Remote	---	---	-0.4mA						
Floating Remote ON/OFF Pin										
Note: Control Voltage Reference to Negative Input					Model	5Vin	12Vin	24Vin	48Vin	
					L1	2.2	6.8	47	150(uH)	
					C1	4.7	2.2	1	0.47(uF)	
					C2	330(pF)/2KV				

Characteristic Curve

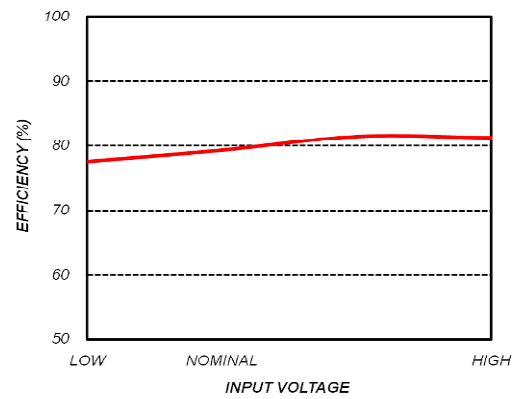
Derating Curve



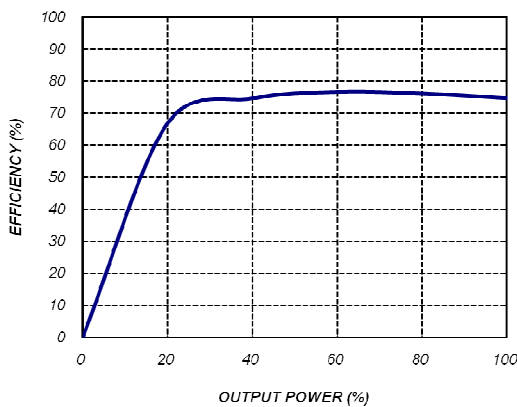
Efficiency-Curve



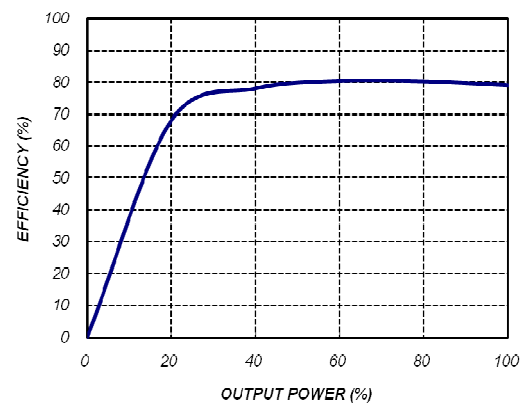
Input Voltage vs. Efficiency, $V_o = 3.3V, 5V \text{ \& } \pm 5V$



Input Voltage vs. Efficiency, Other Output Voltages



Output Power vs. Efficiency, $V_o = 3.3V, 5V \text{ \& } \pm 5V$



Output Power vs. Efficiency, Other Output Voltages

Package Dimension

Front View	Recommend Footprint Details (Top View)																								
	<p>Pin Functions</p> <table border="1"> <thead> <tr> <th>Pin No</th> <th>Single Output</th> <th>Dual Output</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-Vin</td> <td>-Vin</td> </tr> <tr> <td>2</td> <td>+Vin</td> <td>+Vin</td> </tr> <tr> <td>3</td> <td>Remote On/Off</td> <td>Remote On/Off</td> </tr> <tr> <td>5</td> <td>N.C.</td> <td>N.C.</td> </tr> <tr> <td>6</td> <td>+Vout</td> <td>+Vout</td> </tr> <tr> <td>7</td> <td>-Vout</td> <td>Common</td> </tr> <tr> <td>8</td> <td>N.C.</td> <td>-Vout</td> </tr> </tbody> </table> <p>N.C.: No Connect</p>	Pin No	Single Output	Dual Output	1	-Vin	-Vin	2	+Vin	+Vin	3	Remote On/Off	Remote On/Off	5	N.C.	N.C.	6	+Vout	+Vout	7	-Vout	Common	8	N.C.	-Vout
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6	+Vout	+Vout																							
7	-Vout	Common																							
8	N.C.	-Vout																							

Note:
 All dimensions in inch [mm]
 Tolerance: XX.X± 0.01 [XX.X±0.25]
 XX.XX± 0.01 [XX.XX±0.25]
 Pin pitch tolerance ±0.01 [±0.25]
 Pin diameter tolerance ±0.004 [±0.1]