

Features

- ◇ 6 Watt Output Power
- ◇ Regulated Output
- ◇ 2:1 Wide Range Input Voltage
- ◇ Efficiency up to 86%
- ◇ 1500VDC Isolation Voltage
- ◇ Operating Temperature Range -40°C~71°C
(Non-Derating)
- ◇ EMI EN55022 Class A Approval
(No External Components Required)
- ◇ Meets UL60950-1 Safety (Approved For Customer)
- ◇ Dual-in-line package (DIP)
- ◇ Industrial Standard Pin-out
- ◇ UL94V-0 Package Material
- ◇ Remote ON/OFF - Enable-High (Optional)
- ◇ 3 Years Warranty



Description

E16W(-R) series are isolated 6 Watt DC/DC converters in DIP-24pin packages, and allow a wide 2:1 input voltage range of 12V, 24V and 48V to convert to a standard output voltage of 3.3V, 5V, 12V, 15V, ±5V, ±12V and ±15V.

E16W(-R) series have the Remote ON/OFF as an optional function, the part number is added suffix "-R".

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	---	---	500 pF
Switching Frequency	Max. Load	---	250 KHz	---
MTBF	Vin-N, Max. Load, 25°C	---	1 MHrs	---
Weight	Epoxy	---	14 g	---
Case Material	Non-Conductive Black Plastic (Meets UL94V-0)			
Base Material	Non-Conductive Black Plastic (Meets UL94V-0)			
Dimensions	1.25 x 0.8 x 0.4 inch (31.8 x 20.3 x 10.2 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	
E16W-1203S(-R)	12 (9 ~ 18)	30	425	20	3.3	60	1200	78	6800
E16W-1205S(-R)			530		5	50	1000	79	6800
E16W-1212S(-R)			600		12	25	500	83	6800
E16W-1215S(-R)			600		15	20	400	83	6800
E16W-1205D(-R)			530		± 5	± 25	± 500	79	2200
E16W-1212D(-R)			600		± 12	± 13	± 250	83	2200
E16W-1215D(-R)			600		± 15	± 10	± 200	83	2200
E16W-2403S(-R)	24 (18 ~ 36)	15	210	10	3.3	60	1200	79	6800
E16W-2405S(-R)			257		5	50	1000	81	6800
E16W-2412S(-R)			295		12	25	500	85	6800
E16W-2415S(-R)			295		15	20	400	85	6800
E16W-2405D(-R)			255		± 5	± 25	± 500	82	2200
E16W-2412D(-R)			290		± 12	± 13	± 250	86	2200
E16W-2415D(-R)			290		± 15	± 10	± 200	86	2200
E16W-4803S(-R)	48 (36 ~ 75)	10	105	5	3.3	60	1200	79	6800
E16W-4805S(-R)			130		5	50	1000	81	6800
E16W-4812S(-R)			147		12	25	500	85	6800
E16W-4815S(-R)			147		15	20	400	85	6800
E16W-4805D(-R)			127		± 5	± 25	± 500	82	2200
E16W-4812D(-R)			145		± 12	± 13	± 250	86	2200
E16W-4815D(-R)			145		± 15	± 10	± 200	86	2200

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 the Load is at No-Load or lower than Min. output current, the DC/DC converters will not be damaged; however, all the parameters may be not reaching all specifications listed.
- 3) Output Ripple & Noise Test please refer to E-Chin Technology Co., Ltd. proposed test-method.
- 4) Load Regulation and Line Regulation calculation 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 a protection as a recommended settlement in order to avoid a surge current or a maximum input current.
- 6) "Vin-H" means "Vin-High", "Vin-N" means "Vin-Nominal", and "Vin-L" means "Vin-Low".
- 7) "Ref. Ripple" means "Reflected Ripple of Input Current".
- 8) The total Capacitive Loads of output should be lower than the value written above.
- 9) Other Input Voltages, Output Voltages and Specifications may be available, please contact us.

Input Specifications

Parameter	Condition	Min.	Typ.	Max.
Input Voltage Range	12VDC models	9	12	18 V
	24VDC models	18	24	36 V
	48VDC models	36	48	75 V
Power ON Voltage Range	12VDC models	7	8	9 V
	24VDC models	14	16	18 V
	48VDC models	30	33	36 V
Power OFF Voltage Range	12VDC models	---	---	8.5 V
	24VDC models	---	---	17 V
	48VDC models	---	---	35 V
Short Circuit Input Power	All models	---	---	3000 mW
Stand-by Input Current	Vin-L to Vin-H	---	---	2 mA
Input Filter	Pi-Network	EMI EN55022 Class A Approval		

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	---	± 0.2	± 0.3 %
Load Regulation	Io = 10% to 100% Load @ Vin-N	---	± 0.5	± 1.0 %
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	---	50	75 mV
Transient Recovery Time	Vin-N, 25% load step change	---	150	300 µSec
Transient Response Deviation		---	± 2.0	± 6.0 %Vo

Protection Specifications

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

Input Fuse Selection Guide

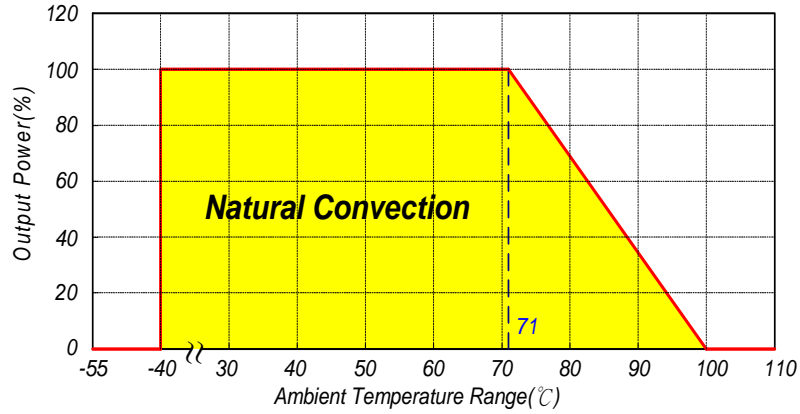
12VDC models	24VDC models	48VDC models
1500 mA Slow – Blow Type	700 mA Slow – Blow Type	350 mA Slow – Blow Type

External Functions Specifications

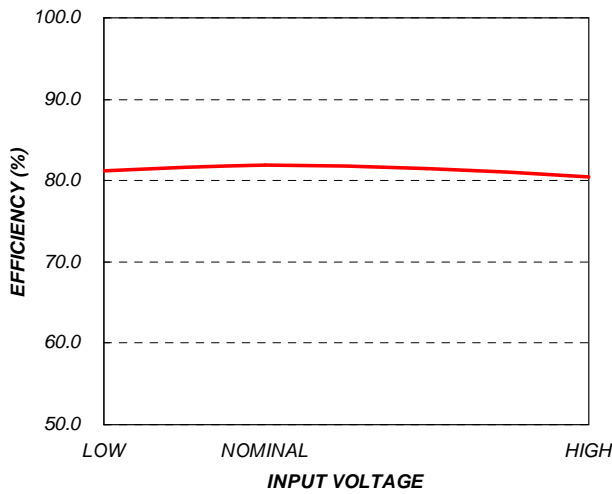
Remote Control Function ---Enable High				
Parameter	Condition	Min.	Typ.	Max.
System Disable	V-Remote	-0.5	---	0.8 (V)
	I-Remote	---	---	-600 (µA)
System Enable	V-Remote	2.5 V	---	Vin-H
	I-Remote	---	---	-500 (µA)
	Floating Remote ON/OFF Pin			
Note: Control Voltage Reference to Negative Input				

Characteristic Curve

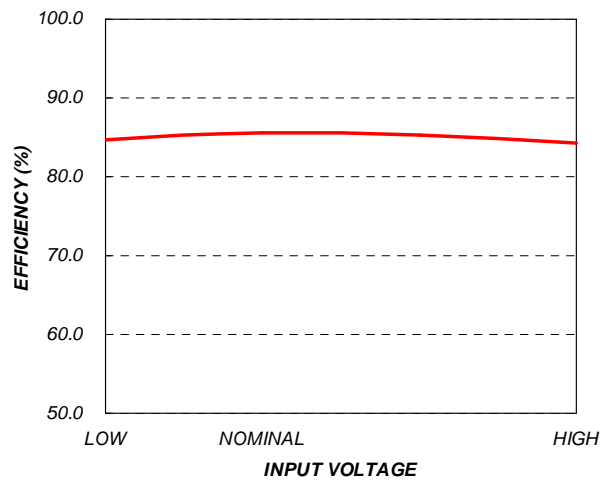
Derating Curve



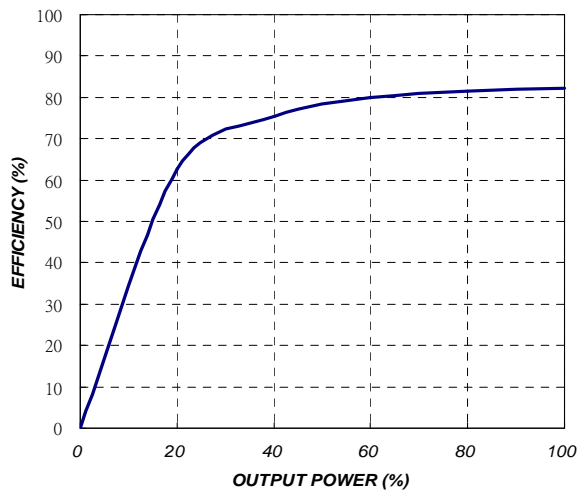
Efficiency-Curve



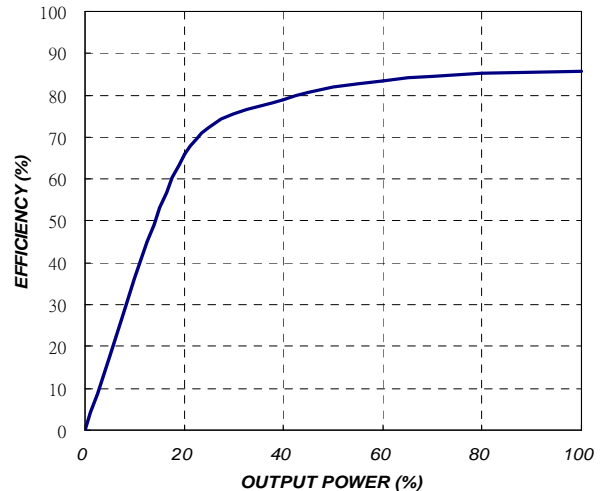
Input Voltage vs. Efficiency, $V_o = 3.3V, 5V \text{ \& } \pm 5V$



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>Single Output</p> <p>Dual Output</p> <p>Grid: 0.1 inch / 2.54 mm Dot(Drill Hole): $\phi 0.8 +0.2/-0$ mm</p>																								
Bottom View	Pin Functions																								
	<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>No Pin (Remote)</td> <td>No Pin (Remote)</td> </tr> <tr> <td>2, 3</td> <td>-Vin</td> <td>-Vin</td> </tr> <tr> <td>9</td> <td>No Pin</td> <td>Common</td> </tr> <tr> <td>11</td> <td>N.C.</td> <td>-Vout</td> </tr> <tr> <td>14</td> <td>+Vout</td> <td>+Vout</td> </tr> <tr> <td>16</td> <td>-Vout</td> <td>Common</td> </tr> <tr> <td>22, 23</td> <td>+Vin</td> <td>+Vin</td> </tr> </tbody> </table> <p>N.C.: No Connect Remote: Only for suffixed "-R" models</p>	Pin No.	Single Output	Dual Output	1	No Pin (Remote)	No Pin (Remote)	2, 3	-Vin	-Vin	9	No Pin	Common	11	N.C.	-Vout	14	+Vout	+Vout	16	-Vout	Common	22, 23	+Vin	+Vin
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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]