

**Features**

- ◇ 3 Watt Output Power
- ◇ Regulated Output
- ◇ 2:1 Wide Range Input Voltage
- ◇ Efficiency up to 84%
- ◇ Operating Temperature Range -40°C~75°C  
(Non-Derating)
- ◇ 4000VAC/5600VDC Isolation Voltage
- ◇ EMI EN55022 Class A Approval  
(with external coupling capacitor  $C_{io}=1\text{ nF} < B$ )
- ◇ Meets UL60601 Safety (Approved For Customer)
- ◇ Comply with Industrial & Medical safety
- ◇ Dual-in-line package (DIP)
- ◇ UL94V-0 Package Material
- ◇ 3 Years Warranty



**Description**

E23WH series are isolated 3 Watt DC/C converters in DIP-24pin packages, and allow a wide 2:1 input voltage range of 5V, 12V, 24V and 48V to convert to a standard output voltage of 5V, 12V, 15V,  $\pm 5V$ ,  $\pm 12V$  and  $\pm 15V$ .

The output continuous short circuit protection, low isolation capacitance, and operating temperature -40°C to +75°C (Non-Derating) are features of this converter.

**Applications**

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

**General Specifications**

Parameter	Condition	Min.	Typ.	Max.
Storage Temperature	Ambient	-55	---	+125 °C
Operating Temperature	Ambient	-40	---	+75 °C
	Case	-40	---	+90 °C
Relative humidity		---	---	95 %
Isolation Voltage	Input to Output, 60 sec.	5600VDC	---	---
Isolation Resistance	Input to Output	10 G ohm	---	---
Isolation Capacitance	Input to Output	---	7	13 pF
Switching Frequency	Max. Load	110	130	150 KHz
MTBF	Vin-N, Max. Load, 25°C	---	1 MHrs	---
Weight	Silicon	---	14 g	---
Case Material	Non-Conductive Black Plastic (Meets UL94V-0)			
Dimensions	1.25 x 0.8 x 0.41 inch ( 31.8 x 20.3 x 10.4 mm )			

**Selection Guide**

Part Number	Input				Output			Efficiency	Cap. Load <sup>(8)</sup>
	Voltage	Current		Ref. Ripple <sup>(7)</sup>	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	
E23WH-0505S	5 (4.5 ~ 9)	40	834	60	5	60	600	72	1000
E23WH-0512S			790		12	25	250	76	470
E23WH-0515S			780		15	20	200	77	470
E23WH-0505D			834		± 5	± 30	± 300	72	470
E23WH-0512D			790		± 12	± 12.5	± 125	76	220
E23WH-0515D			790		± 15	± 10	± 100	76	220
E23WH-1205S	12 (9 ~ 18)	30	334	30	5	60	600	75	1000
E23WH-1212S			313		12	25	250	80	470
E23WH-1215S			309		15	20	200	81	470
E23WH-1205D			334		± 5	± 30	± 300	75	470
E23WH-1212D			313		± 12	± 12.5	± 125	80	220
E23WH-1215D			313		± 15	± 10	± 100	80	220
E23WH-2405S	24 (18 ~ 36)	15	161	15	5	60	600	78	1000
E23WH-2412S			151		12	25	250	83	470
E23WH-2415S			149		15	20	200	84	470
E23WH-2405D			161		± 5	± 30	± 300	78	470
E23WH-2412D			151		± 12	± 12.5	± 125	83	220
E23WH-2415D			151		± 15	± 10	± 100	83	220
E23WH-4805S	48 (36 ~ 75)	7	81	10	5	60	600	78	1000
E23WH-4812S			76		12	25	250	83	470
E23WH-4815S			75		15	20	200	84	470
E23WH-4805D			81		± 5	± 30	± 300	78	470
E23WH-4812D			76		± 12	± 12.5	± 125	83	220
E23WH-4815D			76		± 15	± 10	± 100	83	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 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.
- 10) E23WH series meets EMI EN 55022 Class A with external coupling capacitor Cio= 1 nF < B.

**Input Specifications**

Parameter	Condition	Min.	Typ.	Max.
Input Voltage Range	5VDC models	4.5	5	9
	12VDC models	9	12	18 V
	24VDC models	18	24	36 V
	48VDC models	36	48	75 V
Power ON Voltage Range	5VDC models	3.7	4	4.5
	12VDC models	7	8	9 V
	24VDC models	15	17	18 V
	48VDC models	30	33	36 V
Power OFF Voltage Range	5VDC models			4
	12VDC models	---	---	8.5 V
	24VDC models	---	---	17 V
	48VDC models	---	---	34 V
Short Circuit Input Power	All models	---	---	2000 mW
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	---	± 0.3	± 0.5 %	
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, 20MHz	Single Output	---	30	50 mV
		Dual Output	---	50	75 mV
Transient Recovery Time	Vin-N, 25% load step change	---	300	500 μSec	
Transient Response Deviation		---	± 3.0	± 6.0 %Vo	

**Protection Specifications**

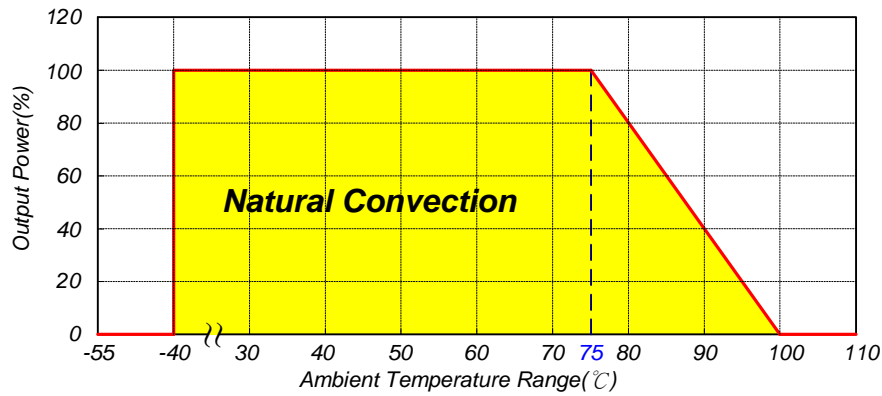
Parameter	Condition	Min.	Typ.	Max.
Over Power Protection	Vin-L to Vin-H	110%Io	---	---
Output Short Circuit Protection	Continuous, Auto-Recovery			

**Input Fuse Selection Guide**

5VDC models	12VDC models	24VDC models	48VDC models
2000mA Slow - Blow Type	1000mA Slow - Blow Type	500mA Slow - Blow Type	250mA Slow - Blow Type

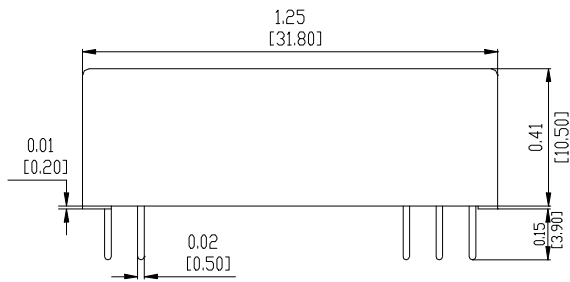
**Characteristic Curve**

**Derating Curve**

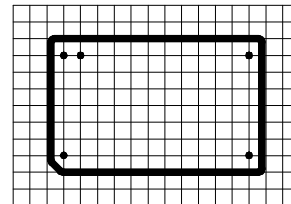


**Package Dimension**

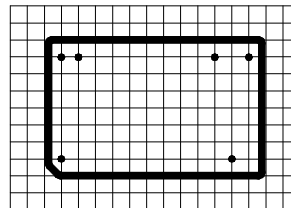
**Front View**



**Recommend Footprint Details (Top View)**



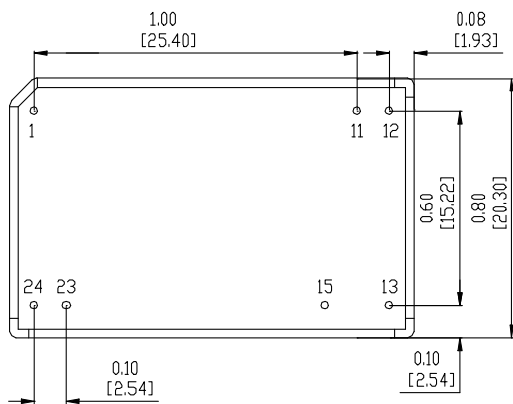
Single Output



Dual Output

Grid : 0.1 inch / 2.54 mm  
Dot(Drill Hole) :  $\phi 0.8 +0.2/-0$  mm

**Bottom View**



**Pin Functions**

Pin No.	Single Output	Dual Output
1	+Vin	+Vin
11	No Pin	Common
12	-Vout	No Pin
13	+Vout	-Vout
15	No Pin	+Vout
23, 24	-Vin	-Vin

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 dimension tolerance ±0.004 [±0.1]