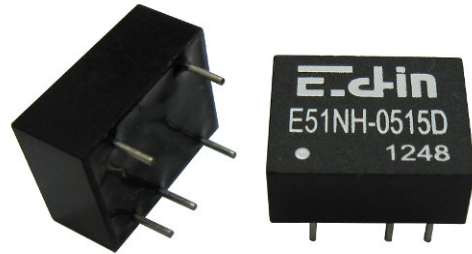


**Features**

- ◇ 1 Watt Output Power
- ◇ Output Current up to 303mA
- ◇ Un-Regulated Output
- ◇ ±10% Input Voltage Range
- ◇ Efficiency up to 81%
- ◇ 3000 VDC Isolation Voltage
- ◇ 8-Pin DIP Package
- ◇ Industrial Standard Pin-out
- ◇ UL94V-0 Package Material
- ◇ Operating Temperature Range -40~85 °C  
(Non-Derating)
- ◇ 3 Years Warranty



**Description**

E51NH series are isolated 1 Watt DC/DC converters in miniature DIP-8pin packages, and allow a ±10% range input voltage of 5V 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	---	+85 °C
	Case	-40	---	+90 °C
Relative Humidity		---	---	95 %
Isolation Voltage	Input to Output, 60 sec.	3 KVDC	---	---
Isolation Resistance	Input to Output	10 G ohm	---	---
Isolation Capacitance	Input to Output	---	---	120 pF
Switching Frequency	Max. Load	---	80 KHz	---
MTBF	Vin-N, Max. Load, 25°C	---	2 Mhrs	---
Weight	Epoxy	---	1.8 g	---
Dimensions	See Package Dimensions			
Case Material	Non-Conductive Black Plastic (Meets UL94V-0)			

**Selection Guide**

Part Number	Input			Output			Efficiency	Load Regulation	Cap. Load <sup>(7)</sup>
	Voltage	Current		Voltage	Current				
	Nominal (Low ~ High)	No Load	Max. Load	Typ.	Min.	Max.	Max. Load		
		Typ.	Typ.				Typ.		
VDC	mA	mA	VDC	mA	mA	%	%	μF	
E51NH - 0503S	5 (4.5~5.5)	40	271	3.3	6.1	303	74	10	220
E51NH - 0505S			257	5	4	200	78	10	220
E51NH - 0512S			256	12	1.7	84	79	7	220
E51NH - 0515S			255	15	1.3	67	79	7	220
E51NH - 0505D			274	± 5	± 1	± 100	73	10	100
E51NH - 0512D			252	± 12	± 0.8	± 42	80	7	100
E51NH - 0515D			248	± 15	± 0.7	± 33	80	7	100

**Input Specifications**

Parameter	Condition	Min.	Typ.	Max.
Input Voltage Range		4.5	5	5.5 V
Input Filter	All models	Internal Capacitor		

**Output Specifications**

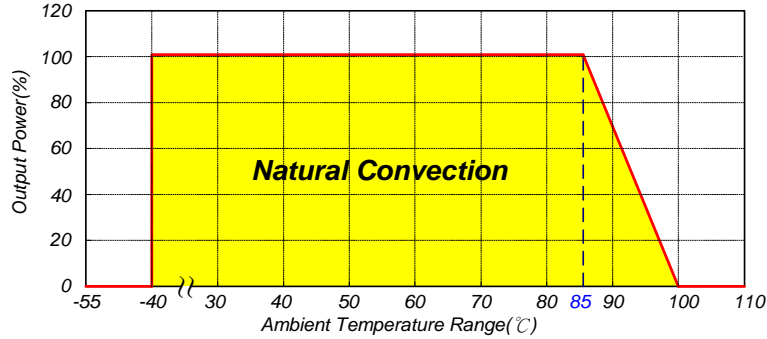
Parameter	Condition	Min.	Typ.	Max.
Output Voltage Accuracy	Vin-N, Max. Load	---	± 1.0	± 3.0 %
Balance Regulation	Vin-N, Max. Load, Dual Output	---	± 0.5	± 1.0 %
Line Regulation	Vin-L to Vin-H @ Max. Load	---	± 1.2	± 1.5 %
Load Regulation	Io = 20% to 100% Load @ Vin-N	See Model Selection Guide		
Temperature Drift	Lowest to Highest Temp.	---	± 0.01	± 0.02 %/°C
Ripple & Noise	Peak to Peak, Each Output, 20MHz	---	75	100 mV
Short Circuit Protection	Limited 0.5 sec. Max.			

**Note:**

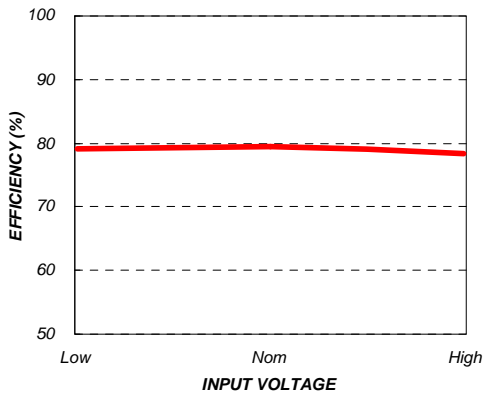
- 1) All specifications are measured at nominal input voltage, constant resistive load between Min. and Max. output current, and probe bandwidth should be under 20MHz, Ta = +25°C.
- 2) When the Load is at No-Load or lower than Min. output current, the DC/DC converters will not be damaged; however, all 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) The total Capacitive Loads of output should be lower than the value written above.
- 8) Other Input Voltages, Output Voltages and Specifications would be available, please contact us.

**Characteristic Curve**

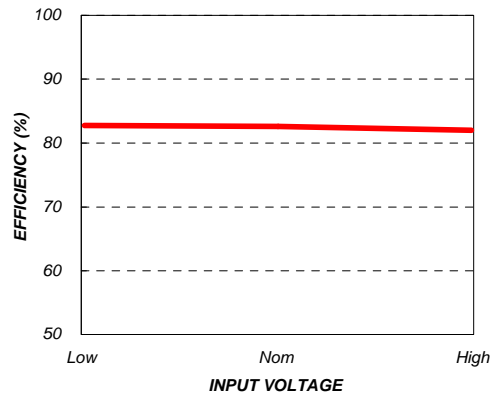
**Derating Curve**



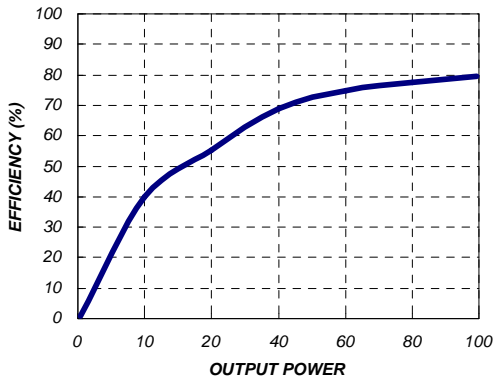
**Efficiency-Curve**



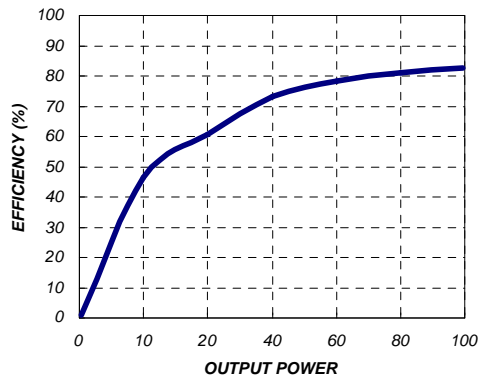
**Input Voltage vs. Efficiency,  $V_o= 3.3V, 5V \text{ \& } \pm 5V$**



**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><b>Single Output</b></p> <p><b>Dual Output</b></p> <p>Grid: 0.1 inch / 2.54 mm Dot(Drill Hole): <math>\Phi</math> 0.8 +0.2 / -0 mm</p>																		
Bottom View	Pin Functions																		
	<table border="1"> <thead> <tr> <th style="background-color: #FFD700;">Pin No.</th> <th style="background-color: #FFD700;">Single Output</th> <th style="background-color: #FFD700;">Dual Output</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-Vin</td> <td>-Vin</td> </tr> <tr> <td>4</td> <td>+Vin</td> <td>+Vin</td> </tr> <tr> <td>5</td> <td>+Vout</td> <td>+Vout</td> </tr> <tr> <td>7</td> <td>-Vout</td> <td>Com.</td> </tr> <tr> <td>8</td> <td>No Pin</td> <td>-Vout</td> </tr> </tbody> </table>	Pin No.	Single Output	Dual Output	1	-Vin	-Vin	4	+Vin	+Vin	5	+Vout	+Vout	7	-Vout	Com.	8	No Pin	-Vout
Pin No.	Single Output	Dual Output																	
1	-Vin	-Vin																	
4	+Vin	+Vin																	
5	+Vout	+Vout																	
7	-Vout	Com.																	
8	No Pin	-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]