



# EC4A SERIES

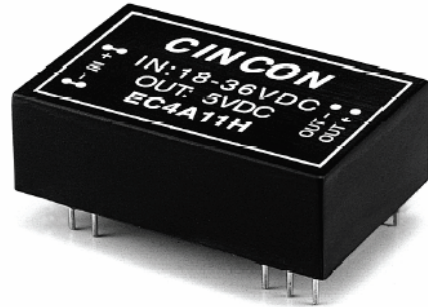
## 5-6 WATT 2:1 INPUT RANGE

### DC-DC CONVERTERS



## FEATURES

- \* 5-6W Isolated Output
- \* 24-Pin DIP Package
- \* Efficiency to 84%
- \* 2:1 Input Range
- \* Regulated Outputs
- \* Pi Input Filter
- \* Continuous Short Circuit Protection
- \* UL60950-1 Approval for H/HM Versions only



MODEL NUMBER	INPUT VOLTAGE <sup>(1)</sup>	OUTPUT VOLTAGE	OUTPUT CURRENT	INPUT CURRENT		% EFF. <sup>(2)</sup>	CAPACITOR LOAD MAX.
				NO LOAD	FULL LOAD		
EC4A01	9-18 VDC	5 VDC	1000 mA	7.5 mA	541 mA	77	4700uF
EC4A02	9-18 VDC	12 VDC	470 mA	7.5 mA	573 mA	82	4700uF
EC4A03	9-18 VDC	15 VDC	400 mA	7.5 mA	625 mA	80	4700uF
EC4A04	9-18 VDC	±12 VDC	±230 mA	12 mA	554 mA	83	2200uF
EC4A05	9-18 VDC	±15 VDC	±190 mA	12 mA	556 mA	81	2200uF
EC4A06	9-18 VDC	±5 VDC	±500 mA	12 mA	541 mA	77	2200uF
EC4A07	9-18 VDC	3.3 VDC	1000 mA	7.5 mA	382 mA	72	4700uF
EC4A11	18-36 VDC	5 VDC	1000 mA	5 mA	260 mA	80	4700uF
EC4A12	18-36 VDC	12 VDC	470 mA	5 mA	280 mA	84	4700uF
EC4A13	18-36 VDC	15 VDC	400 mA	5 mA	298 mA	84	4700uF
EC4A14	18-36 VDC	±12 VDC	±230 mA	7.5 mA	280 mA	82	2200uF
EC4A15	18-36 VDC	±15 VDC	±190 mA	7.5 mA	293 mA	81	2200uF
EC4A16	18-36 VDC	±5 VDC	±500 mA	7.5 mA	260 mA	80	2200uF
EC4A17	18-36 VDC	3.3 VDC	1000 mA	5 mA	186 mA	74	4700uF
EC4A21	36-72 VDC	5 VDC	1000 mA	2 mA	132 mA	79	4700uF
EC4A22	36-72 VDC	12 VDC	470 mA	2 mA	142 mA	83	4700uF
EC4A23	36-72 VDC	15 VDC	400 mA	2 mA	154 mA	81	4700uF
EC4A24	36-72 VDC	±12 VDC	±230 mA	3 mA	142 mA	81	2200uF
EC4A25	36-72 VDC	±15 VDC	±190 mA	3 mA	147 mA	81	2200uF
EC4A26	36-72 VDC	±5 VDC	±500 mA	3 mA	130 mA	80	2200uF
EC4A27	36-72 VDC	3.3 VDC	1000 mA	2 mA	93 mA	74	4700uF

### NOTE:

1. Nominal Input Voltage is 12, 24 or 48 VDC.
2. Typical value at nominal input voltage and full load.

# SPECIFICATIONS

All Specifications Typical At Nominal Line, Full Load, and 25°C Unless Otherwise Noted

## INPUT SPECIFICATIONS:

Input Voltage Range	12V	9-18V
	24V	18-36V
	48V	36-72V
Input Surge Voltage (100ms max.)	12V	25Vdc max.
	24V	50Vdc max.
	48V	100Vdc max.
Input Filter	Pi Type	

## OUTPUT SPECIFICATIONS:

Voltage Accuracy	±2.0% max.	
Voltage Balance (Dual)	±1.0% max.	
Temperature Coefficient	±0.05%/°C	
Ripple & Noise, 20MHz BW	3.3V/5V	100mV pk-pk, max
	12V/15V	1% pk-pk max.
Short Circuit Protection	Continuous	
Line Regulation	Single/Dual (note1)	±0.5% max.
Load Regulation	Single (note2)	±0.5% max.
	Dual (note3)	±1.0% max.

## NOTE:

1. Measured From High Line to Low Line.
2. Measured From Full Load to 10% Load.
3. Measured From Full Load to 1/4 Load.
4. Maximum case temperature under any operating condition should not be exceed 95°C (Plastic Case), 100°C (Copper Case).

## GENERAL SPECIFICATIONS:

Efficiency	See Table
Isolation Voltage:	
500 VDC min.	Standard Models
3K VDC min. ... (Non-Conductive Black Plastic Only)	Suffix "H" Models
1.5K VDC min.	Suffix "HM" Models
Isolation Resistance	10 <sup>9</sup> ohm min.
Switching Frequency	100KHz min.
Operating Ambient Temperature Range	-25°C to +71°C
Power de-rating Curve	see Figure1
Case Temperature (note4) ... Plastic/Copper case...	95°C/100°C max.
Cooling	Natural Convection
Storage Temperature Range	-40°C to +100°C
Humidity	95% RH max. Non condensing
MTBF	MIL-STD-217F 2000Khrs typ.
Dimensions	DIP ... 1.25×0.80×0.40 inches(31.8×20.3×10.2 mm)
	SMD ... 1.25×0.80×0.45 inches(31.8×20.3×11.4 mm)
Case Material:	
Standard Models	Non-Conductive Black Plastic
Suffix "M" Models	Black Coated Copper with Non-conductive Base
Suffix "S" Models	SMD package
Weight	12.5g

## Case A Dimensions:

NOTE: Pin Size is 0.02 ±0.002 Inch (0.5±0.05 mm) DIA  
 All Dimensions In Inches (mm)  
 Tolerances Inches: X.XX= ±0.02 , X.XXX= ±0.010  
 Millimeters: X.X= ±0.5 , X.XX=±0.25

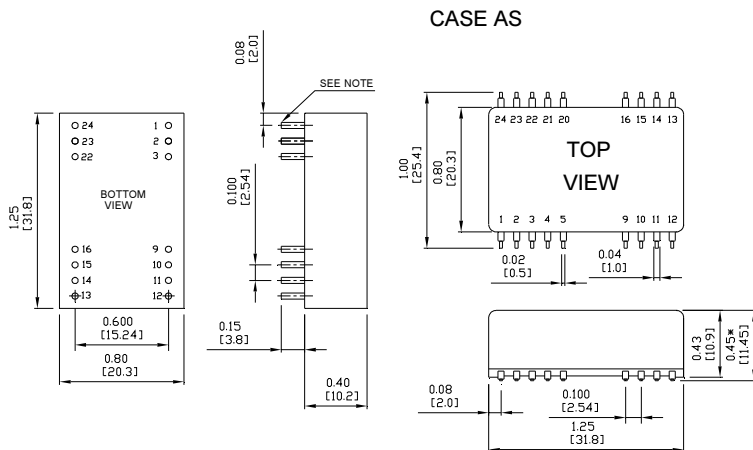
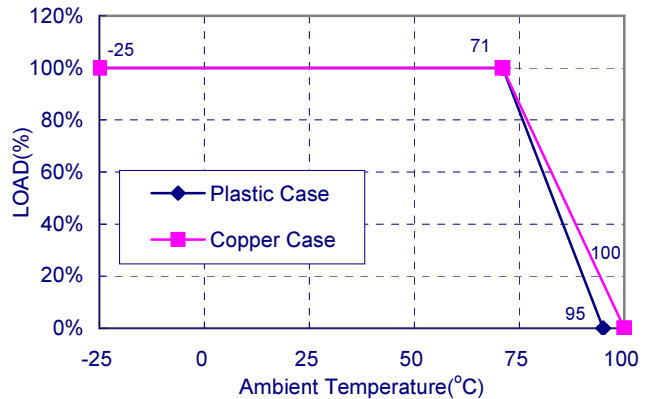


Figure1. Typical Derating curve for Natural Convection



PIN CONNECTION									
Pin	500 VDC				1.5K & 3K VDC				
	Single Output		Dual Output		Pin	Single Output		Dual Output	
	DIP	SMD	DIP	SMD		DIP	SMD	DIP	SMD
1,24	+V Input		+V Input		1,24	NP	NC	NP	NC
2,23	NC		-V Output		2,3	-V Input		-V Input	
3,22	NC		Common		4,5	NP	NC	NP	NC
4	NP	NC	NP	NC	9	NC		Common	
5	NP	NC	NP	NC	10,15	NC		NC	
9	NP	NC	NP	NC	11	NC		-V Output	
10,15	-V Output		Common		12,13	NP	NC	NP	NC
11,14	+V Output		+V Output		14	+V Output		+V Output	
12,13	-V Input		-V Input		16	-V Output		Common	
16	NP	NC	NP	NC	20,21	NP	NC	NP	NC
20,21	NP	NC	NP	NC	22,23	+V Input		+V Input	

\* NP-NO PIN  
 \* NC-NO CONNECTION WITH PIN