



# EC4A SERIES

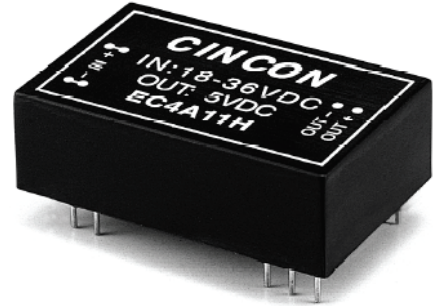
## 5-6 WATT 2:1 INPUT RANGE

### 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
- \* Safety Meets IEC/EN/UL 62368-1



MODEL NUMBER <sup>(1)</sup>	INPUT VOLTAGE <sup>(2)</sup>	OUTPUT VOLTAGE	OUTPUT CURRENT	INPUT CURRENT		% EFF. <sup>(3)</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. □ Can be None, M, H, HM, MS or HMS.
2. Nominal Input Voltage is 12, 24 or 48 VDC.
3. 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 max.	
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.

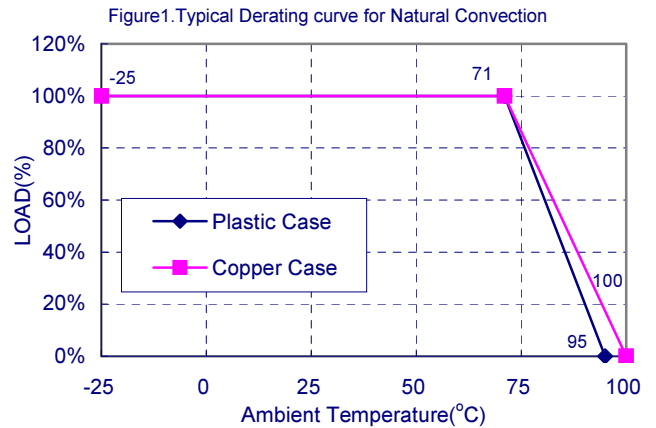
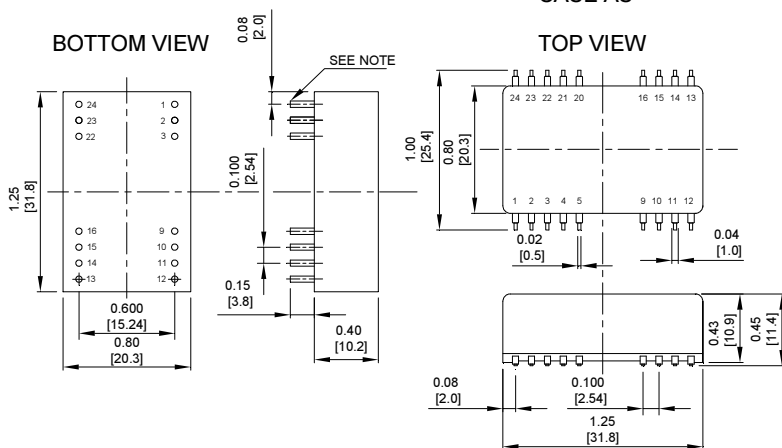
## NOTE:

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 Figure 1
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-HBDK-217F ..... 2000Khrs typ.
Dimensions .....	DIP..... 1.25x0.80x0.40 inches (31.8x20.3x10.2 mm)
	SMD ... 1.25x0.80x0.45 inches (31.8x20.3x11.4 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:



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
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  
 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