



# EC3A SERIES

## 3 WATT 2:1 INPUT RANGE

### DC-DC CONVERTERS



## FEATURES

- \* 3W Isolated Output
- \* 24-Pin DIP Package
- \* Efficiency to 82%
- \* 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		
EC3A01□	4.5-6 VDC	5 VDC	600 mA	15 mA	800 mA	75	2200uF
EC3A02□	4.5-6 VDC	12 VDC	250 mA	15 mA	759 mA	79	2200uF
EC3A03□	4.5-6 VDC	15 VDC	200 mA	15 mA	779 mA	77	2200uF
EC3A04□	4.5-6 VDC	±5 VDC	±300 mA	25 mA	779 mA	77	1000uF
EC3A05□	4.5-6 VDC	±12 VDC	±125 mA	25 mA	789 mA	76	1000uF
EC3A06□	4.5-6 VDC	±15 VDC	±100 mA	25 mA	800 mA	75	1000uF
EC3A07□	4.5-6 VDC	3.3 VDC	600 mA	15 mA	582 mA	68	2200uF
EC3A11□	9-18 VDC	5 VDC	600 mA	7.5 mA	325 mA	77	2200uF
EC3A12□	9-18 VDC	12 VDC	250 mA	7.5 mA	313 mA	80	2200uF
EC3A13□	9-18 VDC	15 VDC	200 mA	7.5 mA	316 mA	79	2200uF
EC3A14□	9-18 VDC	±5 VDC	±300 mA	12 mA	325 mA	77	1000uF
EC3A15□	9-18 VDC	±12 VDC	±125 mA	12 mA	325 mA	77	1000uF
EC3A16□	9-18 VDC	±15 VDC	±100 mA	12 mA	316 mA	79	1000uF
EC3A17□	9-18 VDC	3.3 VDC	600 mA	7.5 mA	229 mA	72	2200uF
EC3A21□	18-36 VDC	5 VDC	600 mA	5 mA	158 mA	79	2200uF
EC3A22□	18-36 VDC	12 VDC	250 mA	5 mA	156 mA	80	2200uF
EC3A23□	18-36 VDC	15 VDC	200 mA	5 mA	152 mA	82	2200uF
EC3A24□	18-36 VDC	±5 VDC	±300 mA	7.5 mA	162 mA	77	1000uF
EC3A25□	18-36 VDC	±12 VDC	±125 mA	7.5 mA	158 mA	79	1000uF
EC3A26□	18-36 VDC	±15 VDC	±100 mA	7.5 mA	154 mA	81	1000uF
EC3A27□	18-36 VDC	3.3 VDC	600 mA	5 mA	111 mA	74	2200uF
EC3A31□	36-72 VDC	5 VDC	600 mA	2 mA	78 mA	79	2200uF
EC3A32□	36-72 VDC	12 VDC	250 mA	2 mA	78 mA	80	2200uF
EC3A33□	36-72 VDC	15 VDC	200 mA	2 mA	78 mA	80	2200uF
EC3A34□	36-72 VDC	±5 VDC	±300 mA	3 mA	80 mA	78	1000uF
EC3A35□	36-72 VDC	±12 VDC	±125 mA	3 mA	80 mA	78	1000uF
EC3A36□	36-72 VDC	±15 VDC	±100 mA	3 mA	80 mA	78	1000uF
EC3A37□	36-72 VDC	3.3 VDC	600 mA	3 mA	57 mA	72	2200uF

### NOTE:

1. □ Can be None, M, H, HM, MS or HMS.
2. Nominal Input Voltage is 5, 12, 24 or 48VDC.
3. Typical Value at Nominal Input Voltage and Full Load.

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# SPECIFICATIONS

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

## INPUT SPECIFICATIONS:

Input Voltage Range	5V	4.5-6V
	12V	9-18V
	24V	18-36V
	48V	36-72V
Input Surge Voltage (100ms max.)	5V	10Vdc 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 (note2)	±1.0% max.

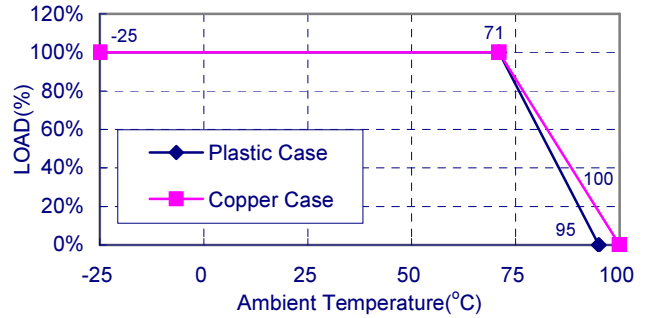
## NOTE:

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).

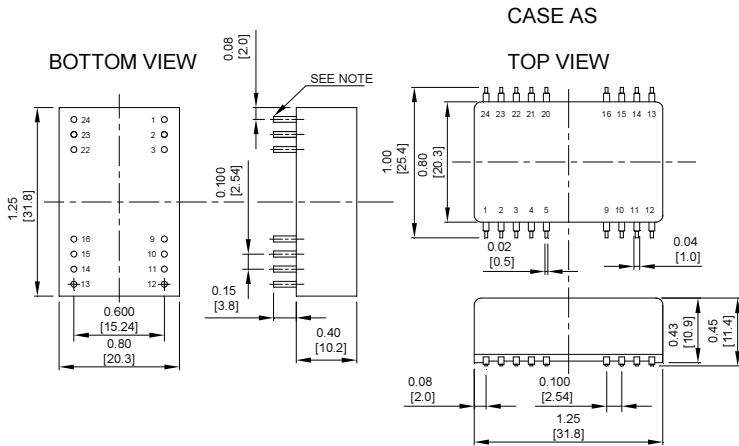
## GENERAL SPECIFICATIONS:

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-HDBK-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

Figure1. Typical Derating curve for Natural Convection



## 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	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  
 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

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