



EC3A SERIES

3 WATT 2:1 INPUT RANGE

DC-DC CONVERTERS



FEATURES

- * 3W Isolated Output
- * 24-Pin DIP Package
- * Efficiency to 87%
- * 2:1 Input Range
- * Regulated Outputs
- * Pi Input Filter
- * Continuous Short Circuit Protection
- * Meet EMI EN55022 class A ("-E" model)
- * No Tantalum Capacitor inside ("-E" model)
- * Wide Operating Temperature Range ("-E" model)
- * UL60950-1 Approval for H/HM Versions only and "-E" Model



MODEL NUMBER ⁽¹⁾	INPUT VOLTAGE ⁽²⁾		OUTPUT VOLTAGE	OUTPUT CURRENT	INPUT CURRENT				% EFF. ⁽³⁾		CAPACITOR LOAD MAX.
					NO LOAD		FULL LOAD				
		"-E"				"-E"		"-E"		"-E"	
EC3A01	4.5-6 VDC	4.5-9 VDC	5 VDC	600 mA	15 mA	15 mA	800 mA	779 mA	75	77	2200uF
EC3A02	4.5-6 VDC	4.5-9 VDC	12 VDC	250 mA	15 mA	15 mA	759 mA	750 mA	79	80	2200uF
EC3A03	4.5-6 VDC	4.5-9 VDC	15 VDC	200 mA	15 mA	15 mA	779 mA	750 mA	77	80	2200uF
EC3A04	4.5-6 VDC	4.5-9 VDC	±5 VDC	±300 mA	25 mA	25 mA	779 mA	779 mA	77	77	1000uF
EC3A05	4.5-6 VDC	4.5-9 VDC	±12 VDC	±125 mA	25 mA	25 mA	789 mA	750 mA	76	80	1000uF
EC3A06	4.5-6 VDC	4.5-9 VDC	±15 VDC	±100 mA	25 mA	25 mA	800 mA	750 mA	75	80	1000uF
EC3A07	4.5-6 VDC	4.5-9 VDC	3.3 VDC	600 mA	15 mA	15 mA	582 mA	550 mA	68	72	2200uF
EC3A11	9-18 VDC		5 VDC	600 mA	7.5 mA	7.5 mA	325 mA	309 mA	77	81	2200uF
EC3A12	9-18 VDC		12 VDC	250 mA	7.5 mA	10 mA	313 mA	298 mA	80	84	2200uF
EC3A13	9-18 VDC		15 VDC	200 mA	7.5 mA	10 mA	316 mA	294 mA	79	85	2200uF
EC3A14	9-18 VDC		±5 VDC	±300 mA	12 mA	15 mA	325 mA	305 mA	77	82	1000uF
EC3A15	9-18 VDC		±12 VDC	±125 mA	12 mA	12 mA	325 mA	298 mA	77	84	1000uF
EC3A16	9-18 VDC		±15 VDC	±100 mA	12 mA	15 mA	316 mA	294 mA	79	85	1000uF
EC3A17	9-18 VDC		3.3 VDC	600 mA	7.5 mA	7.5 mA	229 mA	212 mA	72	78	2200uF
EC3A21	18-36 VDC		5 VDC	600 mA	5 mA	7.5 mA	158 mA	152 mA	79	82	2200uF
EC3A22	18-36 VDC		12 VDC	250 mA	5 mA	7.5 mA	156 mA	145 mA	80	86	2200uF
EC3A23	18-36 VDC		15 VDC	200 mA	5 mA	7.5 mA	152 mA	145 mA	82	86	2200uF
EC3A24	18-36 VDC		±5 VDC	±300 mA	7.5 mA	7.5 mA	162 mA	152 mA	77	82	1000uF
EC3A25	18-36 VDC		±12 VDC	±125 mA	7.5 mA	10 mA	158 mA	147 mA	79	85	1000uF
EC3A26	18-36 VDC		±15 VDC	±100 mA	7.5 mA	10 mA	154 mA	145 mA	81	86	1000uF
EC3A27	18-36 VDC		3.3 VDC	600 mA	5 mA	5 mA	111 mA	106 mA	74	78	2200uF
EC3A31	36-72 VDC		5 VDC	600 mA	2 mA	3 mA	78 mA	74 mA	79	84	2200uF
EC3A32	36-72 VDC		12 VDC	250 mA	2 mA	3 mA	78 mA	73 mA	80	86	2200uF
EC3A33	36-72 VDC		15 VDC	200 mA	2 mA	5 mA	78 mA	73 mA	80	86	2200uF
EC3A34	36-72 VDC		±5 VDC	±300 mA	3 mA	5 mA	80 mA	74 mA	78	85	1000uF
EC3A35	36-72 VDC		±12 VDC	±125 mA	3 mA	5 mA	80 mA	72 mA	78	87	1000uF
EC3A36	36-72 VDC		±15 VDC	±100 mA	3 mA	5 mA	80 mA	72 mA	78	87	1000uF
EC3A37	36-72 VDC		3.3 VDC	600 mA	3 mA	3 mA	57 mA	52 mA	72	79	2200uF

NOTE:

1. Suffix "-E" of the models are high efficiency and wide operating temperature version.
2. Nominal Input Voltage is 5, 12, 24 or 48VDC.
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	5V	4.5-6V, 4.5-9V
	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:

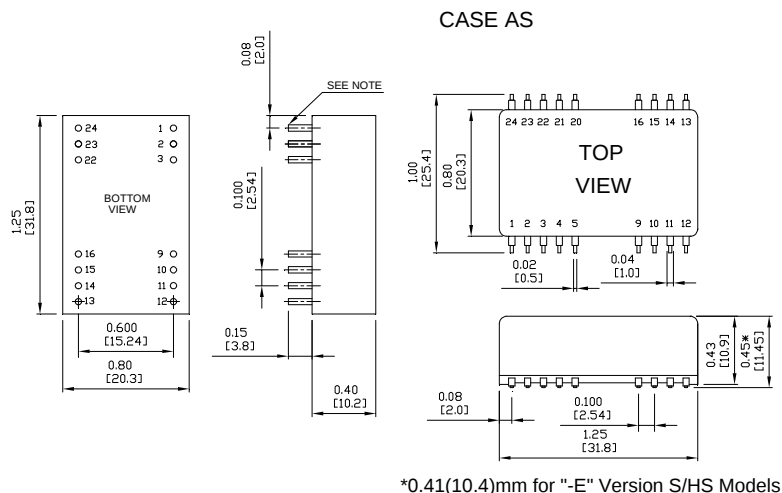
Voltage Accuracy		±2.0% max.
Voltage Balance (Dual)		±1.0% max.
Temperature Coefficient		±0.05%/°C
Ripple & Noise, 20MHz BW (Note 5)	3.3V/5V	100mV p-p, max.
	12V/15V	1% p-p max.
Short Circuit Protection		Continuous
Line Regulation	Single/Dual (Note 1)	±0.5% max.
Load Regulation	Single (Note 2)	±0.5% max.
	Dual (Note 3)	±1.0% max.
Start up time		10 ms 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 exceed 95°C (Plastic Case), 100°C (Copper Case).
5. The output noise is measured with 0.1uF MLCC across for SMD package
6. S and HS models for "E" Version Only

Case A Dimensions:

NOTE: Pin Size is 0.02 ±0.002Inch (0.5±0.05mm) 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



GENERAL SPECIFICATIONS:

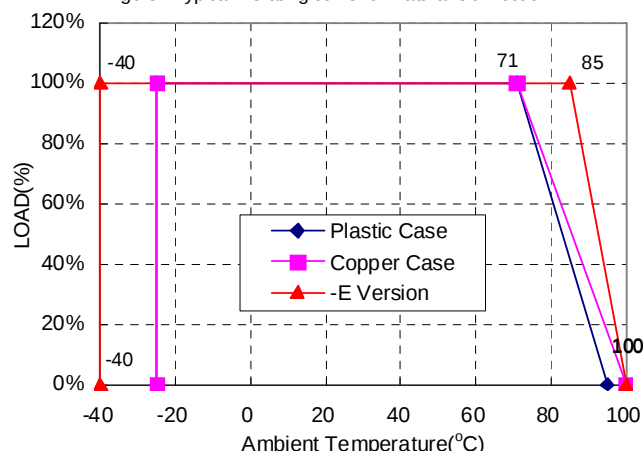
Efficiency		See Table
Isolation Voltage:		
500 VDC min.		Standard Models
3K VDC min.	(Non-Conductive Black Plastic Only)	Suffix "H" Models
1.5K VDC min.		Suffix "HM" Models
Isolation Resistance		10 ⁹ ohm min.
Isolation Capacitance		250pF Typ.
Switching Frequency		100KHz, min.
Operating Ambient Temperature Range		-25°C to +71°C
		"-E" models: -40°C to +85°C

Power de-rating Curve		see Figure1
Case Temperature (Note 4)	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.
		"-E" models: 2500Khrs typ.
Dimensions	DIP	1.25×0.80×0.40 inches(31.8×20.3×10.2mm)
	SMD	1.25×0.80×0.45 inches(31.8×20.3×11.4mm)
	S/HS Models (note 6)	1.25×0.80×0.41 inches(31.8×20.3×10.4mm)

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



PIN CONNECTION									
500 VDC					1.5K & 3K VDC				
Pin	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

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Cincon:

<u>EC3A01-E</u>	<u>EC3A02-E</u>	<u>EC3A03-E</u>	<u>EC3A04-E</u>	<u>EC3A05-E</u>	<u>EC3A06-E</u>	<u>EC3A07-E</u>	<u>EC3A11-E</u>	<u>EC3A12-E</u>	<u>EC3A13-E</u>
<u>EC3A14-E</u>	<u>EC3A15-E</u>	<u>EC3A16-E</u>	<u>EC3A17-E</u>	<u>EC3A21-E</u>	<u>EC3A22-E</u>	<u>EC3A23-E</u>	<u>EC3A24-E</u>	<u>EC3A25-E</u>	<u>EC3A26-E</u>
<u>EC3A27-E</u>	<u>EC3A31-E</u>	<u>EC3A32-E</u>	<u>EC3A33-E</u>	<u>EC3A34-E</u>	<u>EC3A35-E</u>	<u>EC3A36-E</u>	<u>EC3A37-E</u>		