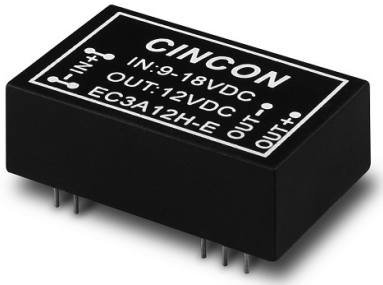
EC3A-E SERIES

3 WATT 2:1 INPUT RANGE DC-DC CONVERTERS

E176177



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 EN55032 Class A
* No Tantalum Capacitor Inside
* Wide Operating Temperature Range
* UL60950-1 2nd Approval
* Safety Meets IEC/EN/UL 62368-1

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

NOTE:

1. □ Can be None, M, H, HM, S, MS, HS or HMS.
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℃ Unless Otherwise Noted

INPUT SPECIFICATIONS:

Input Voltage Range ..... 5V 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.
Under Voltage Lockout ..... 5V power up 4.4Vdc
5V power down 4.2Vdc
12V power up 8.8Vdc
12V power down 8Vdc
24V power up 17Vdc
24V power down 16Vdc
48V power up 34Vdc
48V power down 31Vdc
Input Filter ..... Pi Type

OUTPUT SPECIFICATIONS:

Voltage Accuracy ..... ±1.5% max.
Voltage Balance (Dual) ..... ±1.0% max.
Temperature Coefficient ..... ±0.05%/℃ max.
Ripple & Noise, 20MHz BW (note5) ..... 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.
Start up Time .....10 ms max.

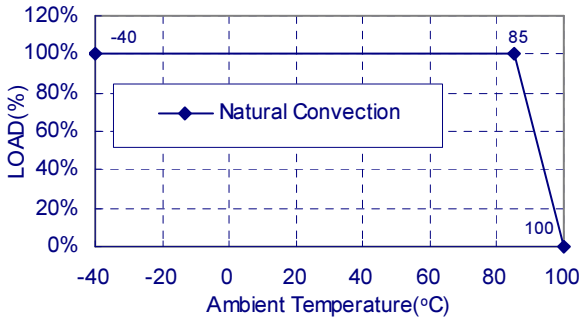
GENERAL SPECIFICATIONS:

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 ..... -40℃ to +85℃
De-Rating, Above 85℃ ..... Linearly to Zero Power at 100℃
Case Temperature (note4) ..... 100℃ max.
Cooling ..... Natural Convection
Storage Temperature Range ..... -40℃ to +100℃
EMI ..... Conductive EMI Meet EN55032 Class A
Humidity ..... 95% RH max. Non Condensing
MTBF ..... MIL-HDBK-217F ..... 2500Khrs typ.
Dimensions ..... DIP ..... 1.25×0.80x0.40 inches (31.8x20.3×10.2 mm)
MS/HMS Models ..... 1.25×0.80x0.45 inches (31.8x20.3×11.4 mm)
S/HS Models ..... 1.25×0.80x0.41 inches (31.8x20.3×10.4 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

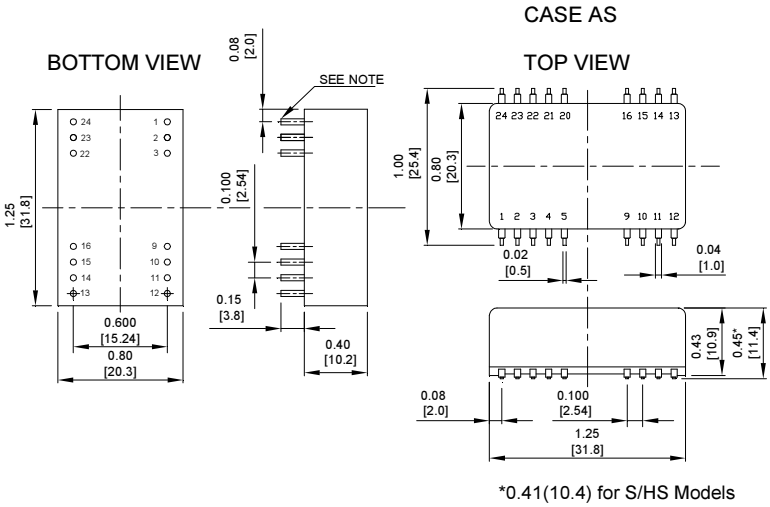
NOTE:

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 100℃.
5. The output noise is measured with 0.1uF MLCC across for SMD package.

Figure1.Typical Derating curve for Natural Convection



Case A Dimensions:



*0.41(10.4) for S/HS Models

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

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