EC3AW8 SERIES
1.98-3WATT 8:1 INPUT RANGE ISOLATED DC-DC CONVERTER

Features

- Efficiency up to 87%
- Fixed Switching Frequency
- Positive Remote On/Off (Optional)
- Fully Protected (OVP/OCP/UVLO)
- 3000Vdc I/O Isolation
- Operating Temperature -40 to +105℃
- 1.25"x0.8"x0.4" Size Meet Industrial Standard
- Safety Meets IEC/EN/UL 62368-1
- Meets EN 55032 Class A without external filter
- 5000m Operating Altitude

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT		INPUT CURRENT 48Vin（TYP.）		% EFF（TYP.）			CAPACITORLOAD MAX.
			MIN.	MAX.	NO LOAD	FULL LOAD	12Vin	24Vin	48Vin	
EC3AW8-48S33	9-75 VDC	3.3 VDC	0 mA	600 mA	5 mA	55 mA	78	78	76	600uF
EC3AW8-48S05	9-75 VDC	5 VDC	0 mA	600 mA	5 mA	77 mA	83	84	82	600uF
EC3AW8-48S12	9-75 VDC	12 VDC	0 mA	250 mA	5 mA	73 mA	87	87	86	250uF
EC3AW8-48S15	9-75 VDC	15 VDC	0 mA	200 mA	7 mA	74 mA	86	86	85	200uF
EC3AW8-48D05	9-75 VDC	±5 VDC	0 mA	±300 mA	5 mA	77 mA	84	84	82	300uF
EC3AW8-48D12	9-75 VDC	±12 VDC	0 mA	±125 mA	5 mA	74 mA	86	87	85	125uF
EC3AW8-48D15	9-75 VDC	±15 VDC	0 mA	±100 mA	7 mA	75 mA	86	87	84	100uF

NOTE:

1. Nominal input voltage $12V_{dc}$,$24V_{dc}$ or $48V_{dc}$.
2. Measured at nominal input voltage.

PART NUMBER

Series	Nominal Input Voltage	Number of Outputs	Nominal Output Voltage	Remote On/Off Logic
EC3AW8-	II	O	XX	L
EC3AW8	48：48 VDC	S：Single D：Dual	33：3.3VDC 05：5.0VDC 12：12VDC 15：15VDC 05：±5.0 VDC 12：±12 VDC 15：±15 VDC	Blank：None P：Positive

Part Number Example:

EC3AW8-48S12: 3W, 8:1 9-75Vdc Input, Single 12Vdc Output

EC3AW8-48S12P: 3W, 8:1 9-75Vdc Input, Single 12Vdc Output, Positive Logic

TECHNICAL SPECIFICATIONS

(All specifications are typical at nominal input, full load at 25℃ unless otherwise noted.)

ABSOLUTE MAXIMUM RATINGS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Input Voltage	Continuous	All	-0.3		75	V_{dc}
Input Surge Voltage	100ms max.	All			100	V_{dc}
Operating Temperature	With de-rating, above 85℃	All	-40		105	℃
Operating Case Temperature	At the center part of case plate	All	-40		115	℃
Storage Temperature		All	-55		125	℃

INPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Operating Input Voltage		All	9	48	75	V_{dc}
Input Under Voltage Lockout						
Turn-On Voltage Threshold	100% Load	All	7.6	8.1	8.8	V_{dc}
Turn-Off Voltage Threshold	100% Load	All	7.0	7.5	8.0	V_{dc}
Lockout Hysteresis Voltage	100% Load	All		0.6		V_{dc}
Maximum Input Current	V_{in}=9V_{dc}, Full load	All		420		mA
No-Load Input Current	V_{in}=48V_{dc}, I_o=0A	See Model Number Table				mA
Input Filter	Pi Type	All				
Inrush Current (I^2t)	As per ETS300 132-2	All			0.1	A^2s
Input Reflected Ripple Current	V_{in}=Nominal, L=12uH, Load=Full load	All		30		mA

OUTPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Voltage Set Point Accuracy	V_{in}=48V_{dc}, Full load, T_c=25℃	3.3Vo Others	-2.0 -1.5		+2.0 +1.5	%
Output Voltage Balance	V_{in}=48V_{dc}, Full load, T_c=25℃	±5Vo Others	-2.0 -1.0		+2.0 +1.0	%
Output Voltage Regulation						
Load Regulation	Full load to no load	Single Dual			±0.5 ±1.0	%
Line Regulation	V_{in}=High line to low line, full load	All			±0.5	%
Cross Regulation	Asymmetrical load 25%/100%	Dual			±5	%
Temperature Coefficient	T_c=-40℃ to 85℃	All			±0.05	%/℃
Over Voltage Protection	Built-in a zener diode component to clamp output voltage	3.3Vo 5Vo 12Vo 15Vo ±5Vo ±12Vo ±15Vo	3.795 5.75 13.8 17.25 ±5.75 ±13.8 ±17.25	4.15 6.6 15.6 19.15 ±6.6 ±15.6 ±19.15	4.62 7 16.8 21 ±7 ±16.8 ±21	V
Output Voltage Ripple and Noise (20MHz bandwidth)						
Peak-to-Peak	Full load, 1uF ceramic capacitors	All			100	mV
Output Current Range	V_{in}= 9 to 75V_{dc}	See Model Number Table				A
Over Current Protection	Hiccup mode. Auto recovery	All	110		230	%
Short Circuit Protection		All	Continuous, Auto Recovery			
External Load Capacitance	Full load (resistive)	See Model Number Table				uF

EFFICIENCY

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
100% Load	V_{in}=12V_{dc}, 24V_{dc}, 48V_{dc}	All		See Model Number Table		%

DYNAMIC CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Output Voltage Current Transient						
Error Band	75% to 100% of $I_{o\_max.}$ step load change d_i/d_t=0.1A/us (within 1% V_{out} nominal)	All			±5	%
Recovery Time		All			250	us
Turn-On Delay and Rise Time	Full load (Constant resistive load)					
Turn-On Delay Time, From Input	$V_{in\ min.}$ to 10%$V_{o\_set,}$ Power up	All		10		ms
Output Voltage Rise Time	10%V_{o_set} to 90%V_{o_set}	All		8		ms

ISOLATION CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Isolation Voltage (100% factory Hi-Pot tested @2sec.)	1 Minute; input to output	All			3000	V_{dc}
Isolation Resistance	Input to output	All	1000			MΩ
Isolation Capacitance	Input to output	All		1000		pF

FEATURE CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Switching Frequency	Pulse width modulation (PWM), fixed	All		200		KHz
On/Off Control, Positive Remote On/Off Logic, Refer to -Vin Pin						
Logic High (Module Off)	$V_{on/off}$ at $I_{on/off}$=1.0mA	All	0		1.2	V_{dc}
Logic Low (Module On)	$V_{on/off}$ at $I_{on/off}$=0.0uA, Pin open=on	All	3.5 or Open Circuit		75	V_{dc}
Off Converter Input Current	Shutdown input idle current	All			1	mA

GENERAL SPECIFICATIONS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
MTBF	I_o=100% of $I_{o\_max.}$; MIL-HDBK - 217F_Notice 1, GB, 25℃	3.3Vo 5Vo 12Vo 15Vo ±5Vo ±12Vo ±15Vo		3591 3425 2864 3131 3263 2550 2804		K hours
Weight		All		12.3		grams
Case Material	Plastic, DAP, UL 94V-0					
Base plate Material	Non-conductive base					
Potting Material	UL 94V-0					
Pin Material	Base: Copper with Steel Plating: Barrel Tin					
Shock/Vibration	MIL-STD-810F Compliant					
Humidity	95% RH max. Non Condensing					
Altitude	5000m Operating altitude，12000m Transport altitude					
Thermal Shock	MIL-STD-810F					

EMC SPECIFICATIONS (External components required, please refer to application note.)

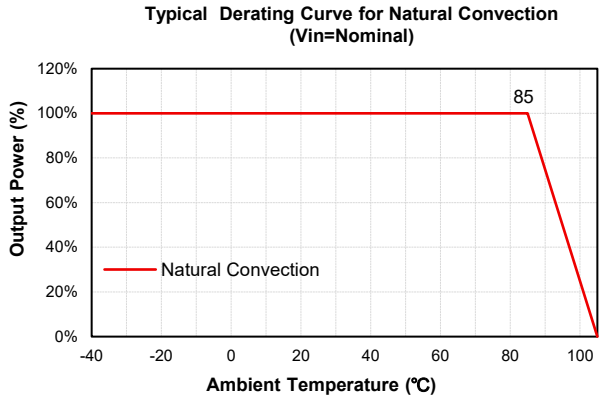
EMI Conduction	Meets EN 55032 Class A (without external filter), Meets EN 55032 Class B (with external filter)	
EMI Radiation	Meets EN 55032 Class A & Class B (without external filter)	
ESD	Meets EN 61000-4-2 Level 2: Air ±8kV, Contact ±4kV	Perf. Criteria A

GENERAL SPECIFICATIONS

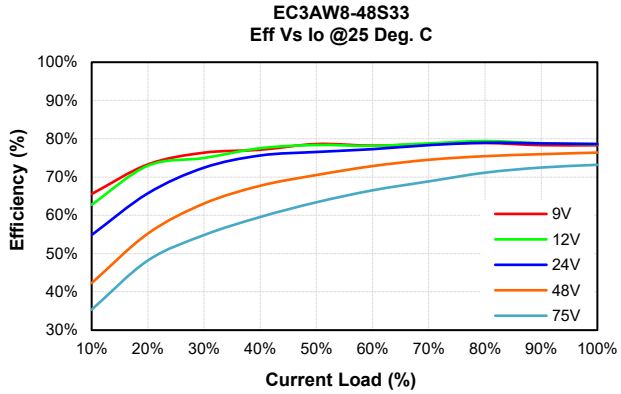
Radiated Immunity	Meets EN 61000-4-3 Level 2: 80~1000MHz, 3V/m	Perf. Criteria A
Fast Transient	Meets EN 61000-4-4 Level 2: On power input port, ±0.5kV, external input TVS required	Perf. Criteria A
Surge	Meets EN 61000-4-5 Level 2: Line to line, ±0.5kV, external input TVS required	Perf. Criteria A
Conducted Immunity	Meets EN 61000-4-6 Level 2: 0.15~80MHz, 3V	Perf. Criteria A
Application Note Link		EC3AW8 Series App Notes
Packaging Information Link		Packaging Information

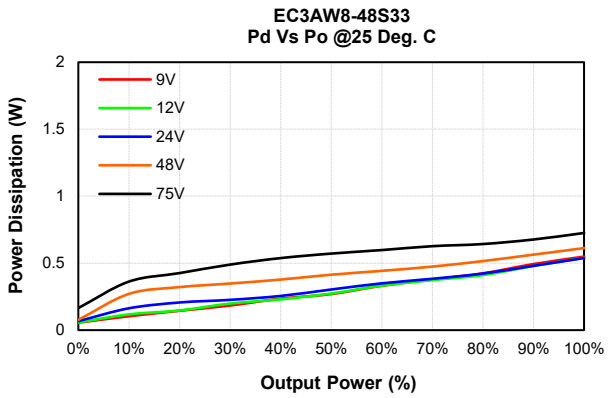
CHARACTERISTIC CURVE

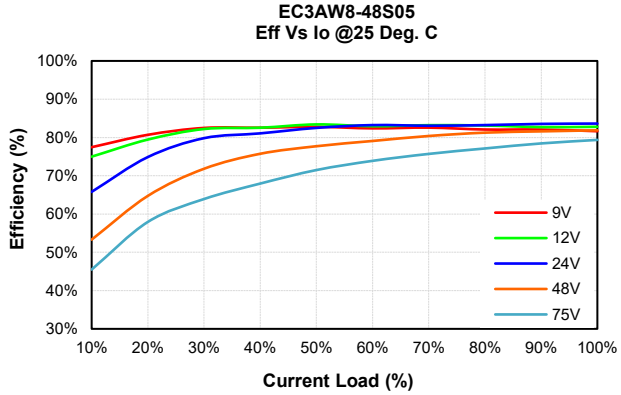
Power Derating Curve

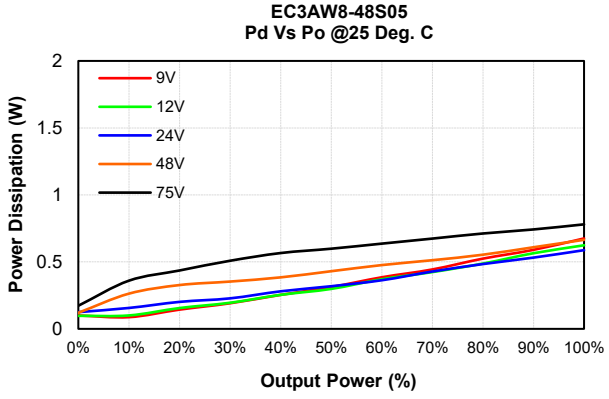


Performance Data

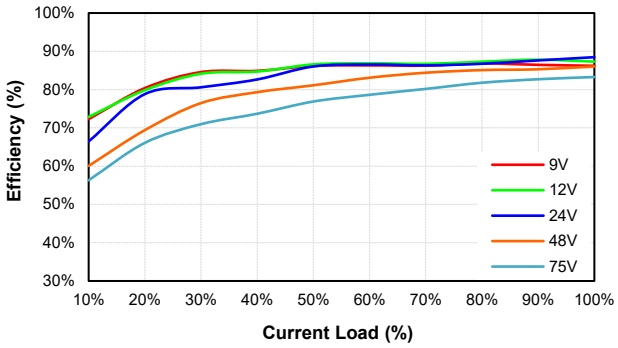




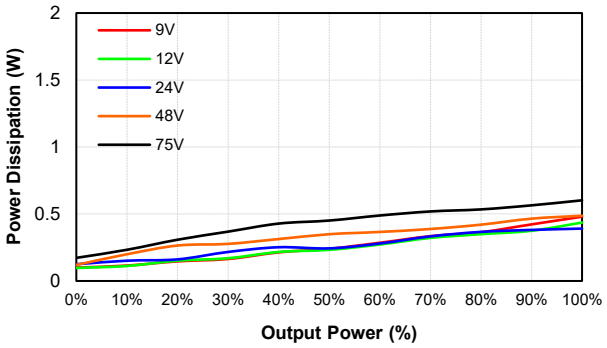




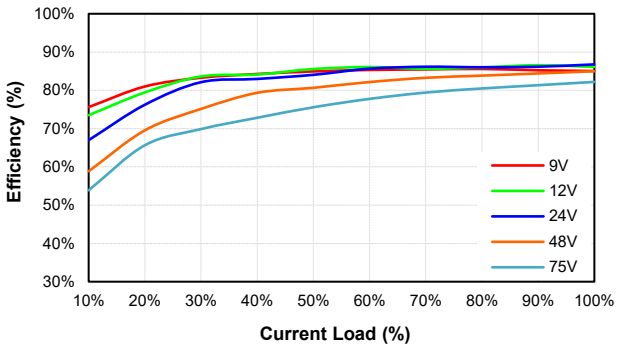
EC3AW8-48S12
Eff Vs Io @25 Deg. C



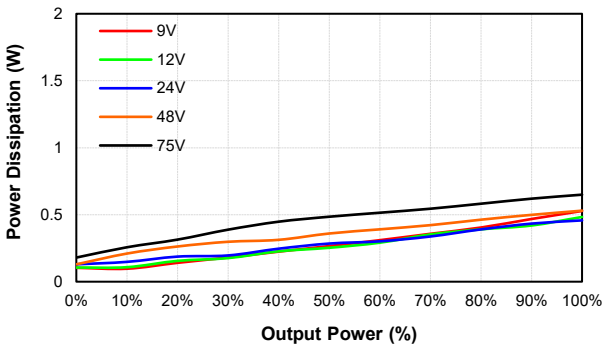
EC3AW8-48S12
Pd Vs Po @25 Deg. C



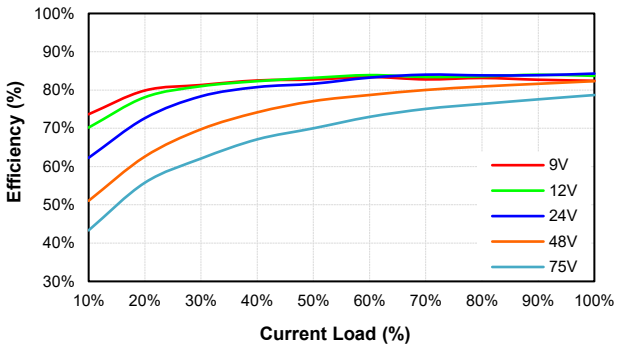
EC3AW8-48S15
Eff Vs Io @25 Deg. C



EC3AW8-48S15
Pd Vs Po @25 Deg. C



EC3AW8-48D05
Eff Vs Io @25 Deg. C



EC3AW8-48D05
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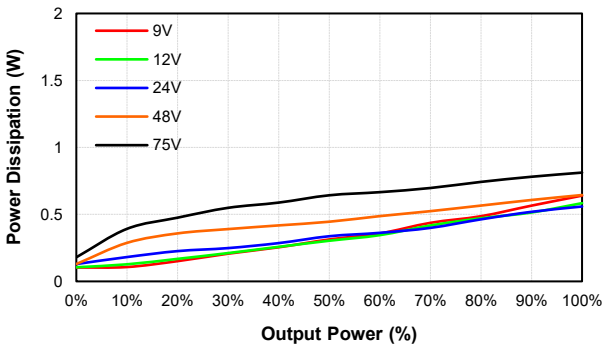
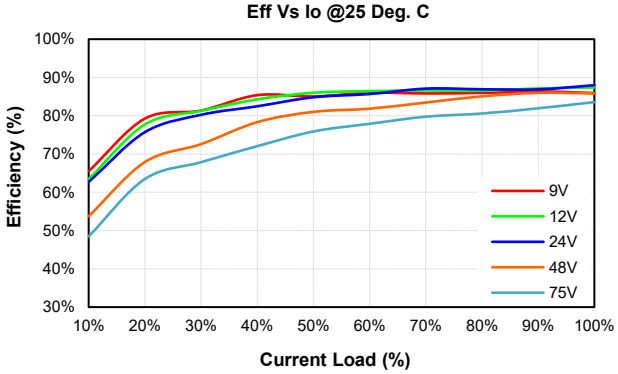
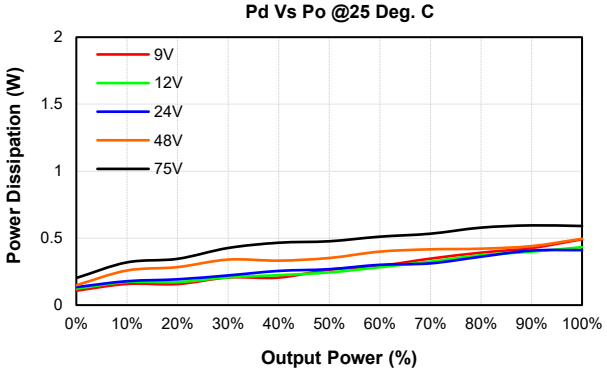
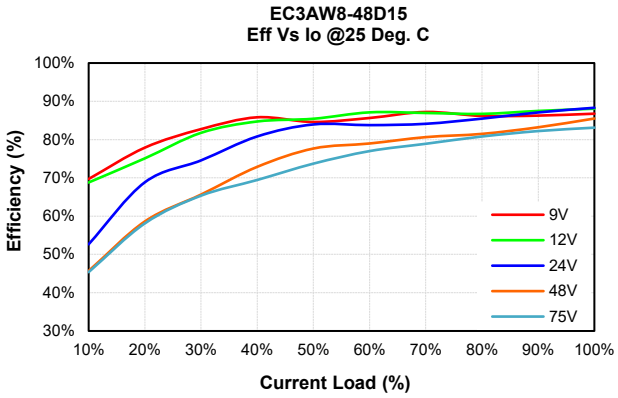


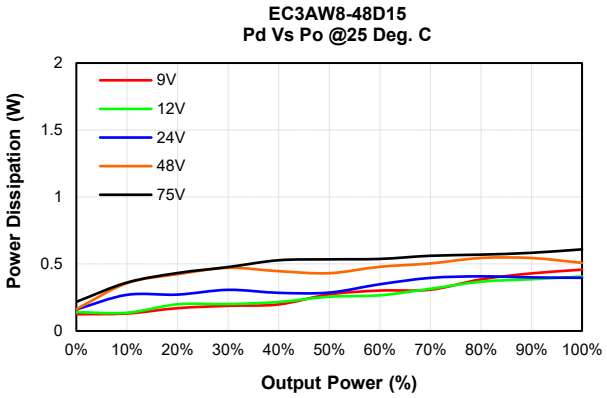
EC3AW8-48D12
Eff Vs Io @25 Deg. C



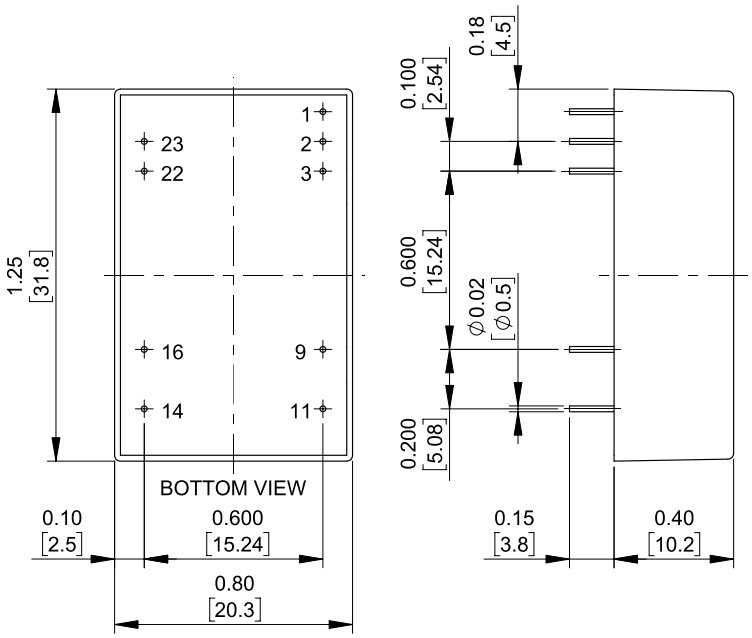
EC3AW8-48D12
Pd Vs Po @25 Deg. C




EC3AW8-48D15
Eff Vs Io @25 Deg. C
Efficiency (%)
100%
90%
80%
70%
60%
50%
40%
30%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Current Load (%)
9V
12V
24V
48V
75V


EC3AW8-48D15
Pd Vs Po @25 Deg. C
Power Dissipation (W)
2
1.5
1
0.5
0
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Output Power (%)
9V
12V
24V
48V
75V

MECHANICAL SPECIFICATION



All Dimensions in Inches[mm]
Tolerance Inches: x.xx=±0.02, x.xxx=±0.010
Millimeters: x.x=±0.5, x.xx=±0.25

Pin Connection

Pin	Single	Dual
1	NP Remote On/Off(Optional)	
2,3	-V Input	-V Input
9	NC	Common
11	NC	-V Output
14	+V Output	+V Output
16	-V Output	Common
22,23	+V Input	+V Input

Note:Pin Size is Ø0.02±0.002 Inch [Ø0.5±0.05 mm]
NP-No Pin
NC-No Connection with Pin

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