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EC3SAW8 SERIES 3 WATT 8:1 INPUT ISOLATED DC-DC CONVERTER

Features

- Efficiency up to 86%
- Fixed Switching Frequency
- Positive Remote On/Off
- Low No Load Power Consumption
- Fully Protected (OCP/UVLO)
- 3000Vdc I/O Isolation
- Safety Meets IEC/EN/UL 62368-1
- 5000m Operating Altitude



MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT		INPUT CURRENT 48V _{in} (TYP.)		% EFF (TYP.)			CAPACITOR LOAD MAX.
			MIN.	MAX.	NO LOAD	FULL LOAD	12V _{in}	24V _{in}	48V _{in}	
EC3SAW8-48S33P	9-75 VDC	3.3 VDC	0 mA	700 mA	3 mA	62 mA	78	79	78	1800uF
EC3SAW8-48S05P	9-75 VDC	5 VDC	0 mA	600 mA	3 mA	76 mA	82	83	82	1000uF
EC3SAW8-48S12P	9-75 VDC	12 VDC	0 mA	250 mA	5 mA	74 mA	85	85	85	220uF
EC3SAW8-48S15P	9-75 VDC	15 VDC	0 mA	200 mA	5 mA	74 mA	86	86	85	120uF
EC3SAW8-48D05P	9-75 VDC	±5 VDC	0 mA	±300 mA	5 mA	77 mA	81	82	81	470uF
EC3SAW8-48D12P	9-75 VDC	±12 VDC	0 mA	±125 mA	8 mA	75 mA	84	84	83	100uF
EC3SAW8-48D15P	9-75 VDC	±15 VDC	0 mA	±100 mA	8 mA	75 mA	84	85	84	47uF

NOTE:

Nominal input voltage 12V_{dc}, 24V_{dc} or 48V_{dc}.

PART NUMBER

Series	Nominal Input Voltage	Number of Outputs	Nominal Output Voltage	Remote On/Off Logic
EC3SAW8-	II	O	XX	L
EC3SAW8	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	P : Positive

Part Number Example:

EC3SAW8-48S12P: 3W, 8:1 9-75Vdc Input, Single 12Vdc Output, Positive Logic

**TECHNICAL SPECIFICATIONS**

(All specifications are typical at nominal input, full load at 25°C 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 71°C	All	-40		105	°C
Operating Case Temperature	At the center part of case plate	All	-40		110	°C
Storage Temperature		All	-55		125	°C

INPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Operating Input Voltage		All	9	48	75	V _{dc}
Input Under Voltage Protection						
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		427		mA
No-Load Input Current	V _{in} =48V _{dc} , I _o =0A	See Model Number Table				mA
Input Filter	Capacitive	All				
Inrush Current (I ² t)	As per ETS300 132-2	All			0.1	A ² s
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°C	All	-1.5		+1.5	%
Output Voltage Balance	V _{in} =48V _{dc} , Full load, T _c =25°C	±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°C to 71°C	All		±0.03		%/°C
Output Voltage Ripple and Noise (20MHz bandwidth)						
Peak-to-Peak	Full load, T _c =25°C	All			50	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}	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 dI/dt=0.1A/us	All			±5	%
Recovery Time	(within 1% V _{out} nominal)	All			250	us



PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Turn-On Delay and Rise Time	Full load (Constant resistive load)					
Turn-On Delay Time, From On/Off Control	$V_{on/off}$ to $10\%V_{o_set}$, Remote on	All		10		ms
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		3		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			M Ω
Isolation Capacitance	Input to output	All		1000		pF

FEATURE CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Switching Frequency	Pulse frequency modulation (PWM), fixed	All		450		KHz
On/Off Control, Positive Remote On/Off Logic, Refer to -Vin Pin						
Logic Low (Module Off)	$V_{on/off}$ at $I_{on/off}=1.0mA$	All	0		1.2	V_{dc}
Logic High (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°C	3.3Vo		3605		K hours
		5Vo		3135		
		12Vo		3639		
		15Vo		3464		
		$\pm 5Vo$		3388		
		$\pm 12Vo$		3414		
		$\pm 15Vo$		3143		
Weight		All		4.8		grams
Case Material	Non-conductive black plastic, UL 94V-0					
Potting Material	UL 94V-0					
Pin Material	Base: Copper Plating: Nickel and Bright 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					

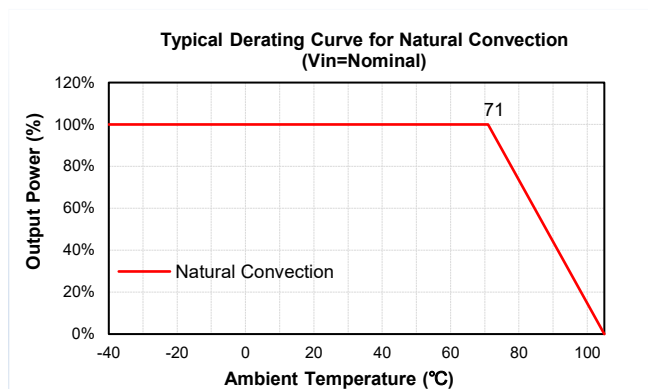
EMC SPECIFICATIONS (External components required, please refer to application note.)

EMI Conduction	Meets EN 55032 Class A & Class B (with external filter)		
EMI Radiation	Meets EN 55032 Class A (without external filter), Meets EN 55032 Class B (with external filter)		
ESD	Meets EN 61000-4-2	Level 2: Air ±8kV, Contact ±4kV	Perf. Criteria A
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		EC3SAW8 Series App Notes	
Packaging Information Link		Packaging Information	

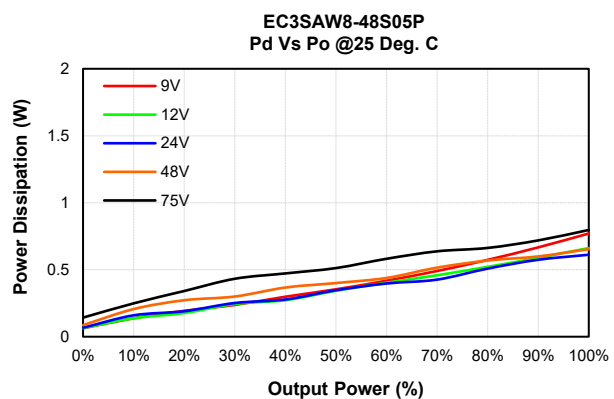
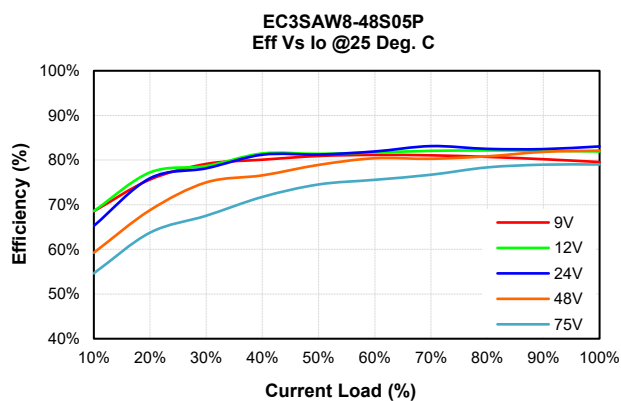
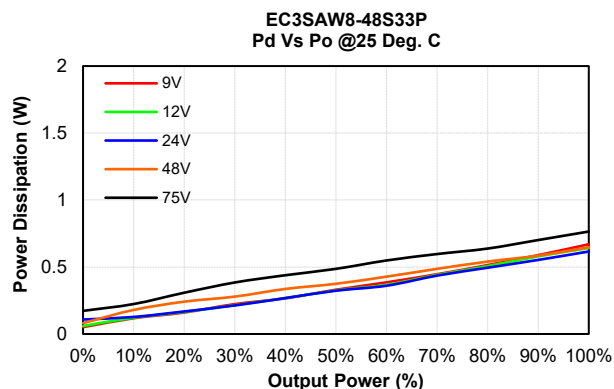
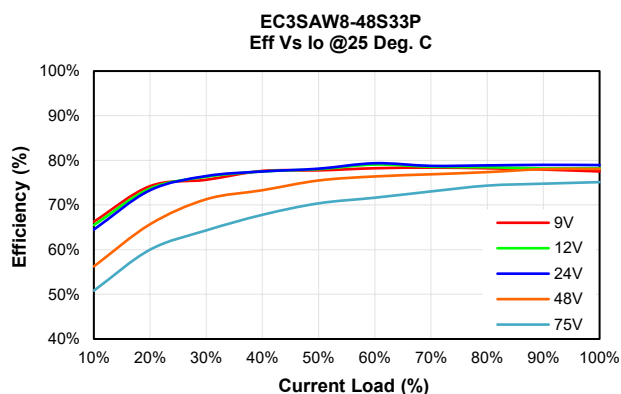


CHARACTERISTIC CURVE

Power Derating Curve

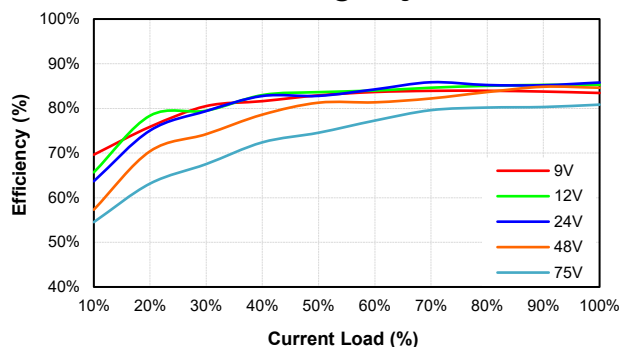


Performance Data

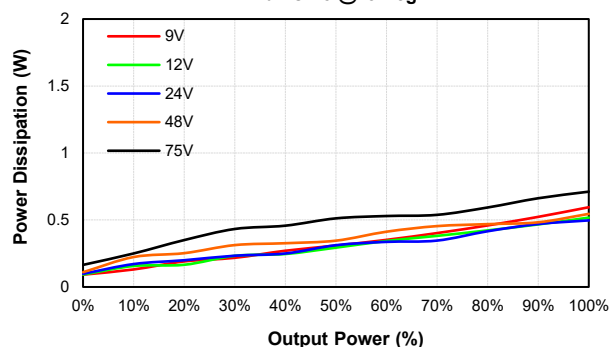


EC3SAW8 Series

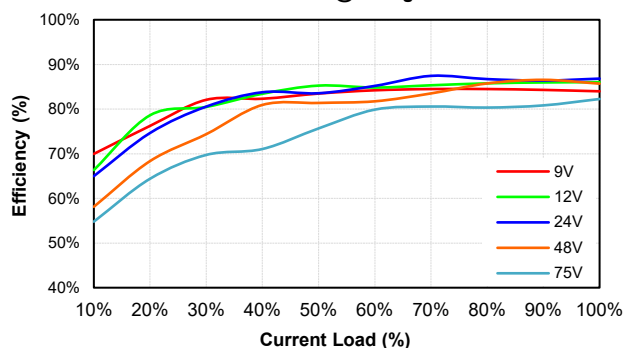
EC3SAW8-48S12P
Eff Vs Io @25 Deg. C



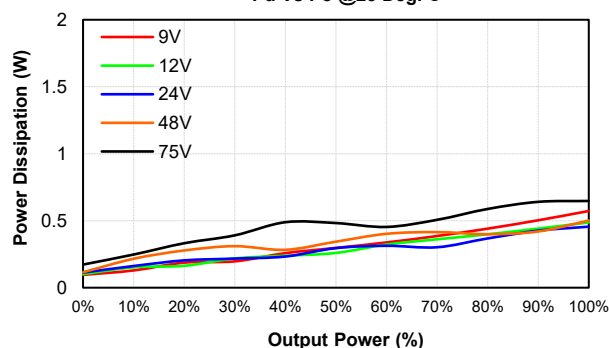
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Pd Vs Po @25 Deg. C



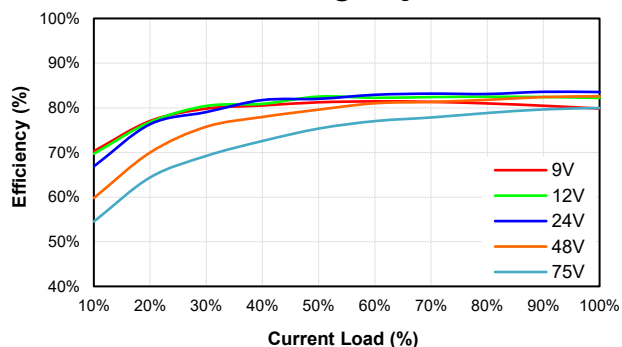
EC3SAW8-48S15P
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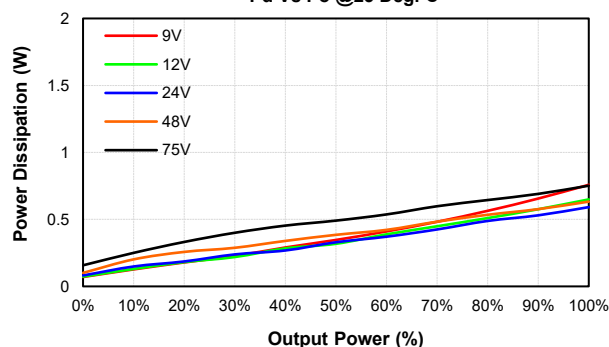
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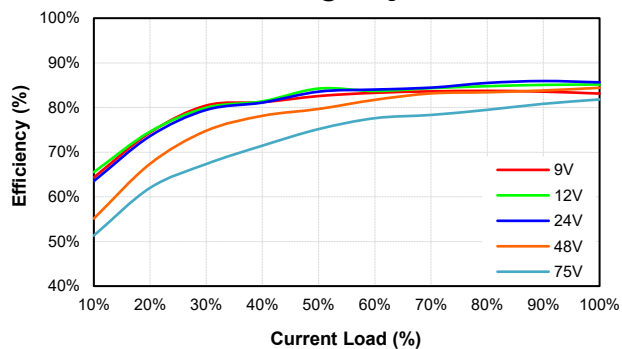
EC3SAW8-48D05P
Eff Vs Io @25 Deg. C



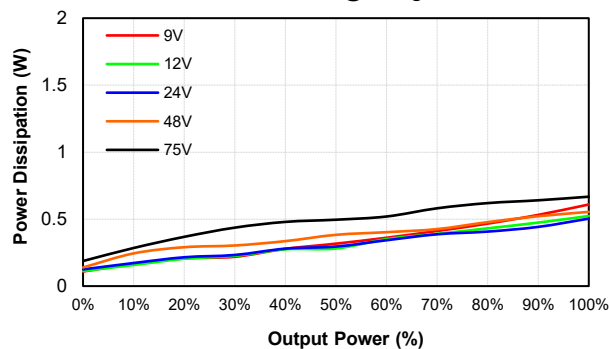
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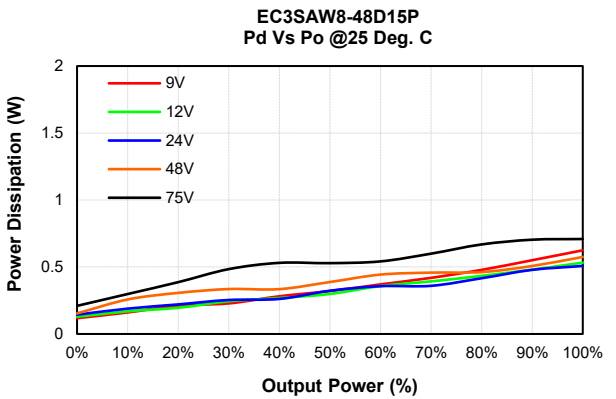
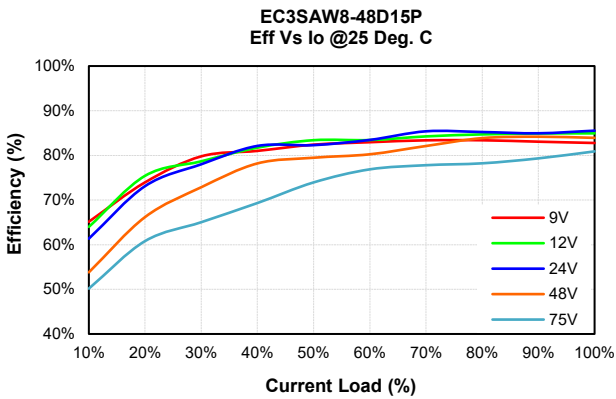
EC3SAW8-48D12P
Eff Vs Io @25 Deg. C



EC3SAW8-48D12P
Pd Vs Po @25 Deg. C

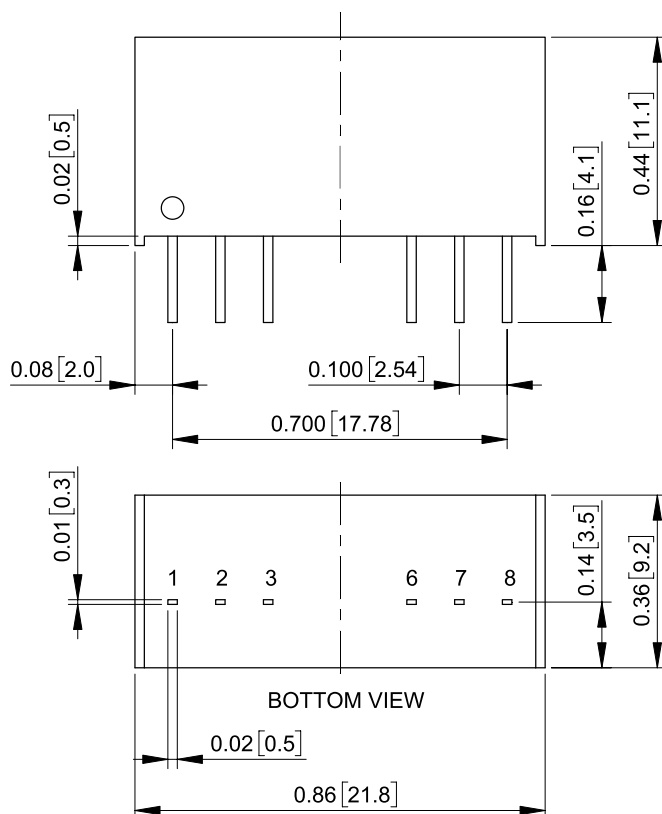


EC3SAW8 Series





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	-V Input	-V Input
2	+V Input	+V Input
3	On/Off	On/Off
6	+V Output	+V Output
7	-V Output	Common
8	NC	-V Output

Note: Pin Size is x.xx±0.002 Inch [x.x±0.05 mm]

NC-No Connection with Pin