



# EC5SAW SERIES

## 10 WATT WIDE INPUT DC-DC CONVERTERS



### FEATURE

- \* 4:1 Input Range
- \* Regulated Outputs
- \* 3000VDC/2000VAC Isolation
- \* Efficiency Up to 89.5%
- \* Compact SIP8 Package
- \* Remote On/Off Control
- \* 6.6-10W Isolated Output
- \* Fixed Switching Frequency
- \* No Tantalum Capacitor Inside
- \* Input Under-Voltage Protection
- \* Low No Load Power Consumption
- \* Continuous Short Circuit Protection



MODEL NUMBER	INPUT VOLTAGE(4)	OUTPUT VOLTAGE	OUTPUT CURRENT		INPUT CURRENT		%EFF.		CAPACITOR LOAD MAX.
			MIN.	MAX.	NO LOAD	FULL LOAD	(3)	(2)	
EC5SAW-24S33N	9-36 VDC	3.3 VDC	0 mA	2000 mA	6 mA	336 mA	81	81.5	2000uF
EC5SAW-24S05N	9-36 VDC	5 VDC	0 mA	2000 mA	6 mA	490 mA	83.5	85	2000uF
EC5SAW-24S12N	9-36 VDC	12 VDC	0 mA	833 mA	6 mA	473 mA	87	89	833uF
EC5SAW-24S15N	9-36 VDC	15 VDC	0 mA	666 mA	6 mA	468 mA	88.5	89.5	666uF
EC5SAW-24D05N	9-36 VDC	±5 VDC	0 mA	±1000 mA	6 mA	490 mA	84	85	1000uF
EC5SAW-24D12N	9-36 VDC	±12 VDC	0 mA	±417 mA	7 mA	468 mA	88.5	89	417uF
EC5SAW-24D15N	9-36 VDC	±15 VDC	0 mA	±333 mA	7 mA	468 mA	88.5	89	333uF
EC5SAW-48S33N	18-75 VDC	3.3 VDC	0 mA	2000 mA	6 mA	168 mA	81	81	2000uF
EC5SAW-48S05N	18-75 VDC	5 VDC	0 mA	2000 mA	6 mA	245 mA	84	85	2000uF
EC5SAW-48S12N	18-75 VDC	12 VDC	0 mA	833 mA	6 mA	237 mA	87.5	88	833uF
EC5SAW-48S15N	18-75 VDC	15 VDC	0 mA	666 mA	6 mA	234 mA	87.5	88	666uF
EC5SAW-48D05N	18-75 VDC	±5 VDC	0 mA	±1000 mA	6 mA	245 mA	84	85	1000uF
EC5SAW-48D12N	18-75 VDC	±12 VDC	0 mA	±417 mA	6 mA	234 mA	88	88	417uF
EC5SAW-48D15N	18-75 VDC	±15 VDC	0 mA	±333 mA	6 mA	234 mA	87.5	88	333uF

#### NOTE:

1. Nominal Input Voltage 24 or 48 VDC
2. Measured at Nominal Input Voltage
3. Measured at 12VDC for 24Vin, 24VDC for 48Vin
4. For 3.3Vo, 5Vo & ±5Vo has Derating by Input is Required Show Fig.1

# SPECIFICATIONS

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

## INPUT SPECIFICATIONS:

Input Voltage Range	24V	9-36V
	48V	18-75V
Input Surge Voltage (100 ms max.)	24V	50VDC max.
	48V	100VDC max.
Input Filter	Capacitive	
Remote On/Off Control:		
Module On	Open or High Impedance	
Module Off	2mA to 4mA	
Module Off (Input Idle Current)	2.5mA max.	

## OUTPUT SPECIFICATIONS:

Voltage Accuracy	±1.0% max.
Voltage Balance (Dual)	±1.0% max
Transient Response: 75%~100% Step Load Change	
Error Band	±5% Vout Nominal, Recovery Time < 250µs
Ripple & Noise, 20MHz BW (Note 5)	3.3V & 5V & ±5V ... 100mV pk-pk max.
	12V/15V/±12V/±15V..... 1%Vo max.
Temperature Coefficient	±0.02%/°C max.
Short Circuit Protection	Continuous
Line Regulation (note1)	±0.2% max.
Load Regulation (note2)	±1.0% max.
Cross Regulation (Dual note3)	Asymmetrical Load 25%/100% .. ±5.0% max.
Current Limit	180% typ.
Start up time	5ms typ.

## GENERAL SPECIFICATIONS:

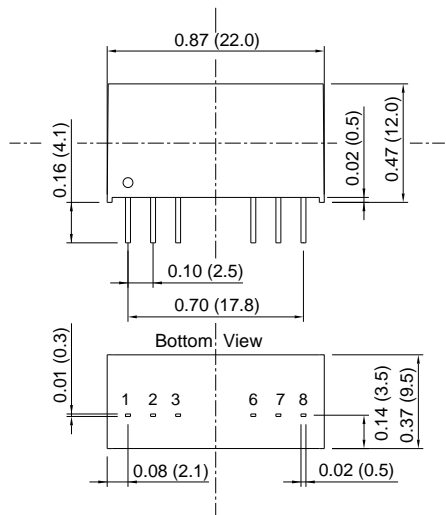
Efficiency	See Table
Isolation Voltage	Input/Output ..... 3000VDC min.
	Input/Output ..... 2000VAC min.
Isolation Resistance	..... 10 <sup>9</sup> ohm min.
Isolation Capacitance	..... 50pF max.
Switching Frequency	..... 530KHz typ.
Operating Ambient Temperature	..... -40°C to +85°C
De-rating, Above 50°C	..... Linearly to Zero power at 105°C
Case Temperature (note4)	..... 105°C max.
Cooling	..... Natural Convection
Storage Temperature	..... -55°C to +125°C
Humidity	..... 95% RH max. Non condensing
MTBF	.... MIL-HDBK-217F, GB, 25°C, Full Load ..... 1930Khrs typ.
Dimensions	..... 0.87x0.37x0.47 inches (22.0x9.5x12.0mm)
Case Material	..... Non-Conductive Black Plastic
Weight	..... 4.9g

## NOTE:

1. Measured from high line to low line.
2. Measured from full load to no load.
3. For asymmetric loading, both channels must be at 25% load or more.
4. Maximum case temperature under any operating condition should not be exceeded 105°C.
5. Output ripple and noise measured with 1µF ceramic capacitor

## CASE SA DIMENSIONS:

All Dimensions In Inches (mm)  
 Tolerances : Inches      Millimeters  
 X.XX=±0.02      X.X=±0.5  
 Pin                      ±0.002                      ±0.05



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

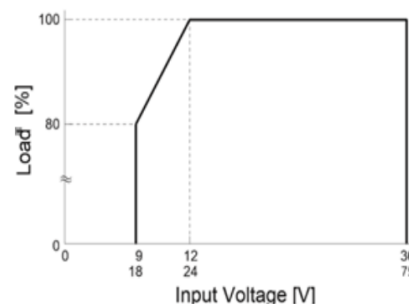


Fig1. Input Voltage Derating Curve  
 Typical Derating curve for Natural Convection

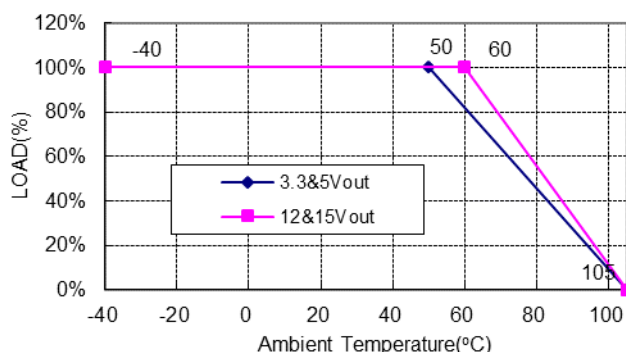


Fig2. Typical Derating Curve for Naturel Convection