

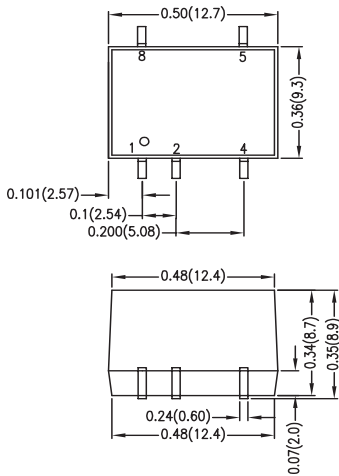
- Efficiency up to 82%
- 1000VDC Isolation
- MTBF > 2,000,000 Hours
- RoHS Compliant



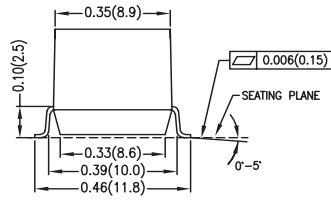
## 2 Watt SMK Single and Dual Series



Model Number	Voltage			Current				Load Regulation % (Max)	Input Overvoltage (1000ms) Max (VDC)	Efficiency @ Max Load (%, Typ)	Capacitive Load Max (Dual each output)
	Input		Output	Input		Output					
	Nom. (VDC)	Range (VDC)	(VDC)	@ No Load (mA)	@ Max Load (mA)	Min (mA)	Max (mA)				
SMK2F5S5	5	4.5 - 5.5	5	60	519	8	400	11	9	77	47 $\mu$ F
SMK2F5S12	5	4.5 - 5.5	12	60	488	3	165	11	9	81	10 $\mu$ F
SMK2F5D5	5	4.5 - 5.5	$\pm 5$	60	519	$\pm 4$	$\pm 200$	12	9	77	10 $\mu$ F
SMK2F5D12	5	4.5 - 5.5	$\pm 12$	60	504	$\pm 1.5$	$\pm 83$	7	9	79	4.7 $\mu$ F
SMK2F5D15	5	4.5 - 5.5	$\pm 15$	60	501	$\pm 1$	$\pm 66$	7	9	79	4.7 $\mu$ F
SMK2F12S5	12	10.8 - 13.2	5	30	213	8	400	8	18	78	47 $\mu$ F
SMK2F12S12	12	10.8 - 13.2	12	30	201	3	165	6	18	82	10 $\mu$ F
SMK2F12D12	12	10.8 - 13.2	$\pm 12$	30	202	$\pm 1.5$	$\pm 83$	5	18	82	4.7 $\mu$ F
SMK2F12D15	12	10.8 - 13.2	$\pm 15$	30	201	$\pm 1$	$\pm 66$	5	18	82	4.7 $\mu$ F
SMK2F24S5	24	21.6 - 26.4	5	15	106	8	400	8	30	78	47 $\mu$ F
SMK2F24S12	24	21.6 - 26.4	12	15	101	3	165	5	30	81	10 $\mu$ F
SMK2F24D12	24	21.6 - 26.4	$\pm 12$	15	102	$\pm 1.5$	$\pm 83$	5	30	81	4.7 $\mu$ F
SMK2F24D15	24	21.6 - 26.4	$\pm 15$	15	100	$\pm 1$	$\pm 66$	5	30	82	4.7 $\mu$ F

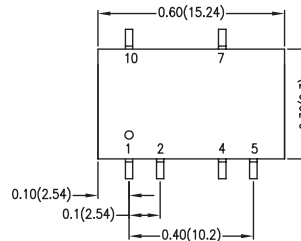


### Single Output Case

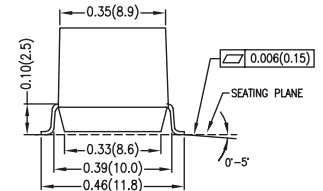
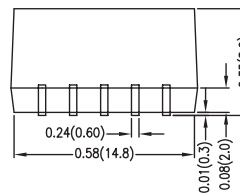


Dimensions are inches (mm) unless noted

Tolerance: Inches	Millimeters
X.XX $\pm 0.01$	X.X $\pm 0.25$
X.XXX $\pm 0.005$	X.XX $\pm 0.13$
Pin	$\pm 0.002$ $\pm 0.05$



### Dual Output Case



Pin Connections (NC) Not Connected		
Pin	Single	Dual
1	-Vin	-Vin
2	+Vin	+Vin
4	-Vout	Common
5	+Vout	-Vout
7	No Pin	+Vout
8	NC	No Pin
10	No Pin	NC

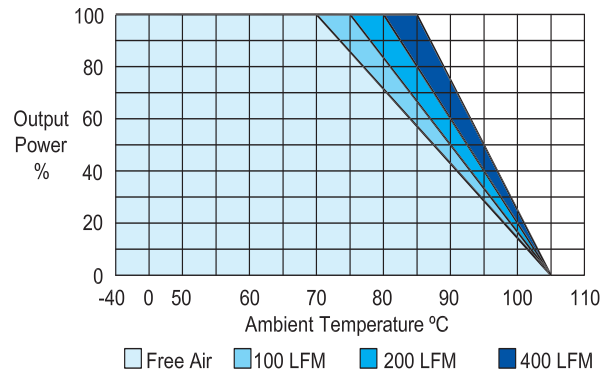
See Model Selection Table for Model Specific Parameters

Input Parameters	Min	Typ	Max	Units
Reverse Polarity Input Current			0.3	A
Switching Frequency	50	100	120	kHz
Input Filter	Internal Capacitor			
Output Parameters	Min	Typ	Max	Units
Output Voltage Accuracy		±1.5	±4.0	%
Output Voltage Balance Dual Output, Balanced Loads		±0.1	±1.0	%
Load Regulation I <sub>o</sub> = 20% to 100%	See Model Selection Guide			%
Line Regulation for V <sub>in</sub> Change of 1%		±1.2	±1.5	%
Ripple & Noise (20MHz)		100	120	mV P-P
Ripple & Noise (20 MHz) Over Line, Load & Temp			200	mV P-P
Ripple & Noise (20 MHz)			15	mV RMS
Temperature Coefficient		±0.01	±0.02	% / °C
Short Circuit Protection	0.5 Second Max			
General Specifications	Min	Typ	Max	Units
Isolation Voltage, 60 seconds	1000			VDC
Isolation Resistance 500VDC	1000			Mohms
Isolation Capacitance, 100kHz, 1V		60	100	pF
Operating Temperature (Ambient)	-40		+85	°C
Storage Temperature	-40		+125	°C
Humidity			95	%
MTBF MIL-HDBK-217F @25°C, Ground Benign	2000			K Hours
Moisture Sensitivity Level (MSL) Temperature	IPC/JEDEC J-STD-20 LEVEL 3			
Leadfree Reflow Solder Process	IPC/JEDEC J-STD-020C peak temp. 245°C/10 sec.			
Cooling	Free-Air Convection			
Case Size	Single Output	0.50 x 0.37 x 0.34 inches 12.7 x 9.3 x 8.7 mm		
	Dual Output	0.60 x 0.37 x 0.34 inches 15.3 x 9.3 x 8.7 mm		
Case Material	Moulding (UL94V-0)			
Weight	Single Output	1.5g		
	Dual Output	2.2g		

The converter is encapsulated in a low thermal resistance molding compound that has excellent resistance/electrical characteristics over a wide temperature range and in high humidity environments. The molding compound material is rated to UL94V-0 flammability specifications. Leads are tin plated for improved solderability.

Notes:

- Specifications typical at Ta=+25°C, resistive load, nominal input voltage, full rated output current unless otherwise noted.
- ConTech power converters require a minimum output loading to maintain specified regulation. Operation under no-load conditions will not damage these modules; however, they may not meet all specifications listed.
- The series has a limitation of a maximum connected capacitance at the output. The power module may be operated in current limiting mode during start-up, affecting the ramp-up and the startup time.
- When measuring peak-to-peak output noise, use a Cout 0.33µF ceramic capacitor. Scope measurement should be made by using a BNC socket, measurement bandwidth is 0-20MHz. Position the load between 2" and 2.5" from the converter.
- Water washability - ConTech DC/DC converters are designed to withstand most solder/wash processes. Careful attention should be used when assessing the applicability in your specific manufacturing process. Converters are not hermetically sealed.
- See ConTech website for Definition of Terms, Application Notes, and Test Setups and Parameters. [www.ConTech-us.com/appnotes.html](http://www.ConTech-us.com/appnotes.html).
- Specifications subject to change without notice.
- See ConTech website [www.ConTech-us.com/pdf/rohs.pdf](http://www.ConTech-us.com/pdf/rohs.pdf) for RoHS Statement.



Derating Curve

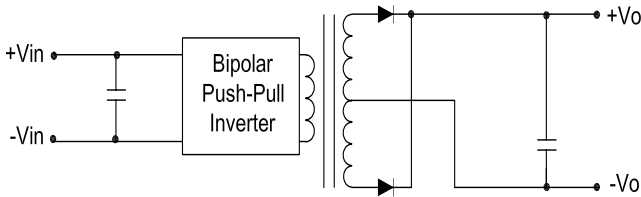
To avoid exceeding the maximum temperature rating of the components inside the power module, the case temperature must be kept below 90°C.

Input Fuse Selection Table	
5V Input	1000 mA Slow-Blow
12V Input	500 mA Slow-Blow
24V Input	200 mA Slow-Blow

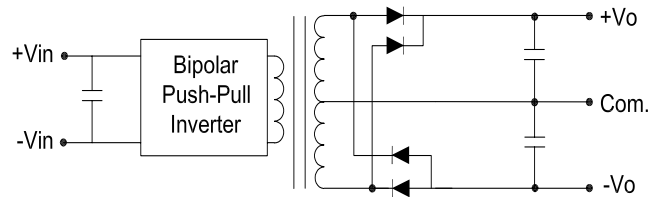
External fusing should be used for system protection due to a catastrophic failure. See ConTech website for Fusing Application Notes to determine the correct fuse.



## Block Diagrams



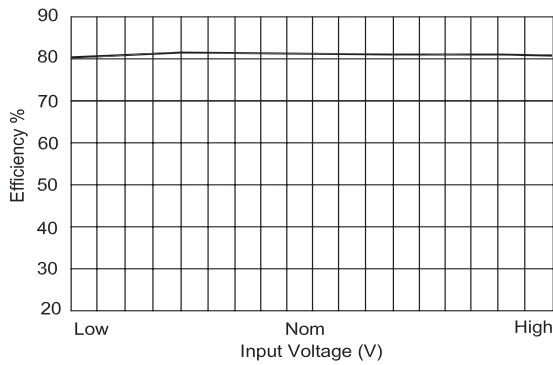
Single Output Block Diagram



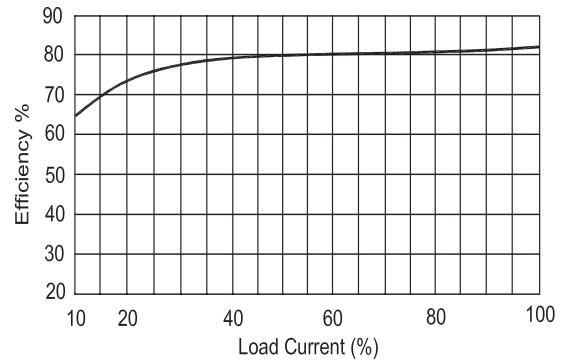
Dual Output Block Diagram

## Efficiency Curves

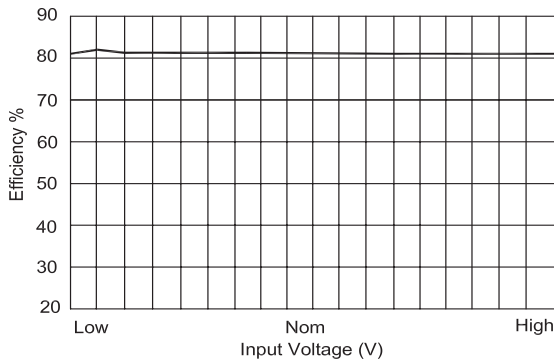
### Single Output



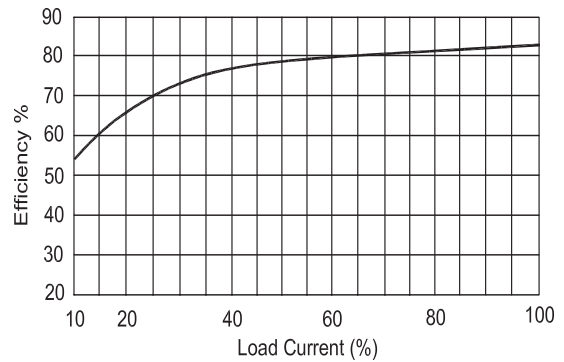
Efficiency vs Input Voltage



Efficiency vs Output Load

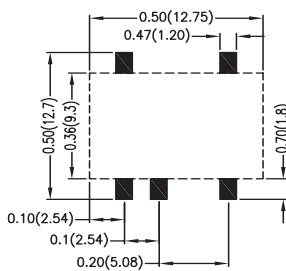


Efficiency vs Input Voltage

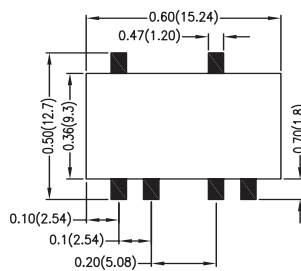


Efficiency vs Output Load

## SMD Footprints



Single Output



Dual Output

Dimensions are inches (mm) unless noted

Tolerance:	Inches	Millimeters
	X.XX ±0.01	X.X ±0.25
	X.XXX ±0.005	X.XX ±0.13
Pin	±0.002	±0.05