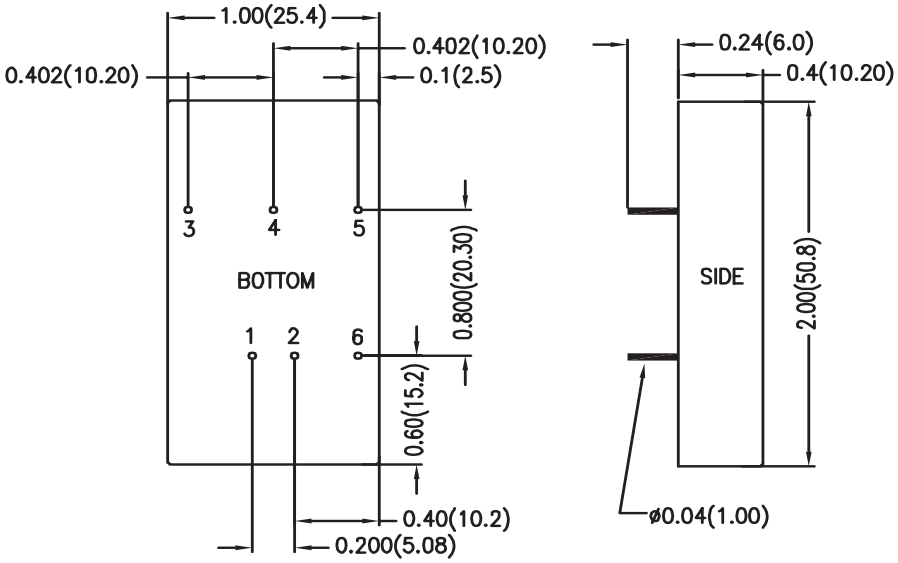
CONTECH
Division of Calex Mfg.

12 Watt TMK
Single and Dual Series

- Efficiency up to 84%
- 1500VDC Isolation
- MTBF > 700,000 Hours
- 4:1 Input
- Over Voltage Protection
- Short Circuit Protection
- Six-Sided Shielding
- UL60950 Approved
- RoHS Compliant

Model Number	Voltage			Current				Over Voltage Protection	Input Overvoltage (1000ms)	Efficiency	Capacitive Load
	Input		Output	Input		Output					
	Nom. (VDC)	Range (VDC)	(VDC)	@ No Load (mA)	@ Max Load (mA)	Min (mA)	Max (mA)	Typ (mA)	Max (VDC)	@ Max Load (%, Typ)	Max (Dual each output)
TMK8H24S3R3	24	9-36	3.3	10	423	240	2400	3.9	42	78	470µF
TMK10H24S5	24	9-36	5	10	508	200	2000	6.8	42	82	470µF
TMK12H24S12	24	9-36	12	10	595	100	1000	15	42	84	470µF
TMK12H24S15	24	9-36	15	10	595	80	800	18	42	84	470µF
TMK12H24D5	24	9-36	±5	10	508	±100	±1000	±6.8	42	82	150µF
TMK12H24D12	24	9-36	±12	10	595	±50	±500	±15	42	84	150µF
TMK12H24D15	24	9-36	±15	10	595	±40	±400	±18	42	84	150µF
TMK8H48S3R3	48	18-75	3.3	5	212	240	2400	3.9	84	78	470µF
TMK10H48S5	48	18-75	5	5	254	200	2000	6.8	84	82	470µF
TMK12H48S12	48	18-75	12	5	298	100	1000	15	84	84	470µF
TMK12H48S15	48	18-75	15	5	298	80	800	18	84	84	470µF
TMK12H48D5	48	18-75	±5	5	254	±100	±1000	±6.8	84	82	150µF
TMK12H48D12	48	18-75	±12	5	298	±50	±500	±15	84	84	150µF
TMK12H48D15	48	18-75	±15	5	298	±40	±400	±18	84	84	150µF



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

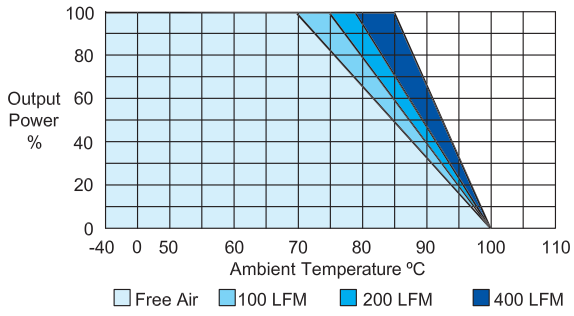
Pin Connections		
Pin	**Single**	**Dual**
1	+Vin	+Vin
2	-Vin	-Vin
3	+Vout	+Vout
4	No Pin	Common
5	-Vout	-Vout
6	No Pin	No Pin

See Model Selection Table for Model Specific Parameters

Input Parameters		Min	Typ	Max	Units
Reverse Polarity Input Current				1	A
Short Circuit Input Power				3500	mW
Start Voltage	24 Vin 48 Vin	8 14	8.5 16	9 18	VDC
Under Voltage Shutdown	24 Vin 48 Vin	7 13	8 15	8.5 17	VDC
Switching Frequency		300	350	400	kHz
Input Filter		Pi Filter			
Output Parameters		**Min**	**Typ**	**Max**	**Units**
Output Voltage Accuracy			±0.5	±1.0	%
Output Voltage Balance Dual Output, Balanced Loads			±0.5	±2.0	%
Load Regulation (3.3Vout) Io = 10% to 100%			±0.8	±1.0	%
Load Regulation Io = 10% to 100%			±0.2	±0.5	%
Line Regulation Vin=Min. to Max.			±0.1	±0.5	%
Ripple & Noise (20MHz)			50	75	mV P-P
Ripple & Noise (20 MHz) Over Line, Load & Temp				100	mV P-P
Ripple & Noise (20 MHz)				15	mV RMS
Over Power Protection		120			%
Transient Recovery Time 25% Load Step Change			150	250	µs
Transient Response Deviation, 25% Load Step Change			±1.5	±2.5	%
Temperature Coefficient			±0.01	±0.02	% / ºC
Short Circuit Protection		Continuous			
General Specifications		**Min**	**Typ**	**Max**	**Units**
Isolation Voltage, 60 seconds		1500			VDC
Isolation Resistance 500VDC		1000			Mohms
Isolation Capacitance, 100kHz, 1V			500	650	pF
Operating Temperature (Ambient)		-40		+71	ºC
Storage Temperature		-40		+125	ºC
Humidity				95	%
MTBF MIL-HDBK-217F @25ºC, Ground Benign		700			K Hours
Cooling		Free-Air Convection			
Case Size		2.0 x 1.0 x 0.4 inches 50.8 x 25.4 x 10.2 mm			
Case Material		Six Sided Shielding Metal Case (UL94V-0)			
Weight		31.7g			
Agency Approval		UL60950 Approved			

Notes:

1. Specifications typical at Ta=+25ºC, resistive load, nominal input voltage, full rated output current unless otherwise noted.
2. Transient recovery time is measured to within 1% error band for a step change in output load 75% to 100%.
3. 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.
4. 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.
5. When measuring peak-to-peak output noise, use a Cout 0.47µF 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.
6. 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.
7. See ConTech website for Definition of Terms, Application Notes, and Test Setups and Parameters. www.ConTech-us.com/appnotes.html
8. Specifications subject to change without notice.
9. See ConTech website www.ConTech-us.com/pdf/rohs.pdf for RoHS Statement.



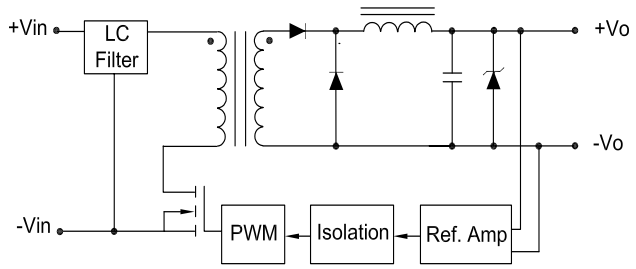
Derating Curve

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

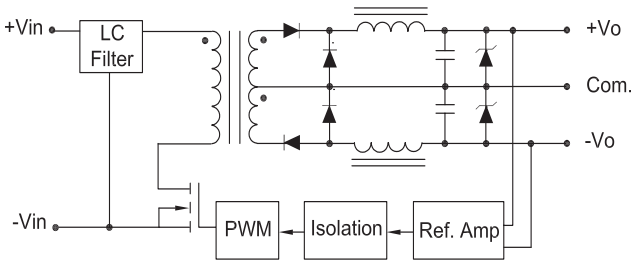
Input Fuse Selection Table	
24V Input	1500 mA Slow-Blow
48V Input	750 mA Slow-Blow

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



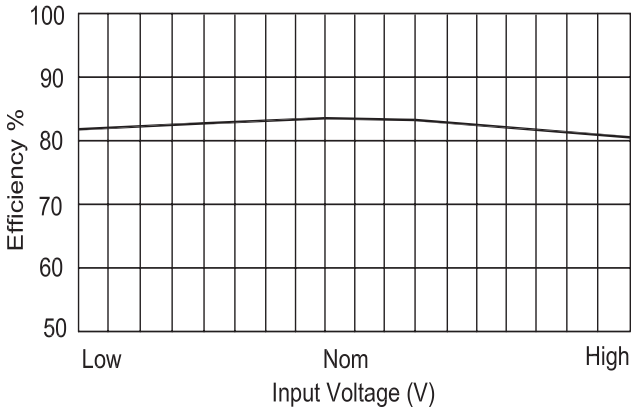
Single Output Block Diagram



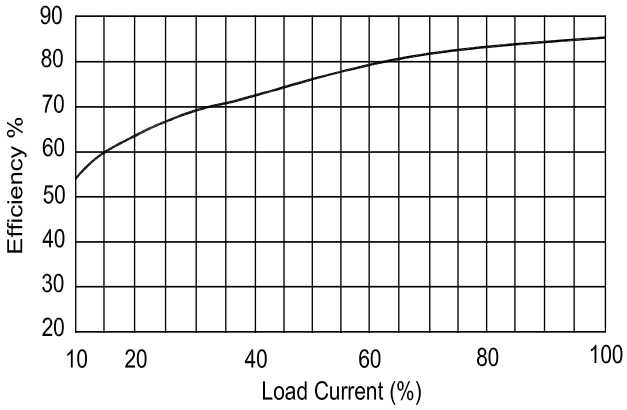
Dual Output Block Diagram

Efficiency Curves

Single Output

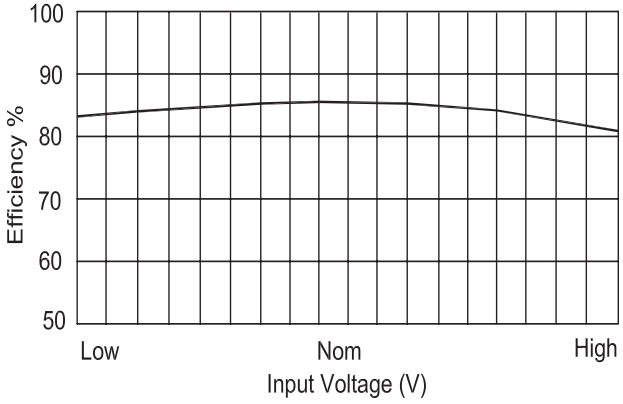


Efficiency vs Input Voltage

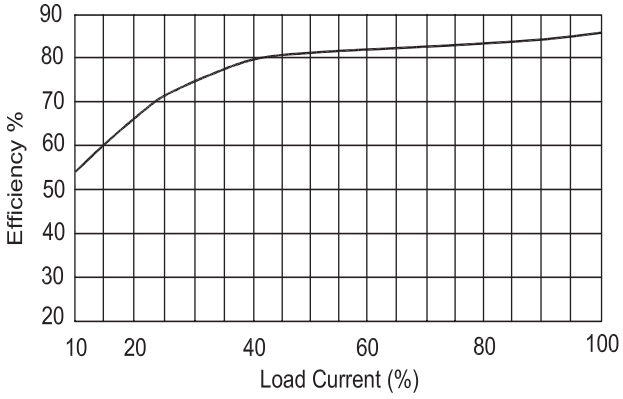


Efficiency vs Output Load

Dual Output



Efficiency vs Input Voltage



Efficiency vs Output Load