

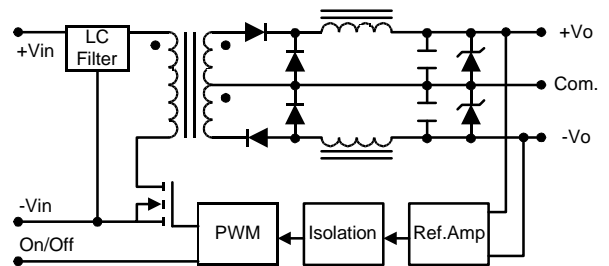
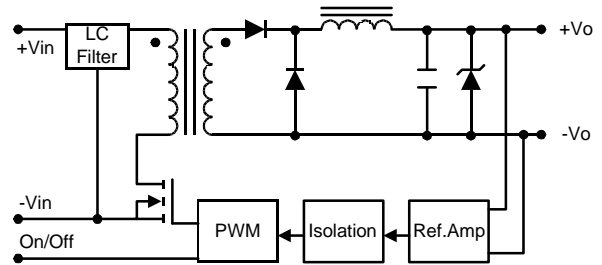
# TOTAL POWER INT'L

## MKW2000 Series 12 Watt 4:1 Wide Input Range DC/DC Converters

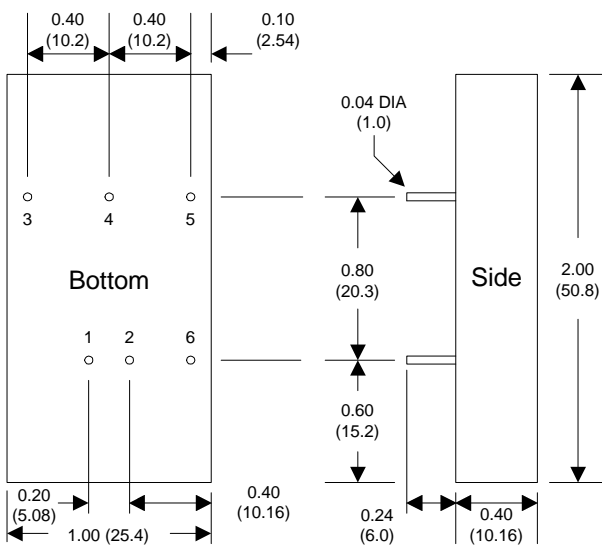
### Single & Dual Output

#### Key Features

- SMT Technology
- 4:1 Input Range
- High Efficiency up to 84 %
- I / O Eolation 1500VDC
- Short Circuit Protected
- Remote on/off Control ( Optional )
- Over Voltage Protection
- Six-Side Shielded Case
- EMI Complies With EN55022 Class A
- MTBF > 700,000 Hours



#### Mechanical Configuration



All dimensions typical in inches (mm). Tolerance= +/- 0.01 (+/- 0.25)

#### Pin Connections

Pin	Single Output	Dual Output
1	+Input	+Input
2	-Input	-Input
3	+Output	+Output
4	No Pin	Common
5	-Output	-Output
6	Remote on/off	Remote on/off

#### Physical Characteristics

Case Size	50.8×25.4×10.2 mm 2.0×1.0×0.4 inches
Case Material	Metal With Non-Conductive Base
Weight	30g

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## MKW2000

### Absolute Maximum Ratings

Exceeding these values can damage the module. These are not continuous operating ratings.

Parameter		Min.	Max.	Unit.
Input Surge Voltage ( 1000 mS )	24VDC Input Models	-0.7	42	VDC
	48VDC Input Models	-0.7	84	VDC
Internal Power Dissipation		---	5000	mW

### Environmental Specifications

Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating Temperature		-40	---	+71	°C
Storage Temperature		-40	---	+125	°C
Humidity		---	---	95	%
Cooling	Free-Air Convection				
RFI	Six-Side Shielded Metal Case				
Conducted EMI	EN55022 Class A				

### General Specification

Parameter	Conditions	Min.	Typ.	Max.	Unit
Isolation Voltage	60 Seconds	1500	---	---	VDC
Isolation Resistance	500VDC	1000	---	---	MΩ
Isolation Capacitance	100KHz, 1V	---	500	650	pF
Switching Frequency		350	400	450	kHz

### Model Selection Guide

Model Number	Input voltage VDC	Output Voltage VDC	Output Current mA (Max.)	Output Current mA (Min.)	Input Current Max. Load mA (Typ.)	Input Current No Load mA (Typ.)	Over Voltage Protection VDC(Typ.)	Efficiency % (Typ.)
MKW2021	24 ( 9 ~ 36 )	3.3	2400	240	423	10	3.9	78
MKW2022		5	2000	200	508		6.8	82
MKW2023		12	1000	100	595		15	84
MKW2024		15	800	80	595		18	84
MKW2025		±5	±1000	±100	508		±6.8	82
MKW2026		±12	±500	±50	595		±15	84
MKW2027		±15	±400	±40	595		±18	84
MKW2031	48 ( 18 ~ 75 )	3.3	2400	240	212	5	3.9	78
MKW2032		5	2000	200	254		6.8	82
MKW2033		12	1000	100	298		15	84
MKW2034		15	800	80	298		18	84
MKW2035		±5	±1000	±100	254		±6.8	82
MKW2036		±12	±500	±50	298		±15	84
MKW2037		±15	±400	±40	298		±18	84

Specifications typical at Ta=+25] ,resistive load,nominal input voltage,rated output current unless otherwise noted.

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# TOTAL POWER INT'L

## MKW2000

### Input Specifications

Parameter	Model	Min.	Typ.	Max.	Unit
Start Voltage	24V Input Models	8	8.5	9	VDC
	48V Input Models	14	16	18	
Under Voltage Shutdown	24V Input Models	7	8	8.5	
	48V Input Models	13	15	17	
Reverse Polarity Input Current	All Models	----	----	1	A
Short Circuit Input Power		----	----	3500	mW
Input Filter		Pi Filter			

### Output Specifications

Parameter	Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy		----	±0.5	±1.0	%
Output Voltage Balance	Dual Output Balance Load	----	±0.5	±1.0	%
Line Regulation	V <sub>in</sub> =Min. to Max.	----	±0.1	±0.5	%
Load Regulation	I <sub>o</sub> =10% to 100%	----	±0.2	±0.5	%
Ripple & Noise (20MHz)		----	50	75	mV P-P
Ripple & Noise (20MHz)	Over Line, Load & Temp.	----	----	100	mV P-P
Ripple & Noise (20MHz)		----	----	15	mV rms.
Over Load		120	----	----	%
Transient Recovery Time	25% Load Step Change	----	150	250	µS
Transient Response Deviation		----	±1.5	±2.5	%
Temperature Coefficient		----	±0.01	±0.02	%/°C
Output Short Circuit	Continuous				

### Remote On/Off Control

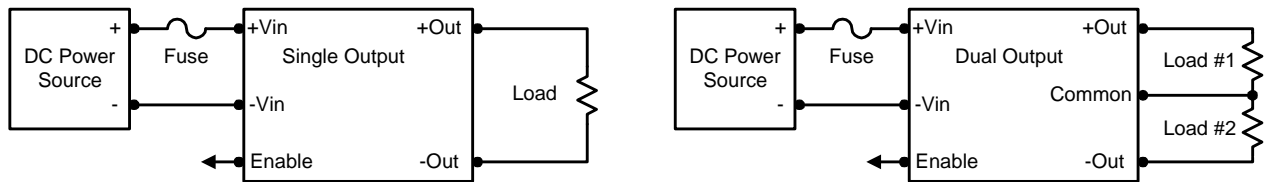
Parameter	Conditions	Min.	Typ.	Max.	Unit
Supply On	2.5 to 5.5VDC or Open Circuit				
Supply Off		-0.7	----	0.8	VDC
Standby Input Current		----	----	10	mA
Control Common	Referenced to Negative Input				

### Input Fuse Selection Guide

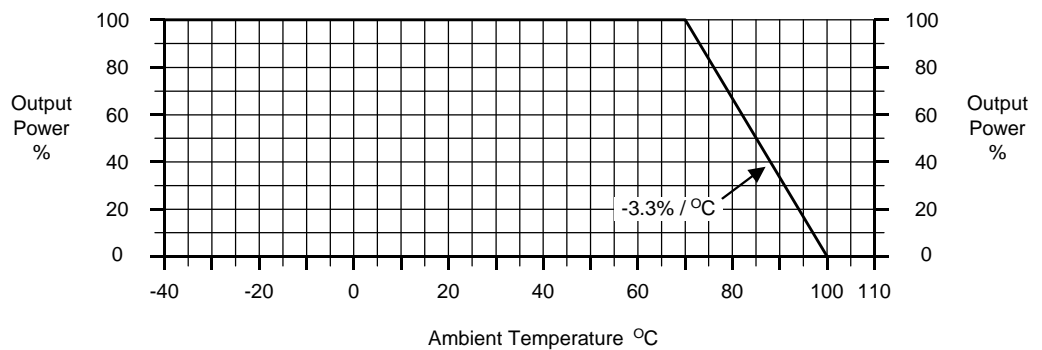
24V Input Models	48V Input Models
3000mA Slow – Blow Type	1500mA Slow – Blow Type

# TOTAL POWER INT'L MKW2000

## Typical Applications



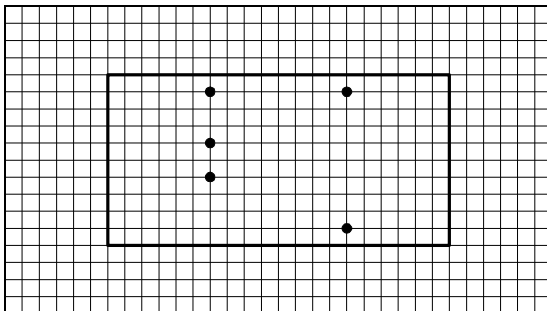
## Derating Curve



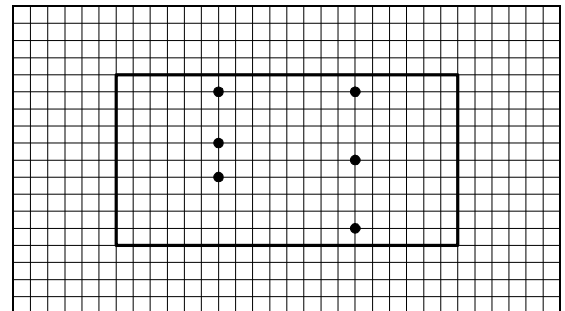
## Connecting Pin Patterns

(2.54 mm / 0.1 inch grids)

### Single Output



### Dual Output



## NOTE:

1. Specifications typical at  $T_a = +25^\circ\text{C}$ , resistive load, nominal input voltage, rated output current unless otherwise noted.
2. Transient recovery time is measured to within 1% error band for a step change in output load of 75% to 100%.
3. When measure output ripple & noise, an external 0.1 $\mu\text{F}$  ceramic capacitor is recommended to be placed from +Vout to -Vout (single output) and each output to common (dual output).
4. Enable inputs internally pulled high. Nominal open circuit voltage is 1.8VDC.
5. Other input and output voltage may be available, Please contact factory.
6. Specifications subject to change without notice.