

**TRUMPower**

TOC4 Series

4 Watts Single & Dual Outputs AC/DC Power Modules

FEATURES

- PCB Mount Switching Power Modules
- Fully Encapsulated Plastic Case
- 1.44" x 1.07" x 0.67" Compact Size
- 90-264 VAC, 47-440 Hz Universal Input
- Class II Isolation
- UL, cUL, CE & CB Approvals



INPUT SPECIFICATIONS

Input Voltage Range	90~265 VAC or 120~370 VDC
Input Frequency	47~440Hz
Input Current	110mA max. @ 115 VAC, 70mA max. @ 230 VAC
Inrush Current	15A max. @ 115 VAC, 25A max. @ 230 VAC
Leakage Current	0.25mA max.
Recommended External Fuse	3.15A slow-blow type
No Load Power Consumption	0.3W max.

OUTPUT SPECIFICATIONS

Output Ratings	See Table
Line & Load Regulations	See Table
Ripple & Noise	See Table
Minimum Load, Single	Not required
Dual	25%
Hold-up Time	15ms min.
Switching Frequency	132±8 KHz
Over Power Protection	Hiccup technique, auto-recovery
Over Voltage Protection	Zener diode clamp
Short Circuit Protection	Hiccup mode, indefinite (auto-recovery)
Input-Output Isolation	3000 VAC

GENERAL SPECIFICATIONS

Efficiency	See Table
Operating Temperature	-40°C to +70°C
Derating	Derate linearly from 100% @+50°C 50% @+70°C
Cooling	Free air convection
Storage Temperature	-40°C to +85°C
Temp. Coefficient	±0.02%/°C max.
Relative Humidity	95% RH
MTBF	350K hours at full load, 25°C ambient, calculated per MIL-HDBK-217F
Dimensions (LxWxH)	1.44 x 1.07 x 0.67 inches; 36.66 x 27.16 x 17.1 mm
Case Material	Plastic resin with fiberglass, UL 94V-0 rated
Weight	26 grams

EMC & SAFETY STANDARDS

Safety Standards	UL/IEC 60950-1 2nd Ed., CSA C22.2 No. 60950-1 2nd Ed.
Agency Approvals	UL, cUL, CB, CE
EMI	EN55022 Class B
EMS	EN55024

MODELS LIST - SINGLE OUTPUT

Product No.	TOC4-S3.3	TOC4-S5	TOC4-S8	TOC4-S9	TOC4-S12	TOC4-S15	TOC4-S24
Output Voltage	3.3 VDC	5 VDC	8 VDC	9 VDC	12 VDC	15 VDC	24 VDC
Max. Output Current	1200 mA	800 mA	500 mA	444 mA	333 mA	267 mA	167 mA
Voltage Accuracy	±2%	±2%	±2%	±2%	±2%	±2%	±2%
Load Regulation (NL-FL)	±1%	±1%	±1%	±1%	±0.5%	±0.5%	±0.5%
Line Regulation (LL-HL)	±0.2%	±0.2%	±0.2%	±0.2%	±0.2%	±0.2%	±0.2%
Max. Capacitive Load	14000 µF	8000 µF	2700 µF	2400 µF	1000 µF	700 µF	220 µF
Ripple & Noise* (Vp-p)	<250 mV	<250 mV	<200 mV	<200 mV	<150 mV	<100 mV	<100 mV
Efficiency	68%	72%	74%	75%	76%	76%	77%

Tumbler Technologies + TRUMPower

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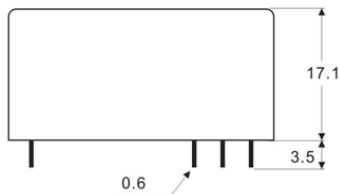
MODELS LIST - DUAL OUTPUTS

Product No.	TOC4-D1		TOC4-D2		TOC4-D3	
Output Rail	Output 1	Output 2	Output 1	Output 2	Output 1	Output 2
Output Voltage	+5 VDC	+3.3 VDC	+8 VDC	+5 VDC	+12 VDC	+5 VDC
Max. Output Current	600 mA	150 mA	375 mA	120 mA	250 mA	120 mA
Voltage Accuracy	±2%	±5%	±2%	±5%	±2%	±5%
Load Regulation (25-100%)	±0.5%	±5%	±0.5%	±5%	±0.5%	±5%
Line Regulation (LL-HL)	±0.2%	±3%	±0.2%	±3%	±0.2%	±3%
Max. Capacitive Load	5600 µF	4700 µF	1000 µF	4700 µF	330 µF	4700 µF
Ripple & Noise* (Vp-p)	<200 mV		<150 mV		<100 mV	
Efficiency	72%		74%		75%	

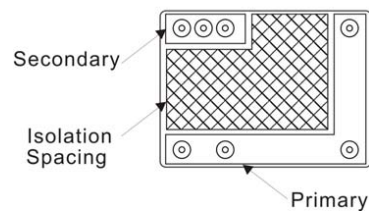
*R&N measured at 20MHz bandwidth and 47µF tantalum capacitor in parallel with a 0.1µF ceramic capacitor at rated line voltage and load ranges.

MECHANICAL SPECIFICATIONS

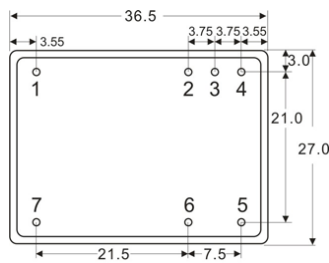
FRONT VIEW



ISOLATION (BOTTOM VIEW)



TOP VIEW



PINOUT CHART

PIN NO.	SINGLE OUTPUT	DUAL OUTPUT
1	N.C.	N.C.
2	+V1	+V1
3	-V1	COMMON
4	N.C.	+V2
5	AC IN (L)	AC IN (L)
6	AC IN (N)	AC IN (N)
7	N.C.	N.C.

All dimensions in inch [mm]
Tolerance: ±0.5mm