

**TRUMPower**

TES3 Series

3 Watts AC/DC Power Modules

FEATURES

- PCB Mount Switching Power Modules
- Fully Encapsulated Plastic Case
- 90-264VAC, 47-63Hz Universal Input
- Low Ripple and Noise
- Class II Construction
- 0 to 100% Remote Voltage Programming
- 0.3W Maximum No-Load
- CE, UL Approvals

MODELS LIST

Product No. *	TES3-S3.3	TES3-S5	TES3-S9	TES3-S12	TES3-S15	TES3-S24
Output Voltage	3.3V	5V	9V	12V	15V	24V
Max. Output Current	900mA	600mA	333mA	250mA	200mA	125mA
Max. Capacitive Load	14000 μ F	8000 μ F	3200 μ F	1500 μ F	1000 μ F	470 μ F
Ripple & Noise** (Vp-p max.)	250mV	200mV	150mV	100mV	100mV	100mV

*Add suffix A for Type A, suffix B for Type B

**Ripple & Noise are measured at 20MHz bandwidth with 0.1 μ F & 47 μ F capacitors in parallel.

Type A



Type B



All specifications typical at nominal input voltage, full load and +25°C after warm-up time unless otherwise noted.

INPUT SPECIFICATIONS

Input Voltage Range	90~264 VAC or 120~370 VDC
Input Frequency	47~63Hz
Input Current	75mA max. @ 115 VAC 55mA max. @ 230 VAC
Inrush Current	20A max. @ 115 VAC 50A max. @ 230 VAC
Leakage Current	0.25mA max.
Recommended External Fuse	3.15A slow blow type

OUTPUT SPECIFICATIONS

Output Wattage	3W max.
Output Voltage	See table
Voltage Accuracy	$\pm 10\%$
Line Regulation, LL-HL	3.3V: $\pm 5\%$ typ, 5V~24V: $\pm 2\%$ typ.
Load Regulation, 0-100%	3.3V: $\pm 5\%$ typ, 5V~24V: $\pm 2\%$ typ.
Minimum Output Load	Not required
Hold-up Time	15ms min.
Switching Frequency	132 ± 8 KHz
Overpower Protection	Hiccup mode, auto-recovery
Overvoltage Protection	Zener diode clamp
Short-circuit Protection	Hiccup mode, indefinite, auto-recovery
Input-Output Isolation	3750 VAC

GENERAL SPECIFICATIONS

Efficiency	77% max.
Operating Temperature	-40°C to +85°C
Derating	Refer to Power Derating Curve
Cooling	Free air convection
Storage Temperature	-40°C to +125°C
Temp. Coefficient	$\pm 0.02\%/^{\circ}\text{C}$
Relative Humidity	95% RH
MTBF	650K hours minimum at full load, 25°C ambient, calculated per MIL-HDBK-217F
Dimensions (LxWxH)	1.37 x 0.71 x 0.86 inches (35.0 x 18.0 x 22.0 mm)
Case Material:	Plastic resin with fiberglass case, UL 94V-0 rated
Weight	26g

EMC & SAFETY STANDARDS

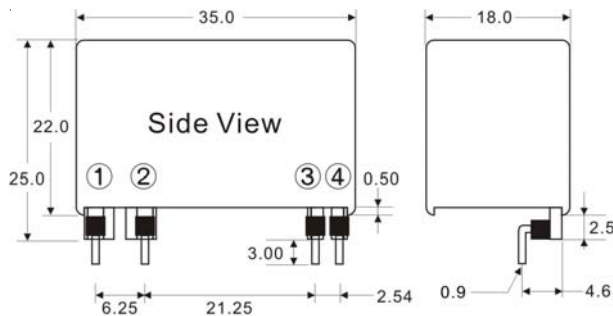
Safety Standards	UL60950-1, EN60950-1
Agency Approvals	UL, cUL, CB, CE
EMI	EN55022, Class B (Conducted & Radiated Emission)
EMS	EN55024 (Noise Immunity)

Tumbler Technologies + TRUMPower

3350 Scott Blvd., Building 13 • Santa Clara, California 95054, USA • 408-988-6616 • sales@trumpower.com • www.TRUMPower.com

MECHANICAL DRAWINGS

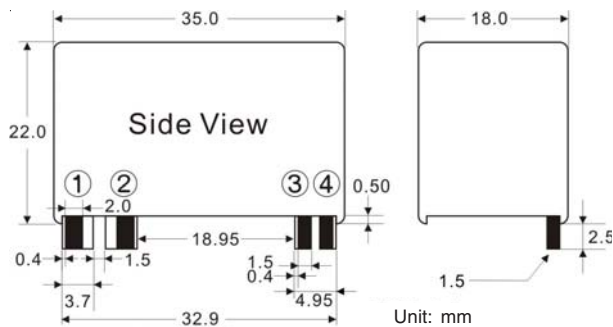
TYPE A



Unit: mm
Tolerance: ± 0.1 mm

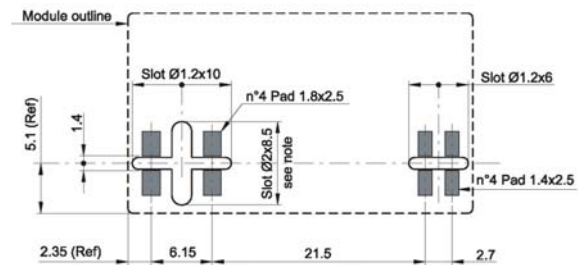
PIN NO.	FUNCTION
1	AC IN (L)
2	AC IN (N)
3	+DC OUT
4	-DC OUT

TYPE B



Unit: mm
PCB: 1.0mm
Tolerance: ± 0.1 mm

PCB Footprint - Bottom View



NOTE:

The 2x8.5mm slot is not mandatory
This slot is useful when high creepage between PCB tracks is required

DERATING

Power Derating Curve

