



# TRE06 SERIES 6 WATT AC-DC I.T.E SWITCHING ADAPTER

## Features

- Universal Input Range 90~264Vac
- High Efficiency up to 81%
- Miniature Size
- Optional US&EU AC Plugs
- Class II
- No Load Power Consumption < 75mW
- Approved IEC/UL 62368-1
- Meets EN55032 and CISPR/FCC Class B
- Operating Altitude 4000m
- Continuous Short Circuit Protection
- Constant Current (Optional)
- Meets CoC Tier 2 & DoE Level VI



MODEL NUMBER	OUTPUT VOLTAGE	OUTPUT CURRENT	VOLTAGE ACCURACY NOTE1	RIPPLE & NOISE NOTE2	LINE REGULATION NOTE3	LOAD REGULATION NOTE4	%EFF. (Typ.) NOTE5
TRE06S050	5 V	1200 mA	±4%	100 mV	±1%	±3%	76%
TRE06S090	9 V	650 mA	±3%	100 mV	±1%	±2%	80%
TRE06S120	12 V	500 mA	±3%	120 mV	±1%	±2%	80%
TRE06S150	15 V	400 mA	±3%	120 mV	±1%	±2%	81%

Note:

1. Voltage accuracy is set at 60% full load.
2. Add a 0.1uF ceramic capacitor and a 10uF E.L. capacitor to output for ripple & noise measuring @20MHz BW.
3. Line regulation is measured from 100Vac to 240Vac with 100% full load.
4. Load regulation is measured from 60% to 100% full load and from 60% to 20% full load (60%±40% full load).
5. Typical efficiency at 230 Vac and 75% full load at 25°C.

## PART NUMBER

Series	Output Voltage	AC Plug Type	DC Plug Type	Cable Type	Cable Length
TRE06	XXX	-X	-XX	X	XX
6W I.T.E Adapter	050 : 5V 090 : 9V 120 : 12V 150 : 15V	A : USA 2 Pin E : Europe 2 Pin	<a href="#">See Page 5</a>	A : UL2468 without OVP E : UL2468 with OVP	01 : 720mm 02 : 1220mm 03 : 1800mm 11 : 720mm with Ferrite Core 12 : 1220mm with Ferrite Core 13 : 1800mm with Ferrite Core <a href="#">See page 5 for restrictions</a>

Part Number Example:

- TRE06S120-A-01A03**, 12V<sub>dc</sub> Output, AC Plug Type, DC Jack Type, without OVP, Cable Length 1800mm  
**TRE06S120-E-01E03**, 12V<sub>dc</sub> Output, AC Plug Type, DC Jack Type, with OVP, Cable Length 1800mm



# TRE06 Series

## TECHNICAL SPECIFICATIONS

(All specifications are typical at nominal input, full load at 25°C unless otherwise noted.)

### ABSOLUTE MAXIMUM RATINGS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Input Voltage		All	90		264	V <sub>ac</sub>
				120		370
Operating Case Temperature	See Derating Curve	All	-20		80	°C
Storage Temperature		All	-20		85	°C
Operating Altitude		All			4000	m

### INPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Operating Voltage Range		All	100		240	V <sub>ac</sub>
Input Frequency Range		All	47		63	Hz
Maximum Input Current	100% Full load, V <sub>in</sub> =100V <sub>ac</sub>	All			0.25	A
Leakage Current		All			250	uA
Inrush Current	V <sub>in</sub> =240V <sub>ac</sub> , Cold start at 25°C	All			90	A

### OUTPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Output Voltage Set Point	V <sub>in</sub> =115V <sub>ac</sub> and 230V <sub>ac</sub> , I <sub>o</sub> =60% Full load T <sub>c</sub> =25°C	TRE06S050	4.8	5	5.2	V <sub>dc</sub>
		TRE06S090	8.73	9	9.27	
		TRE06S120	11.64	12	12.36	
		TRE06S150	14.55	15	15.45	
Operating Output Current Range	V <sub>in</sub> =115V <sub>ac</sub> and 230V <sub>ac</sub> , T <sub>c</sub> =25°C	TRE06S050			1.2	A
		TRE06S090			0.65	
		TRE06S120			0.5	
		TRE06S150			0.4	
Holdup Time	V <sub>in</sub> =115V <sub>ac</sub>	All		10		ms
Output Voltage Regulation						
Load Regulation	60%±40% Full load change	TRE06S050			±3.0	%
		TRE06S090			±2.0	
		TRE06S120			±2.0	
		TRE06S150			±2.0	
Line Regulation	V <sub>in</sub> =100V <sub>ac</sub> to 240V <sub>ac</sub>	All			±1.0	%
Over Current Protection	Auto recovery	All	110		160	%
Short Circuit Protection	Auto recovery	All				
Output Ripple and Noise	1. Add a 0.1uF ceramic capacitor and a 10uF aluminum electrolytic capacitor to output 2. Oscilloscope is 20MHz band width 3. Ambient temperature=25°C	TRE06S050			100	mV
		TRE06S090			100	
		TRE06S120			120	
		TRE06S150			120	
Load Capacitance	1. V <sub>in</sub> =115V <sub>ac</sub> and 230V <sub>ac</sub> 2. Output is max. load 3. Ambient temperature=25°C	TRE06S050			1200	uF
		TRE06S090			680	
		TRE06S120			560	
		TRE06S150			400	
Efficiency	1. V <sub>in</sub> =230V <sub>ac</sub> 2. Output is 75% full load 3. Ambient temperature=25°C	TRE06S050		76		%
		TRE06S090		80		
		TRE06S120		80		
		TRE06S150		81		



# TRE06 Series

## ISOLATION CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Input to Output	1 minute	All			3000	V <sub>ac</sub>
Isolation Resistance	Input to output	All	100			MΩ

## FEATURE CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Switching Frequency	P <sub>out</sub> =max. rated power	All		30~70		kHz

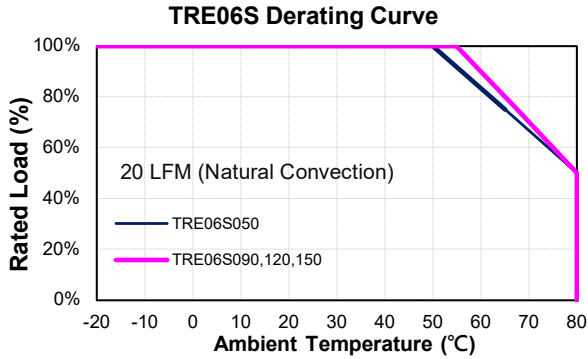
## GENERAL SPECIFICATIONS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
MTBF	I <sub>o</sub> =100%; T <sub>a</sub> =25°C per MIL-HDBK-217F	All	900			k hours
Humidity	Non-condensing	All			93	% RH
Shock	Meet MIL-STD-810F Table 516.5, Table 516.5-1 10ms, each axis 3 times (±X · ±Y · ±Z axis)	All		75		g
Vibration	Meet MIL-STD-810F Table 514.5C-VIII, 15~2000Hz, X · Y · Z axis, 1 hour (each axis), Total 3hrs.	All		4		g
Weight		All		55		g
Dimensions		All	2.047x1.417x0.992 inches (52.00x36.00x25.21 mm)			
<b>Safety</b>	Class II, IEC/UL 62368-1					Ed.3.0
<b>EMC Emission</b>	EN 55032:2015+A1:2020, EN 55032:2015+A11:2020, 47 CFR FCC Part 15 Subpart B, EN 61000-6-3:2021, EN 61000-6-4:2019, EN 61000-3-2:2019+A1:2021, EN 61000-3-3:2013+A2:2021					Class B
Conducted Disturbance	EN 55032:2015+A1:2020, EN 55032:2015+A11:2020, 47 CFR FCC Part 15 Subpart B, EN 61000-6-3:2021, EN 61000-6-4:2019					Class B
Radiated Disturbance	EN 55032:2015+A1:2020 · EN 55032:2015+A11:2020, 47 CFR FCC Part 15 Subpart B, EN 61000-6-3:2021, EN 61000-6-4:2019					Class B
Harmonic Current Emissions	EN 61000-3-2:2019+A1:2021					
Voltage Fluctuations & Flicker	EN 61000-3-3:2013+A2:2021					
<b>EMC Immunity</b>	EN 55035:2017+A11:2020, EN 61000-6-1:2019, EN 61000-6-2:2019 · IEC 61000-4-2, 3, 4, 5, 6, 11					
Electrostatic Discharge (ESD)	IEC 61000-4-2:2008 · Air Discharge: ±8kV, Contact Discharge: ±4kV					Criteria A
Radio-Frequency, Continuous Radiated Disturbance	IEC 61000-4-3:2020					Criteria A
Electrical Fast Transient (EFT)	IEC 61000-4-4:2012, ±0.5kV, ±1kV					Criteria A
Surge	IEC 61000-4-5:2014+A1:2017, L-N: ±0.5kV, ±1kV					Criteria A
Conducted Disturbances, Induced by RF Fields	IEC 61000-4-6:2013+COR1:2015					Criteria A
Voltage Dips	IEC 61000-4-11:2020, Dip: 30% Reduction, Dip >95% Reduction					Criteria A
Voltage Interruptions	IEC 61000-4-11:2020, >95% Reduction					Criteria B
Application Note Link						<a href="#">TRE06 Series App Notes</a>

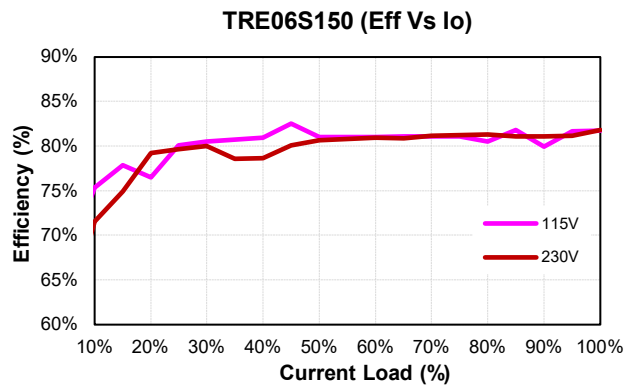
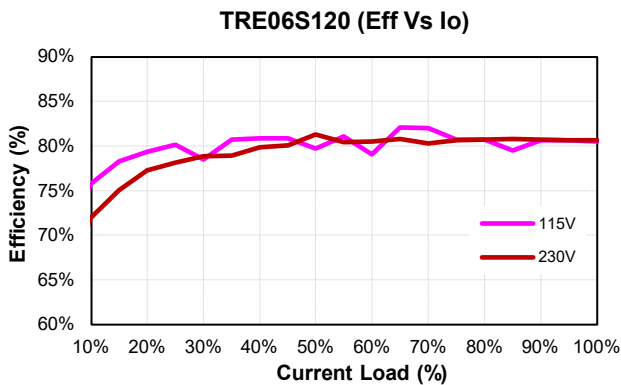
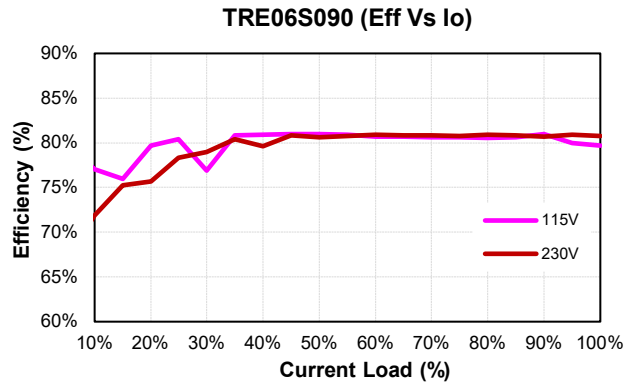
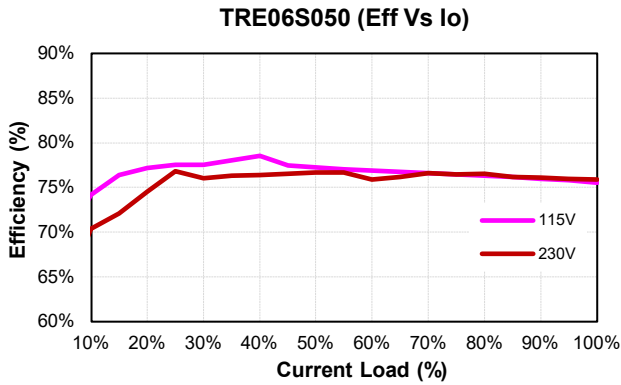


**CHARACTERISTIC CURVE**

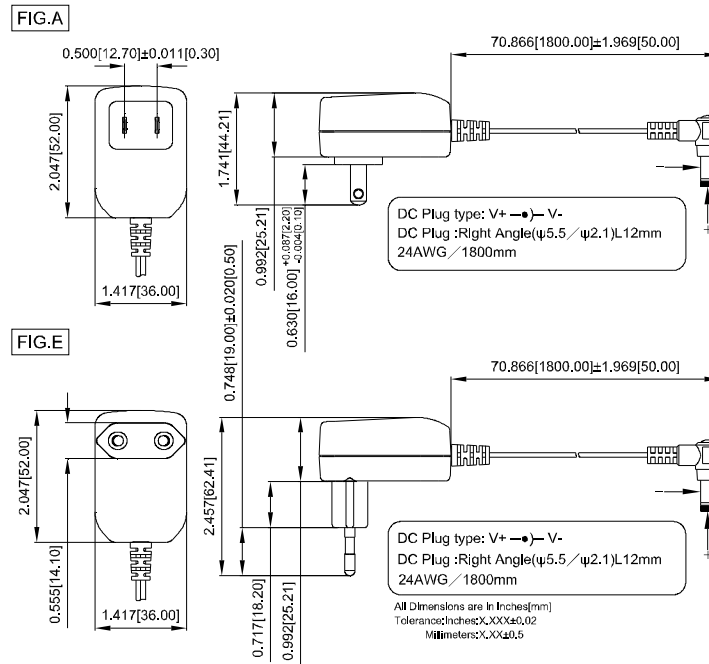
**Power Derating Curve**



**Performance Data**



## MECHANICAL SPECIFICATION



## STANDARD OUTPUT PLUG

DC Plug Type	Cable Number-XXXXX	A	B	C	Cable Type	Cable Length	Cable AWG
		OD (mm)	ID (mm)	L (mm)			
 Straight/Inner+Outer- + ●) -	11A03	Φ5.5	Φ2.1	12	UL2468	1800mm without Core	22AWG for Vo: 5V 24AWG for Vo: 9V, 12V, 15V
	12A03	Φ5.5	Φ2.5	12			
	23A03	Φ5.5	Φ2.1	9.5			
	26A03	Φ5.5	Φ2.5	9.5			
 Right Angle/Inner+Outer- + ●) -	01A03	Φ5.5	Φ2.1	12			
	02A03	Φ5.5	Φ2.5	12			
	21A03	Φ5.5	Φ2.5	9.5			
	24A03	Φ5.5	Φ2.1	9.5			
 Straight/Inner+Outer- + ●) -	11E03	Φ5.5	Φ2.1	12	UL2468	1800mm without Core	22AWG for Vo: 5V 24AWG for Vo: 9V, 12V, 15V
	12E03	Φ5.5	Φ2.5	12			
	23E03	Φ5.5	Φ2.1	9.5			
	26E03	Φ5.5	Φ2.5	9.5			
 Right Angle/Inner+Outer- + ●) -	01E03	Φ5.5	Φ2.1	12			
	02E03	Φ5.5	Φ2.5	12			
	21E03	Φ5.5	Φ2.5	9.5			
	24E03	Φ5.5	Φ2.1	9.5			

※Other DC Plug Type please refer to the link: <https://www.cincon.com/productdownload/TRE06-cable--DC-Plug.pdf>

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