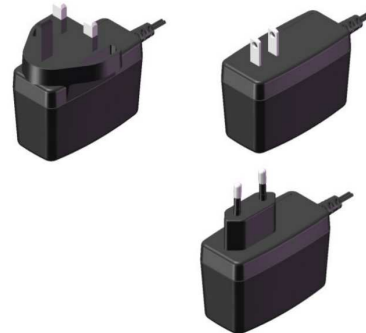




TRE25 SERIES 25 WATT I.T.E SWITCH ADAPTER

Features

- Universal Input Range 90~264Vac
- High Efficiency up to 88%
- Class II
- No Load Input Power Consumption < 75mW
- Approval IEC/EN/UL 62368-1 Ed 3.0
- Approval EN55032 and CISPR/FCC Class B
- Operating Altitude 3000m
- Continuous Short Circuit Protection
- Over Voltage Protection
- Meets CoC Tier 2 and DOE Level VI



MODEL NUMBER	OUTPUT VOLTAGE	OUTPUT CURRENT	RIPPLE & NOISE NOTE1	VOLTAGE ACCURACY NOTE2	LINE REGULATION NOTE3	LOAD REGULATION NOTE4	%EFF. (Typ.) NOTE5
TRE25050	5 V	4.0 A	50 mV	±2%	±1%	±6%	80%
TRE25090	9 V	2.5 A	90 mV	±2%	±1%	±5%	87%
TRE25120	12 V	2.1 A	120 mV	±2%	±1%	±5%	87%
TRE25150	15 V	1.67 A	150 mV	±2%	±1%	±3%	88%
TRE25180	18 V	1.4 A	180 mV	±2%	±1%	±2%	88%
TRE25240	24 V	1.05 A	240 mV	±2%	±1%	±2%	88%

Note:

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

PART NUMBER

Series	Output Voltage	DC Plug Type	Cable Type	Cable Length
TRE25	XXX	-XX	X	XX
25W I.T.E Adapter	050 : 5V 090 : 9V 120 : 12V 150 : 15V 180 : 18V 240 : 24V A : USA 2 Pin E : Europe 2 Pin U : British 3 Pin	See Page 6	G : UL1571 with OVP	01 : 720mm 02 : 1220mm 03 : 1800mm 11 : 720mm with Ferrite Core 12 : 1220mm with Ferrite Core 13 : 1800mm with Ferrite Core See page 6 for restrictions

Part Number Example:

TRE25120-01E02, 25W, 12V_{dc} Output, DC Jack Type, Cable Length 1220mm



TRE25 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	90 120		264 370	V _{ac} V _{dc}
Operating Temperature	See Derating Curve	All	-20		60	°C
Storage Temperature		All	-20		85	°C
Input/Output Isolation Voltage	1 minute	All			3000	V _{ac}
Operating Altitude		All			3000	m

INPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Operating Voltage Range		All	100		240	V _{ac}
Input Frequency Range		All	47		63	Hz
Maximum Input Current	100% Load, V _{in} =100V _{ac}	All			0.7	A
Leakage Current		All			250	uA
Under Voltage Protection		All	60	68	75	V _{ac}
Inrush Current	V _{in} =240V _{ac} , Cold start at 25°C	All			60	A

OUTPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Output Voltage Set Point	V _{in} =115V _{ac} and 230V _{ac} , I _o =60% Full load T _c =25°C	TRE25050 TRE25090 TRE25120 TRE25150 TRE25180 TRE25240	4.9 8.82 11.76 14.7 17.64 23.52	5 9 12 15 18 24	5.1 9.18 12.24 15.3 18.36 24.48	V _{dc}
Operating Output Current Range	V _{in} =115V _{ac} and 230V _{ac} , T _c =25°C	TRE25050 TRE25090 TRE25120 TRE25150 TRE25180 TRE25240	0 0 0 0 0 0		4 2.5 2.1 1.67 1.4 1.05	A
Holdup Time	V _{in} =115V _{ac}	All		10		ms
Output Voltage Regulation						
Load Regulation	60%±40% Full load change	TRE25050 TRE25090 TRE25120 TRE25150 TRE25180 TRE25240			±6.0 ±5.0 ±5.0 ±3.0 ±2.0 ±2.0	%
Line Regulation	V _{in} =High line to low line, full load	All			±1.0	%
Over Voltage Protection	IC Component to clamp (auto recovery)	TRE25050 TRE25090 TRE25120 TRE25150 TRE25180 TRE25240		7.44 13.6 16.2 18.9 23.5 28.8		V _{dc}
Over Current Protection	Auto recovery	All	110		140	%
Short Circuit Protection	Auto recovery	All				



TRE25 Series

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
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	TRE25050			50	mV
		TRE25090			90	
		TRE25120			120	
		TRE25150			150	
		TRE25180			180	
		TRE25240			240	
Load Capacitance	1. $V_{in}=115V_{ac}$ and $230V_{ac}$ 2. Output is max. load 3. Ambient temperature=25°C	TRE25050			4000	uF
		TRE25090			2500	
		TRE25120			2100	
		TRE25150			1670	
		TRE25180			1400	
		TRE25240			1050	
Efficiency	1. $V_{in}=230V_{ac}$ 2. Output is 75% full load 3. Ambient temperature=25°C	TRE25050		80		%
		TRE25090		87		
		TRE25120		87		
		TRE25150		88		
		TRE25180		88		
		TRE25240		88		

ISOLATION CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Input to Output	1 Minute (without dielectric breakdown)	All			3000	V_{ac}
Isolation Resistance	Input to output	All	100			MΩ

FEATURE CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Switching Frequency		All		65		kHz

GENERAL SPECIFICATIONS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
MTBF	$I_o=100\%$; $T_a=25^\circ C$ per MIL-HDBK-217F	All	300			k hours
Life Time	@75% Load, $40^\circ C$	All	26			k hours
Humidity	Non-condensing	All			93	% RH
Shock	MIL-STD-810F Table 516.5, TABLE 516.5-1 10ms, each axis 3 times($\pm X$ 、 $\pm Y$ 、 $\pm Z$ axis)	All		75		g
Vibration	MIL-STD-810F Table 514.5C-VIII, 15~2000Hz, X、Y、Z axis, 1 hour(each axis),.. total 3 hours.	All		4		g
Weight		All		140		grams
Dimension		All	2.795x1.906x1.299 inches (71.00x48.40x33.00 mm)			
Safety	Class II, IEC 62368-1:2018 EN 62368-1: 2020+A11:2020 UL 62368-1:2019, 3rd Edition					Ed. 3.0
EMC Emission	EN 55032:2015+A11:2020, EN 61000-3-2:2019, EN6100-3-3:2013+A1:2019, 47 CFR FCC Part 15					
Conducted Disturbance	EN 55032:2015+A11:2020					Class B
Radiated Disturbance	EN 55032:2015+A11:2020					Class B
Harmonic Current Emissions	EN 61000-3-2: 2019					Class A
Voltage Fluctuations & Flicker	EN 61000-3-3: 2013+A1:2019					Criterion A
EMC Immunity	EN 55035:2017+A11:2020, EN 61204-3:2020, EN 61000-6-1:2007, EN 61000-3-2:2019, EN 61000-3-3:2013+A1:2019					Criterion A
Electrostatic Discharge (ESD)	IEC 61000-4-2:2008, Air Discharge: $\pm 8kV$ Contact Discharge: $\pm 4kV$					Criterion A
Radio-Frequency, Continuous Radiated Disturbance	IEC 61000-4-3: 2020					Criterion A



TRE25 Series

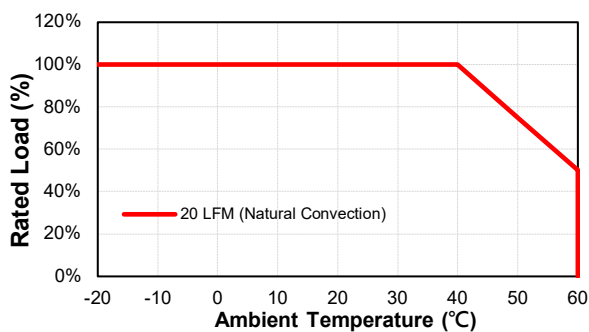
GENERAL SPECIFICATIONS

Electrical Fast Transient (EFT)	IEC 61000-4-4:2012, $\pm 1\text{kV}$	Criterion A
Surge	IEC 61000-4-5 2014+A1:2017, L-N $\pm 0.5\text{kV}$, $\pm 1\text{kV}$	Criterion A
Conducted Disturbances, Induced by RF Fields	IEC 61000-4-6:2013+COR1:2015	Criterion A
Power Frequency Magnetic Field	IEC 61000-4-8:2009	Criterion A
Voltage Dips	IEC 61000-4-11:2020, Dips:30% reduction, Dips: >95% Reduction	Criterion A
Voltage Interruptions	IEC 61000-4-11:2020, >95% Reduction	Criterion B
Application Note Link	TRE25 Series App Notes	

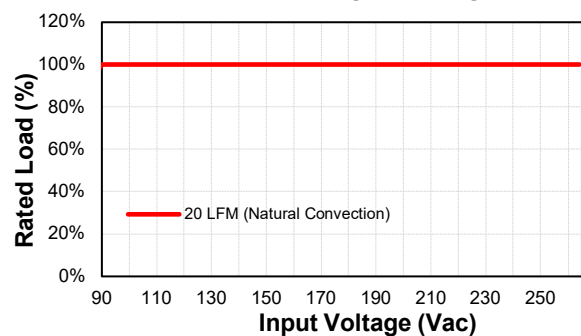
CHARACTERISTIC CURVE

Power Derating Curve

TRE25 Derating Curve

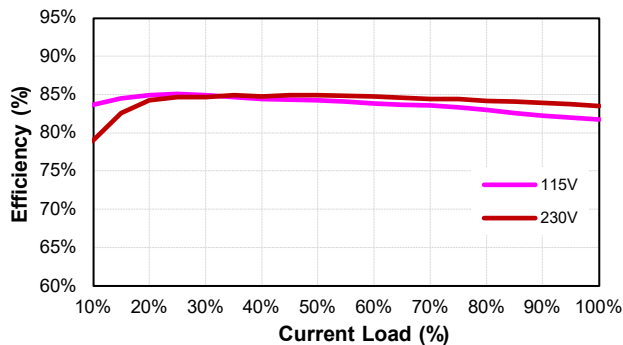


TRE25 Input Voltage Derating Curve

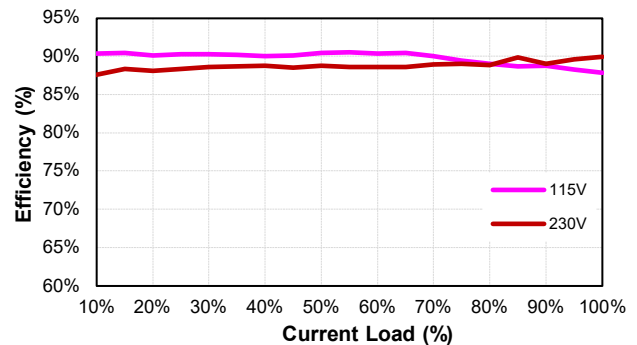


Performance Data

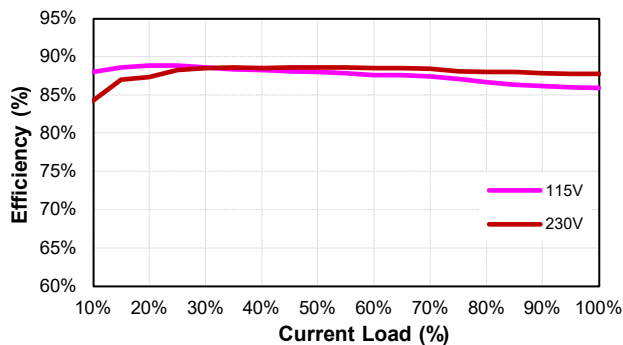
TRE25050 (Eff Vs Io)



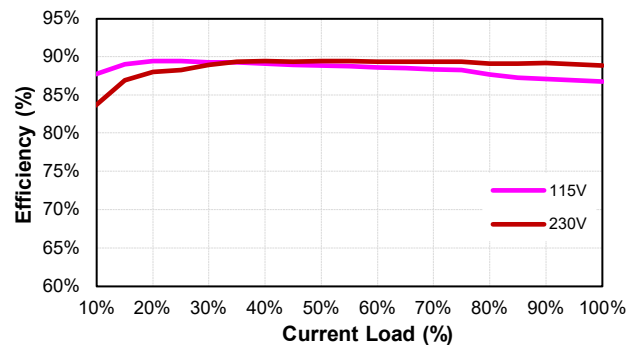
TRE25090 (Eff Vs Io)



TRE25120 (Eff Vs Io)



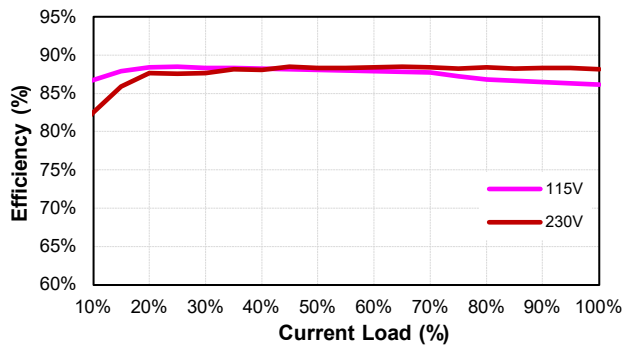
TRE25150 (Eff Vs Io)



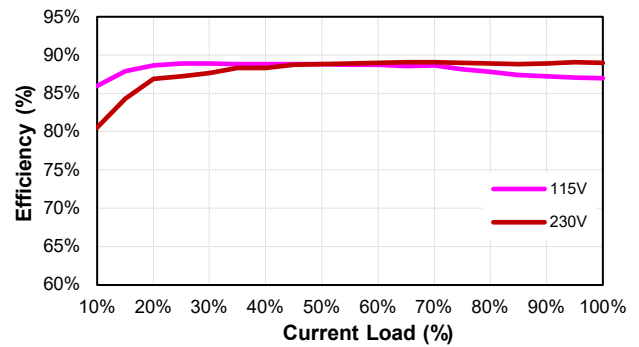


TRE25 Series

TRE25180 (Eff Vs Io)

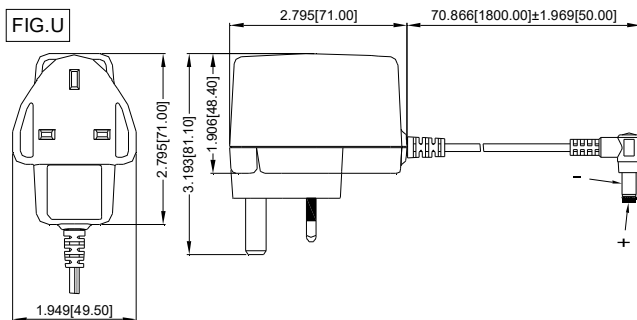
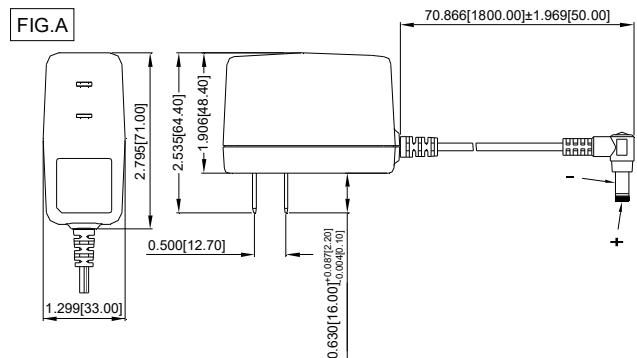
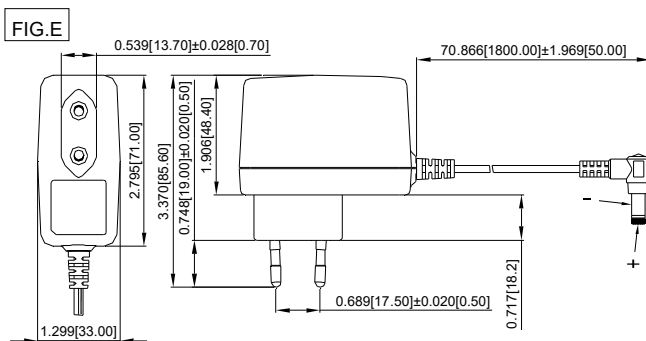


TRE25240 (Eff Vs Io)



MECHANICAL SPECIFICATION

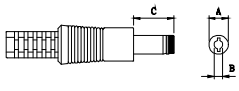
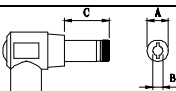
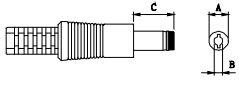
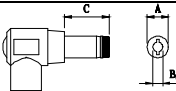
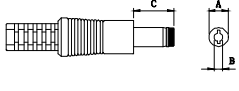
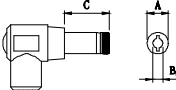
All Dimensions are in inches[mm]
Tolerance: Inches: X.XXX±0.02
Millimeters: X.XX±0.5





TRE25 Series

STANDARD OUTPUT DC 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- + — ● — —	11G03	Φ5.5	Φ2.1	12	UL1571	1800mm without Core	20AWG for 12V,15V,18V, 24V
	12G03	Φ5.5	Φ2.5	12			
	23G03	Φ5.5	Φ2.1	9.5			
	26G03	Φ5.5	Φ2.5	9.5			
 Right Angle/Inner+Outer- + — ● — —	01G03	Φ5.5	Φ2.1	12			
	02G03	Φ5.5	Φ2.5	12			
	21G03	Φ5.5	Φ2.5	9.5			
	24G03	Φ5.5	Φ2.1	9.5			
 Straight/Inner+Outer- + — ● — —	11G03	Φ5.5	Φ2.1	12	UL1571	1800mm without Core	18AWG for 9V
	12G03	Φ5.5	Φ2.5	12			
	23G03	Φ5.5	Φ2.1	9.5			
	26G03	Φ5.5	Φ2.5	9.5			
 Right Angle/Inner+Outer- + — ● — —	01G03	Φ5.5	Φ2.1	12			
	02G03	Φ5.5	Φ2.5	12			
	21G03	Φ5.5	Φ2.5	9.5			
	24G03	Φ5.5	Φ2.1	9.5			
 Straight/Inner+Outer- + — ● — —	11G02	Φ5.5	Φ2.1	12	UL1571	1220mm without Core	16AWG for 5V
	12G02	Φ5.5	Φ2.5	12			
	23G02	Φ5.5	Φ2.1	9.5			
	26G02	Φ5.5	Φ2.5	9.5			
 Right Angle/Inner+Outer- + — ● — —	01G02	Φ5.5	Φ2.1	12			
	02G02	Φ5.5	Φ2.5	12			
	21G02	Φ5.5	Φ2.5	9.5			
	24G02	Φ5.5	Φ2.1	9.5			

✱Other DC Plug Type please refer to the link: <https://www.cincon.com/productdownload/TRE25-cable-DC-plug.pdf>

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