



TRE25RD SERIES 25 WATT I.T.E INTERCHANGEABLE PLUG ADAPTER

Features

- Universal Input Range 90~264Vac
- High Efficiency up to 88%
- Interchangeable AC Plugs
- Class II
- No Load Input Power Consumption < 75mW
- Approval IEC/EN/UL 62368-1
- 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



AC Plug Sold Separately



MODEL NUMBER	OUTPUT VOLTAGE	OUTPUT CURRENT	RIPPLE & NOISE NOTE1	VOLTAGE ACCURACY NOTE2	LINE REGULATION NOTE3	LOAD REGULATION NOTE4	%EFF. (Typ.) NOTE5
TRE25RD050	5 V	4.0 A	50 mV	±2%	±1%	±6%	80%
TRE25RD090	9 V	2.5 A	90 mV	±2%	±1%	±5%	87%
TRE25RD120	12 V	2.1 A	120 mV	±2%	±1%	±5%	87%
TRE25RD150	15 V	1.67 A	150 mV	±2%	±1%	±3%	88%
TRE25RD180	18 V	1.4 A	180 mV	±2%	±1%	±2%	88%
TRE25RD240	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 100V_{ac} to 240V_{ac} 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 230V_{ac} and 75% full load at 25°C.

PART NUMBER

Series	Output Voltage	AC Plug Type	DC Plug Type	Cable Type	Cable Length	Case Color
TRE25RD	XXX	-XXXX	-XX	X	XX	-XX-BK
25W I.T.E Adapter	050 : 5V 090 : 9V 120 : 12V 150 : 15V 180 : 18V 240 : 24V	Blank : Sold Separately ASUE : Include 4 Type	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	BE-BK : Black-Black RD-BK : Red-Black

Part Number Example:

TRE25RD120-11G13-BK-BK, 12V_{dc} Output, DC Jack Type, Cable Length 1800mm with Ferrite Core, Case Color Black-Black

TRE25RD120-ASUE-11G03-BE-BK, 12V_{dc} Output, include 4 Type AC Plug, DC Jack Type, Cable Length 1800mm, Case Color Blue-Black



TRE25RD 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 _{ac}
			120		370	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 (Earth)		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	TRE25RD050	4.9	5	5.1	V _{dc}
		TRE25RD090	8.82	9	9.18	
		TRE25RD120	11.76	12	12.24	
		TRE25RD150	14.7	15	15.3	
		TRE25RD180	17.64	18	18.36	
		TRE25RD240	23.52	24	24.48	
Operating Output Current Range	V _{in} =115V _{ac} and 230V _{ac} , T _c =25°C	TRE25RD050	0		4	A
		TRE25RD090	0		2.5	
		TRE25RD120	0		2.1	
		TRE25RD150	0		1.67	
		TRE25RD180	0		1.4	
		TRE25RD240	0		1.05	
Holdup Time	V _{in} =115V _{ac}	All		10		ms
Output Voltage Regulation						
Load Regulation	60%±40% Full load change	TRE25RD050			±6.0	%
		TRE25RD090			±5.0	
		TRE25RD120			±5.0	
		TRE25RD150			±3.0	
		TRE25RD180			±2.0	
		TRE25RD240			±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)	TRE25RD050		7.44		V _{dc}
		TRE25RD090		13.6		
		TRE25RD120		16.2		
		TRE25RD150		18.9		
		TRE25RD180		23.5		
		TRE25RD240		28.8		
Over Current Protection	Auto recovery	All	110		140	%
Short Circuit Protection	Auto recovery	All				



TRE25RD 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	TRE25RD050			50	mV
		TRE25RD090			90	
		TRE25RD120			120	
		TRE25RD150			150	
		TRE25RD180			180	
		TRE25RD240			240	
Load Capacitance	1. $V_{in}=115V_{ac}$ and $230V_{ac}$ 2. Output is max. load 3. Ambient temperature=25°C	TRE25RD050			4000	uF
		TRE25RD090			2500	
		TRE25RD120			2100	
		TRE25RD150			1670	
		TRE25RD180			1400	
		TRE25RD240			1050	
Efficiency	1. $V_{in}=230V_{ac}$ 2. Output is 75% full load 3. Ambient temperature=25°C	TRE25RD050		80%		%
		TRE25RD090		87%		
		TRE25RD120		87%		
		TRE25RD150		88%		
		TRE25RD180		88%		
		TRE25RD240		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
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 62368-1:2014 EN 62368-1:2014/A11:2017 UL 62368-1, 2nd Edition					Ed 2.0
EMC Emission	EN55032:2015+AC:2016, EN61000-3-2:2014, EN6100-3-3:2013, FCC CFR 47 Part 15					
Conducted Disturbance	EN55032:2015+AC:2016					Class B
Radiated Disturbance	EN55032:2015+AC:2016					Class B
Harmonic Current Emissions	EN 61000-3-2: 2014					Class A
Voltage Fluctuations & Flicker	EN 61000-3-3: 2013					Criterion A
EMC Immunity	EN 55024:2010+A1:2015, EN 61204-3, IEC 61000-4-2, 3, 4, 5, 6, 8, 11					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 61000-4-3:2006+A1:2007+A2:2010					Criterion A
Electrical Fast Transient (EFT)	IEC 61000-4-4:2012, $\pm 1kV$					Criterion A



TRE25RD Series

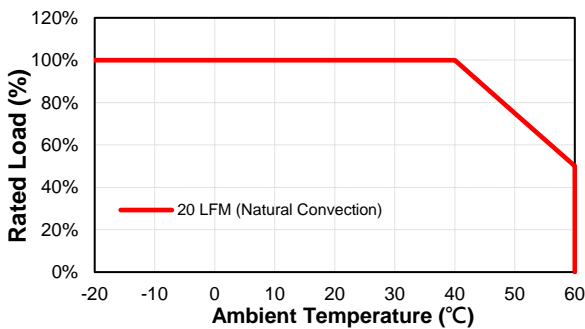
GENERAL SPECIFICATIONS

Surge	IEC 61000-4-5 2014+A1:2017, L-N $\pm 0.5kV$, $\pm 1kV$	Criterion A
Conducted Disturbances, Induced by RF Fields	IEC 61000-4-6:2013	Criterion A
Power Frequency Magnetic Field	IEC 61000-4-8:2009	Criterion A
Voltage Dips	IEC 61000-4-11:2004+A1:2017, Dips:30% reduction, Dips: >95% Reduction	Criterion A
Voltage Interruptions	IEC 61000-4-11:2004+A1:2017, >95% Reduction	Criterion B
Application Note Link	TRE25RD Series App Notes	

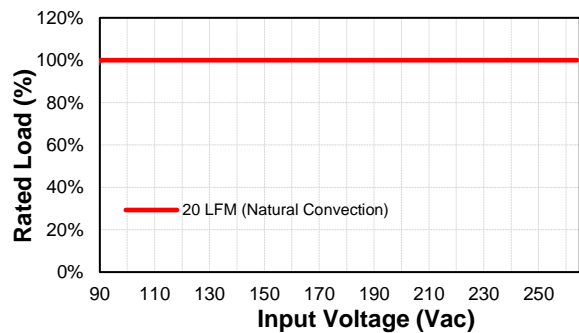
CHARACTERISTIC CURVE

Power Derating Curve

TRE25RD Derating Curve

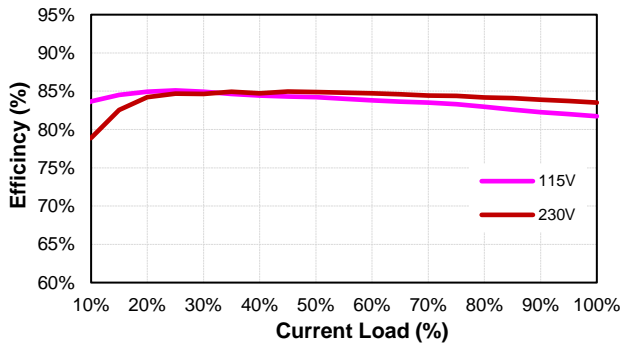


TRE25RD Input Voltage Derating Curve

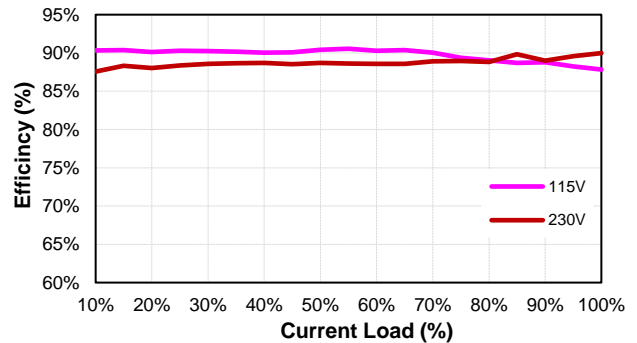


Performance Data

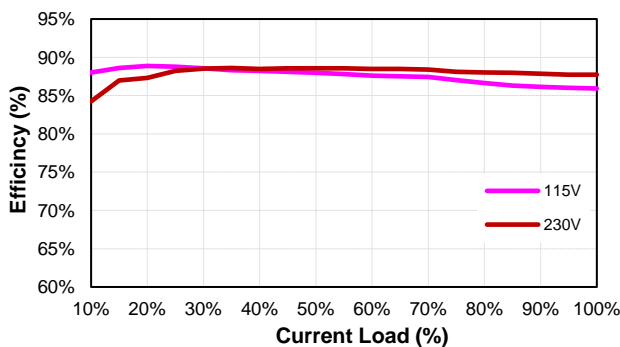
TRE25RD050 (Eff Vs Io)



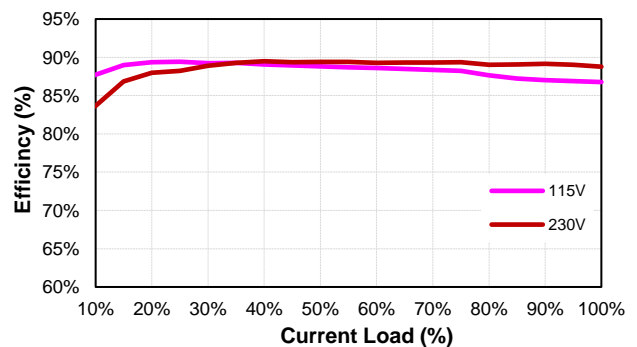
TRE25RD090 (Eff Vs Io)



TRE25RD120 (Eff Vs Io)



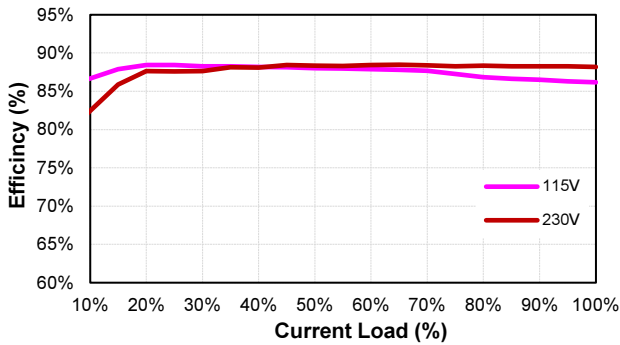
TRE25RD150 (Eff Vs Io)



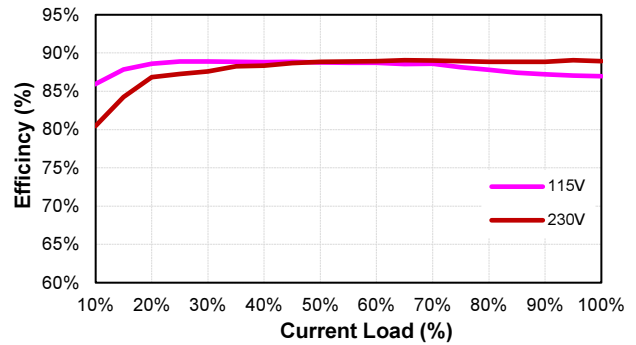


TRE25RD Series

TRE25RD180 (Eff Vs Io)

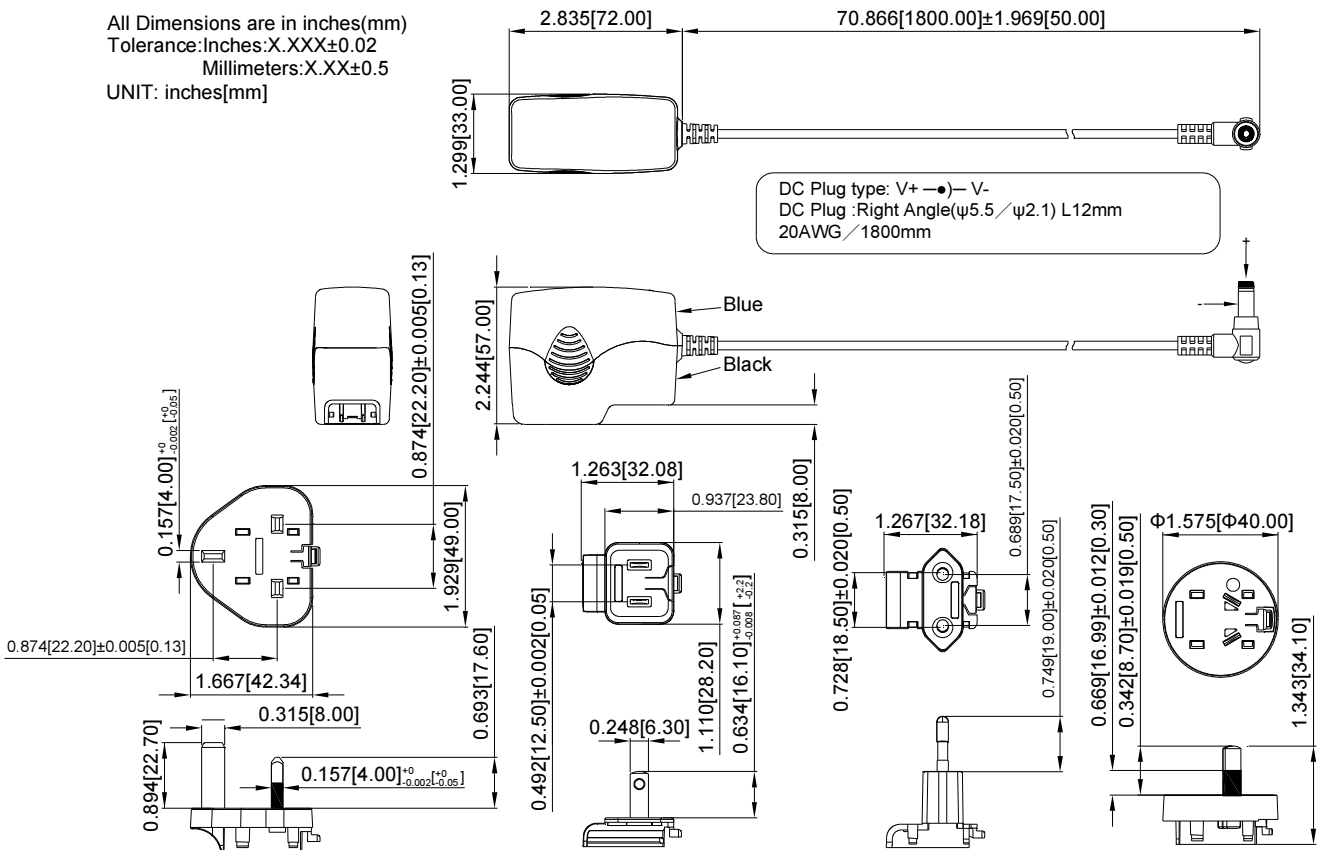


TRE25RD240 (Eff Vs Io)

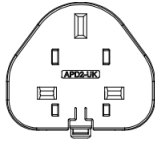

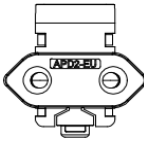



MECHANICAL SPECIFICATION

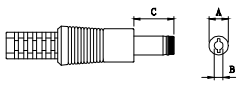
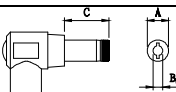
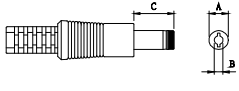
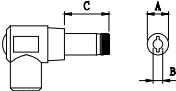
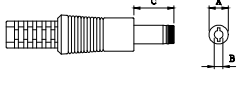
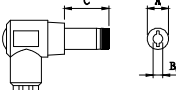
All Dimensions are in inches(mm)
Tolerance: Inches: X.XXX±0.02
Millimeters: X.XX±0.5
UNIT: inches[mm]



INTERCHANGEABLE AC PLUG SPECIFICALLY for TRE25RD (SOLD SEPARATELY)

TYPE				
	U.K type (U)	American type (A)	European type (E)	Australian type (S)
ORDER NO.	AC PLUGE RE-U	AC PLUGE RE-A	AC PLUGE RE-E	AC PLUGE RE-S

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)			
 <p>Straight/Inner+Outer-</p> <p>+ ● -</p>	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			
 <p>Right Angle/Inner+Outer-</p> <p>+ ● -</p>	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			
 <p>Straight/Inner+Outer-</p> <p>+ ● -</p>	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			
 <p>Right Angle/Inner+Outer-</p> <p>+ ● -</p>	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			
 <p>Straight/Inner+Outer-</p> <p>+ ● -</p>	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			
 <p>Right Angle/Inner+Outer-</p> <p>+ ● -</p>	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			