



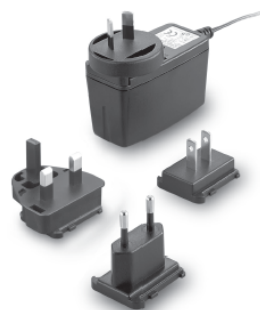
TRG10R SERIES

10 WATT AC-DC I.T.E

INTERCHANGEABLE PLUG ADAPTER

Features

- Universal Input Range 90~264Vac
- High Efficiency up to 84%
- Interchangeable AC Plugs
- Class II
- No Load Power Consumption < 75mW
- Approval IEC/EN/UL 62368-1
- Approval EN55032 Class B and CISPR/FCC Class B
- Operating Altitude 2000m
- Over Voltage Protection
- Continuous Short Circuit Protection
- Meets CoC Tier 2 & DoE Level VI



AC Plug Sold Separately



MODEL NUMBER	OUTPUT VOLTAGE	OUTPUT CURRENT	VOLTAGE ACCURACY NOTE1	RIPPLE & NOISE NOTE2	LINE REGULATION NOTE3	LOAD REGULATION NOTE4	%EFF. (Typ.) NOTE5
TRG10R050	5 V	1600 mA	±2%	50 mV	±1%	±4%	77%
TRG10R059	5.9 V	1500 mA	±2%	60 mV	±1%	±3%	80%
TRG10R060	6 V	1500 mA	±2%	60 mV	±1%	±3%	82%
TRG10R075	7.5 V	1200 mA	±2%	75 mV	±1%	±3%	82%
TRG10R090	9 V	1100 mA	±2%	90 mV	±1%	±2%	84%
TRG10R120	12 V	850 mA	±2%	120 mV	±1%	±2%	82%
TRG10R136	13.6 V	750 mA	±2%	136 mV	±1%	±2%	83%
TRG10R150	15 V	700 mA	±2%	150 mV	±1%	±2%	83%
TRG10R180	18 V	550 mA	±2%	180 mV	±1%	±2%	83%
TRG10R240	24 V	400 mA	±2%	240 mV	±1%	±2%	83%

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 100V_{ac} to 240V_{ac} 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 V_{ac} and 75% full load at 25°C.

PART NUMBER

Series	Output Voltage	AC Plug Type	DC Plug Type	Cable Type	Cable Length
TRG10R	XXX	-X	-XX	X	XX
10W I.T.E Adapter	050 : 5V 059 : 5.9V 060 : 6V 075 : 7.5V 090 : 9V 120 : 12V 136 : 13.6V 150 : 15V 180 : 18V 240 : 24V	Blank: Sold Separately ASUE: Include 4 Type AC Plug	See Page 7	E : UL1185 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 7 for restrictions

Part Number Example:

TRG10R120-01E03, 12V_{dc} Output, DC Jack Type, Cable Length 1800mm

TRG10R120-ASUE-01E03, 12V_{dc} Output, Include 4 Type AC Plug, DC Jack Type, Cable Length 1800mm



TRG10R 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 Case Temperature	See Derating Curve	All	-20		60	°C
Storage Temperature		All	-20		85	°C
Operating Altitude		All			2000	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% Full load, V _{in} =100V _{ac}	All			0.4	A
Leakage Current		All			250	uA
Inrush Current	V _{in} =240V _{ac} , Cold start at 25°C	All			40	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	TRG10R050	4.9	5	5.1	V _{dc}
		TRG10R059	5.78	5.9	6.02	
		TRG10R060	5.88	6	6.12	
		TRG10R075	7.35	7.5	7.65	
		TRG10R090	8.82	9	9.18	
		TRG10R120	11.76	12	12.24	
		TRG10R136	13.328	13.6	13.872	
		TRG10R150	14.7	15	15.3	
		TRG10R180	17.64	18	18.36	
TRG10R240	23.52	24	24.48			
Operating Output Current Range	V _{in} =115V _{ac} and 230V _{ac} , T _c =25°C	TRG10R050			1.6	A
		TRG10R059			1.5	
		TRG10R060			1.5	
		TRG10R075			1.2	
		TRG10R090			1.1	
		TRG10R120			0.85	
		TRG10R136			0.75	
		TRG10R150			0.7	
		TRG10R180			0.55	
TRG10R240			0.4			
Holdup Time	V _{in} =115V _{ac}	All	10			ms
Output Voltage Regulation						
Load Regulation	60%±40% Full load change	TRG10R050			±4.0	%
		TRG10R059			±3.0	
		TRG10R060			±3.0	
		TRG10R075			±3.0	
		TRG10R090			±2.0	
		TRG10R120			±2.0	



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PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Load Regulation	60%±40% Full load change	TRG10R136 TRG10R150 TRG10R180 TRG10R240			±2.0 ±2.0 ±2.0 ±2.0	%
Line Regulation	$V_{in}=100V_{ac}$ to $240V_{ac}$	All			±1.0	%
Over Voltage Protection	TVS Component to clamp	TRG10R050 TRG10R059 TRG10R060 TRG10R075 TRG10R090 TRG10R120 TRG10R136 TRG10R150 TRG10R180 TRG10R240			7.54 8.28 8.28 12 13 16.2 16.2 19.3 23.5 28.8	V_{dc}
Over Current Protection	Auto recovery	All	110		180	%
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	TRG10R050 TRG10R059 TRG10R060 TRG10R075 TRG10R090 TRG10R120 TRG10R136 TRG10R150 TRG10R180 TRG10R240			50 60 60 75 90 120 136 150 180 240	mV
Load Capacitance	1. $V_{in}=115V_{ac}$ and $230V_{ac}$ 2. Output is max. load 3. Ambient temperature=25°C	TRG10R050 TRG10R059 TRG10R060 TRG10R075 TRG10R090 TRG10R120 TRG10R136 TRG10R150 TRG10R180 TRG10R240			1600 1500 1500 1200 1100 850 750 700 550 400	uF
Efficiency	1. $V_{in}=230V_{ac}$ 2. Output is 75% full load 3. Ambient temperature=25°C	TRG10R050 TRG10R059 TRG10R060 TRG10R075 TRG10R090 TRG10R120 TRG10R136 TRG10R150 TRG10R180 TRG10R240		77% 80% 82% 82% 84% 82% 83% 83% 83% 83%		%



TRG10R Series

ISOLATION CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Input to Output	1 minute	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	P _{out} =max. rated power	All		67		kHz

GENERAL SPECIFICATIONS

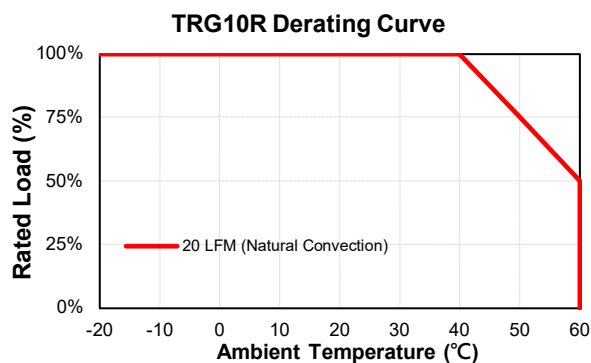
PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
MTBF	I ₀ =100%; T _a =25°C per MIL-HDBK-217F	All	500			k hours
Humidity	Non-condensing	All			93	% RH
Shock	Meet MIL-STD-810F Table 516.5, Table 516.5-I 10ms, each axis 3 times(±X、±Y、±Z axis)	All		75		g
Vibration	Meet MIL-STD-810F Table 514.5C-VIII, 15~2000Hz, X、Y、Z axis, 1 hour (each axis), Total 3 hrs.	All		4		g
Weight		All		130		g
Dimensions		All	2.858x1.823x1.402 inches (72.6x46.3x35.6 mm)			
Safety	Class II, IEC/EN/UL 62368-1					Ed.3.0
EMC Emission	EN 55032:2015+A11:2020, 47 FCC CFR, Part 15 Subpart B, ICES-003 Issue 7, EN 61204-3:2000, EN 61000-6-3:2007+A1:2011+AC:2012, EN 61000-3-2:2019, EN 61000-3-3:2013+A1:2019					Class B
Conducted Disturbance	EN 55032:2015+A11:2020, 47 FCC CFR Part 15 Subpart B, ICES-003 Issue 7, EN 61204-3:2000, EN 61000-6-3:2007+A1:2011+AC:2012					Class B
Radiated Disturbance	EN 55032:2015+A11:2020, 47 FCC CFR Part 15 Subpart B, ICES-003 Issue 7, EN 61204-3:2000, EN 61000-6-3:2007+A1:2011+AC:2012					Class B
Power Harmonics	EN 61000-3-2:2019					
Voltage Fluctuations	EN 61000-3-3:2013+A1:2019					
EMC Immunity	EN 55035:2017+A11:2020, EN 61204-3:2000, EN 61000-6-1:2007					
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					Criteria A
Surge	IEC 61000-4-5:2014+A1:2017					Criteria A
Conducted disturbances, induced by RF fields	IEC 61000-4-6:2013					Criteria A
Power frequency magnetic field	IEC 61000-4-8:2009					Criteria A
Voltage dips	IEC 61000-4-11:2020, Dips: 30% Reduction, Dips: >95% Reduction					Criteria A
Voltage interruptions	IEC 61000-4-11:2020, >95% reduction					Criteria B
Application Note Link			TRG10R Series App Notes			



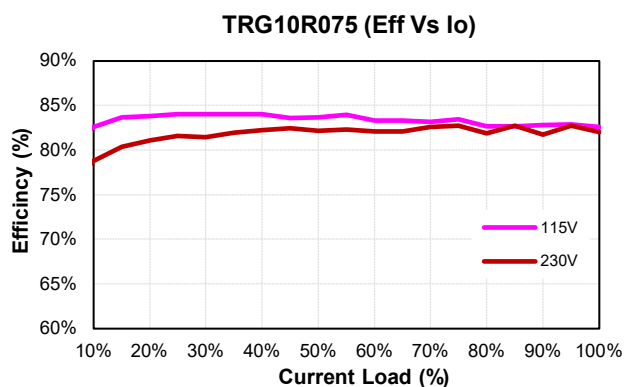
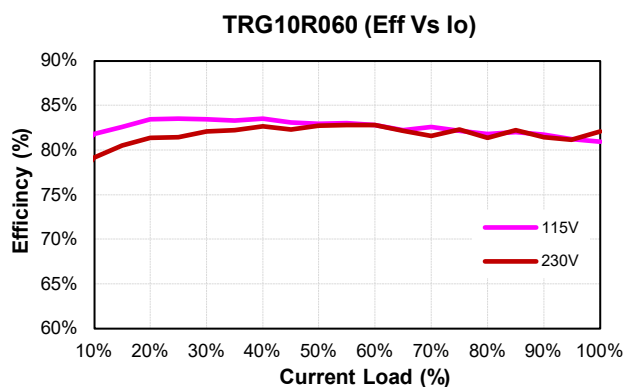
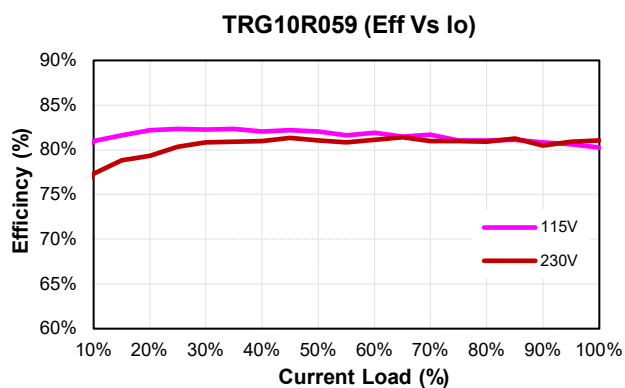
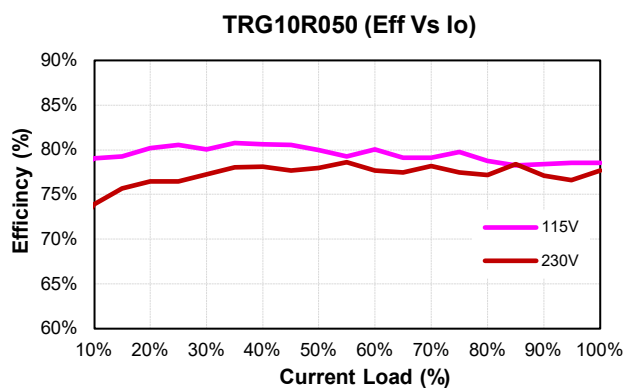
TRG10R Series

CHARACTERISTIC CURVE

Power Derating Curve



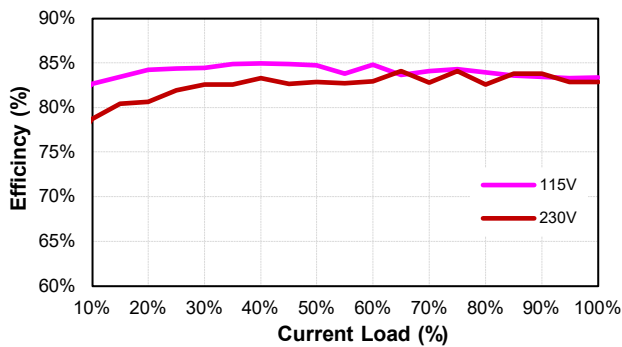
Performance Data



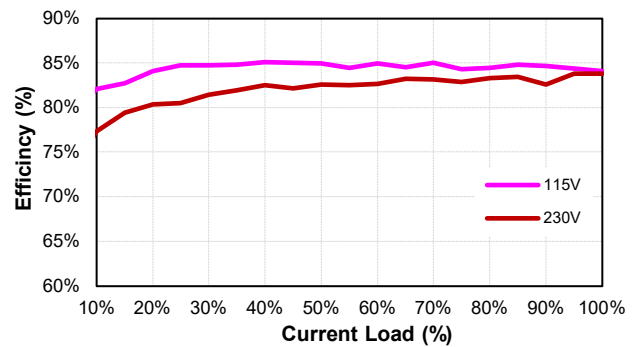


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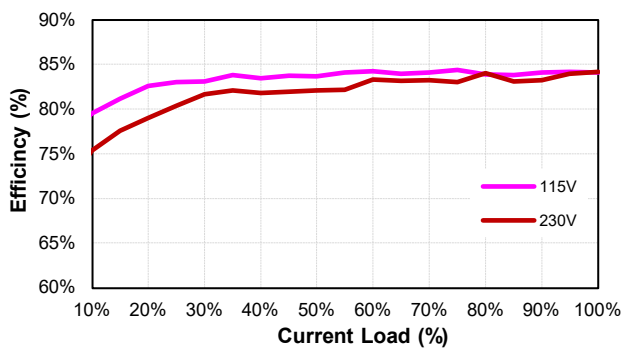
TRG10R090 (Eff Vs Io)



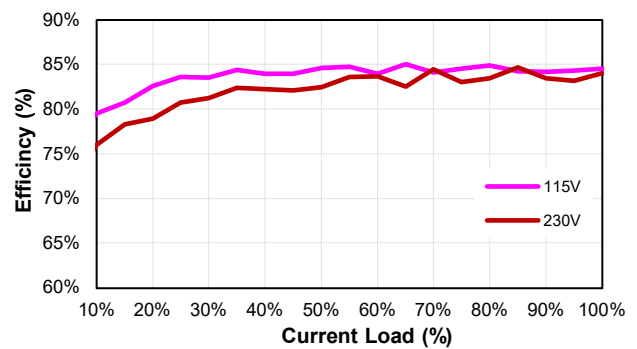
TRG10R120 (Eff Vs Io)



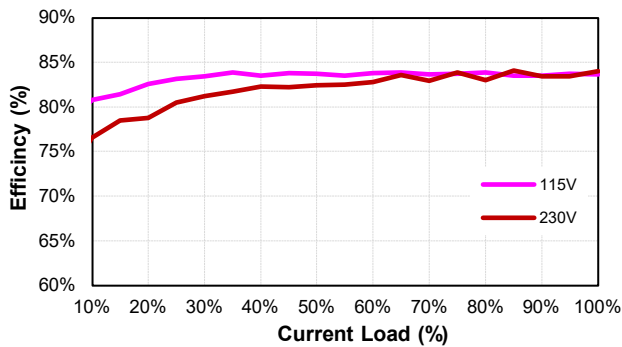
TRG10R136 (Eff Vs Io)



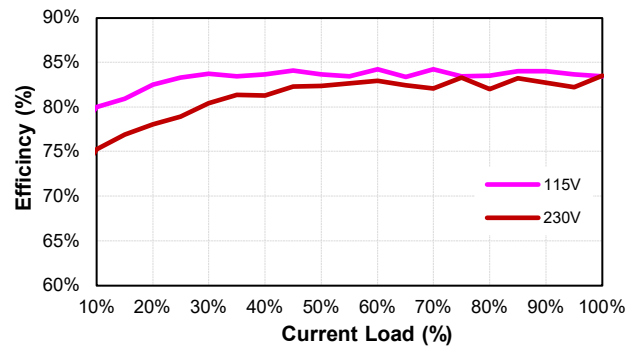
TRG10R150 (Eff Vs Io)



TRG10R180 (Eff Vs Io)



TRG10R240 (Eff Vs Io)

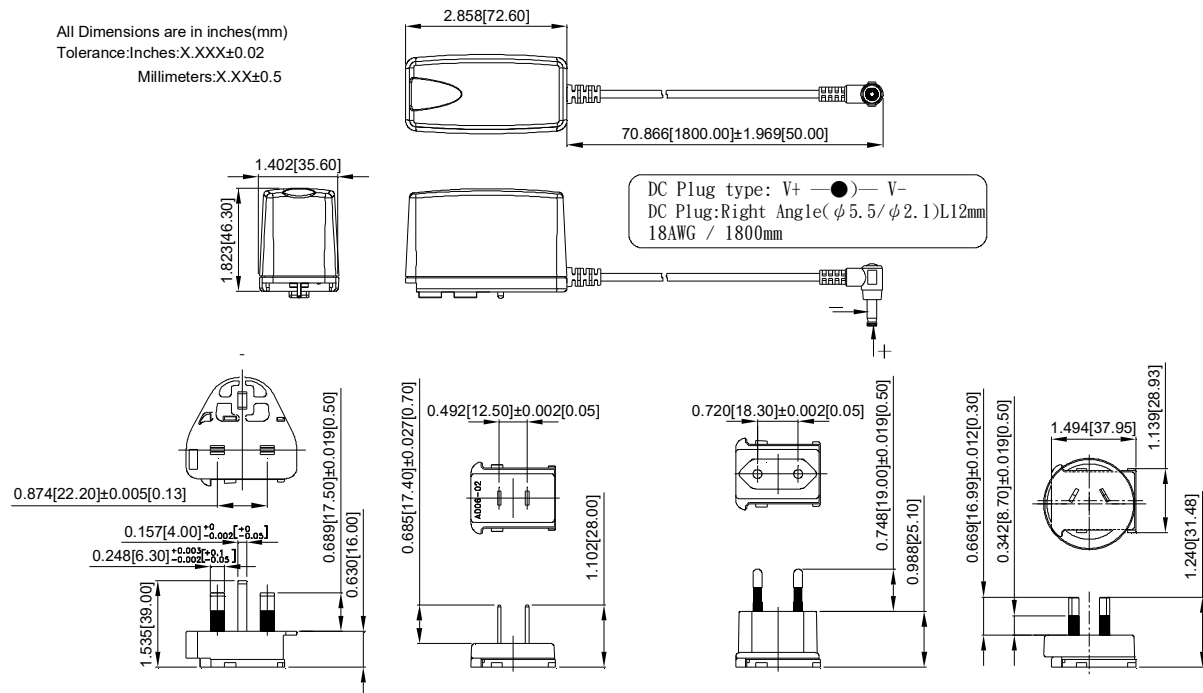




TRG10R Series

MECHANICAL SPECIFICATION

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



INTERCHANGEABLE AC PLUG SPECIFICALLY FOR TRG10R (SOLD SEPARATELY)

TYPE				
	U.K type (U)	American type (A)	European type (E)	Australian type (S)
ORDER NO.	AC PLUG R1-U	AC PLUG R1-A	AC PLUG R1-E	AC PLUG R1-S

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- + (●) -	11E03	Φ5.5	Φ2.1	12	UL1185	1800mm without Core	18AWG for Vo: 5V, 5.9V, 6V, 7.5V, 9V 20AWG for Vo: 12V, 13.6V 22AWG for Vo: 15V, 18V 24AWG for Vo: 24V
	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/TRG10R-cable-DC-Plug.pdf>

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