TRG30RA V SERIES
30 WATT AC-DC INTERCHANGEABLE PLUG SWITCHING ADAPTER

Features

- Universal Input Range 90~264Vac
- High Efficiency up to 88%
- Interchangeable AC Plugs
- Leakage Current < 0.25mA
- Class II
- No Load Power Consumption < 75mW
- Approval IEC/EN/UL 62368-1 Ed 3.0
- Approval EN 55032, FCC CFR 47 Part 15 Class B
- Operating Altitude 5000m
- 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
TRG30RA050V	5 V	4.0 A	±2%	50 mV	±1%	±6%	83.7%
TRG30RA090V	9 V	3.0 A	±2%	90 mV	±1%	±3%	87.7%
TRG30RA120V	12 V	2.5 A	±2%	100 mV	±1%	±2%	87.7%
TRG30RA150V	15 V	2.0 A	±2%	100 mV	±1%	±2%	88.0%
TRG30RA180V	18 V	1.67 A	±2%	100 mV	±1%	±2%	88.0%
TRG30RA240V	24 V	1.25 A	±2%	100 mV	±1%	±2%	88.0%

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℃.

PART NUMBER

Series	Output Voltage	AC Plug Type	DC Plug Type	Cable Type	Cable Length	Case Color
TRG30RA	XXXV	-XXXX	-XX	E	XX	-XX-BK
30W Switching Adapter	050 : 5V 090 : 9V 120 : 12V 150 : 15V 180 : 18V 240 : 24V	Blank : Sold Separately ASUE : Include 4 Type AC Plug	See Page 6	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 6 for restrictions	Blank: Blue-Black GY-BK: Gray-Black RD-BK: Red-Black

Part Number Example:

TRG30RA120V-11E13-GY-BK, 12V_{dc} Output, DC Jack Type, Cable Length 1800mm with Ferrite Core, Case Color Gray-Black

TRG30RA120V -ASUE-11E03, 12V_{dc} Output, include 4 Type AC Plug, DC Jack Type, Cable Length 1800mm, Case Color Blue-Black

TECHNICAL SPECIFICATIONS

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

ABSOLUTE MAXIMUM RATINGS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Input Voltage		All	90		264	V_{ac}
Operating Case Temperature	See Derating Curve	All	-20		60	℃
Storage Temperature		All	-20		85	℃
Operating Altitude		All			5000	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			0.8	A
Leakage Current		All			0.25	mA
Inrush Current	V_{in}=240V_{ac}, Cold start at 25℃	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℃	TRG30RA050V	4.90	5	5.10	V_{dc}
		TRG30RA090V	8.82	9	9.18	
		TRG30RA120V	11.76	12	12.24	
		TRG30RA150V	14.70	15	15.30	
		TRG30RA180V	17.64	18	18.36	
		TRG30RA240V	23.52	24	24.48	
Operating Output Current Range	V_{in}=115V_{ac} and 230V_{ac}, T_c=25℃	TRG30RA050V			4.0	A
		TRG30RA090V			3.0	
		TRG30RA120V			2.5	
		TRG30RA150V			2.0	
		TRG30RA180V			1.67	
		TRG30RA240V			1.25	
Holdup Time	V_{in}=115V_{ac}	All		10		ms
Output Voltage Regulation						
Load Regulation	60%±40% Full load change	TRG30RA050V			±6	%
		TRG30RA090V			±3	
		TRG30RA120V			±2	
		TRG30RA150V			±2	
		TRG30RA180V			±2	
		TRG30RA240V			±2	
Line Regulation	V_{in}=100V_{ac} to 240V_{ac}	All			±1	%
Over Voltage Protection	Latch Off	TRG30RA050V		7.44		V_{dc}
		TRG30RA090V		12.60		
		TRG30RA120V		16.30		
		TRG30RA150V		19.50		
		TRG30RA180V		23.50		
		TRG30RA240V		31.50		
Over Current Protection	Auto recovery	All	110		160	%
Short Circuit Protection	Auto recovery	All				

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℃	TRG30RA050V			50	mV
		TRG30RA090V			90	
		TRG30RA120V			100	
		TRG30RA150V			100	
		TRG30RA180V			100	
		TRG30RA240V			100	
Load Capacitance	1. V_{in}=115V_{ac} and 230V_{ac} 2. Output is max. load 3. Ambient temperature=25℃	TRG30RA050V			4000	uF
		TRG30RA090V			3000	
		TRG30RA120V			2500	
		TRG30RA150V			2000	
		TRG30RA180V			1670	
		TRG30RA240V			1250	
Efficiency	1. V_{in}=230V_{ac} 2. Output is 75% full load 3. Ambient temperature=25℃	TRG30RA050V		83.7		%
		TRG30RA090V		87.7		
		TRG30RA120V		87.7		
		TRG30RA150V		88.0		
		TRG30RA180V		88.0		
		TRG30RA240V		88.0		

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		65		kHz

GENERAL SPECIFICATIONS

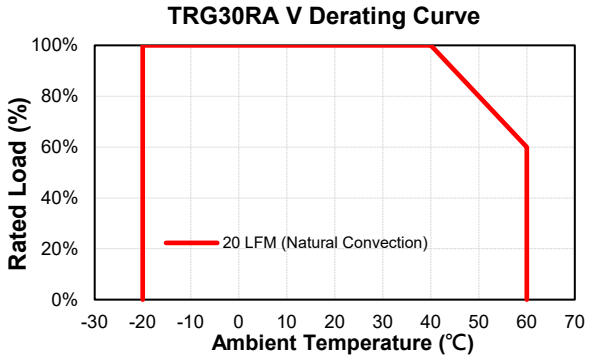
PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
MTBF	I_o=100%; T_a=25℃ per MIL-HDBK-217F	All	240			k hours
Humidity	Non-condensing	All			93	% RH
Shock	Meet MIL-STD-810F Table 516.5,Table 516.5-I 10ms, each axis 3 times(±X、±Y、±Z axis)	All		75		g
Vibration	Meet MIL-STD-810F Table 514.5C-VIII,15~2000Hz, X、Y、Z axis, 1 hour (each axis),. Total 3 hrs.	All		4		g
Weight		All		220		g
Dimensions		All	4.278x2.440x1.445 Inches (108.67x61.98x36.70 mm)			
Safety	Class II, IEC/EN/UL 62368-1					Ed.3.0
EMC Emission	EN 55032:2015+A11:2020, CISPR 32:2015+COR1:2016, EN 61000-6-3:2007+A1:2011+AC:2012, Class B, EN 61003-3:2013+A1:2019, FCC CFR 47 Part 15					
Conducted Disturbance	EN 55032:2015+A11:2020, CISPR 32:2015+COR1:2016, FCC CFR 47 Part 15					Class B
Radiated Disturbance	EN 55032:2015+A11:2020, CISPR 32:2015+COR1:2016, FCC CFR 47 Part 15					Class B
Voltage Fluctuations & Flicker	EN 61000-3-3:2013+A1:2019					
EMC Immunity	EN 55035:2017+A11:2020, EN 61000-6-1:2007, EN 61204-3:2000, IEC 61000-4-2, 3, 4, 5, 6, 8, 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

GENERAL SPECIFICATIONS

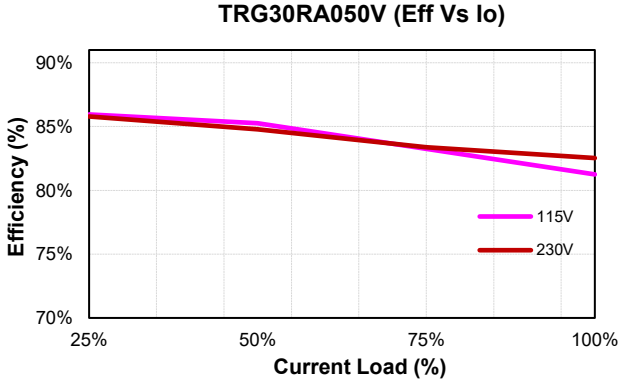
Electrical Fast Transient (EFT)	IEC 61000-4-4:2012, ±1kV	Criteria A
Surge	IIEC 61000-4-5:2014+A1:2017, L-N: ±0.5kV, ±1kV	Criteria A
Conducted Disturbances, Induced by RF Fields	IEC 61000-4-6:2013	Criteria A
Power Frequency Magnetic Field	IEC 61000-4-8:2009	Criteria A
Voltage Dips	IEC 61000-4-11:2004+A1:2017, Dips: 30% Reduction, Dips: >95% Reduction	Criteria A
Voltage Interruptions	IEC 61000-4-11:2004+A1:2017, >95% reduction	Criteria B
Application Note Link	TRG30RA V Series App Notes	

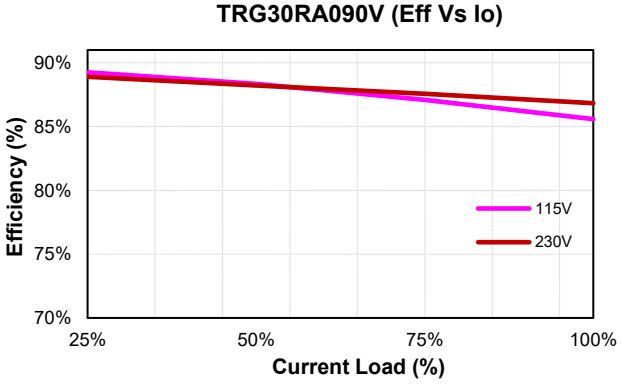
CHARACTERISTIC CURVE

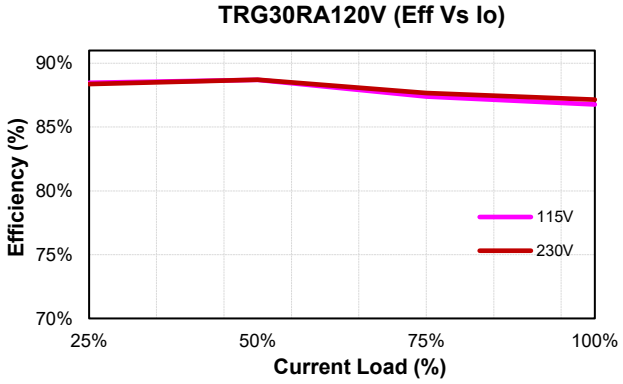
Power Derating Curve

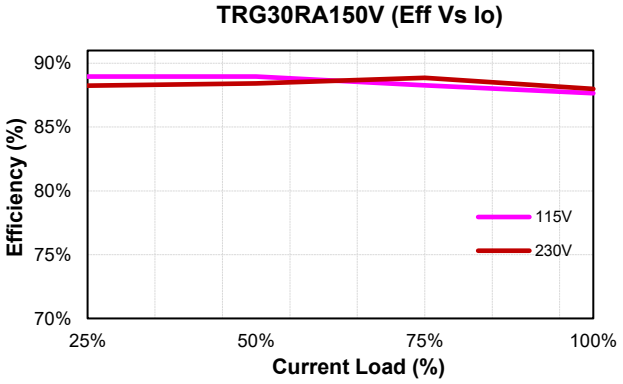


Performance Data

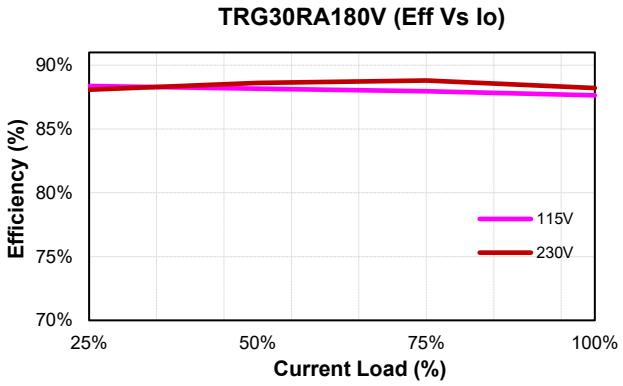


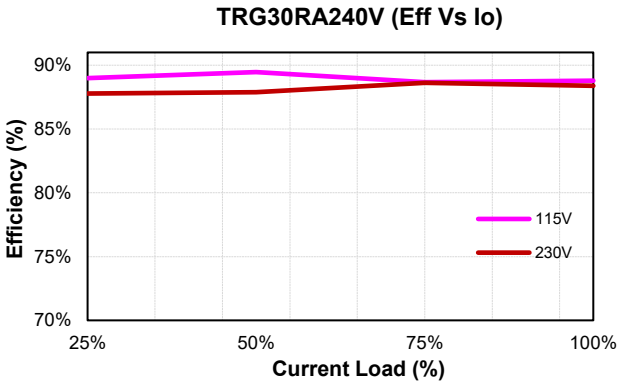






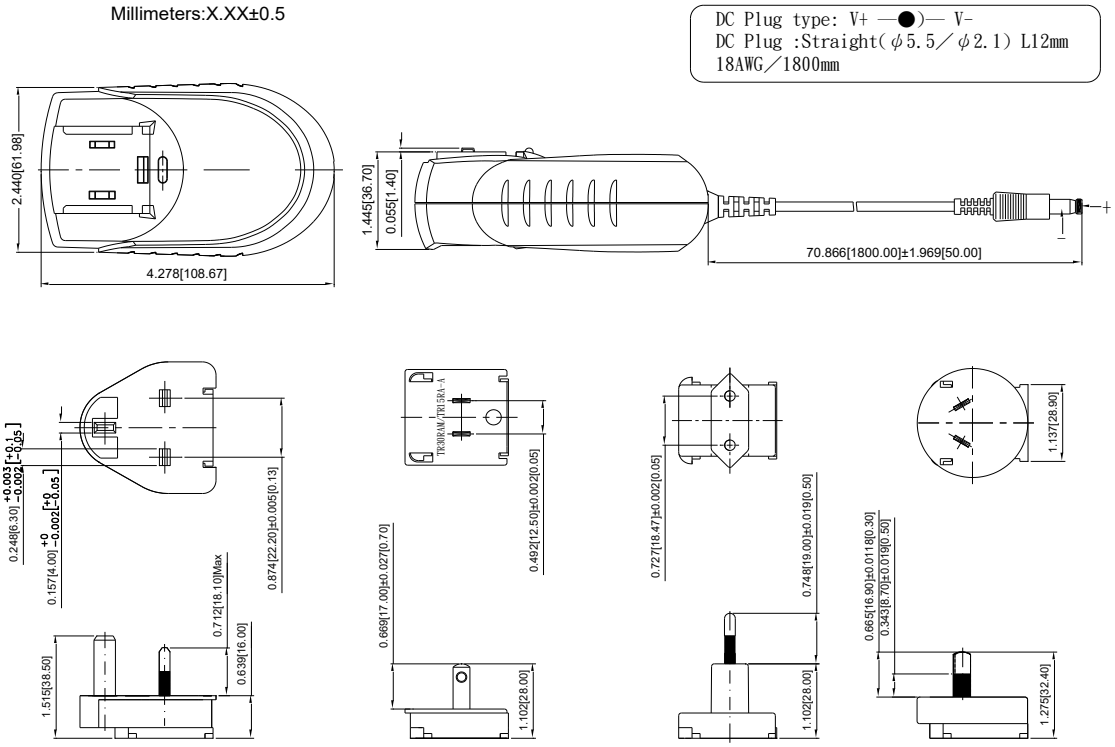
TRG30RA V Series



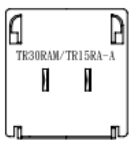
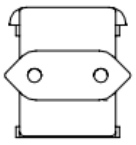
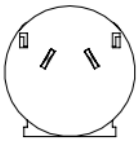


MECHANICAL SPECIFICATION

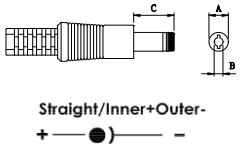
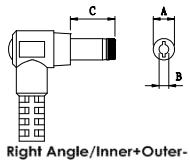
All Dimensions are in inches(mm)
Tolerance:Inches:X.XXX±0.02
Millimeters:X.XX±0.5



INTERCHANGEABLE AC PLUG SPECIFICALLY for TRG30RA V (SOLD SEPARATELY)

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

STANDARD OUTPUT PLUG

DC Plug Type	Cable Number -XXXXX	A OD (mm)	B ID (mm)	C L (mm)	Cable Type	Cable Length	Cable AWG
 Straight/Inner+Outer-	11E03	Φ5.5	Φ2.1	12	UL1185	1800mm without Core	16AWG for Vo: 5V, 9V 18AWG for Vo: 12V, 15V, 18V, 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/TRG30RAV-cable-DC-Plug.pdf

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