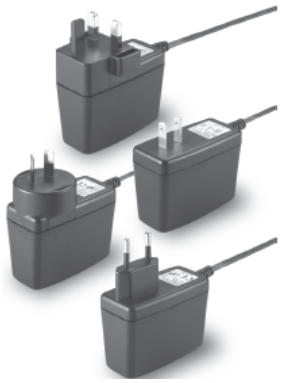
TRG15 SERIES
15 WATT AC-DC I.T.E SWITCHING ADAPTER

Features

- Universal Input Range 90~264Vac
- High Efficiency up to 86%
- Class II
- No Load Power Consumption < 75mW
- Approved IEC/EN/UL 62368-1
- Meets EN55032 Class B and CISPR/FCC Class B
- Operating Altitude 5000m
- Over Voltage Protection
- Continuous Short Circuit Protection
- 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
TRG1505	5 V	2 A	±2%	50 mV	±1%	±4%	80%
TRG1506	6 V	1.5 A	±2%	60 mV	±1%	±3%	82%
TRG1507	7.5 V	1.6 A	±2%	75 mV	±1%	±3%	83%
TRG1509	9 V	1.4 A	±2%	90 mV	±1%	±2%	84%
TRG1512	12 V	1 A	±2%	100 mV	±1%	±2%	85%
TRG1512-01	13.6 V	1 A	±2%	100 mV	±1%	±2%	85%
TRG1515	15 V	1 A	±2%	100 mV	±1%	±2%	86%
TRG1518	18 V	0.83 A	±2%	100 mV	±1%	±2%	86%
TRG1524	24 V	0.63 A	±2%	100 mV	±1%	±2%	86%

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
TRG15	XX or XX-XX	-X	-XX	X	XX
15W I.T.E Adapter	05：5V 06：6V 07：7.5V 09：9V 12：12V 12-01：13.6V 15：15V 18：18V 24：24V	A: USA 2 Pin E: Europe 2 Pin U: British 3 Pin S: Australia 2 Pin	See Page 7	E：UL1185 with OVP	5V：1800mm with DC Jack 6V：1220mm with DC Jack 7.5V：1800mm with DC Jack 9V：1800mm with DC Jack 12V：1800mm with DC Jack 13.6V：1800mm with DC Jack 15V：1800mm with DC Jack 18V：1800mm with DC Jack 24V：1800mm with DC Jack

Part Number Example:

TRG1512-A-01E03, 12V_{dc} Output, AC Plug Type, DC Jack Type, Cable Length 1800mm

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			0.5	A
Leakage Current		All			250	uA
Inrush Current	V_{in}=240V_{ac}, Cold start at 25℃	All			50	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℃	TRG1505	4.9	5	5.1	V_{dc}
		TRG1506	5.88	6	6.12	
		TRG1507	7.35	7.5	7.65	
		TRG1509	8.82	9	9.18	
		TRG1512	11.76	12	12.24	
		TRG1512-01	13.32	13.6	13.87	
		TRG1515	14.7	15	15.3	
		TRG1518	17.64	18	18.36	
		TRG1524	23.52	24	24.48	
Operating Output Current Range	V_{in}=115V_{ac} and 230V_{ac},T_c=25℃	TRG1505			2	A
		TRG1506			1.5	
		TRG1507			1.6	
		TRG1509			1.4	
		TRG1512			1	
		TRG1512-01			1	
		TRG1515			1	
		TRG1518			0.83	
		TRG1524			0.63	
Holdup Time	V_{in}=115V_{ac}	All		10		ms
Output Voltage Regulation						
Load Regulation	60%±40% Full load change	TRG1505			±4.0	%
		TRG1506			±3.0	
		TRG1507			±3.0	
		TRG1509			±2.0	
		TRG1512			±2.0	
		TRG1512-01			±2.0	
		TRG1515			±2.0	
		TRG1518			±2.0	
		TRG1524			±2.0	
Line Regulation	V_{in}=100V_{ac} to 240V_{ac}	All			±1.0	%

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Over Voltage Protection	IC component to clamp (auto recovery)	TRG1505			7.14	V_{dc}
		TRG1506			7.88	
		TRG1507			10.05	
		TRG1509			12.1	
		TRG1512			15.8	
		TRG1512-01			16.5	
		TRG1515			19.5	
		TRG1518			23.1	
		TRG1524			28.4	
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℃	TRG1505			50	mV
		TRG1506			60	
		TRG1507			75	
		TRG1509			90	
		TRG1512			100	
		TRG1512-01			100	
		TRG1515			100	
		TRG1518			100	
		TRG1524			100	
Load Capacitance	1. V_{in}=115V_{ac} and 230V_{ac} 2. Output is max. load 3. Ambient temperature=25℃	TRG1505			2000	uF
		TRG1506			1500	
		TRG1507			1680	
		TRG1509			1470	
		TRG1512			1000	
		TRG1512-01			1000	
		TRG1515			1000	
		TRG1518			830	
		TRG1524			630	
Efficiency	1. V_{in}=230V_{ac} 2. Output is 75% full load 3. Ambient temperature=25℃	TRG1505		80%		%
		TRG1506		82%		
		TRG1507		83%		
		TRG1509		84%		
		TRG1512		85%		
		TRG1512-01		85%		
		TRG1515		86%		
		TRG1518		86%		
		TRG1524		86%		

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

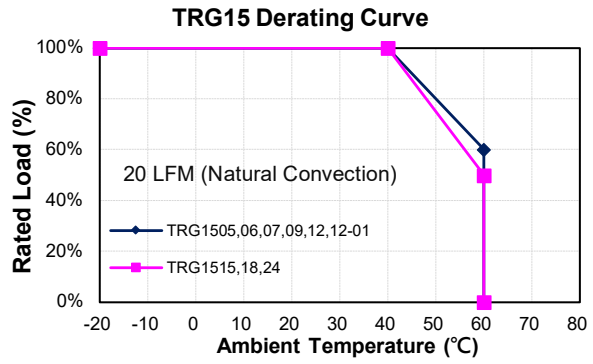
PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Switching Frequency	Vin=115Vac, Io=100%	All		85		kHz
	Vin=230Vac, Io=100%			65		

GENERAL SPECIFICATIONS

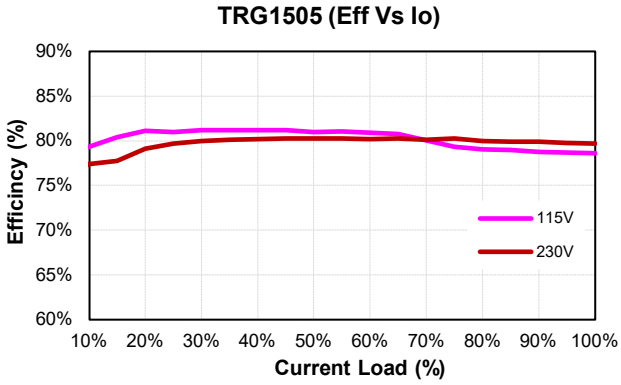
PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
MTBF	I_o=100%; T_a=25℃ per MIL-HDBK-217F	All	200			k hours
Humidity	Non-condensing	All			93	% RH
Shock	Meet MIL-STD-810F Table 516.5,Table 516.5-I 10ms, each axis 3 times(±X、±Y、±Z axis)	All		75		g
Vibration	Meet MIL-STD-810F Table 514.5C-VIII,15~2000Hz, X、Y、Z axis, 1 hour (each axis),. Total 3 hrs.	All		4		g
Weight		All		140		g
Dimensions		All	2.835x2.047x1.378 inches (72.00x52.00x35.00 mm)			
Safety	Class II, IEC/EN/UL 62368-1					Ed.3.0
EMC Emission	EN 55032:2015/A1:2020, EN 61000-3-2:2019, EN 61000-3-3:2013/A1:2019, FCC CFR Title 47 Part 15 Subpart B: 2007, ICES-003 Issue 4					Class B
Conducted Disturbance	EN 55032:2015/A1:2020, EN 61000-6-3:2021, EN 61204-3:2018					Class B
Radiated Disturbance	EN 55032:2015/A1:2020, EN 61000-6-3:2021, EN 61204-3:2018					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 61204-3:2018, EN 61000-6-1:2019					
Electrostatic Discharge (ESD)	IEC 61000-4-2 Ed. 2.0: 2008, Air Discharge: ±8kV, Contact Discharge: ±4kV					Criteria A
Radio-Frequency, Continuous Radiated Disturbance	IEC 61000-4-3 Ed. 4.0: 2020					Criteria A
Electrical Fast Transient (EFT)	IEC 61000-4-4 Ed. 3.0: 2012, ±1kV					Criteria A
Surge	IEC 61000-4-5 Ed. 3.1: 2017, L-N: ±1kV					Criteria A
Conducted disturbances, induced by RF fields	IEC 61000-4-6 Ed. 4.0: 2013					Criteria A
Power frequency magnetic field	IEC 61000-4-8 Ed. 2.0: 2009					Criteria A
Voltage dips	IEC 61000-4-11 Ed. 3.0: 2020, Dips: 30% Reduction, Dips: >95% Reduction					Criteria B
Voltage interruptions	IEC 61000-4-11 Ed. 3.0: 2020, >95% reduction					Criteria B
Application Note Link	TRG15 Series App Notes					

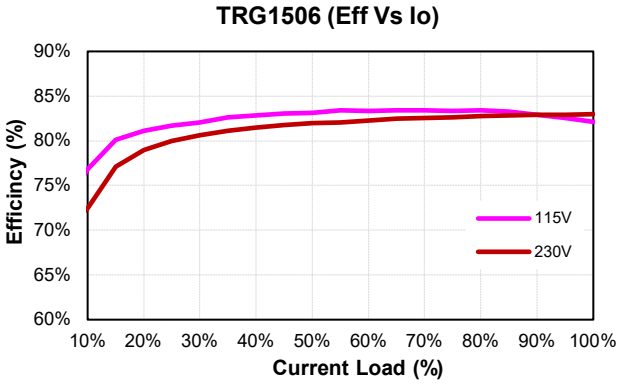
CHARACTERISTIC CURVE

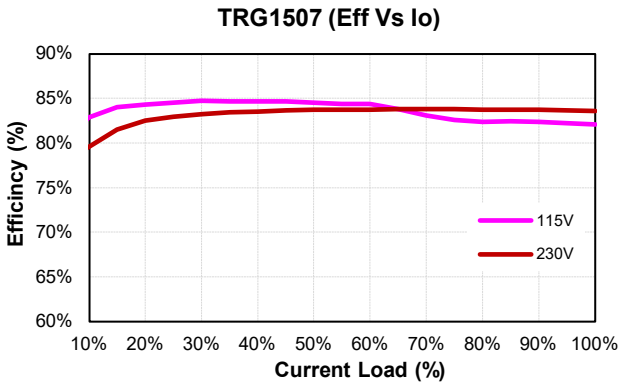
Power Derating Curve

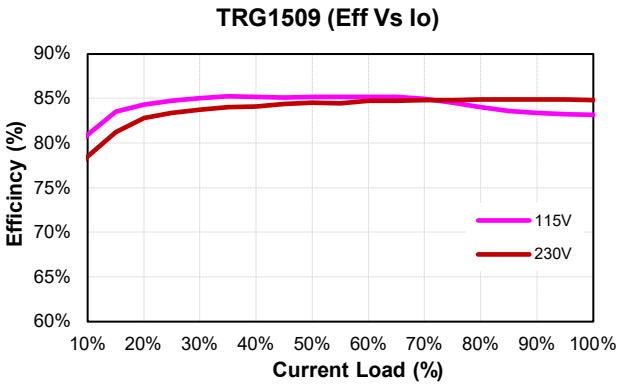


Performance Data

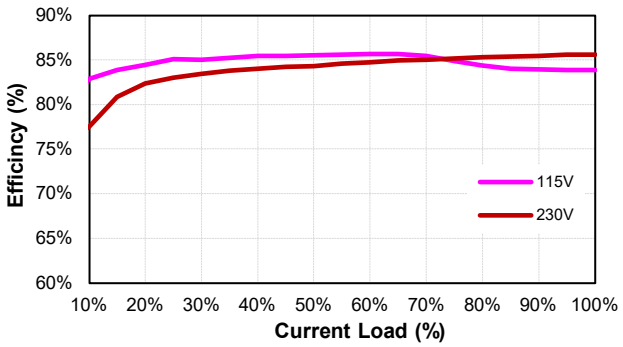




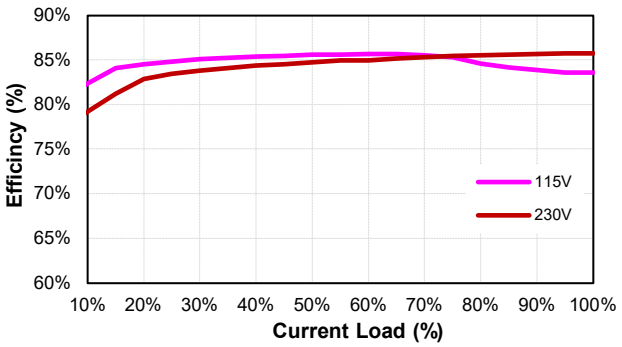




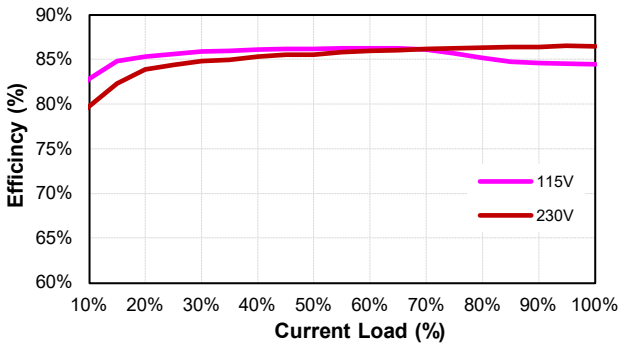
TRG1512 (Eff Vs Io)



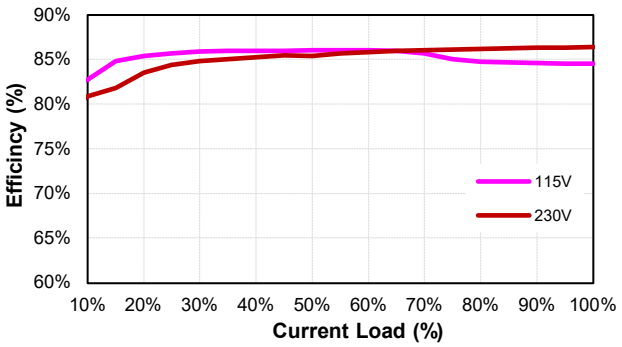
TRG1512-01 (Eff Vs Io)



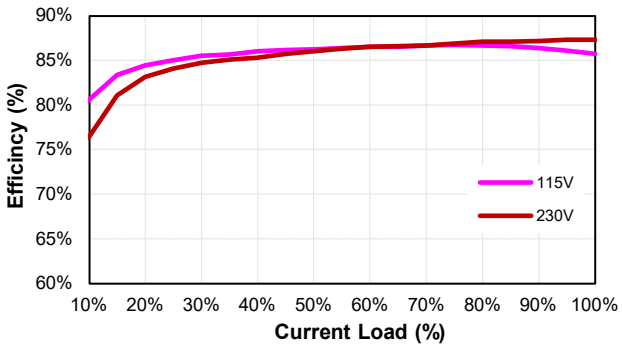
TRG1515 (Eff Vs Io)



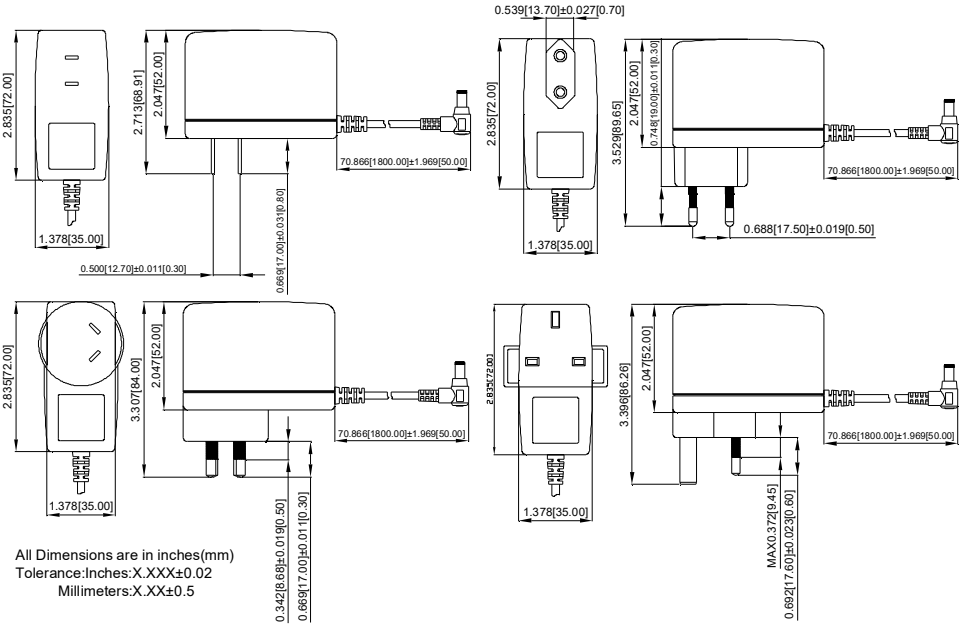
TRG1518 (Eff Vs Io)



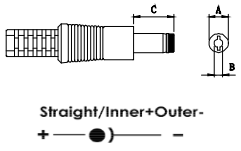
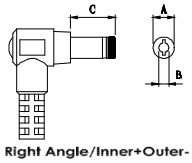
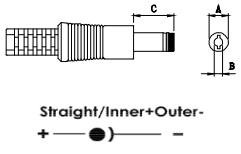
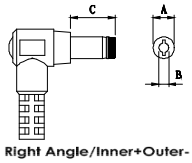
TRG1524 (Eff Vs Io)



MECHANICAL SPECIFICATION



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	18AWG for Vo: 5V, 7.5V, 9V 20AWG for Vo: 12V, 13.6V, 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			
 Straight/Inner+Outer-	11E02	Φ5.5	Φ2.1	12	UL1185	1220mm without Core	16AWG for Vo: 6V
	12E02	Φ5.5	Φ2.5	12			
	23E02	Φ5.5	Φ2.1	9.5			
	26E02	Φ5.5	Φ2.5	9.5			
 Right Angle/Inner+Outer-	01E02	Φ5.5	Φ2.1	12			
	02E02	Φ5.5	Φ2.5	12			
	21E02	Φ5.5	Φ2.5	9.5			
	24E02	Φ5.5	Φ2.1	9.5			

※Other DC Plug Type please refer to the link:https://www.cincon.com/productdownload/TRG15-cable-DC-Plug.pdf

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