



# P-DUKE POWER

## TAD50 Series

1.5 X 3 Inch AC-DC POWER SUPPLIES  
Up to 50 Watts

**3**  
YEARS  
WARRANTY

ROHS  
COMPLIANT

REACH  
COMPLIANT



+85°C  
-40°C  
AMBIENT TEMP.



Automation



Datacom



IPC



Industry



Measurement



Telecom



Medical



Automobile



Boat



Charger



PV



Railway



**PEAK**  
POWER

**3000 VAC**  
Reinforced  
Insulation

**ADJ.**  
Output  
Voltage

Internal  
EN55032  
Class  
Filter **B**

**LOW**  
Leakage  
Current

**LOW**  
Standby  
Power

Operating  
Altitude  
**5000**  
meter

Protection  
Class I  
Class II

**OCP**

**OVP**

**SCP**

**OVCIII**

### PART NUMBER STRUCTURE

**TAD50**

Series Name

**U**

Universal  
Input  
(VAC)

85 ~ 264

**S**

Output  
Quantity

Single

**12**

Output  
Voltage  
(VDC)

05:5  
7P5:7.5  
09:9  
12:12  
15:15  
18:18  
24:24  
36:36  
48:48  
53:53

**B**

Protection  
Type

A:CLASS I  
B:CLASS II

-

**J**

Connector  
Options

J: JST  
M: Molex  
T: Terminal Block



Application  
Options

AC Input  
C: OVC III (2000m)  
G: DC Input

**TECHNICAL SPECIFICATION** All specifications are typical at 230VAC input, full load and 25°C unless otherwise noted

Model Number	Input Range	Output Voltage	Output Current Natural Convection	Max. Output Power	Input Power @No Load	Efficiency	Maximum Capacitor Load
	VAC	VDC	mA	W	mW	%	μF
TAD50US05B	85 ~ 264	5	8000	40	50	90.5	16000
TAD50US7P5B	85 ~ 264	7.5	6670	50	50	90.5	8900
TAD50US09B	85 ~ 264	9	5560	50	50	90.5	6200
TAD50US12B	85 ~ 264	12	4170	50	50	92.5	3500
TAD50US15B	85 ~ 264	15	3340	50	50	92.5	2300
TAD50US18B	85 ~ 264	18	2780	50	100	92.5	1600
TAD50US24B	85 ~ 264	24	2085	50	100	92.5	870
TAD50US36B	85 ~ 264	36	1390	50	100	91.5	390
TAD50US48B	85 ~ 264	48	1045	50	100	91.5	220
TAD50US53B	85 ~ 264	53	950	50	100	91.5	180

**INPUT SPECIFICATIONS**

Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating input voltage range	AC input	85		264	VAC
	DC input	120		370	VDC
Input frequency	AC input	47		63	Hz
Input current	100VAC and Full Load			1.4	A
	240VAC and Full Load			0.8	
Leakage current	264VAC		150		μA
Start up time				1000	ms
Rise time			15		ms
Hold up time	115VAC and Full Load		12		ms
Input inrush current	230VAC		60		A
Input protection	Internal fuse		T3.15A/250VAC		

**OUTPUT SPECIFICATIONS**

Parameter	Conditions	Min.	Typ.	Max.	Unit	
Output power	Full Load			40	Watts	
	5Vout Others			50		
Output peak power	Peak power			56	Watts	
		5Vout 7.5Vout Others				65 70
		Peak power time		5		s
	Peak power duty		20		%	
	Average operation power ( % of Full Load)		70		%	
Initial set voltage accuracy	230VAC and Full Load	-1.0		+1.0	%	
Line regulation	Low Line to High Line at Full Load	-0.2		+0.2	%	
Load regulation	No Load to Full Load	5Vout		+0.7	%	
		Others	-0.5	+0.5		
	10% Load to 90% Load	5Vout Others	-0.6 -0.4	+0.6 +0.4		
Voltage adjustability	Single output	-10 -20		+10 +10	%	
Minimum load			0		%	
Ripple and noise	Measured by 20MHz bandwidth With a 10μF/25V 1206 X7R MLCC	5Vout, 7.5Vout, 9Vout	75		mVp-p	
		12Vout, 15Vout, 18Vout	100			
	With a 1μF/50V 1206 X7R MLCC	24Vout, 36Vout	100			
	With a 0.1μF/100V 1206 X7R MLCC	48Vout, 53Vout	100			
Temperature coefficient		-0.02		+0.02	%/°C	
Transient response	Load step from 50 ~ 75% change at 2.5A/μs	Peak deviation		3	%Vout	
		Recovery time		300	μs	
Over voltage protection	% of Vout(nom); Latch mode	115		135	%	
Over load protection	% of Iout rated; Hiccup mode		165		%	
Short circuit protection		Continuous, automatics recovery				

## GENERAL SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit
Isolation voltage	1 minute (Reinforced insulation)	Input to Output Input (Output) to F.G.	3000 2000			VAC
Isolation resistance	500VDC		0.1			GΩ
Switching frequency	230VAC	5Vout 7.5Vout Others	70 95 110		95 120 135	kHz
Safety approvals	IEC/ EN/ UL 62368-1					UL:E193009 CB:UL(Demko)
Weight						78g (2.75oz)
MTBF	MIL-HDBK-217F, Full load					1.487 x 10 <sup>6</sup> hrs

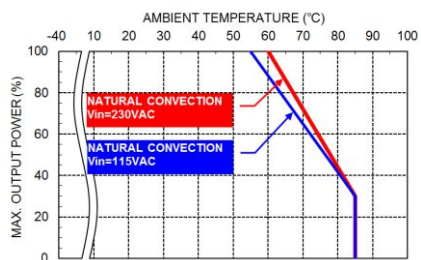
## ENVIRONMENTAL SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit
Operating ambient temperature	Natural convection	With derating	-40		+85	°C
Storage temperature range			-40		+85	°C
Operating altitude					5000	m
Shock						IEC60068-2-27
Vibration						IEC60068-2-6
Relative humidity	Non-condensing					5% to 95% RH

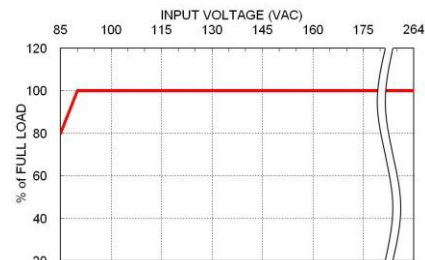
## EMC SPECIFICATIONS

Parameter	Conditions		Level	
EMI	EN55032 and FCC Part 15		Conducted Radiated	Class B Class B
	External components may be required for class I application.			
Harmonic currents	EN61000-3-2	Full Load		Class A
Voltage flicker	EN61000-3-3			
EMS	EN55035			
ESD	EN61000-4-2			Perf. Criteria A
Radiated immunity	EN61000-4-3	20 V/m		Perf. Criteria A
Fast transient	EN61000-4-4	± 2kV		Perf. Criteria A
Surge	EN61000-4-5	DM ± 1kV and CM ± 2kV		Perf. Criteria A
Conducted immunity	EN61000-4-6	20 Vr.m.s		Perf. Criteria A
Power frequency magnetic field	EN61000-4-8	10 A/m		Perf. Criteria A
Dip and interruptions	EN61000-4-11			

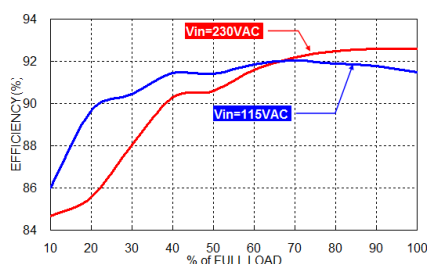
## CHARACTERISTIC CURVE



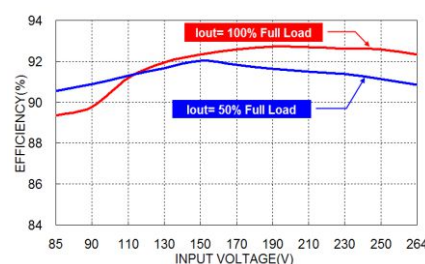
Derating Curve vs. Ambient Temperature



Derating Curve vs. Input Voltage



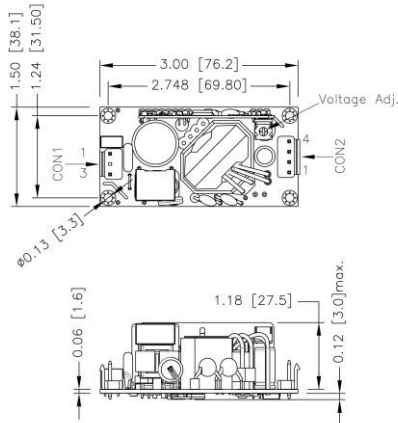
TAD50US12 Efficiency VS Output Load



TAD50US12 Efficiency vs. Input Voltage

## MECHANICAL DRAWING

TAD Open type



FRONT VIEW

\*Either one of four screws holes of Chassis type can be considered as PE connection for CLASS I application

### CONNECTORS CONNECTION

CON1 – Input Connector	
Pin Number	AC Input
Pin 1	Line
Pin 3	Neutral

CON2 – Output Connector	
Pin 1,2	-Vout
Pin 3,4	+Vout

- All dimensions in inch [mm]
- Tolerance :  $x.xx \pm 0.02$  [ $x.x \pm 0.5$ ]  
 $x.xxx \pm 0.010$  [ $x.xx \pm 0.25$ ]
- The screw locked torque: MAX 5.0Kgf-cm/0.49N-m

## CONNECTOR OPTIONS

**-J**

JST Type

Mates with housing

CON1: **VHR-3N**

CON2: **VHR-4N**



Crimp terminals

CON1: **SVH-21T-P1.1**

CON2: **SVH-21T-P1.1**

**-M**

Molex Type

Mates with housing

CON1: **09-50-8031**

CON2: **09-50-8041**



Crimp terminals

CON1: **SD-2478**

CON2: **SD-2478**

**-T**

Terminal Block

Mates with

**Screw locked torque**

**MAX 2Kgf.cm/0.2N.m**



**Wire dimension range**

**26 ~ 16AWG**