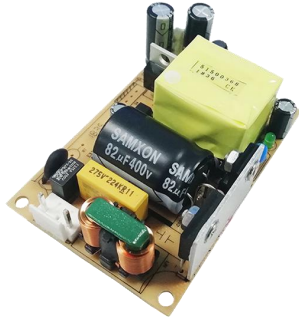


# 60W Open Frame AC/DC Converter

TGO65-xx Series

50-65W, AC-DC converter



## FEATURES

- Universal 85-264VAC or 100-370VDC input voltage
- 3×2 inch high power density
- Operating ambient temperature range: -25°C to +70°C
- Output short circuit, over-current, over-voltage protection
- High efficiency, high reliability
- Regulated output, low ripple & noise
- EMI performance meets CISPR32 / EN55032 CLASS B
- 3 years warranty



TGO65-xx series is one Tiger Powers' compact size power converter. It features universal AC input and at the same time accepts DC input voltage, low power consumption, high efficiency, high reliability, reinforced isolation. It offers good EMC performance compliant to IEC/EN61000-4 and CISPR32/EN55032 and meets UL/EN/IEC62368 standards. The converters are widely used in industrial, office and civil applications. For extremely harsh EMC environment, we recommend using the application circuit show in Design Reference of this datasheet.

## Selection Guide

Certification	Part No.	Output Power	Nominal Output Voltage and Current	Efficiency at 230VAC (%) Typ.	Capacitive Load (μF) Max.
UL/EN/IEC/ UKCA	TGO65-05	50W	5V/10.00A	80	40000
	TGO65-09	60W	9V/6.60A	83	12000
	TGO65-12	65W	12V/5.42A	85	8000
	TGO65-15		15V/4.34A	85	7000
	TGO65-24		24V/2.71A	87	1500
	TGO65-48		48V/1.36A	87	1000
EN	TGO65-30	65.15W	30.3V/2.15A	87	1200

## Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	AC input	85	--	264	VAC
	DC input	100	--	370	VDC
Input Frequency		47	--	63	Hz
Input Current	115VAC	--	--	1600	mA
	230VAC	--	--	900	
Inrush Current	115VAC	--	35	--	A
	230VAC	--	50	--	
Hot Plug		Unavailable			

## Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy		--	±2	--	%
Line Regulation	Full load	--	±0.5	--	
Load Regulation	5%-100% Load	--	±1	--	
Ripple & Noise*	(Load balancing) 20VHz bandwidth (peak-to-peak value)	--	--	150	mV
Stand-by Power Consumption		--	--	0.5	W
Temperature Coefficient		--	±0.02	--	%/°C
Short Circuit Protection		Hiccup, continuous, self-recovery			

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Over-current Protection		≥120% Io, self-recovery			
Over-voltage Protection	5VDC output	≤9VDC		Output voltage clamp or turn off	
	9VDC output	≤16VDC			
	12VDC output	≤20VDC			
	15VDC output	≤24VDC			
	24VDC output	≤35VDC			
	30VDC output	≤39VDC			
	48VDC output	≤60VDC			
Minimum Load		0	--	--	%
Hold-up Time	230VAC input	--	35	--	ms
Note: * The "parallel cable" method is used for ripple and noise test, please refer to AC-DC Converter Application Notes for specific information.					

## General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit			
Isolation	Input - output	Electric Strength Test for 1min., leakage current <5mA			3000	--	--	VAC
Operating Temperature		-25	--	+70	°C			
Storage Temperature		-25	--	+85				
Storage Humidity		--	--	90	%RH			
Switching Frequency		--	65	--	kHz			
Power Derating	-25°C to -10°C	2.0	--	--	% / °C			
	+50°C to +70°C	2.5	--	--				
	85VAC - 165VAC	0.375	--	--	% / VAC			
	240VAC - 264VAC	0.833	--	--				
Safety Standard	TGO65-05/09/12/15/24/48	UL/IEC62368-1 safety approved & EN62368-1, BS EN 62368-1 (Report)						
	TGO65-30	EN62368-1 (Report); Design refer to UL/IEC62368-1& BS EN 62368-1						
Safety Class		CLASS II						
MTBF		MIL-HDBK-217F@25°C > 300,000 h						

## Mechanical Specifications

Dimension	76.20 x 50.80 x 30.00 mm
Weight	95g(Typ.)
Cooling method	Free air convection

## Electromagnetic Compatibility (EMC)

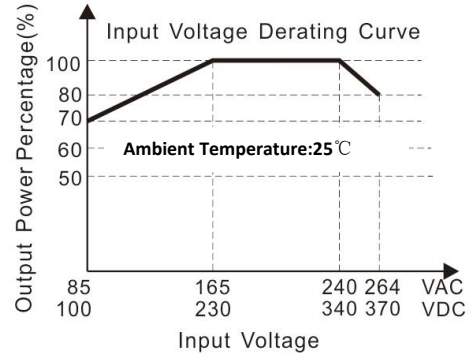
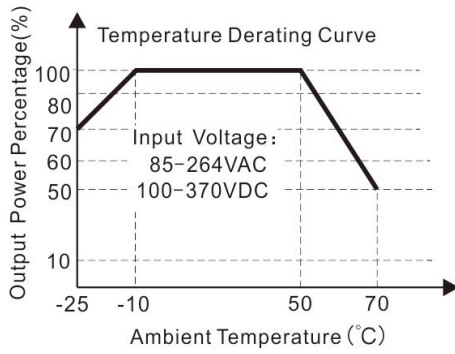
Emissions	CE	CISPR32/EN55032	CLASS B
	RE	CISPR32/EN55032	CLASS B
Immunity	ESD	IEC/EN61000-4-2	Contact ±6KV Perf. Criteria B
	RS	IEC/EN61000-4-3	10V/m Perf. Criteria A
	EFT	IEC/EN61000-4-4	±2KV Perf. Criteria B
	Surge	IEC/EN61000-4-5	line to line ±1KV Perf. Criteria B
	CS	IEC/EN61000-4-6	10Vr.m.s Perf. Criteria A
	Voltage dips, short interruption and voltage variations	IEC/EN61000-4-11	100% dip 1 periods, 30% dip 25 periods, 100% interruptions 250 periods

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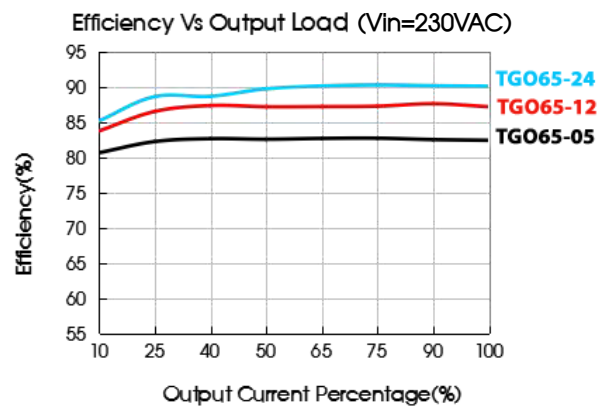
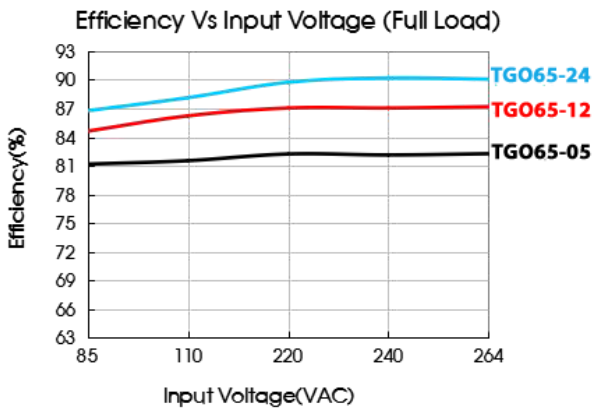


## Product Characteristic Curve



Note: ① With an AC input between 85-165V/240-264VAC and a DC input between 100-230V/340-370VDC, the output power must be derated as per temperature derating curves;

② This product is suitable for applications using natural air cooling; for applications in closed environment please consult factory or one of our FAE.



## Design Reference

### 1. Typical application

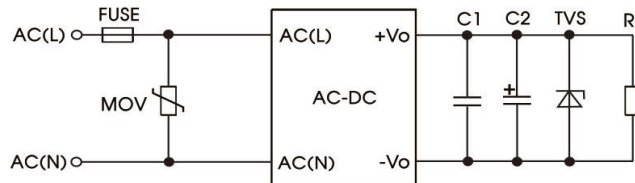


Fig. 1: Typical circuit diagram

Part No.	FUSE	MOV	C1(μF)	C2(μF)	TVS
TGO65-05	3.15A/250V slow-blow	S14K300	1uF/16V	330uF/16V	SMBJ7.0A
TO65-09				47uF/16V	SMBJ12A
TO65-12			1uF/25V	47uF/25V	SMBJ20A
TO65-15				47uF/25V	SMBJ20A
TO65-24			1uF/50V	47uF/35V	SMBJ30A
TO65-30			1uF/50V	47uF/63V	SMBJ40A
TO65-48			1uF/100V	47uF/63V	SMBJ64A

#### Output Filter Components:

We recommend using an electrolytic capacitor with high frequency, and low ESR rating for C2 (refer to manufacture's datasheet). C1 is a ceramic capacitor used for filtering high-frequency noise. Choose a capacitor voltage rating with at least 20% margin, in other words not exceeding 80%. And TVS is a recommended suppressor diode to protect the application in case of a converter failure.

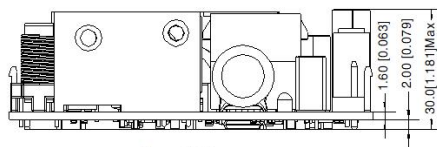
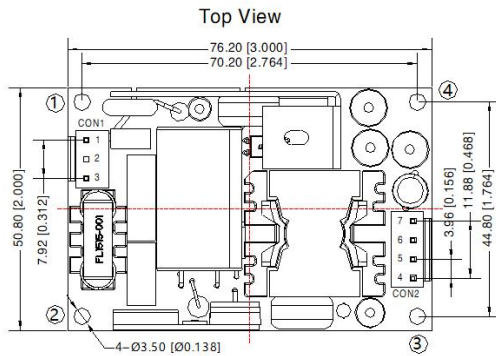
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## Dimensions and Recommended Layout

THIRD ANGLE PROJECTION



Front View

Note:  
 Unit: mm[inch]  
 General tolerances:  $\pm 0.50 [\pm 0.020]$   
 The layout of the device is for reference only, please refer to the actual product

Pin-Out			
Connectors	Pin	Mark	Client Connectors
CON1	1	AC(L)	Housing: JST VHR Contact: JSTSVH-21T-P1.1 or equivalent
	2	NoPin	
	3	AC(N)	
CON2	4	-Vo	Housing: JST VHR Contact: JSTSVH-21T-P1.1 or equivalent
	5	-Vo	
	6	+Vo	
	7	+Vo	

Position	Screw Spec.	L(Recommend)	Torque(max)
① - ④	M3	6mm	0.4N · m

