


DESCRIPTION: 3W 3KVDC Isolated Single And Dual Output DC/DC Converters

The TPK-3W series are miniature, isolated 3W DC/DC converters in a SIP package. They offer the ideal solution in many space critical applications for board level power distribution. The internal SMD construction makes it possible to offer a product with high performance at low cost. The series offers smaller size, improved efficiency, lower output ripple noise and 3KVDC isolation.

FEATURES

RoHS compliant	Efficiency from 80%	Input voltage: 3.3V, 5V, 12V, 15V, 24V
Operating temperature: -40°C to 105°C	UL 94V-0 package material	Output voltage: 3.3V, 5V, 9V, 12V, 15V, 24V / $\pm 5V$, $\pm 9V$, $\pm 12V$, $\pm 15V$, $\pm 24V$
Industry standard pinout	3KVDC isolation (1 minute)	CE certification

SELECTION GUIDE

Part Number	Nominal Input Voltage	Output Voltage	Output Current (Max./Min)	Load Regulation (Max)	Efficiency (Typ.)	Package
	V	V	mA	%	%	Style
TPK0303SA-3W	3.3	3.3	909/90.9	7.2	82	SIP
TPK0305SA-2W	3.3	5	600/60	7.2	82	SIP
TPK0503SA-3W	5	3.3	909/90.9	7.2	82	SIP
TPK0505SA-3W	5	5	600/60	7.2	82	SIP
TPK0509SA-3W	5	9	333/33.3	5.8	86	SIP
TPK0512SA-3W	5	12	250/25	5.0	86	SIP
TPK0515SA-3W	5	15	200/20	4.6	87	SIP
TPK1205SA-3W	12	5	600/60	4.9	82	SIP
TPK1209SA-3W	12	9	333/33.3	3.0	87	SIP
TPK1212SA-3W	12	12	250/25	2.9	87	SIP
TPK1215SA-3W	12	15	200/20	2.5	89	SIP
TPK1515SA-3W	15	15	200/20	2.5	84	SIP
TPK2405SA-3W	24	5	600/60	4.9	82	SIP
TPK2412SA-3W	24	12	250/25	5.0	84	SIP
TPK2415SA-3W	24	15	200/20	2.5	89	SIP
TPK2424SA-3W	24	24	125/12.5	5.0	83	SIP
TPK0505S-3W	5	± 5	$\pm 300/\pm 30$	6.3	82	SIP
TPK0509S-3W	5	± 9	$\pm 166.5/\pm 16.65$	5.4	86	SIP
TPK0512S-3W	5	± 12	$\pm 125/\pm 12.5$	4.8	86	SIP
TPK0515S-3W	5	± 15	$\pm 100/\pm 10$	5.3	87	SIP
TPK0524S-3W	5	± 24	$\pm 62.5/\pm 6.25$	5.0	83	SIP
TPK1205S-3W	12	± 5	$\pm 300/\pm 30$	3.9	82	SIP
TPK1209S-3W	12	± 9	$\pm 166.5/\pm 16.65$	2.9	86	SIP
TPK1212S-3W	12	± 12	$\pm 125/\pm 12.5$	2.8	87	SIP
TPK1215S-3W	12	± 15	$\pm 100/\pm 10$	2.5	87	SIP
TPK1515S-3W	15	± 15	$\pm 100/\pm 10$	2.5	87	SIP
TPK2405S-3W	24	± 5	$\pm 300/\pm 30$	3.9	82	SIP
TPK2412S-3W	24	± 12	$\pm 125/\pm 12.5$	2.8	87	SIP
TPK2415S-3W	24	± 15	$\pm 100/\pm 10$	2.5	87	SIP
TPK2424S-3W	24	± 24	$\pm 62.5/\pm 6.25$	5.0	83	SIP
TPK0305DA-3W	3.3	5	600/60	7.2	82	DIP
TPK0505DA-3W	5	5	600/60	7.2	82	DIP
TPK0509DA-3W	5	9	333/33.3	5.8	86	DIP
TPK0512DA-3W	5	12	250/25	5.0	86	DIP
TPK0515DA-3W	5	15	200/20	4.6	87	DIP
TPK1205DA-3W	12	5	600/60	4.9	82	DIP
TPK1209DA-3W	12	9	333/33.3	3.0	87	DIP
TPK1212DA-3W	12	12	250/25	2.9	87	DIP
TPK1215DA-3W	12	15	200/20	2.5	89	DIP
TPK1515DA-3W	15	15	200/20	2.5	84	DIP
TPK2405DA-3W	24	5	600/60	4.9	82	DIP
TPK2412DA-3W	24	12	250/25	5.0	84	DIP
TPK2424DA-3W	24	24	125/12.5	5.0	83	DIP
TPK0505D-3W	5	± 5	$\pm 300/\pm 30$	6.3	82	DIP
TPK0509D-3W	5	± 9	$\pm 166.5/\pm 16.65$	5.4	86	DIP
TPK0512D-3W	5	± 12	$\pm 125/\pm 12.5$	4.8	86	DIP
TPK0515D-3W	5	± 15	$\pm 100/\pm 10$	5.3	87	DIP
TPK1205D-3W	12	± 5	$\pm 300/\pm 30$	3.9	82	DIP
TPK1209D-3W	12	± 9	$\pm 166.5/\pm 16.65$	2.9	86	DIP
TPK1212D-3W	12	± 12	$\pm 125/\pm 12.5$	2.8	87	DIP
TPK1215D-3W	12	± 15	$\pm 100/\pm 10$	2.5	87	DIP
TPK1515D-3W	15	± 15	$\pm 100/\pm 10$	2.5	87	DIP
TPK2405D-3W	24	± 5	$\pm 300/\pm 30$	3.9	82	DIP
TPK2412D-3W	24	± 12	$\pm 125/\pm 12.5$	2.8	87	DIP
TPK2424D-3W	24	± 24	$\pm 62.5/\pm 6.25$	5.0	83	DIP

Add suffix "P" for continuous short circuit protection, for example TPK0505SP-3W.

INPUT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Voltage range	3.3V input	2.9	3.3	3.6	V
Voltage range	5V input	4.5	5	5.5	V
Voltage range	12V input	11	12	13	V
Voltage range	15V input	13.4	15	16.4	V
Voltage range	24V input	22	24	26	V

OUTPUT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Rated Power	TA=-40°C to 85°C			3	W
Voltage Set Point Accuracy	See tolerance envelope				
Line regulation	High Vin to low Vin		1.0	1.2	%/%

ABSOLUTE MAXIMUM RATINGS

Lead temperature 1.5mm from case for 10 seconds	300°C
Internal power dissipation	650mW
Input voltage Vin, TPK03	5.5V
Input voltage Vin, TPK05	7V
Input voltage Vin, TPK12	15V
Input voltage Vin, TPK15	18V
Input voltage Vin, TPK24	28V

ISOLATION CHARACTERISTICS

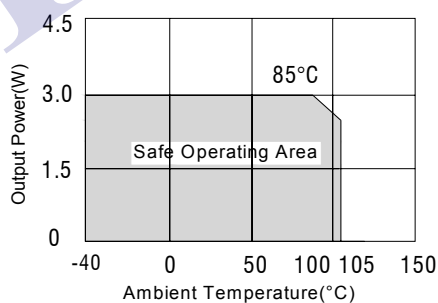
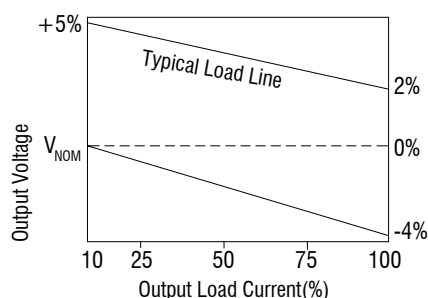
Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation test voltage	Tested for 1 minute	3000			VDC
Resistance	Viso= 1000VDC	1			GΩ

GENERAL CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Switching frequency			65		kHz

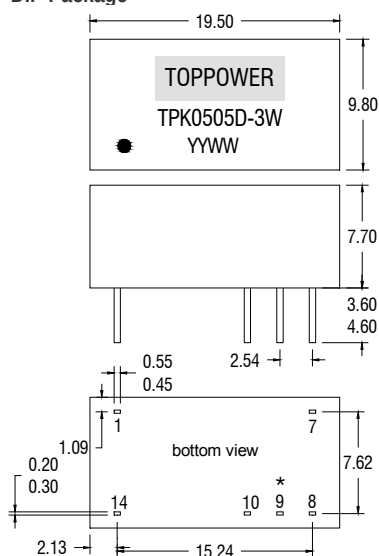
TEMPERATURE CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Specification	Derating if the temperature ≥85°C	-40		105	°C
Storage		-50		150	°C
Case Temperature above ambient	5V output			30	°C
Case Temperature above ambient	All other output			30	°C
Cooling	Free air convection				

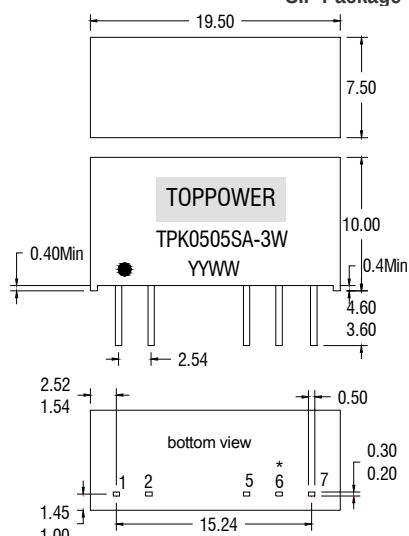
TEMPERATURE DERATING GRAPHS

TOLERANCE ENVELOPES


MECHANICAL DIMENSIONS

DIP Package



SIP Package



All dimensions in mm ± 0.25 mm.

All pins on a 2.54mm pitch and within ± 0.25 mm of true position. Weight: 2.8g

* Pin not fitted on single output variants

PIN CONNECTIONS

Dual Output Variants	
14 PIN DIP	
Pin	Function
1	-Vin
7	NC
8	+Vout
9	0V
10	-Vout
14	+Vin

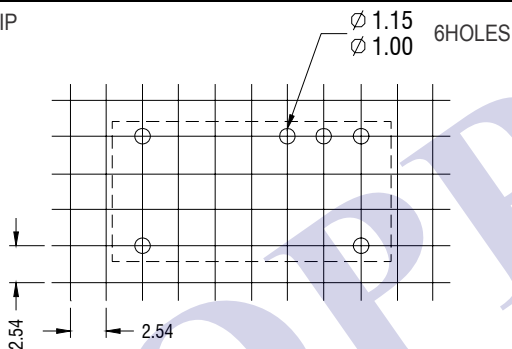
7 PIN SIP	
Pin	Function
1	+Vin
2	-Vin
5	-Vout
6	0V
7	+Vout

Single output variants	
14 PIN DIP	
Pin	Function
1	-Vin
7	NC
8	+Vout
10	-Vout
14	+Vin

7 PIN SIP	
Pin	Function
1	+Vin
2	-Vin
5	-Vout
7	+Vout

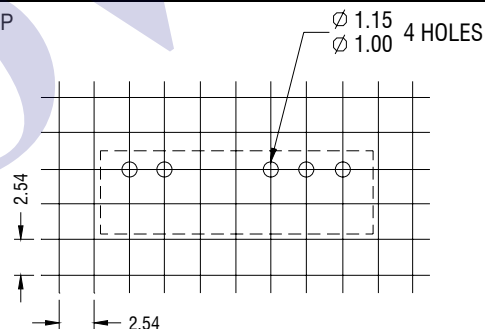
RECOMMENDED FOOTPRINT DETAILS

14Pin DIP



Unless otherwise stated all dimensions in mm ± 0.5 mm.

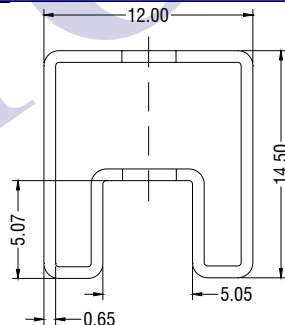
7Pin SIP



Unless otherwise stated all dimensions in mm ± 0.5 mm.

TUBE OUTLINE DIMENSIONS

14Pin DIP

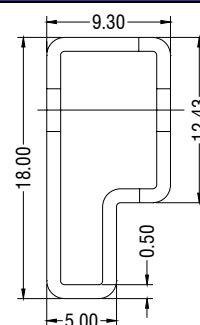


Unless otherwise stated all dimensions in mm ± 0.5 mm.

Tube length : 520mm ± 2 mm.

Tube Quantity : 25PCS

7Pin SIP



Unless otherwise stated all dimensions in mm ± 0.5 mm.

Tube length : 520mm ± 2 mm.

Tube Quantity : 25PCS

SOLDERING INFORMATION

This series is compatible with RoHS soldering systems with a peak wave solder temperature of 300°C for 10 seconds. The series is backward compatible with Sn/Pb soldering systems