


DESCRIPTION : 1W 1.5KVDC and 3KVDC Isolated Miniature Single Output DC/DC Converters

The TKE series are miniature, isolated 1W DC/DC converters in a SIP and DIP 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.

FEATURES

RoHS compliant	Sub-Miniature SIP & DIP styles	DIP: 3KVDC isolation, SIP: 3KVDC /1.5KVDC isolation
UL 94V-0 package material	Operating temperature: -40℃ to 105℃	Power density 2.09W/cm ³
Footprint at 0.69cm ²	Industry standard pinout	Input voltage: 3.3V, 5V, 12V,24V
Output voltage: 3.3V, 5V, 9V, 12V,15V	Custom solutions available	CE certification

SELECTION GUIDE

Part Number	Nominal Input Voltage	Output Voltage	Output Current (Max./Min)	Efficiency	Package Style
	V	V	mA	%	
TKE0303D	3.3	3.3	303/30.3	71	DIP
TKE0305D	3.3	5	200/20	74	DIP
TKE0309D	3.3	9	111/11.1	75	DIP
TKE0303S	3.3	3.3	303/30.3	71	SIP
TKE0305S	3.3	5	200/20	75	SIP
TKE0309S	3.3	9	111/11.1	74	SIP
TKE0503D	5	3.3	303/30.3	74	DIP
TKE0505D	5	5	200/20	69	DIP
TKE0509D	5	9	111/11.1	74	DIP
TKE0512D	5	12	83/8.3	78	DIP
TKE0515D	5	15	67/6.7	78	DIP
TKE0503S	5	3.3	303/30.3	74	SIP
TKE0505S	5	5	200/20	69	SIP
TKE0509S	5	9	111/11.1	75	SIP
TKE0512S	5	12	83/8.3	78	SIP
TKE0515S	5	15	67/6.7	78	SIP
TKE1205D	12	5	200/20	72	DIP
TKE1209D	12	9	111/11.1	78	DIP
TKE1212D	12	12	83/8.3	80	DIP
TKE1215D	12	15	67/6.7	81	DIP
TKE1203S	12	3.3	303/30.3	72	SIP
TKE1205S	12	5	200/20	72	SIP
TKE1209S	12	9	111/11.1	78	SIP
TKE1212S	12	12	83/8.3	80	SIP
TKE1215S	12	15	67/6.7	81	SIP
TKE2405S	24	5	200/20	72	SIP
TKE2403D	24	3.3	303/30.3	73	DIP
TKE2405D	24	5	200/20	69	DIP
TKE2412D	24	12	83/8.3	78	DIP
TKE2415D	24	15	67/6.7	79	DIP

Add suffix "P" for continuous short circuit protection, for example TKE0505SP.

Add suffix "/H" for 3KVDC isolated for SIP version, for example TKE0505S/H.

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	5.0	5.5	V
Voltage range	12V input	11	12.0	13.3	V
Voltage range	24V input	21.6	24.0	26.4	V

ABSOLUTE MAXIMUM RATINGS

Short-circuit protection	1 second
Lead temperature 1.5mm from case for 10 seconds	300℃
Internal power dissipation	520mW
Input voltage Vin, TKE03	5.5V
Input voltage Vin, TKE05	7V
Input voltage Vin, TKE12	15V
Input voltage Vin, TKE24	28V

All specifications typical at TA=25℃, nominal input voltage and rated output current unless otherwise specified.

ISOLATION CHARACTERISTICS

Parameter	Conditions	Min.	Max.	Units
Rated Power	TA= -40℃ to 85℃, see derating graphs		1.0	W
Voltage Set Point Accuracy	See tolerance envelope			
Line regulation	High Vin to low Vin		1.2	%/%
Load Regulation(10% load to rated load)	3.3V output types & 0309		15	%
Load Regulation(10% load to rated load)	5V output types		15	%
Load Regulation(10% load to rated load)	9V output types		10	%
Load Regulation(10% load to rated load)	12V output types		10	%
Load Regulation(10% load to rated load)	15V output types		9	%

ISOLATION CHARACTERISTICS

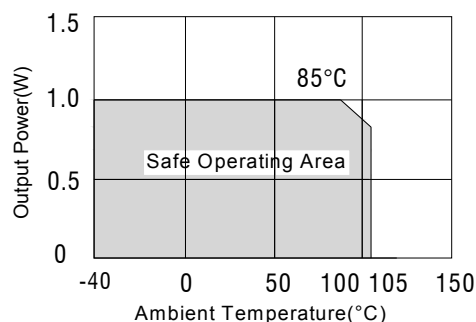
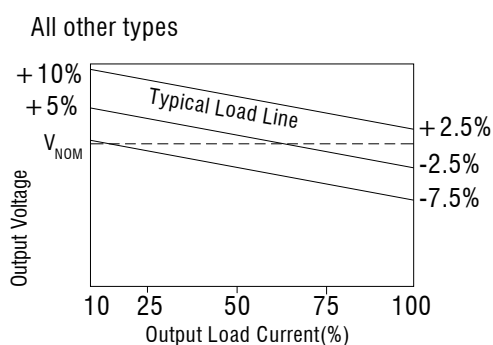
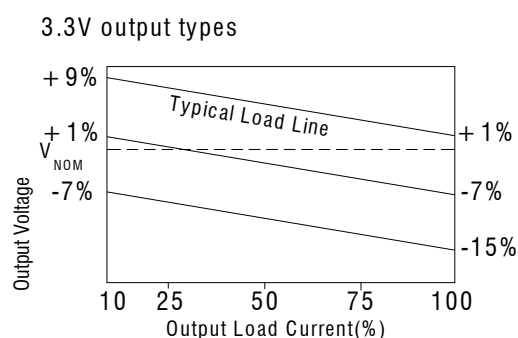
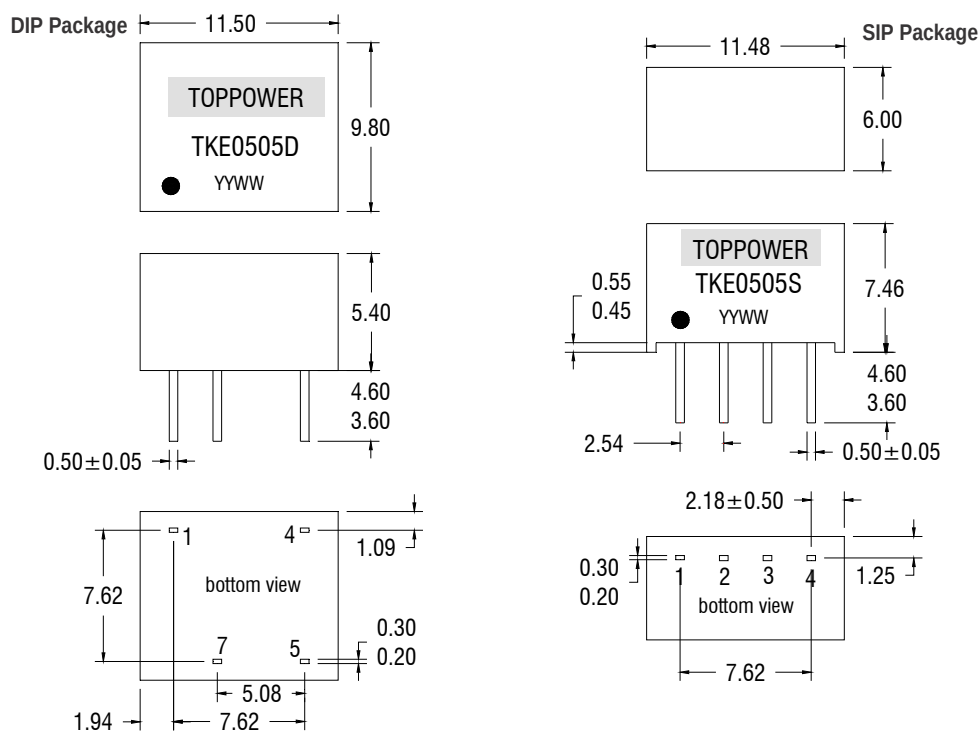
Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation test voltage DIP package	tested for 1 second	3000			VDC
Isolation test voltage SIP package	tested for 1 second	1500			VDC
Resistance	Viso= 1000VDC	1			GΩ

GENERAL CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Switching frequency	All output types		120		kHz

TEMPERATURE CHARACTERISTICS

Specification	Conditions	Min.	Typ.	Max.	Units
Specification	Derating if the temperature ≥85℃	-40		105	℃
Storage		-50		130	℃
Case temperature rise above ambient	0505D/S, 1205D/S			35	℃
Case temperature rise above ambient	All other output types				
Cooling	Free air convection				

TEMPERATURE DERATING GRAPHS

TOLERANCE ENVELOPES

MECHANICAL DIMENSIONS


All dimensions in mm ±0.25mm. All pins on a 2.54mm pitch and within ±0.25mm of true position.
Weight: 1.09g(SIP) 1.25g(DIP)

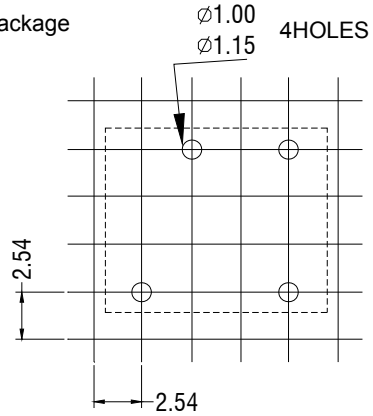
PIN CONNECTIONS

8 PIN DIP	
Pin	Function
1	-Vin
4	+Vin
5	+Vout
7	-Vout

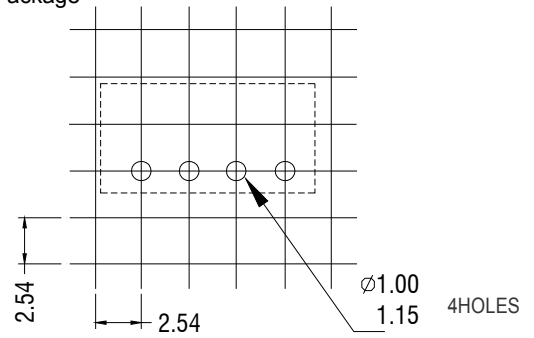
4 PIN SIP	
Pin	Function
1	-Vin
2	+Vin
3	-Vout
4	+Vout

RECOMMENDED FOOTPRINT DETAILS

8 Pin DIP Package

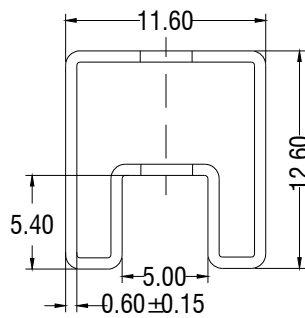


4 Pin SIP Package

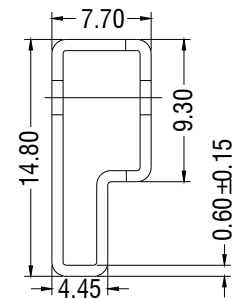


TUBE OUTLINE DIMENSIONS

8 Pin DIP Tube



4 Pin SIP Tube



Unless otherwise stated all dimensions in mm ± 0.5 mm

Tube length(8 Pin DIP):520mm ± 2 mm

Tube length(4 Pin SIP):525mm ± 2 mm

Tube Quantity:40PCS

SOLDERING INFORMATION

This series is compatible with RoHS soldering systems with a peak wave solder temperature of 300° C for 10 seconds. Both SIP and DIP types in this series are backward compatible with Sn/Pb soldering systems.