DESCRIPTION: **5.2KVDC Isolated DC/DC Converters for IGBT drivers**

The TPJXXX is 5.2KVDC isolated DC/DC-converters for IGBT drivers in a SIP package. Their ultra low isolation capacitance can improve the capability of anti-interference.The built-in common-ground mode of the unique asymmetric voltage output mode reduces the driver loss of IGBT driver. They feature short-circuit protection and auto-recovery , and can be widely used in:General inverter, AC servo drive system,Electric welding machine, Uninterruptible power supply (UPS) . They offer the ideal solution in many space critical applications for board level power distribution.
The series offers smaller size, improved efficiency, lower output ripple noise.

FEATURES

RoHS compliant	Max capacitive load: 220uF	DC/DC-converters for IGBT drivers
Operating temperature: -40ºC to 105ºC	Footprint 1.91cm^2	UL 94V-0 package material
No heatsink required	5.2KVDC isolation	SIP package style
Input voltage: 24V,15V,12V	Dual Output voltage: +15/-8.7,+15/-5/+15/-3	short-circuit protection

SELECTION GUIDE

Part Number	Nominal Input Voltage	Output Voltage	Output Current	Efficiency (Min.)
	V	V	mA	%
TPJ1515/9	15	+15/-8.7	+80/-40	76-80
TPJ1215/9	12	+15/-8.7	+80/-40	76-80
TPJ1215/5	12	+15/-5	+80/-40	75-80
TPJ1215/3	12	+15/-3	+93/-185	75-80
TPJ2415/3	24	+15/-3	+66/-333	75-80
TPJ2415/3-O	24	+15/-3	**+111/-111**	75-80

INPUT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Voltage range	24V input	22.8	24	25.2	VDC
Voltage range	15V input	13.5	15	16.5	VDC
Voltage range	12V input	10.8	12	13.2	VDC

INPUT SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Filter		Filter capacitor			
Hot plug		Unavailable			
Input current	DC24V	30		140	mA
Input current	DC15V	20		130	MA
Input current	DC12V	20		160	MA
Load regulation	10%-100% load	Positive output 8%-15%,Negative output 10-15%			

ABSOLUTE MAXIMUM RATINGS

Short-circuit protection	continuous
Lead temperature 1.5mm from case for 10 seconds	300°C
Input voltage Vin, TPJ24	24V
Input voltage Vin, TPJ15	15V
Input voltage Vin, TPJ12	12V

OUTPUT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
+Vo	Vin=15VDC/12VDC, Pin6 & Pin7 +Io=+80mA	14.25	15	15.75	VDC
-Vo	Vin=15VDC/12VDC, Pin5 & Pin6 -Io=-40mA	-8	-8.7	-9.4	VDC
+Vo	Vin=12VDC, Pin6 & Pin7 +Io=+93mA	14.25	15	15.75	VDC
-Vo	Vin=12VDC, Pin5 & Pin6 -Io= -185mA	-2.76	-3	-3.24	VDC
+Vo	Vin=24VDC, Pin6 & Pin7 +Io=+66mA	14.25	15	15.75	VDC
-Vo	Vin=24VDC, Pin5 & Pin6 -Io= -333mA	-2.76	-3	-3.24	VDC
+Vo	Vin=24VDC, Pin6 & Pin7 +Io=+111mA	14.25	15	15.75	VDC
-Vo	Vin=24VDC, Pin5 & Pin6 -Io= -111mA	-2.76	-3	-3.24	VDC
Output Voltage Accuracy	See tolerance envelope graph				
Line Regulation	High Vin to Low Vin	-	±1.2	±1.5	-
Temperature Coefficient	Full load	-	-	±0.03	%/℃

GENERAL CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Short Circuit Protection			Continuous, self-recovery		
Ripple & Noise*	20MHz bandwidth	-	100	200	mVp-p

ISOLATION CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation test voltage	Input-output, with the test time of 1 minute and the leak current lower than 1mA	5200		-	VDC
Resistance	Input-output, Isolation voltage 500VDC	1000	-	-	MΩ
Capacitance	Input-output, 100KHz/0.1V	-	6.6	-	pF

GENERAL CHARACTERISTICS

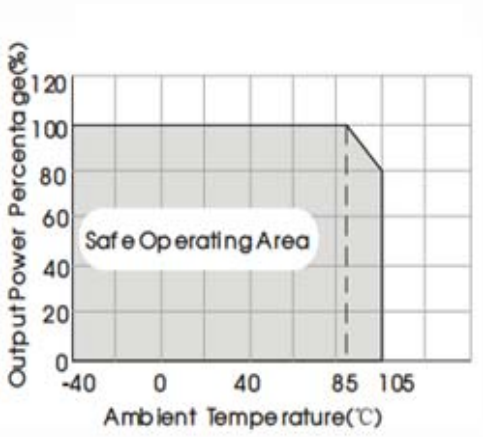
Parameter	Conditions	Min.	Typ.	Max.	Units
Storage Humidity	Non-condensing	-	-	95	%RH
Switching frequency	Full load, nominal input voltage	-	100	300	KHz
MTBF	MIL-HDFK-217F@25℃	3500	-	-	K hours
Cooling Method	Free convection				

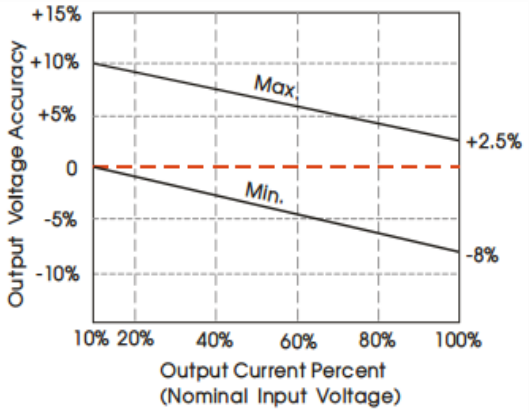
TEMPERATURE CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature	Derating when operating temperature up to 85℃, (see Fig. 2)	-40	-	105	℃
Storage Temperature		-55	-	125	℃
Pin Welding Resistance	Welding spot is 1.5mm away from the casing, 10 seconds	-	-	300	℃
Casing Temperature Rise	Ta=25℃, nominal input, full load output	-	25	-	℃

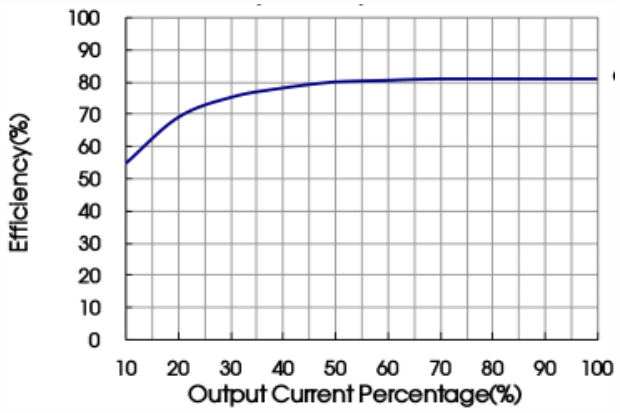
TEMPERATURE DERATING GRAPHS

TOLERANCE ENVELOPE

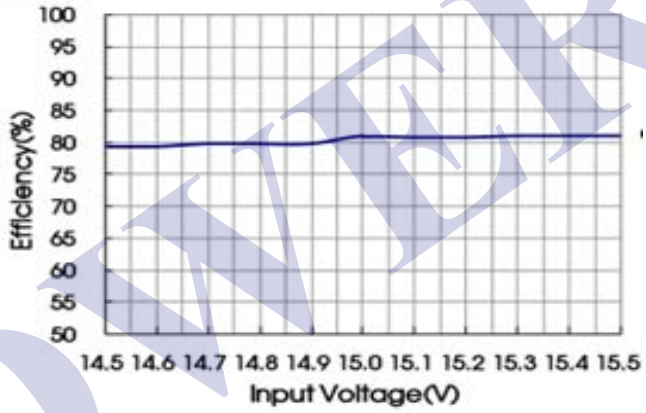




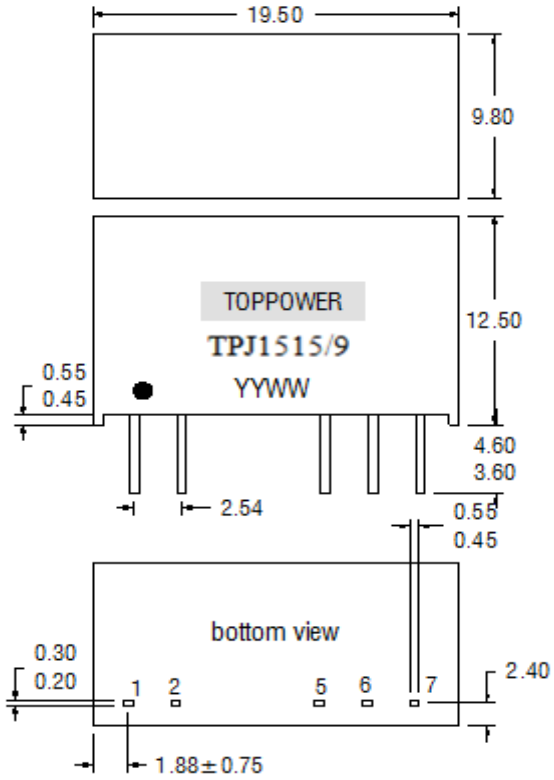
Efficiency&Onput voltage （full load）



Efficiency&Input voltage （full load）



MECHANICAL DIMENSIONS

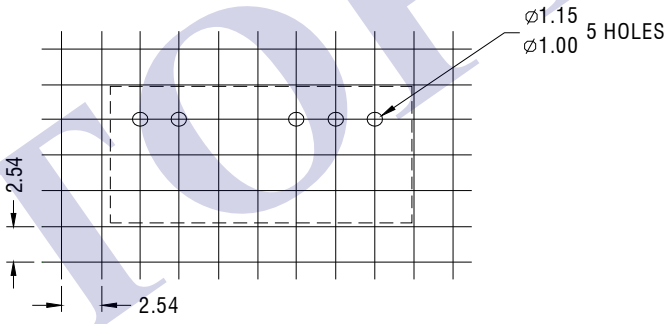


Weight: 4.3g
All dimensions in mm ±0.25mm. All pins on a 2.54mm pitch and within ±0.25mm of true position.

PIN CONNECTIONS

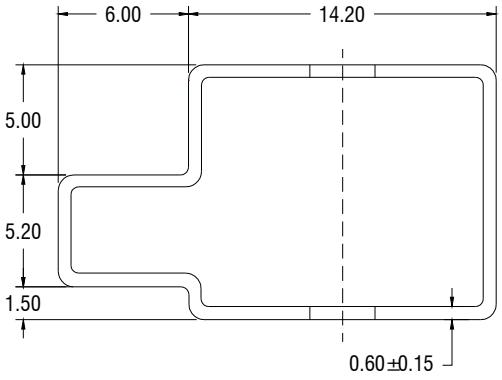
Output	
Pin	Function
1	+Vin
2	GND
5	-Vout
6	OV
7	+Vout

RECOMMENDED FOOTPRINT DETAILS



All dimensions in mm±0.25mm

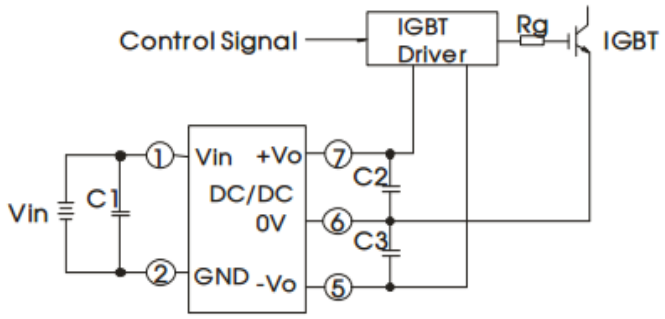
TUBE OUTLINE DIMENSIONS



Unless otherwise stated all dimensions in ±mm ±0.5mm.
Tube length : 25mm±2mm. Tube Quantity : 25

RECOMMENDED FOOTPRINT DETAILS

1. Typical application

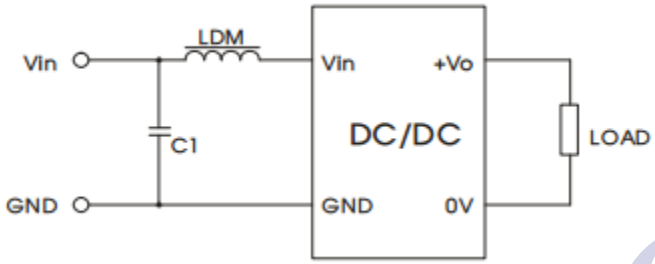


C1/C2/C3
100uF/35V (Low internal resistance capacitance)

Note: On both ends of capacitance C2 and C3 shunt respectively a capacitance value in 1uF -10uF ceramic capacitors

EMC solution-recommended circuit

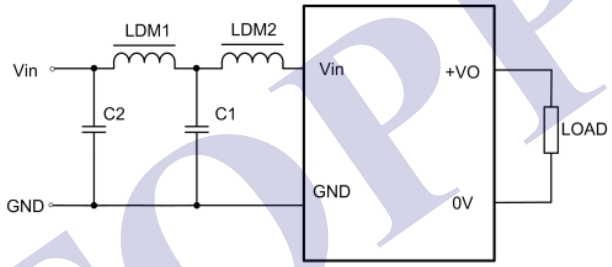
recommended circuit 1



Input voltage (VDC)		12/15
EMI	C1	4.7μF /50V
	LDM	12μH

Note: It is not allowed to connect modules output in parallel to enlarge the power

recommended circuit 2



Input voltage (VDC)		12/15
EMI	C1,C2	4.7uF/50V
EMI	LDM1	12uH
EMI	LDM2	47uH