



# Transpower Applications Ltd

## TPS600

### Introduction

TPS600 is a transient surge suppressor which enables standard DC - DC products to be used in military and harsh environments.

This suppressor is designed to withstand and ride through all surges and spikes up to and including DEF-STAN 61-5 part 6 issue 6.

- \* MIL-STD 1275A/B/C and D compliant.
- \* MIL-STD 461E and F compliant.
- \* DEF-STAN61-5 part 6 issue 6 compliant.
- \* > 99% efficient.
- \* Reverse polarity protected.



### Input characteristics

|                                  |  |
|----------------------------------|--|
| Input voltage, normal operation. | 18 to 36V DC input.                                  |
| Input current                    | 33A maximum.   |
| Under voltage lockout            | 9V DC.   |
| Over voltage lockout             | 41V DC.  |
| Reverse polarity protection      | Continuous.  |
| Inrush current                   | Electronically limited <5A with 330uF 63V capacitor. |

### Signal

|                |   |
|----------------|---|
| Input shutdown | Floating = enable, short to input 0V to disable |
|----------------|---|





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## Output characteristics

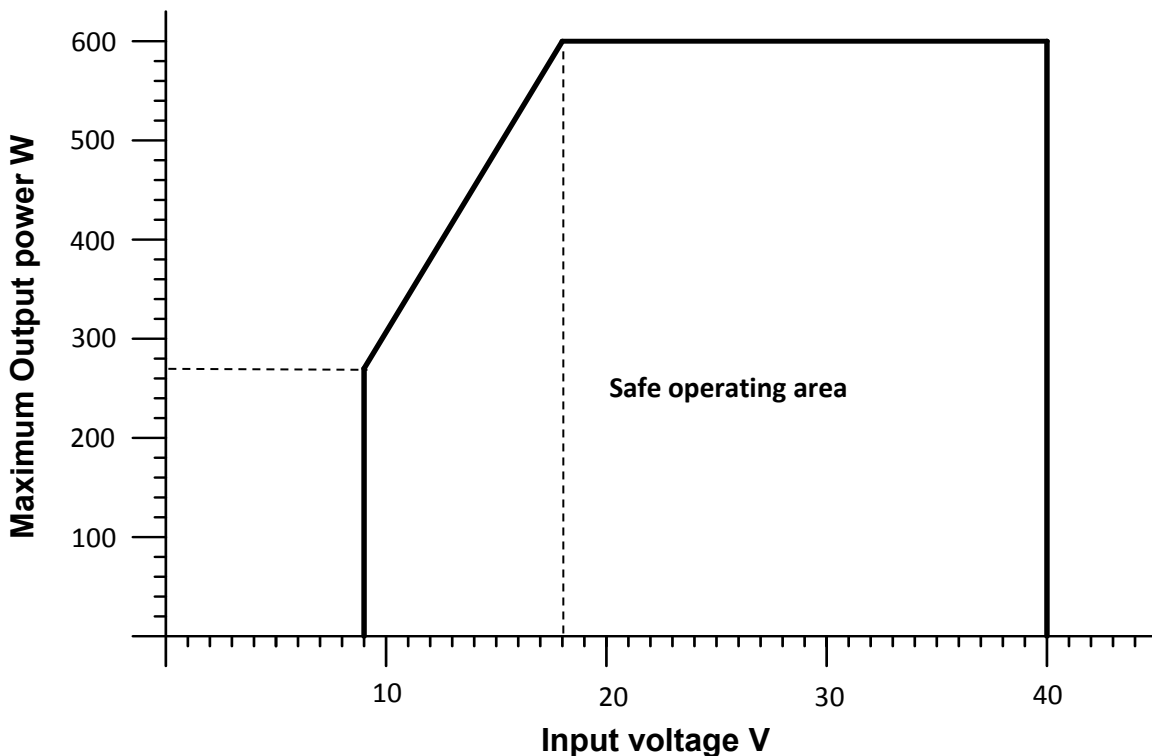
|                               |  |
|-------------------------------|--|
| Output voltage                | 18 to 36V DC (9 to 41V during transient condition)       |
| Output current overload limit | Current overload set to 40A maximum.                     |
| Output current                | 33A max. (refer to graph below for safe operating area)  |
| Output power                  | 600W max. (refer to graph below for safe operating area) |

## Signals

|                 |   |
|-----------------|---|
| Output inhibit  | Control signal for downstream converter. 0V = off, 5V = enable.   |
| Fault detection | If a fault is detected this pin toggles low. 0V = fault, 5V = ok. |

## Environmental

|                       |                 |
|-----------------------|-----------------|
| Operating temperature | -40°C to +85°C  |
| Storage temperature   | -55°C to +100°C |

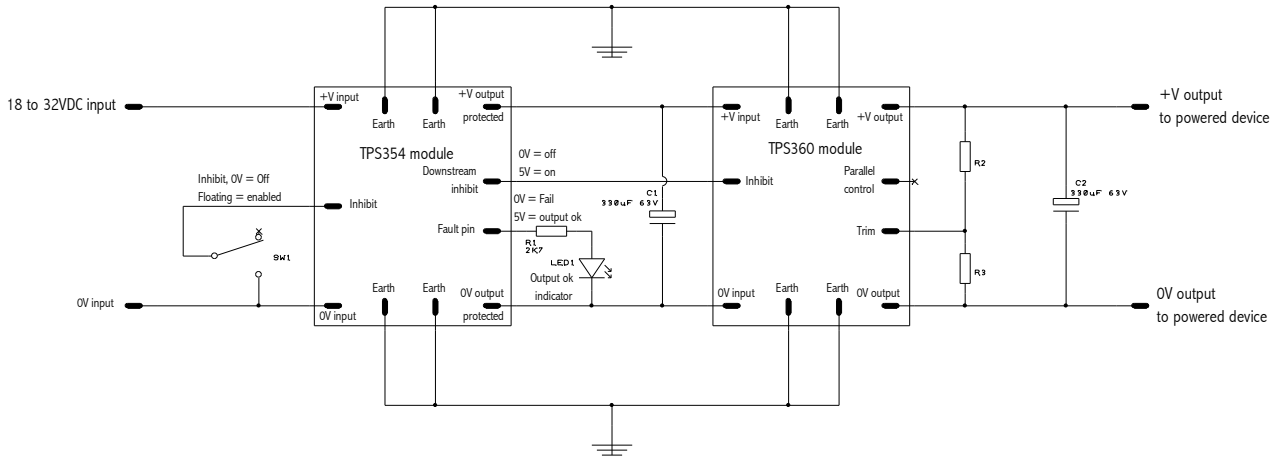




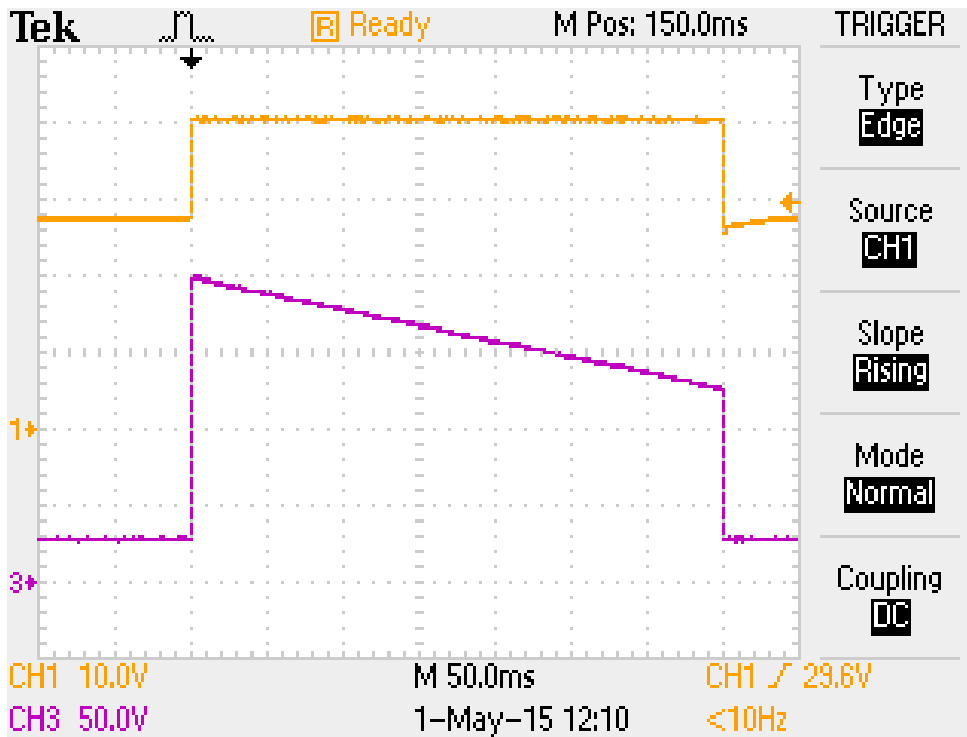
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Below is a typical application diagram using the TPS360 DC - DC converter.

**Note: C1 must be fitted at a minimum of 330uF 63V electrolytic.**



## Transient operation



Purple trace is 202V surge for 350ms

Yellow trace is TPS600 output regulating at 41V. Tested at 600W

Trise for the pulse in DEF STAN 61-5 Pt6 iss 6 is defined as less than 10ms with peak of 174V above 28V starting voltage =202V peak. Pulse down to 17.4V above 28V by 350ms. (Test DIT08.B)

The pulse as used for transient testing TPS600 has at least the same energy.



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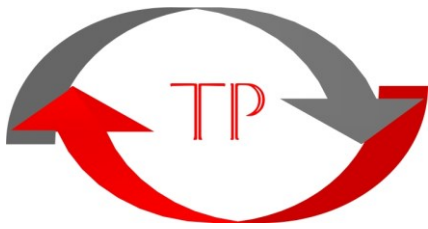
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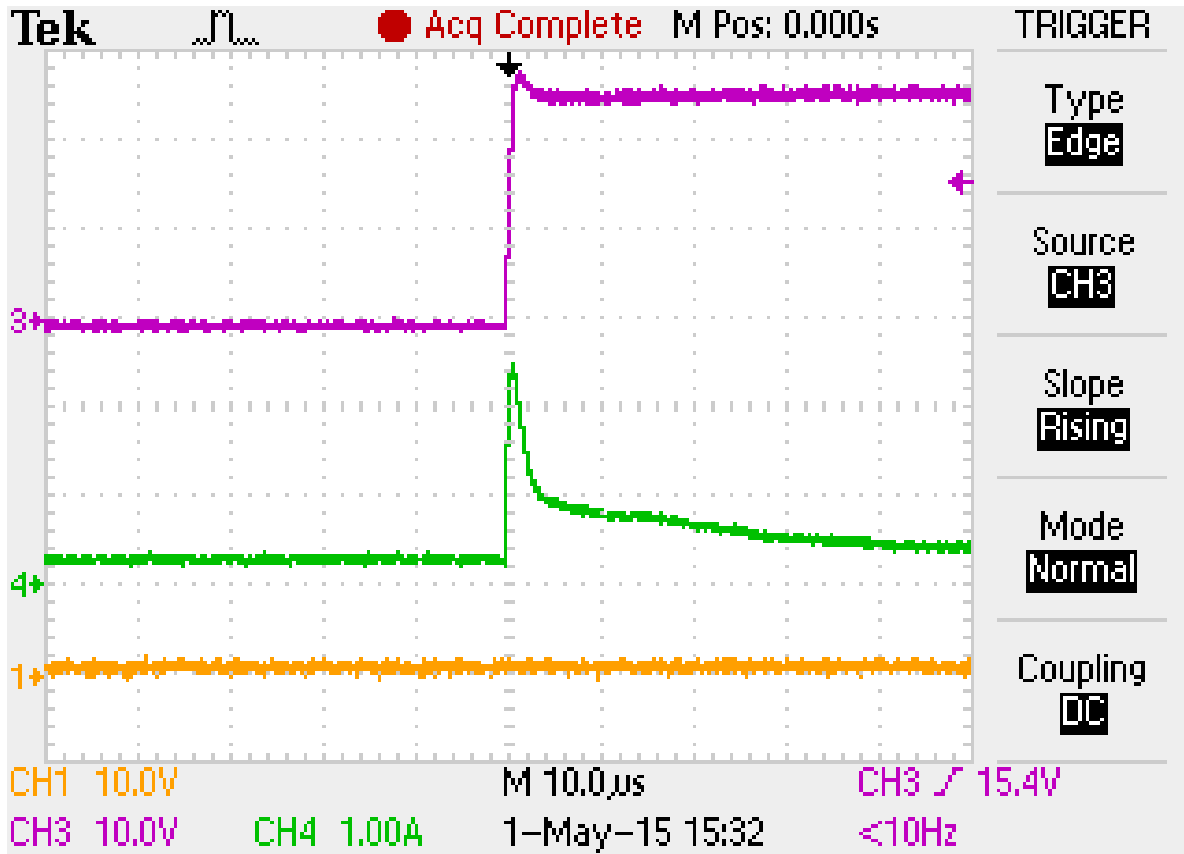
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## Inrush current



Yellow trace is output voltage  
Green trace is input current  
Purple trace is input voltage

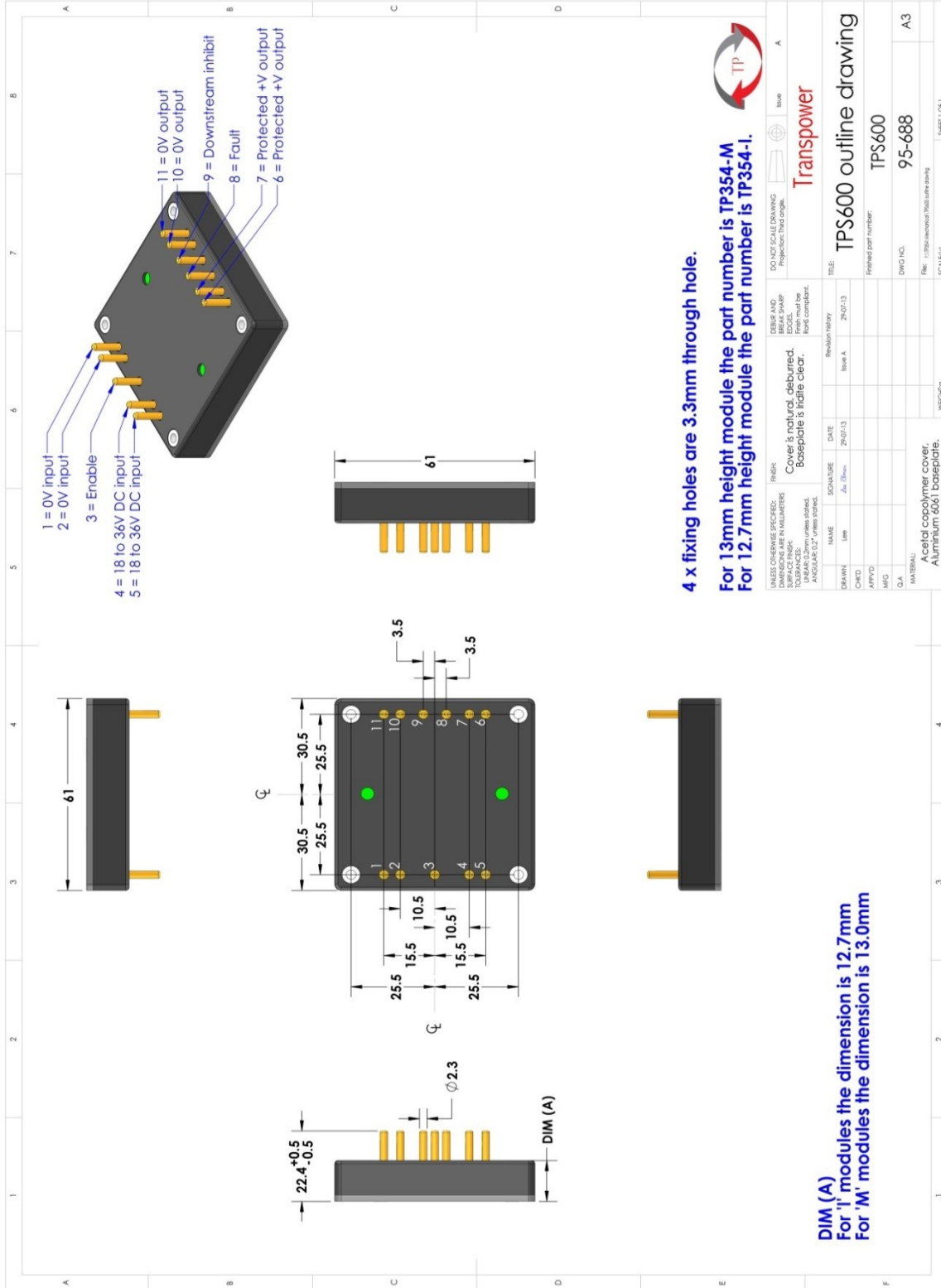
This plot was taken with a 330uF capacitor attached to the output along with a 400W constant power load.





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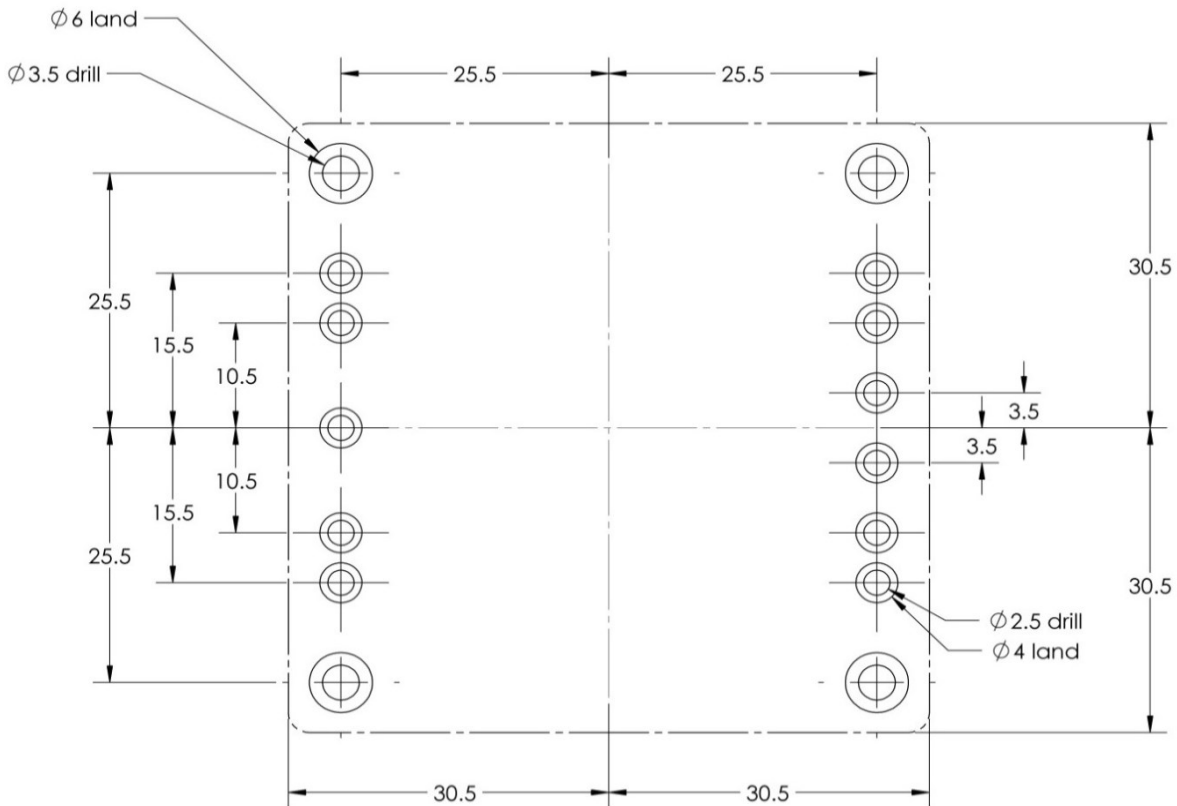
## Mechanical outline





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## Recommended PCB layout



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