

### Features

- ◆ Compact high voltage power supplies
- ◆ Full SMD design with ceramic capacitors for highest reliability
- ◆ Positive or negative polarity models
- ◆ PCB- and flying lead versions
- ◆ Excellent output stability
- ◆ Low temperature coefficient
- ◆ Ultra low ripple
- ◆ Remote voltage programming 0 to 100 %
- ◆ Short circuit protection
- ◆ Shielded metal case
- ◆ 3-year product warranty



The THV / SHV series are regulated miniature high voltage power modules using SMD and hybrid technology. They are designed for PCB mounting (THV series) or chassis mounting (SHV series). The use of high stability components guarantees a minimal temperature drift and a very stable output voltage. Typical applications for these high voltage power supplies are photomultiplier tubes, gas chromatography, analytical instruments and wherever where small size and high output voltage stability is requested.

### Models

| Order code         | Input voltage range              | Output voltage | Output current max. | Case |
|--------------------|----------------------------------|----------------|---------------------|------|
| THV 12-180P        | <b>12 VDC</b><br>10.8 – 13.2 VDC | 0...+180 VDC   | 15 mA               | A    |
| THV 12-180N        |                                  | 0...-180 VDC   | 15 mA               | A    |
| THV 12-300P        |                                  | 0...+300 VDC   | 10 mA               | A    |
| THV 12-300N        |                                  | 0...-300 VDC   | 10 mA               | A    |
| THV 12-350P        |                                  | 0...+350 VDC   | 7 mA                | A    |
| THV 12-350N        |                                  | 0...-350 VDC   | 7 mA                | A    |
| THV 12-500P        |                                  | 0...+500 VDC   | 6 mA                | B    |
| THV 12-500N        |                                  | 0...-500 VDC   | 6 mA                | B    |
| THV 12-1000P       | <b>12 VDC</b><br>10.8 – 16.5 VDC | 0...+1000 VDC  | 2 mA                | B    |
| THV 12-1000N       |                                  | 0...-1000 VDC  | 2 mA                | B    |
| THV 12-1500P       |                                  | 0...+1500 VDC  | 1.3 mA              | B    |
| THV 12-1500N       |                                  | 0...-1500 VDC  | 1.3 mA              | B    |
| THV 12-2000P       |                                  | 0...+2000 VDC  | 1 mA                | B    |
| THV 12-2000N       |                                  | 0...-2000 VDC  | 1 mA                | B    |
| SHV 12-0.5 K 6000P | <b>12 VDC</b><br>10.8 – 13.2 VDC | 0...+500 VDC   | 6 mA                | C    |
| SHV 12-0.5 K 6000N |                                  | 0...-500 VDC   | 6 mA                | C    |
| SHV 12-1.0 K 2000P | <b>12 VDC</b><br>10.8 – 16.5 VDC | 0...+1000 VDC  | 2 mA                | C    |
| SHV 12-1.0 K 2000N |                                  | 0...-1000 VDC  | 2 mA                | C    |
| SHV 12-1.5 K 1300P |                                  | 0...+1500 VDC  | 1.3 mA              | C    |
| SHV 12-1.5 K 1300N |                                  | 0...-1500 VDC  | 1.3 mA              | C    |
| SHV 12-2.0 K 1000P |                                  | 0...+2000 VDC  | 1 mA                | C    |
| SHV 12-2.0 K 1000N |                                  | 0...-2000 VDC  | 1 mA                | C    |

Appendix P for positive output polarity / Appendix N for negative output polarity

## Input Specifications

|               |                                                                                            |
|---------------|--------------------------------------------------------------------------------------------|
| Input voltage | 180, 300, 350 & 500 VDC models: +10.8 to +13.2 VDC<br>other VDC models: +10.8 to +16.5 VDC |
|---------------|--------------------------------------------------------------------------------------------|

|                            |      |
|----------------------------|------|
| Reserve voltage protection | none |
|----------------------------|------|

|                         |                 |
|-------------------------|-----------------|
| Conducted noise (input) | internal filter |
|-------------------------|-----------------|

## Output Specifications

|                      |      |
|----------------------|------|
| Voltage set accuracy | ±5 % |
|----------------------|------|

|                                                                                                             |           |
|-------------------------------------------------------------------------------------------------------------|-----------|
| Voltage adjustment range<br>(adjustable with external voltage 0 to +4 VDC or with 5 kOhm variable resistor) | 0 – 100 % |
|-------------------------------------------------------------------------------------------------------------|-----------|

|                                                          |                                                        |
|----------------------------------------------------------|--------------------------------------------------------|
| Remote On/Off control (not for 180, 300, 350 VDC models) | On = pin 2 to pin 5 open<br>Off = pin 2 to pin 5 short |
|----------------------------------------------------------|--------------------------------------------------------|

|            |                                                                      |                            |
|------------|----------------------------------------------------------------------|----------------------------|
| Regulation | – Input variation Vin min. to Vin max.<br>– Load variation 0 – 100 % | 0.03 % max.<br>0.08 % max. |
|------------|----------------------------------------------------------------------|----------------------------|

|                                        |                                                                                                                             |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Ripple and noise<br>(20 MHz Bandwidth) | 180, 300 & 350 VDC models: 30 mVpk-pk typ.<br>500 VDC models: 10 mVpk-pk typ.<br>1.0, 1.5 & 2.0 kVDC models: 8 mVpk-pk typ. |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|

|                         |           |
|-------------------------|-----------|
| Temperature coefficient | ±0.01 %/K |
|-------------------------|-----------|

|           |                              |
|-----------|------------------------------|
| Stability | 0.05 % 8h after warm-up time |
|-----------|------------------------------|

|                           |                               |
|---------------------------|-------------------------------|
| Output current limitation | 105 % of Iout max., fold back |
|---------------------------|-------------------------------|

|                          |                                |
|--------------------------|--------------------------------|
| Short circuit protection | indefinite, automatic recovery |
|--------------------------|--------------------------------|

## General Specifications

|                    |                                                |                                                |
|--------------------|------------------------------------------------|------------------------------------------------|
| Temperature ranges | – Operating<br>– Case temperature<br>– Storage | –10°C to +60°C<br>+95°C max.<br>–25°C to +85°C |
|--------------------|------------------------------------------------|------------------------------------------------|

|          |                  |
|----------|------------------|
| Derating | 4 %/K above 50°C |
|----------|------------------|

|                           |                 |
|---------------------------|-----------------|
| Humidity (non condensing) | 95 % rel H max. |
|---------------------------|-----------------|

|            |           |
|------------|-----------|
| Efficiency | 60 – 65 % |
|------------|-----------|

|                                                                       |            |
|-----------------------------------------------------------------------|------------|
| Reliability, calculated MTBF (MIL-HDBK-217F, at +25°C, ground benign) | >300'000 h |
|-----------------------------------------------------------------------|------------|

|                                    |      |
|------------------------------------|------|
| Isolation (Input/Output) – Voltage | none |
|------------------------------------|------|

|                     |                      |
|---------------------|----------------------|
| Switching frequency | 125 kHz typ. (fixed) |
|---------------------|----------------------|

|           |                                                                 |
|-----------|-----------------------------------------------------------------|
| Vibration | 5 – 100 Hz amplitude 10 mm pk-pk<br>10 – 55 Hz acceleration 2 G |
|-----------|-----------------------------------------------------------------|

|               |                                    |
|---------------|------------------------------------|
| Thermal shock | acceleration 20 G max. time 11 ms. |
|---------------|------------------------------------|

|                          |                   |                                                                                                                                       |
|--------------------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Environmental compliance | – Reach<br>– RoHS | <a href="http://www.tracopower.com/products/thv-reach.pdf">www.tracopower.com/products/thv-reach.pdf</a><br>RoHS Directive 2011/65/EU |
|--------------------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------|

## Physical Specifications

|                 |                            |
|-----------------|----------------------------|
| Casing material | Steel chrome-nickel plated |
|-----------------|----------------------------|

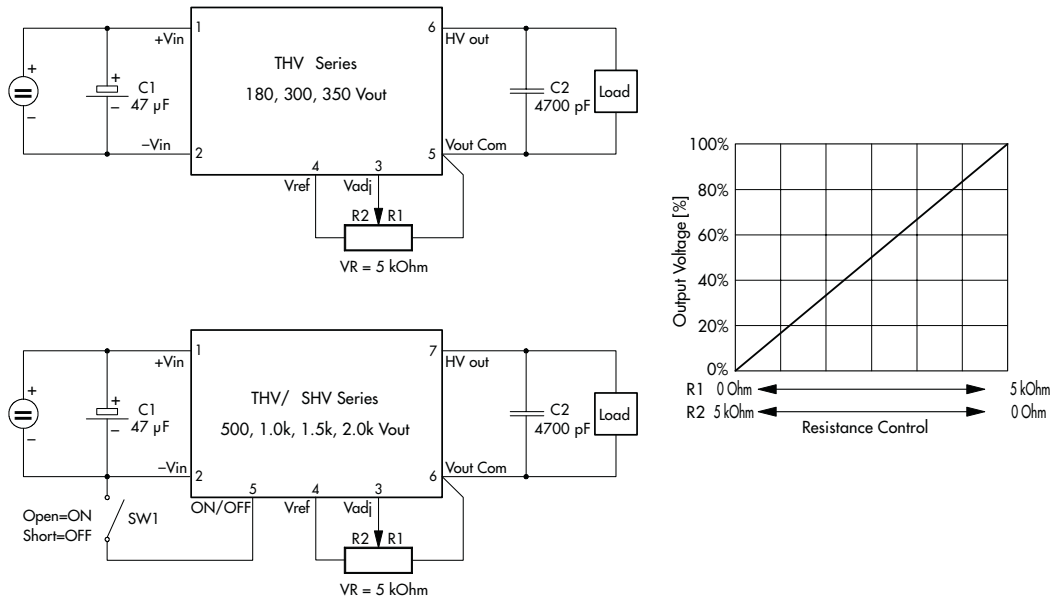
|        |                                                                                                         |
|--------|---------------------------------------------------------------------------------------------------------|
| Weight | THV models case A : 47 g (1.66 oz)<br>THV models case B : 65 g (2.29 oz)<br>SHV models : 98 g (3.46 oz) |
|--------|---------------------------------------------------------------------------------------------------------|

|                       |                      |
|-----------------------|----------------------|
| Soldering temperature | max. 260°C / 10 sec. |
|-----------------------|----------------------|

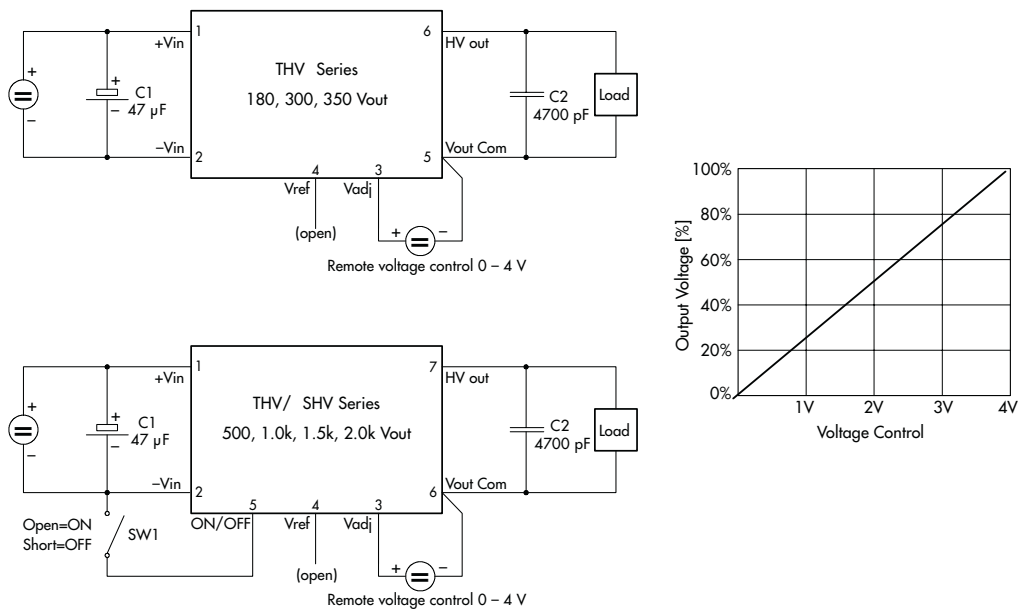
All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

## Connection Diagram

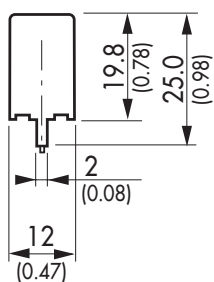
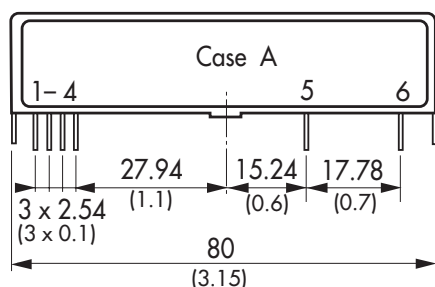
Connection for remote control by variable resistor



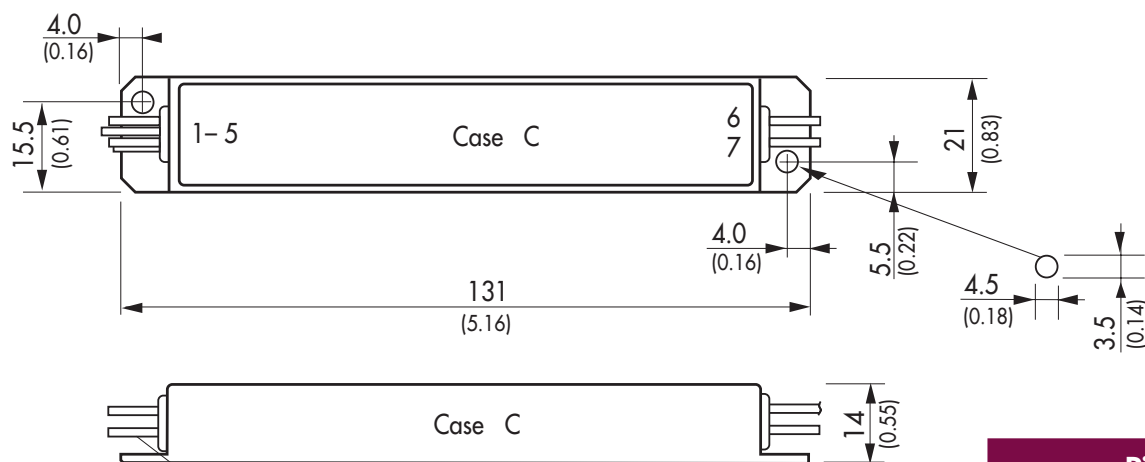
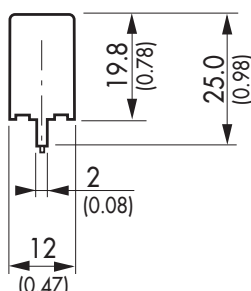
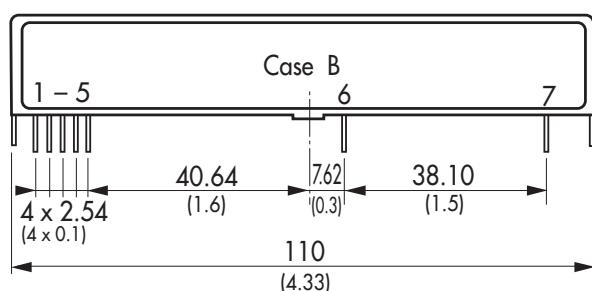
Connection for remote control voltage control



All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

**Outline Dimensions**


| Pin-Out |            |            |
|---------|------------|------------|
| Pin     | Case A     | Case B     |
| 1       | +Vin (Vcc) | +Vin (Vcc) |
| 2       | -Vin (GND) | -Vin (GND) |
| 3       | V adj.     | V adj.     |
| 4       | V ref.     | V ref.     |
| 5       | Common     | ON/OFF     |
| 6       | Vout       | Common     |
| 7       | no pin     | Vout       |



Lead length 250 mm (10.0)

Dimensions in [mm], ( ) = Inch  
Pin diameter: 0.65 ±0.05 (0.03 ±0.002)  
Tolerances: ±0.5 (±0.02)

| Pin-Out |            |            |
|---------|------------|------------|
| Pin     | Lead color | Case C     |
| 1       | red        | +Vin (Vcc) |
| 2       | black      | -Vin (GND) |
| 3       | yellow     | V adj.     |
| 4       | orange     | V ref.     |
| 5       | blue       | ON/OFF     |
| 6       | black      | Common     |
| 7       | red        | Vout       |

Specifications can be changed any time without notice.