# PT3340 Series

**30-W 24/48-V Input**
**Isolated DC/DC Converter**

**SLTS019B**
***(Revised 4/9/2002)***

## Features

- Input Voltage Range: 18V to 60V
- 1500 VDC Isolation
- On/Off Control
- $V_o$ Adjust
- Differential Remote Sense
- Current Limit
- Short-Circuit Protection
- Over-Temperature Shutdown
- Undervoltage Lockout
- Flexible SIP Package
- UL1950 Recognized
- CSA 22.2 950 Certified
- EN60950 Approved
- VDE Licensed
- 5 x$10^6$ Hrs MTBF
- Meets FCC Class A Radiated Limits

## Description

The PT3340 series is a single-output isolated DC/DC converter, housed in a 19-pin aluminum SIP package. These modules are UL, CSA, and VDE approved for telecom applications, and rated at 30W or 8A. The 18V to 60V input range allows easy integration into many distributed power applications which utilize 24V bus architectures.

Standard output voltages range from 1.8V to 15V, and are each adjustable by up to ±10%. Operating features include a *Remote On/Off* control, an under-voltage lockout (UVLO), and a differential remote sense. Protection features include an output current limit, short-circuit protection, and over-temperature shutdown.

A 330µF output capacitor is required for proper operation.

## Ordering Information

**PT3341❒** = 3.3V/8A (26.4W)
**PT3342❒** = 5.0V/6A
**PT3343❒** = 12.0V/2.5A
**PT3344❒** = 15.0V/2A

## PT Series Suffix (PT1234x)

| Case/Pin Configuration | Order Suffix | Package Code * |
|---|---|---|
| Vertical | **N** | (EHG) |
| Horizontal | **A** | (EHH) |
| SMD | **C** | (EHJ) |

** Previously known as package styles 840 & 850.*

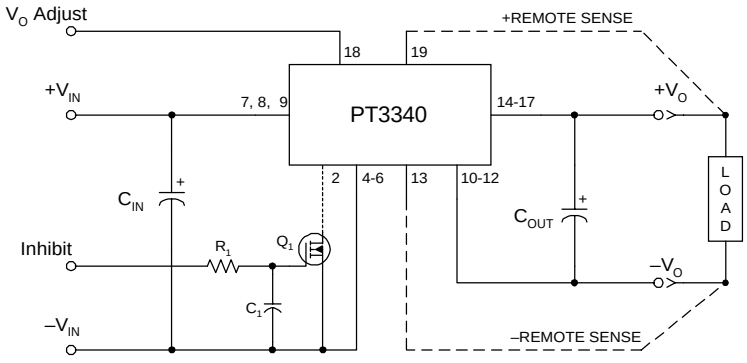
*(Reference the applicable package code drawing for the dimensions and PC board layout)*

## Pin-Out Information

| Pin | Function |
|---|---|
| 1 | Do Not Use |
| 2 | Remote On/Off † |
| 3 | Do Not Use |
| 4 | -$V_{in}$ |
| 5 | -$V_{in}$ |
| 6 | -$V_{in}$ |
| 7 | +$V_{in}$ |
| 8 | +$V_{in}$ |
| 9 | +$V_{in}$ |
| 10 | -$V_o$ |
| 11 | -$V_o$ |
| 12 | -$V_o$ |
| 13 | -Remote Sense |
| 14 | +$V_o$ |
| 15 | +$V_o$ |
| 16 | +$V_o$ |
| 17 | +$V_o$ |
| 18 | $V_o$ Adjust † |
| 19 | +Remote Sense |

*† For more information, see application notes.*

## Standard Application




$C_{in}$ = Optional 100µF/100V electrolytic
$C_{out}$ = Required 330µF electrolytic (See Notes)
$Q_1$ = N-Channel MOSFET
$R_i/C_1$ = Optional (see application notes)

## Specifications (Unless otherwise stated, $T_a$ =25°C, $V_{in}$ =24V, $C_{out}$ =330µF, and $I_o$ =$I_o$max)

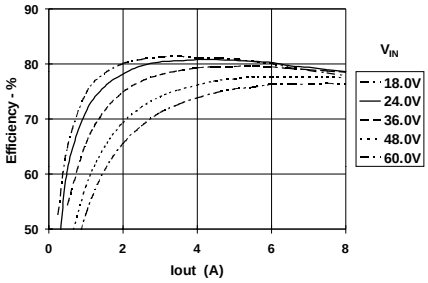
| Characteristic | Symbol | Conditions | | PT3340 SERIES Min | Typ | Max | Units |
|---|---|---|---|---|---|---|---|
| Output Current | $I_o$ | Over $V_{in}$ range | $V_o$ = 15V | 0.1 (1) | — | 2.0 | A |
| | | | $V_o$ = 12V | 0.1 (1) | — | 2.5 | |
| | | | $V_o$ =5.0V | 0.25 (1) | — | 6.0 | |
| | | | $V_o$≤3.3V | 0.25 (1) | — | 8.0 | |
| Input Voltage Range | $V_{in}$ | Over $I_o$ Range | | 18.0 | 24.0 | 60.0 | V |
| Set Point Voltage Tolerance | $V_o$ tol | | $V_o$≥5.0V | — | ±1 | ±1.5 | %$V_o$ |
| | | | $V_o$≤3.3V | — | ±33 | ±50 | mV |
| Temperature Variation | $Reg_{temp}$ | –40° ≤$T_a$≤ +85°C | | — | ±0.5 | — | %$V_o$ |
| Line Regulation | $Reg_{line}$ | Over $V_{in}$ range | $V_o$≥5.0V | — | ±0.2 | ±1.0 | %$V_o$ |
| | | | $V_o$≤3.3V | — | ±7 | ±33 | mV |
| Load Regulation | $Reg_{load}$ | Over $I_o$ range | Vo ≥5.0V | — | ±0.4 | ±1.0 | %$V_o$ |
| | | | $V_o$≤3.3V | — | ±13 | ±33 | mV |
| Total Output Voltage Variation | $\Delta V_o$tot | Includes set-point, line, load, | $V_o$≥5.0V | — | ±2 | — | %$V_o$ |
| | | –40° ≤$T_a$≤ +85°C | $V_o$≤3.3V | — | ±67 | — | mV |
| Efficiency | η | | $V_o$ = 15V | — | 85 | — | % |
| | | | $V_o$ = 12V | — | 86 | — | |
| | | | $V_o$ =5.0V | — | 83 | — | |
| | | | $V_o$ =3.3V | — | 80 | — | |
| $V_o$ Ripple (pk-pk) | $V_r$ | 20MHz bandwidth | $V_o$≥5.0V | — | 1.0 | 2.0 | %$V_o$ |
| | | | $V_o$≤3.3V | — | 50 | 75 | $mV_{pp}$ |
| Transient Response | $t_{tr}$ | 0.1A/µs load step, 50% to 100% $I_o$max | | — | 100 | 200 | µs |
| | $\Delta V_{tr}$ | $V_o$ over/undershoot | $V_o$≥5.0V | — | ±3.0 | ±5.0 | %$V_o$ |
| | | | $V_o$≤3.3V | — | ±100 | ±150 | mV |
| Short Circuit Current | $I_{sc}$ | | | — | 2x$I_o$max | — | A |
| Switching Frequency | $f_s$ | Over $V_{in}$ range | $V_o$>10V | 450 | 500 | 550 | kHz |
| | | | $V_o$<10V | 700 | 750 | 800 | |
| Under-Voltage Lockout | UVLO | $V_{in}$ increasing | | — | 17 | — | V |
| | | $V_{in}$ decreasing | | — | 16 | — | |
| Remote On/Off Input (pin 2) | | Referenced to –$V_{in}$ (pins 4–6) | | | | | |
| Input High Voltage | $V_{IH}$ | | | 2.5 | — | 15 (2) | V |
| Input Low Voltage | $V_{IL}$ | | | –0.2 | — | +0.8 | |
| Input Low Current | $I_{IL}$ | | | –3 | –6 | –10 | µA |
| Standby Input Current | $I_{in}$ standby | pins 2 & 4 connected | | — | 8 | 16 | mA |
| Internal Input Capacitance | $C_{in}$ | | | — | 0.66 | — | µF |
| External Output Capacitance | $C_{out}$ | Between +$V_o$ and –$V_o$ | $V_o$ ≥ 9V | 260 | 330 | 600 (3) | µF |
| | | | $V_o$ ≤ 5V | 260 | 330 | 1,000 (3) | |
| Isolation Voltage | | Input-output/input-case | | 1500 | — | — | Vdc |
| Capacitance | | Input-output | | — | 1200 | — | pF |
| Resistance | | Input-output | | 10 | — | — | MΩ |
| Operating Temperature Range | $T_a$ | Over $V_{in}$ range | | -40 (4) | — | +85 (5) | °C |
| Maximum Case Temperature | $T_c$ | | | — | — | 100 | °C |
| Storage Temperature Range | $T_s$ | — | | -40 | — | +125 | °C |
| Reliability | MTBF | Per Bellcore TR-332<br>50% stress, $T_a$ =40°C, ground benign | | 5.0 | — | — | $10^6$ Hrs |
| Mechanical Shock | — | Per Mil-Std-883D, method 2002.3,<br>1mS, half-sine, mounted to a fixture | | — | 500 | — | G's |
| Mechanical Vibration | — | Per Mil-Std-883D, method 2007.2,<br>20-2000Hz, soldered to board | | — | 10 | — | G's |
| Weight | — | — | | — | 43 | — | grams |
| Flammability | — | Materials meet UL 94V-0 | | | | | |

**Notes:** *(1) The DC/DC converter will operate at no load with reduced specifications.*
*(2) The Remote On/Off input has an internal pull-up. If it is left open circuit the module will operate when input power is applied. A low-leakage (<100nA) MOSFET is recommended to control this input. The open-circuit voltage is less than 10V. See application notes for interface considerations.*
*(3) Output capacitor values are absolute. Allowances must be made for any additional de-coupling capacitors and the total external capacitor tolerance. The value of external capacitance is limited due to regulator startup current requirements. Consult the factory for further details.*
*(4) For operation below 0°C, the required external output capacitor must have temperature stable characteristics. E.g. Tantalum or Oscon® types.*
*(5) See Safe Operating Area curves or contact the factory for the appropriate thermal derating.*

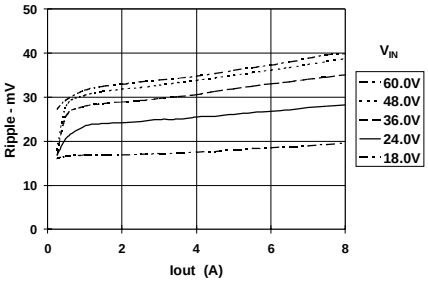
# Typical Characteristics

## PT3341, 3.3 VDC (See Note A)

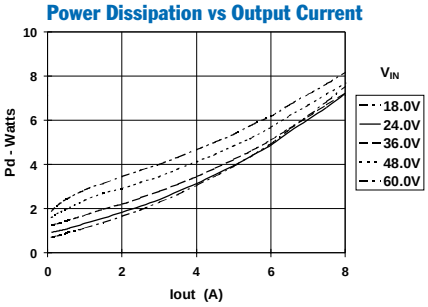
### Efficiency vs Output Current



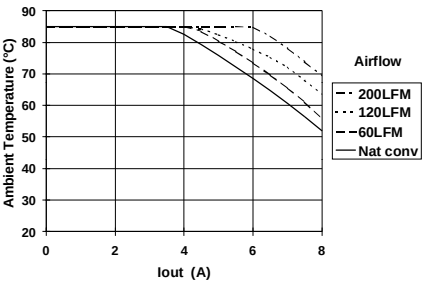

### Ripple vs Output Current




### Power Dissipation vs Output Current

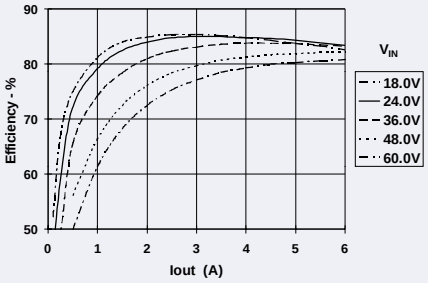



### Safe Operating Area ($V_{in}$ =24V) (See Note B)

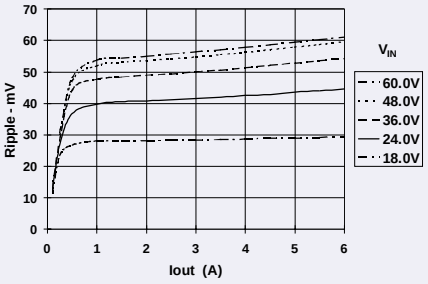



## PT3342, 5.0 VDC (See Note A)

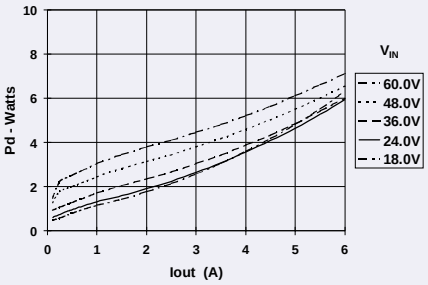
### Efficiency vs Output Current



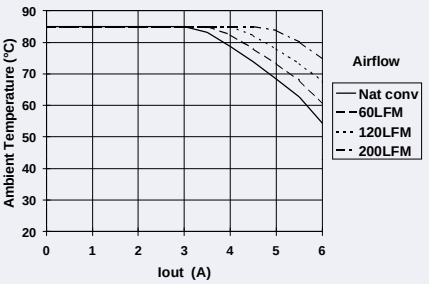

### Ripple vs Output Current




### Power Dissipation vs Output Current

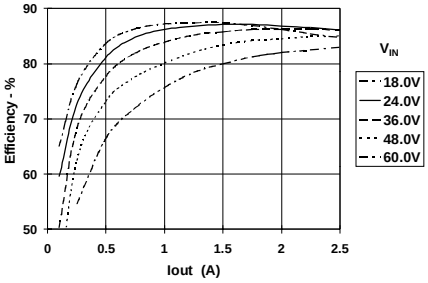



### Safe Operating Area ($V_{in}$ =24V) (See Note B)

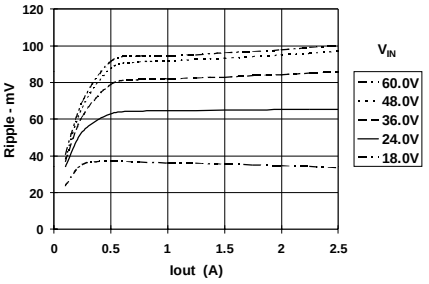



## PT3343, 12.0 VDC (See Note A)

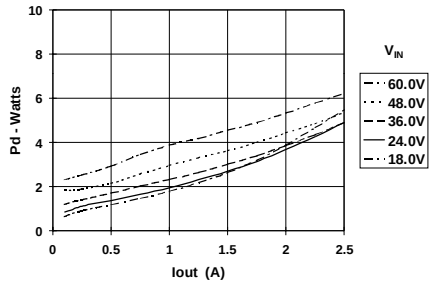
### Efficiency vs Output Current



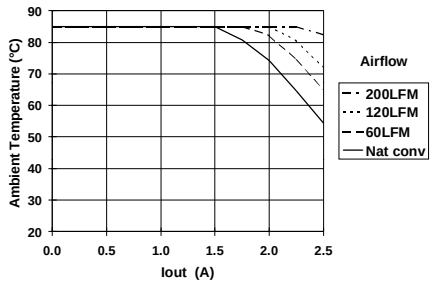

### Ripple vs Output Current




### Power Dissipation vs Output Current




### Safe Operating Area ($V_{in}$ =24V) (See Note B)




**Note A:** *All data listed in the above graphs has been developed from actual products tested at 25°C. This data is considered typical data for the DC-DC Converter.*
**Note B:** *SOA Curves represent operating conditions at which internal components are at or below manufacturer's maximum rated operating temperatures.*

## Adjusting the Output Voltage of Power Trends' 30W Isolated DC/DC Converter Series

The factory pre-set output voltage of Power Trends' 30W series of isolated DC/DC converters may be adjusted within a nominal ±10% range. This is accomplished with the addition of a single external resistor. For the input voltage range specified in the data sheet, Table 1 gives the allowable adjustment range for each model as $V_o$ (min) and $V_o$ (max).

**Adjust Up:** An increase in the output voltage is obtained by adding a resistor, $R_2$ between $V_o$ adjust (pin 18), and -Remote Sense (pin 13). *See note 4.*

**Adjust Down:** Add a resistor ($R_1$), between $V_o$ adjust (pin 18), and +Remote Sense (pin 19).

Refer to Figure 1 and Tables 2 & 3 for both the placement and value of the required resistor, ($R_1$) or $R_2$.

**Notes:**

1. Use only a single 1% resistor in either the ($R_1$) or $R_2$ location. Place the resistor as close to the ISR as possible.
2. Never connect capacitors to $V_o$ adjust. Any capacitance added to the $V_o$ adjust control pin will affect the stability of the ISR.
3. If the remote sense pins are not being used, the resistors ($R_1$) and R2 can be connected to $+V_{out}$ or $-V_{out}$ respectively.
4. The adjusted output voltage, $V_a$ effectively sets the voltage across pins 13 and 19 (±Remote Sense). When using the remote sense pins, $V_{out}$ (measured directly across pins 10–12, and 14–17) can be significantly higher than $V_a$, and may exceed $V_o$ (max). If $V_a$ is adjusted upward of $V_o$(max), the the minimum input voltage is increased by the same percentage as $V_{out}$ exceeds $V_o$(max).

The values of ($R_1$) [adjust down], and $R_2$ [adjust up], can also be calculated using the following formulas.

$$(R_1) = \frac{K_o (V_a - V_r)}{V_r (V_o - V_a)} - R_s \quad k\Omega$$

$$R_2 = \frac{K_o}{(V_a - V_o)} - R_s \quad k\Omega$$

Where $V_o$ = Original output voltage
$V_a$ = Adjusted output voltage
$V_r$ = Reference voltage (Table 1)
$K_o$ = Multiplier constant (Table 1)
$R_s$ = Series resistance (Table 1)

***Table 1***

**DC/DC CONVERTER ADJUSTMENT RANGE AND FORMULA PARAMETERS**

| **Series Pt #** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **AL Case:** | | | | | | | | | |
| **24V Bus** | | | | | **PT3341** | **PT3342** | | **PT3343** | **PT3344** |
| **48V Bus** | | **PT3327** | **PT3325** | **PT3326** | **PT3321** | **PT3322** | | **PT3323** | **PT3324** |
| **CU Case:** | | | | | | | | | |
| **24V Bus** | **PT4585** | | | | **PT4581** | **PT4582** | | **PT4583** | **PT4584** |
| **48V Bus** | | **PT4567** | **PT4565** | **PT4566** | **PT4561** | **PT4562** | **PT4571** | **PT4563** | **PT4564** |
| **$V_o$(nom)** | 1.8V | 1.8V | 2.0V | 2.5V | 3.3V | 5.0V | 9.0V | 12.0V | 15.0V |
| **Vo(min)** | 1.62V | 1.62V | 1.8V | 2.25V | 2.95V | 4.5V | 7.0V | 10.8V | 13.5V |
| **Vo(max)** | 2.5V | 1.98V | 2.2V | 2.75V | 3.65V | 5.5V | 10.0V | 13.2V | 16.5V |
| **$V_r$** | 1.225V | 1.225V | 1.225V | 1.225V | 1.225V | 1.225V | 2.5V | 2.5V | 2.5V |
| **$K_o$ (V·kΩ)** | 69.58 | 69.58 | 62.47 | 42.33 | 68.89 | 68.71 | 133.25 | 135.9 | 137.5 |
| **$R_s$ (kΩ)** | 80.6 | 80.6 | 150.0 | 121.0 | 150.0 | 121.0 | 110 | 90.9 | 80.6 |

***Figure 1***

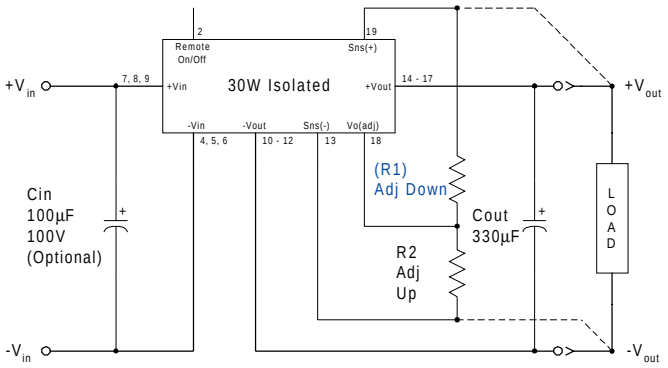


***Table 2***

| DC/DC CONVERTER ADJUSTMENT RESISTOR VALUES | | | | | |
|---|---|---|---|---|---|
| **Series Pt #** | | | | | |
| **AL Case** | | | | | |
| **24V Bus** | | | | | **PT3341** |
| **48V Bus** | | **PT3327** | **PT3325** | **PT3326** | **PT3321** |
| **CU Case** | | | | | |
| **24V Bus** | **PT4585** | | | | **PT4581** |
| **48V Bus** | | **PT4567** | **PT4565** | **PT4566** | **PT4561** |
| **Current** | **8Adc** | **8Adc** | **8Adc** | **8Adc** | **8Adc** |
| **$V_o$(nom)** | **1.8V** | **1.8V** | **2.0V** | **2.5V** | **3.3V** |
| **$V_a$(req'd)** | | | | | |
| 1.65 | (80.3)kΩ | (80.3)kΩ | | | |
| 1.7 | (189.0)kΩ | (189.0)kΩ | | | |
| 1.75 | (516.0)kΩ | (516.0)kΩ | | | |
| 1.8 | | | | | |
| 1.85 | 1.31MΩ | 1.31MΩ | (62.5)kΩ | | |
| 1.9 | 615.0kΩ | 615.0kΩ | (194.0)kΩ | | |
| 1.95 | 383.0kΩ | 383.0kΩ | (589.0)kΩ | | |
| 2.0 | 267.0kΩ | | | | |
| 2.05 | 198.0kΩ | | 1.1MΩ | | |
| 2.1 | 151.0kΩ | | 475.0kΩ | | |
| 2.15 | 118.0kΩ | | 266.0kΩ | | |
| 2.2 | 93.3kΩ | | 162.0kΩ | | |
| 2.25 | 74.0kΩ | | | (20.7)kΩ | |
| 2.3 | 58.6kΩ | | | (64.7.0)kΩ | |
| 2.35 | 45.9kΩ | | | (138.0)kΩ | |
| 2.4 | 35.4kΩ | | | (285.0)kΩ | |
| 2.45 | 26.4kΩ | | | (726.0)kΩ | |
| 2.5 | 18.8kΩ | | | | |
| 2.55 | | | | 726.0kΩ | |
| 2.6 | | | | 302.0kΩ | |
| 2.65 | | | | 161.0kΩ | |
| 2.7 | | | | 90.6kΩ | |
| 2.75 | | | | 48.3kΩ | |
| 2.95 | | | | | (127.0)kΩ |
| 3.0 | | | | | (183.0)kΩ |
| 3.05 | | | | | (261.0)kΩ |
| 3.1 | | | | | (377.0)kΩ |
| 3.15 | | | | | (572.0)kΩ |
| 3.2 | | | | | (961.0)kΩ |
| 3.25 | | | | | (2.13)MΩ |
| 3.3 | | | | | |
| 3.35 | | | | | 1.23MΩ |
| 3.4 | | | | | 539.0kΩ |
| 3.45 | | | | | 309.0kΩ |
| 3.5 | | | | | 194.0kΩ |
| 3.55 | | | | | 126.0kΩ |
| 3.6 | | | | | 79.6kΩ |
| 3.65 | | | | | 46.8kΩ |

R1 = (Blue) R2 = Black

*Table 3*

| DC/DC CONVERTER ADJUSTMENT RESISTOR VALUES | | | | | |
|---|---|---|---|---|---|
| **Series Pt #** | | | | | |
| **AL Case** | | | | | |
| **24V Bus** | **PT3342** | | | **PT3343** | **PT3344** |
| **48V Bus** | **PT3322** | | | **PT3323** | **PT3324** |
| **CU Case** | | | | | |
| **24V Bus** | **PT4582** | | | **PT4583** | **PT4584** |
| **48V Bus** | **PT4562** | | **PT4571** | **PT4563** | **PT4564** |
| **Current** | **6Adc** | | **3.3Adc** | **2.5Adc** | **2.0Adc** |
| **$V_o$(nom)** | **5.0V** | | **9.0V** | **12.0V** | **15.0V** |
| **$V_a$(req'd)** | | **$V_a$(req'd)** | | | |
| 4.5 | (246.0)kΩ | 7.0 | (9.9)kΩ | | |
| 4.55 | (293.0)kΩ | 7.2 | (29.2)kΩ | | |
| 4.6 | (352.0)kΩ | 7.4 | (53.2)kΩ | | |
| 4.65 | (428.0)kΩ | 7.6 | (84.2)kΩ | | |
| 4.7 | (529.0)kΩ | 7.8 | (125.0)kΩ | | |
| 4.75 | (670.0)kΩ | 8.0 | (183.0)kΩ | | |
| 4.8 | (882.0)kΩ | 8.2 | (270.0)kΩ | | |
| 4.85 | (1.23)MΩ | 8.4 | (414.0)kΩ | | |
| 4.9 | (1.94)MΩ | 8.6 | (703.0)kΩ | | |
| 4.95 | | 8.8 | (1.57)MΩ | | |
| 5.0 | | 9.0 | | | |
| 5.05 | | 9.2 | 556.0kΩ | | |
| 5.1 | 566.0kΩ | 9.4 | 223.0kΩ | | |
| 5.15 | 337.0kΩ | 9.6 | 112.0kΩ | | |
| 5.2 | 223.0kΩ | 9.8 | 56.6kΩ | | |
| 5.25 | 154.0kΩ | 10.0 | 23.3kΩ | | |
| 5.3 | 108.0kΩ | • | | | |
| 5.35 | 75.3kΩ | 10.8 | | (285.0)kΩ | |
| 5.4 | 50.8kΩ | 11.0 | | (371.0)kΩ | |
| 5.45 | 31.7kΩ | 11.2 | | (500.0)kΩ | |
| 5.5 | 16.4kΩ | 11.4 | | (715.0)kΩ | |
| | | 11.6 | | (1.15)MΩ | |
| | | 11.8 | | | |
| | | 12.0 | | | |
| | | 12.2 | | 588.0kΩ | |
| | | 12.4 | | 249.0kΩ | |
| | | 12.6 | | 136.0kΩ | |
| | | 12.8 | | 78.9kΩ | |
| | | 13.0 | | 45.0kΩ | |
| | | 13.2 | | 22.3kΩ | |
| | | • | | | |
| | | 13.5 | | | (323.0)kΩ |
| | | 13.6 | | | (355.0)kΩ |
| | | 13.8 | | | (437.0)kΩ |
| | | 14.0 | | | (522.0)kΩ |
| | | 14.2 | | | (724.0)kΩ |
| | | 14.4 | | | (1010.0)kΩ |
| | | 14.6 | | | (1.58)MΩ |
| | | 14.8 | | | |
| | | 15.0 | | | |
| | | 15.2 | | | 607.0kΩ |
| | | 15.4 | | | 263.0kΩ |
| | | 15.6 | | | 149.0kΩ |
| | | 15.8 | | | 91.3kΩ |
| | | 16.0 | | | 56.9kΩ |
| | | 16.5 | | | 11.1kΩ |

R1 = (Blue) R2 = Black

# Using Remote On/Off on Power Trends' 30W Isolated DC-DC Converter Series

Power Trends' 30W isolated series of DC/DC converters incorporate a *Remote On/Off* function. This function may be used in applications for battery conservation, power-up/shutdown sequencing, or to co-ordinate the power-up of the regulator for active in-rush current control. (See TI application reports, SLTA021, and SLUA250).

The Remote On/Off function is provided by pin 2. If pin 2 is left open-circuit, the converter provides a regulated output whenever a valid source voltage [1] is applied between $+V_{in}$ (pins 7-9), and $-V_{in}$ (pins 4-6). Applying a low voltage [2], with respect to $-V_{in}$ (pin 2), disables the regulator output [3]. Table 1 details the control requirements for this input. Figure 1 shows how a discrete MOSFET ($Q_1$) may be referenced to the negative input voltage rail to control the Remote On/Off pin.

***Table 1 Remote On/Off Control Requirements [2]***

| Parameter | min | max | |
|---|---|---|---|
| Enable ($V_{IH}$) | 2.5V [5] | 15V | (or open circuit) [4] |
| Disable ($V_{IL}$) | –0.3V | 0.8V | |

**Notes:**

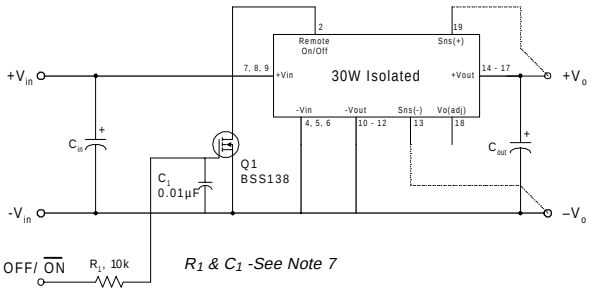
1. These converters incorporate an "Under Voltage Lockout" (UVLO) function. This function automatically holds the converter output in the "Off" state until there is sufficient input voltage for the converter to produce a regulated output. Table 2 gives the applicable UVLO thresholds.

***Table 2 UVLO Thresholds***

| Series | UVLO Threshold | $V_{in}$ Range |
|---|---|---|
| PT3320/4560 | 34 ±2.0V | 36 – 75V |
| PT3340/4580 | 16.5 ±1.5V | 18 – 60V |

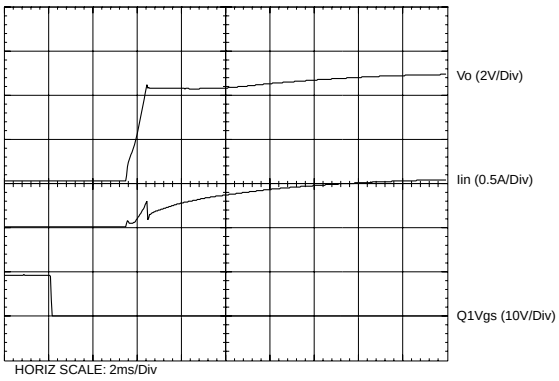
2. The Remote On/Off control pin uses $-V_{in}$ (pins 4-6) as its ground reference. All voltages specified are with respect to $-V_{in}$.
3. When the converter output is disabled the current drawn from the input supply is typically reduced to 8mA (16mA maximum).
4. The internal circuitry comprises of a high impedance (3µA -10µA) current source. The open-circuit voltage is less than 10V.
5. The Remote On/Off pin is ideally controlled using devices with an open-collector (or open-drain) output. A small low-leakage MOSFET (<100nA) is recommended. A pull-up resistor is not required, but may be necessary to ensure that the Remote On/Off pin exceeds $V_{IH}$(min) (see Table 1). *Do not* use a pull-up resistor to the $+V_{in}$ input, or drive the pin above $V_{IH}$(max).
6. Keep the on/off transition to less than 1ms. This prevents erratic operation of the ISR, whereby the output voltage may drift un-regulated between 0V and the rated output voltage during power-up.
7. In Figure 1, $Q_1$ is a low-threshold MOSFET. The components $R_1$ and $C_1$ are added to improve noise susceptibility.

***Figure 1***




**Turn-On Time:** When the Remote On/Off input is left open-circuit, the output of the converter is automatically enabled when a valid input voltage [1] is applied to the input power pins. The converter typically rises to full regulation within 30ms of the application of power (or after the release of the Remote On/Off pin with input power applied). The actual turn-on time will vary with the input voltage, output load, and the total amount of capacitance connected to the output. Using the circuit of Figure 1, Figure 2 shows the typical output voltage and input current waveforms for a PT3322/PT4562 after $Q_1$ is turned off. The turn off of $Q_1$ correlates with the fall of the $Q_1$ Vgs waveform. The waveforms were measured with a 48Vdc input voltage, and 5-A resistive load.

***Figure 2***



## VDE Approved Installation Instructions (Installationsanleitung)

| | | |
|---|---|---|
| Nennspannnug (Rated Voltage): | PT3320 36 to 72 Vdc, Transient to 75Vdc<br>PT3340 18 to 60 Vdc | |
| Nennaufnahme (Rated Input): | PT3320 1.5 Adc<br>PT3340 3.0 Adc | |
| Nennleistung (Rated Power): | 30 Watts Maximum | |
| Ausgangsspannung (Sec. Voltage): | PT3320 Series | PT3340 Series |
| | PT3321, 3.3 Vdc, 8.0 Adc | PT3341, 3.3 Vdc, 8.0 Adc |
| | PT3322, 5.0 Vdc, 6.0 Adc | PT3342, 5.0 Vdc, 6.0 Adc |
| Ausgangsstrom (Sec. Current): | PT3323, 12.0 Vdc, 2.5 Adc | PT3343,12.0 Vdc, 2.5 Adc |
| oder (or) | PT3324, 15.0 Vdc, 2.0 Adc | PT3344,15.0 Vdc, 2.0 Adc |
| Ausgangsleistung (Sec. Power): | PT3325, 2.0 Vdc, 8.0 Adc | |
| | PT3326, 2.5 Vdc, 8.0 Adc | |
| | PT3327, 1.8 Vdc, 8.0 Adc | |
| | PT3328, 5.2 Vdc, 6.0 Adc | |
| | PT3329, 6.0 Vdc, 5.0 Adc | |
| | PT3330, 8.0 Vdc, 3.75 Adc | |
| | PT3331, 9.0 Vdc, 3.3 Adc | |

Angabe der Umgebungstemperatur

(Information on ambient temperature): +85°C Ambient or 100°C Case Maximum

Besondere Hinweise (Special Instructions):

Es ist vorzusehen, daß die Spannungsversorgung in einer Endanwendung über eine isolierte Sekundaerschaltung bereit gestellt wird. Die Eingangspannung der Spannungsversorgungsmodule muss eine verstaerkte Isolierung von der Wechselstromquelle aufweisen.

Die Spannungsversorgung muss gemaess den Gehaeuse-, Montage-, Kriech- und Luftstrecken-, Markierungs- und Trennanforderungen der Endanwendung installiert werden. Bei Einsatz eines TNV-3-Einganges muss die SELV-Schaltung ordnungsgemaess geerdet werden.

(The power supply is intended to be supplied by isolated secondary circuitry in an end use application. The input power to these power supplies shall have reinforced insulation from the AC mains.

The power supply shall be installed in compliance with the enclosure, mounting, creepage, clearance, casualty, markings, and segregation requirements of the end-use application. When the input is TNV-3, the SELV circuitry must be reliably grounded.)

Offenbach,

**VDE Prüf- und Zertifizierungsinstitut**
Abteilung / *Department TD*

(Jürgen Bärwinkel)

Ort / *Place*: Datum / *Date*: 12/12/01

(Stempel und Unterschrift des Herstellers / Stamp and signature of the manufacturer)

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