

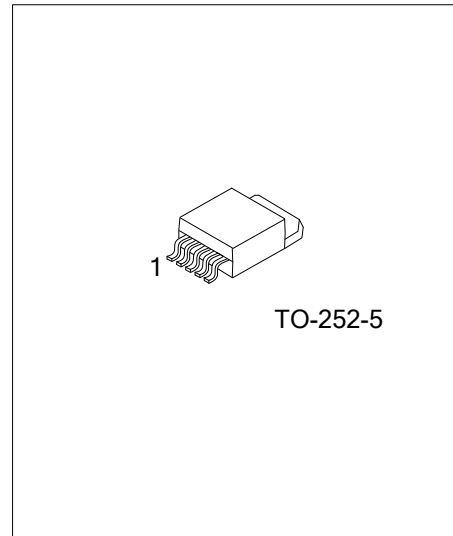


150KHz, 2A PWM BUCK DC/DC CONVERTER

DESCRIPTION

The UTC **P3576B** series are monolithic IC designed for a step-down DC/DC converter. The external shutdown function can be controlled by logic level and then come into standby mode. Regarding protected function, thermal shutdown is to prevent over temperature operating from damage, and current limit is against over current operating of the output switch. If current limit function occurs and V_{FB} is down, the switching frequency will be reduced.

The UTC **P3576B** series operates at a switching frequency of 150KHz thus allow smaller sized filter components than what would be needed with lower frequency switching regulators. The output fixed 5V.



FEATURES

- * Output load current: 2A
- * Operating voltage can be up to 40V
- * 150KHz fixed switching frequency.
- * Low power standby mode
- * High efficiency
- * Internal current and thermal limit
- * ON/OFF shutdown control input.
- * Short Circuit Protect (SCP).

ORDERING INFORMATION

| Ordering Number | | Package | Packing |
|------------------|------------------|----------|-----------|
| Lead Free | Halogen Free | | |
| P3576BL-xx-TN5-R | P3576BG-xx-TN5-R | TO-252-5 | Tape Reel |

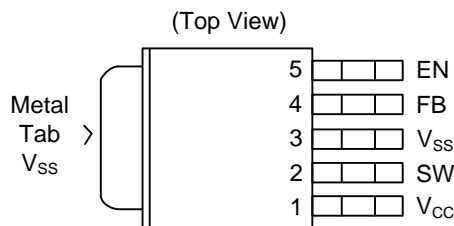
Note: xx: Output Voltage, Refer to Marking Information

| | |
|-------------------------|--|
| <p>P3576BG-xx-TN5-R</p> | <ul style="list-style-type: none"> (1) R: Tape Reel (2) TN5: TO-252-5 (3) xx: refer to Marking information (4) G: Halogen Free and Lead Free, L: Lead Free |
|-------------------------|--|

MARKING INFORMATION

| PACKAGE | VOLTAGE CODE | MARKING |
|----------|--------------|---|
| TO-252-5 | 50 : 5.0V | <p>UTC P3576B XX Voltage Code</p> <p>L: Lead Free G: Halogen Free Date Code Lot Code</p> <p>1 2 3 4 5</p> |

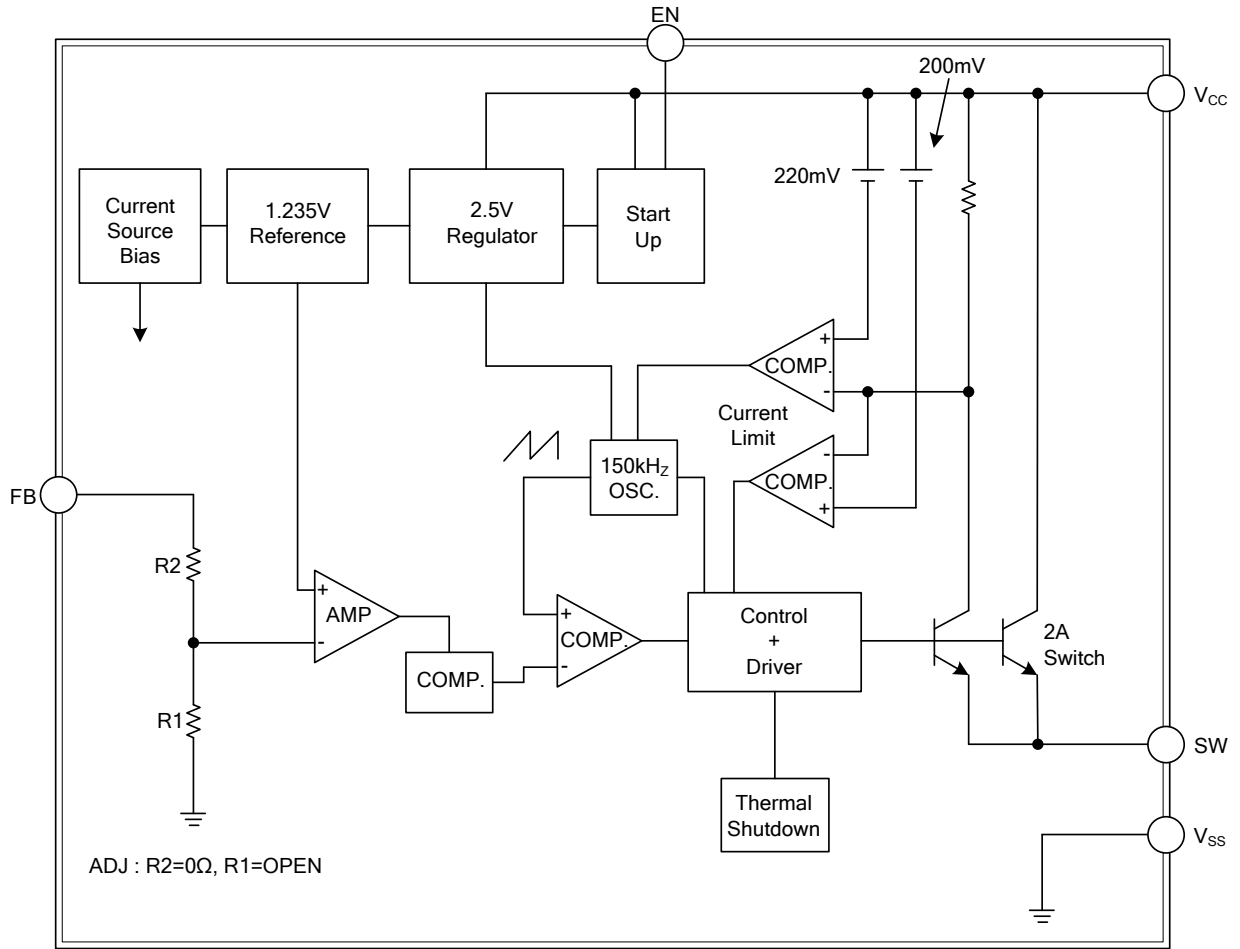
PIN CONFIGURATION



PIN DESCRIPTION

| PIN NO. | PIN NAME | DESCRIPTION |
|---------|-----------------|---------------------------------|
| 1 | V _{cc} | Operating voltage input |
| 2 | SW | Switching output |
| 3 | V _{ss} | GND pin |
| 4 | FB | Output voltage feedback control |
| 5 | EN | ON/OFF Shutdown |

■ BLOCK DIAGRAM



■ **ABSOLUTE MAXIMUM RATING** ($T_A=25^{\circ}\text{C}$, unless otherwise specified)

| PARAMETER | SYMBOL | RATINGS | UNIT |
|--------------------------|-----------|--------------------|--------------------|
| Supply Voltage | V_{CC} | +45 | V |
| ON/OFF Pin Input Voltage | V_{EN} | 40 | V |
| Feedback Pin Voltage | V_{FB} | 12 | V |
| Output Voltage to Ground | V_{OUT} | -0.8 | V |
| Operating Supply Voltage | V_{OP} | +4.5 ~ +40 | V |
| Power Dissipation | P_D | Internally Limited | W |
| Junction Temperature | T_J | +125 | $^{\circ}\text{C}$ |
| Operating Temperature | T_{OPR} | -40 ~ +125 | $^{\circ}\text{C}$ |
| Storage Temperature | T_{STG} | -65 ~ +150 | $^{\circ}\text{C}$ |

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

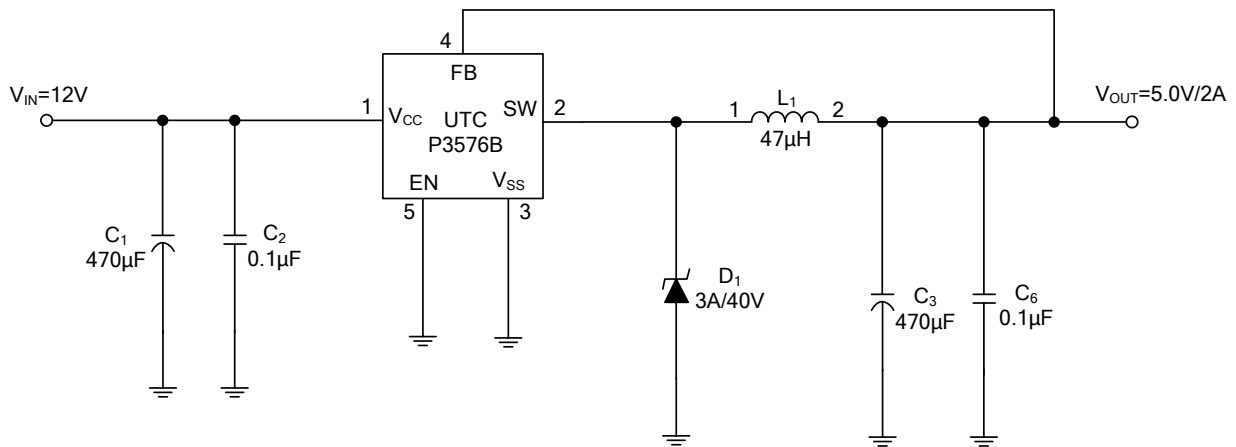
■ **THERMAL DATA**

| PARAMETER | SYMBOL | RATINGS | UNIT |
|---------------------|---------------|---------|----------------------|
| Junction to Ambient | θ_{JA} | 112 | $^{\circ}\text{C/W}$ |

■ **ELECTRICAL CHARACTERISTICS** ($T_A=25^{\circ}\text{C}$, unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|------------------------|--|--------------------------------------|-------|------|--------------------|
| Quiescent Current | I_Q | $V_{FB}=12\text{V}$ force driver off | | 4 | 8 | mA |
| Shutdown Supply Current | I_{SD} | EN pin=5V, $V_{CC}=40\text{V}$ | | 70 | 200 | μA |
| Oscillator Frequency | f_{OSC} | | 125 | 150 | 175 | KHz |
| Oscillator Frequency of Short Circuit Protect | f_{SCP} | $V_{OUT} < V_{OUT} \times 40\%$ | | 30 | | KHz |
| Duty Cycle | MAX | DC $V_{FB}=0\text{V}$ force driver ON | | 100 | | % |
| | MIN | | $V_{FB}=12\text{V}$ force driver OFF | | 0 | |
| Current Limit | I_{CL} | Pear current, No outside circuit $V_{FB}=0\text{V}$ force driver on | 2.5 | | | A |
| SW pin Leakage Current | SW pin=0V I_{SWL} | No outside circuit $V_{FB}=12\text{V}$ force driver off | | | -200 | μA |
| EN pin Logic Input Threshold Voltage | Low | V_{IL} regulator ON | | 1.3 | 0.6 | V |
| | High | V_{IH} regulator OFF | 2.0 | 1.3 | | V |
| EN pin Logic Input Current | I_H | $V_{EN}=2.5\text{V}$ (OFF) | | -0.1 | -10 | μA |
| EN pin Input Current | I_L | $V_{EN}=0.5\text{V}$ (ON) | | -0.01 | -1.5 | μA |
| Thermal shutdown Temp | TSD | | | 135 | | $^{\circ}\text{C}$ |

■ TYPICAL APPLICATION CIRCUIT



UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. UTC reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.