
Data Sheet

BIT3260

High Performance PWM Controller

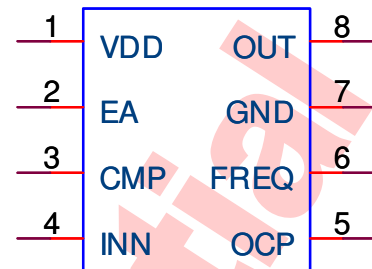
Version: A1

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Features:

- Voltage Mode PWM Controller
- 10V ~ 18V operation voltage
- Current limit
- Frequency adjustable
- Internal Soft-Start
- Maximum duty cycle output
- Over temperature protection, OTP
- Internal Under Voltage Lock Out, UVLO
- Totem Pole Output
- SOP-8 Package

Pin Layout:



General Description:

The BIT3260 is a high frequency PWM controller integrates required functions for boost conversion in a small SOP-8 package. A low 0.2V feedback voltage and over current protection make BIT3260 be an ideal controller for LED backlight supplies. Frequency adjustable is flexible in variable system design. Internal soft start function can avoid inrush current happened in the start up period. Over temperature protection and UVLO make system reliable. CMOS process greatly reduces the operating current when comparing to similar products

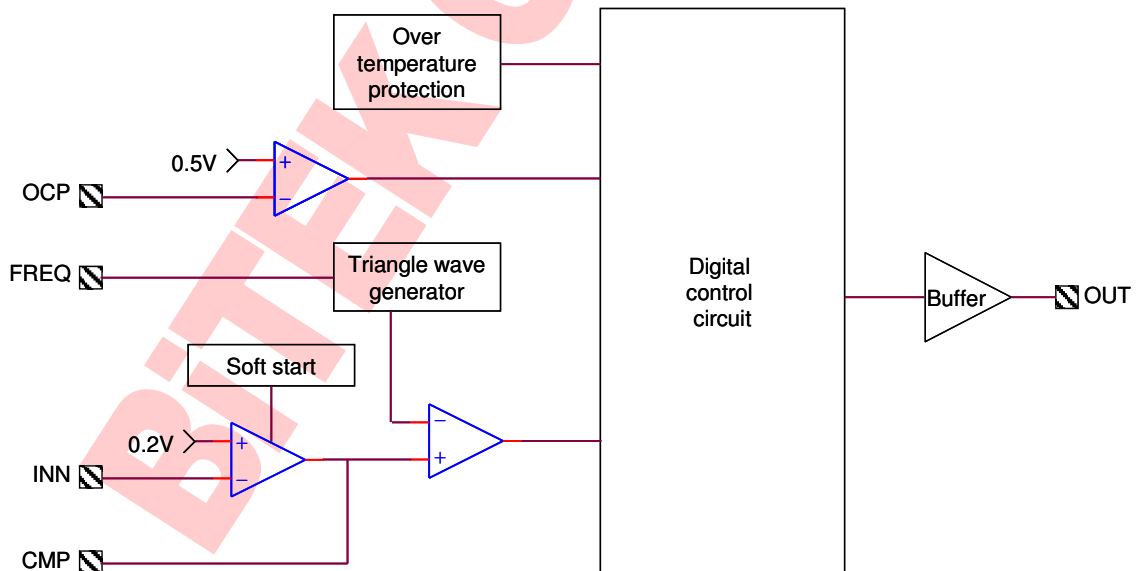
Recommended Operating Condition:

Supply Voltage.....10V ~ 18V
 Operating Frequency.....100kHz ~ 400kHz
 Operating Ambient Temperature.....-20 °C ~ 85 °C

Absolute Ratings

VDD.....-0.3 ~ +18 V
 GND.....±0.3 V
 Input Voltage.....-0.3 ~ VDD+0.3 V
 Operating Ambient Temperature.....-20 ~ 85 °C
 Operating Junction Temperature.....+150 °C
 Storage Temperature.....-55 ~ 150 °C

Functional Description:



Pin Description:

| Pin No. | Symbol | Descriptions |
|---------|--------|--|
| 1 | VDD | Power supply |
| 2 | EA | Enable pin |
| 3 | CMP | Output of the error amplifier |
| 4 | INN | The inverting input of the error amplifier |
| 5 | OCP | Over current protection |
| 6 | FREQ | Frequency control |
| 7 | GND | Ground pin |
| 8 | OUT | Output pin |

Functional Description:

Under Voltage Locked Out, UVLO:

The Under-voltage lockout turns-off BIT3260 if the input voltage drops below the under-voltage lockout threshold. It turns-on BIT3260 if the input voltage is higher than its threshold. The hysteresis voltage is about 100mV.

Enable control:

The EA pin controls the state of BIT3260. When $EA \geq 2V$, BIT3260 is enabled. And $EA \leq 0.8V$, BIT3260 enters into shutdown mode operation.

The PWM generator:

The pulse width modulation control circuit includes a reference voltage, an error amplifier, a ramp wave generator, and a comparator. A signal input to the INN pin is compared with reference voltage in the error amplifier, there will be an error signal output in the error amplifier. This error signal can be modulated into PWM signal in the comparator output when it compares to ramp wave signal in the comparator.

Frequency adjustable:

To connect a resistor here in the FREQ pin can set different output frequency. The formula is as following:

$$Freq.(kHz) = \frac{7023}{R(k\Omega)}$$

Where R is the resistor connected in FREQ pin.

Internal soft-start

Built-in soft-start function is controlled by FREQ pin. To connect an about 21kΩ will set an about 12ms soft start time.

Over current protection, OCP:

The power switch will pass through too many current when abnormal conditions happened. BIT3260 will shut off its output if the OCP pin senses a over current signal. The shut off status can be reset by reducing the signal input to OCP.

Over Temperature Protection, OTP

BIT3260 provides over temperature protection that is more reliable for system protection. When the operation temperature is too high, BIT3260 will shut off its output. When the temperature of the die drops below the threshold, recovered, BIT3260 will automatically recover to work again.

DC/AC Characteristics:

Ta=25°C unless otherwise specified.

| Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--|------------------------------------|------|------|------|------|
| Supply voltages | | | | | |
| Pin VDD input | | 10 | | 18 | V |
| Under voltage lock out | | | | | |
| Positive Going Threshold | | | 9 | | V |
| Hysteresis | | | 0.1 | | V |
| Chip consumed current | VDD=12V supply voltage | | 2 | | mA |
| Enable control | | | | | |
| ON | VDD=12V | 2 | | | V |
| OFF | VDD=12V | | | 0.8 | V |
| Error amplifier reference voltage | | | | | |
| Non-Inverting input of the error amplifier | VDD=12V, measure INN | | 0.2 | | V |
| Operating frequency | | | | | |
| Operating frequency range | VDD=12V | 100 | | 400 | KHz |
| Frequency precision | VDD=12V, FREQ=22kΩ | 288 | 320 | 352 | KHz |
| Error amplifier | | | | | |
| Open loop gain | Note1 | | 80 | | dB |
| Unit gain band width | | | 1 | | MHz |
| Over current protection, OCP | | | | | |
| OCP voltage | VDD=12V | | 0.5 | | V |
| Over temperature protection, OTP | | | | | |
| Over temperature protection, OTP | VDD=12V | | 150 | | °C |
| hysteresis | VDD=12V | | 50 | | °C |
| Soft start | | | | | |
| Soft start time | VDD=12V, FREQ=22kΩ | | 12 | | ms |
| Output drive | | | | | |
| Rising Time | VDD=12V, C _{load} =1000pF | | 20 | | nS |
| Falling Time | | | 20 | | nS |

Note 1. Only guaranteed by simulation or sampled evaluation during -20~+85°C. Not 100% tested.

Soldering Information

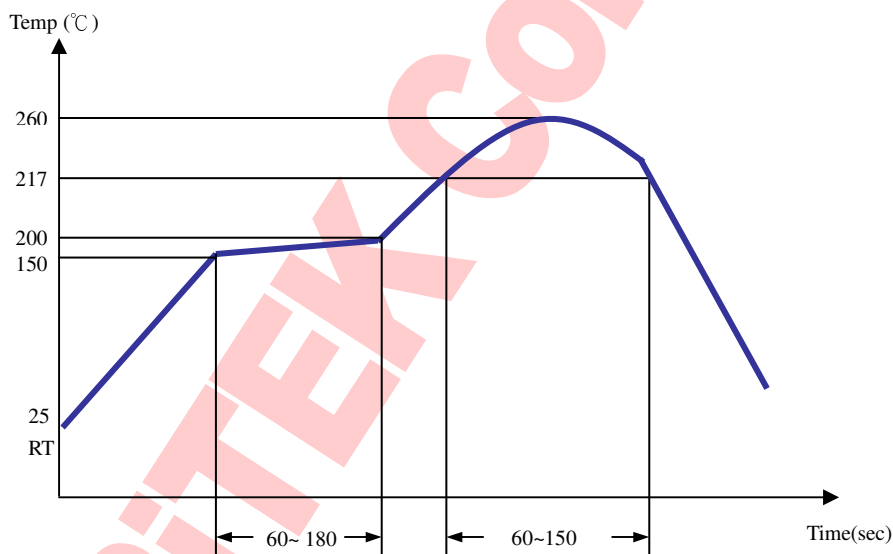
Reflow Soldering:

The choice of heating method may be influenced by plastic QFP package). If infrared or vapor phase heating is used and the package is not absolutely dry (less than 0.1% moisture content by weight), vaporization of the small amount of moisture in them can cause cracking of the plastic body. Preheating is necessary to dry the paste and evaporate the binding agent. Preheating duration: 45 minutes at 45 °C.

Reflow soldering requires solder paste (a suspension of fine solder particles, flux and binding agent) to be applied to the printed-circuit board by screen printing, stenciling or pressure-syringe dispensing before package placement. Several methods exist for reflowing; for example, convection or convection/infrared heating in a conveyor type oven. Throughput times (preheating, soldering and cooling) vary between 100 and 200 seconds depending on heating method.

Typical reflow peak temperatures range from 215 to 270 °C depending on solder paste material. The top-surface temperature of the packages should preferable be kept below 245 °C for thick/large packages (packages with a thickness ≥ 2.5 mm or with a volume ≥ 350 mm³ so called thick/large packages). The top-surface temperature of the packages should preferable be kept below 260 °C for thin/small packages (packages with a thickness < 2.5 mm and a volume < 350 mm³ so called thin/small packages).

| Stage | Condition | Duration |
|------------------|------------------|------------|
| 1'st Ram Up Rate | max3.0+/-2°C/sec | - |
| Preheat | 150°C ~200°C | 60~180 sec |
| 2'nd Ram Up | max3.0+/-2°C/sec | - |
| Solder Joint | 217°C above | 60~150 sec |
| Peak Temp | 260 +0/-5°C | 20~40 sec |
| Ram Down rate | 6°C/sec max | - |



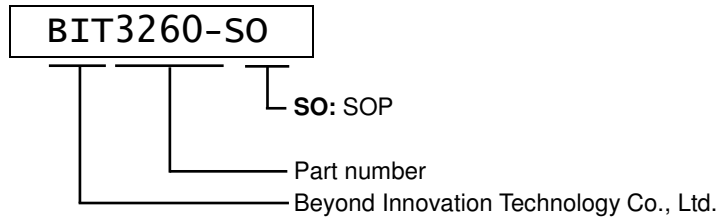
Wave Soldering:

Conventional single wave soldering is not recommended for surface mount devices (SMDs) or printed-circuit boards with a high component density, as solder bridging and non-wetting can present major problems.

Manual Soldering:

Fix the component by first soldering two diagonally-opposite end leads. Use a low voltage (24 V or less) soldering iron applied to the flat part of the lead. Contact time must be limited to 10 seconds at up to 300 °C. When using a dedicated tool, all other leads can be soldered in one operation within 2 to 5 seconds between 270 and 320 °C.

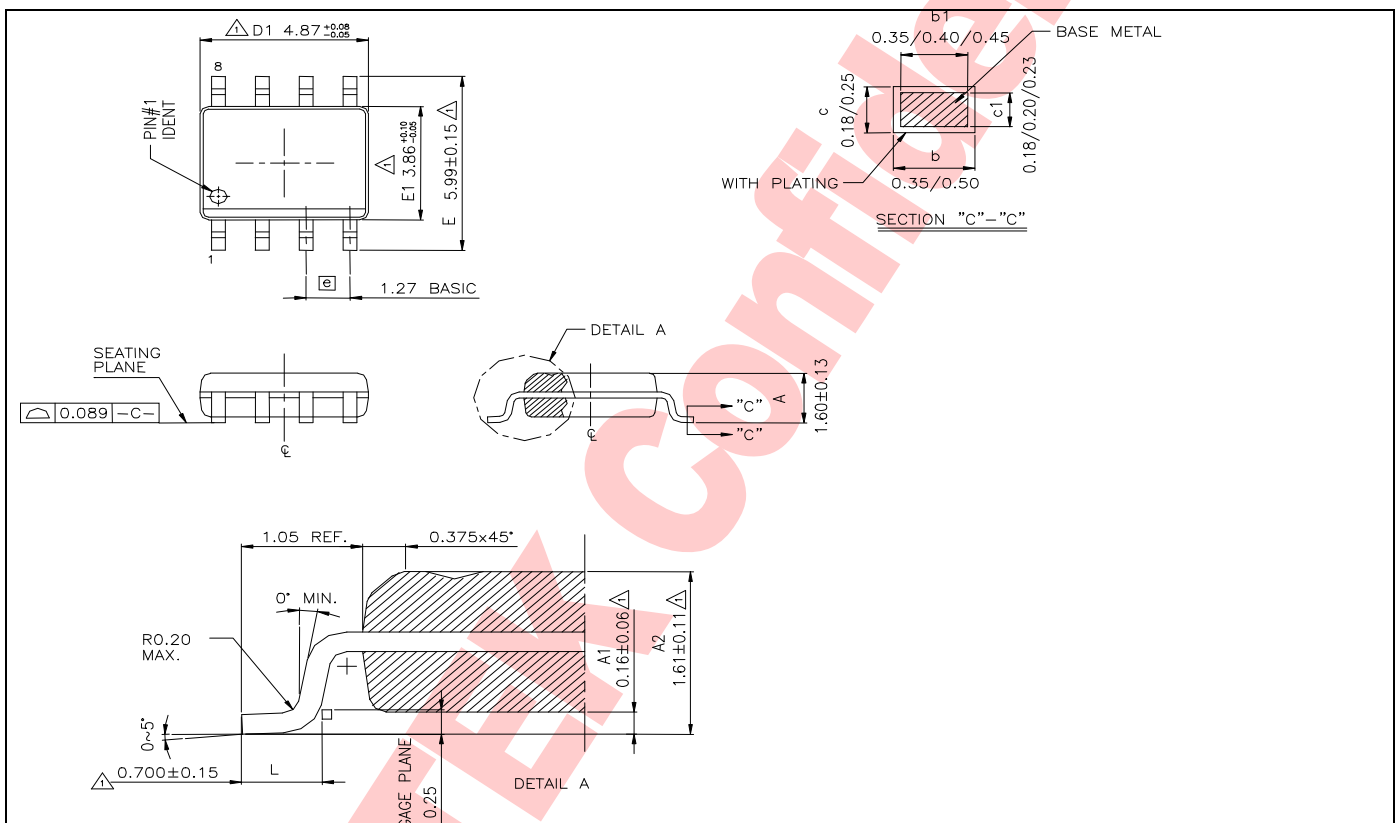
Order Information:



Package Information :

Unit: mm

SOP type :



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