

1.25A High Current Low Dropout Voltage Regulator for Convert 5V & 3.3V

LM3940

Description

The Bay Linear LM3940 is a 1.25A high accuracy, low dropout voltage regulator with only 40mV at light loads and 350mV(Typ.)@ 1.0A) and low quiescent current of 240µA typical.

The LM3940 is designed for low voltage a application that requires lower dropout voltage and faster transient response. This device is an excellent choice for use in powering low voltage applications where require a lower dropout, faster transient response to regulate from +2.5V to 3.8V supplies and as a post regulator for switching supplies applications.

The LM3940 offers full protection against over-current faults, reversed input polarity, reversed load insertion, and positive and negative transient voltage. On-Chip trimming adjusts the reference voltage to 1%.

The LM3940 are offered in a 3-pin SOT-223, TO-220 & TO-263 package compatible with other 3 terminal regulators. The LM3940 is also offer in a new LPDD (Low Profile TO-263) package from 4.47 mm (DD) tickness down to only 1.27 mm (LPDD) total tickness.

Features

- **High output accuracy of 1%**
- **Fix Output 5.0v & 3.3V**
- **Output Current of 1.25A**
- **Low Dropout Voltage**
- **Low quiescent current**
- **Extremely Tight Load & Line Regulation**
- **Reverse-battery and “Load Dump” Protection**
- **Zero Current Shutdown Mode (5-pin version)**
- **Offer in TO-263, TO-252, TO-220, SOT-223, & New Slim LPDD**
- **Similar to industry Standard LM3940**

Applications

- **Powering VGA & Sound Card**
- **LCD Monitor**
- **Battery Powered Equipments/Laptop & Notebook**
- **SMPS Post Regulator / DC to DC Modules**
- **High Efficiency Linear Power Supply**
- **Adjustable Power Supply**
- **Bar Code Scanners**

Pin Connection

Ordering Information

| Devices | Package | Temp. |
|---------|-----------|------------------|
| LM3940T | TO-220-3 | -40 °C to 125 °C |
| LM3940S | TO-263-3 | -40 °C to 125 °C |
| LM3940D | TO-252 | -40 °C to 125 °C |
| LM3940N | SOT-223-3 | -40 °C to 125 °C |
| LM3940J | LPDD-3 | -40 °C to 125 °C |

ABSOLUTE MAXIMUM RATINGS

Lead Temp. (Soldering, 5 Seconds).....260°C
 Storage Temperature Range..... -65° to +150°C
 Operating Junction Temperature Range
 LM3940 Control Section..... -45°C +125°C
 LM3940 Power Transistor.....-45°C +150°C

Input Voltage26V
 Maximum Output Current.....3.5A
 Input Supply Voltage (Survival)..... -20V to +60V

ELECTRICAL CHARACTERISTICS $I_{OUT} = 5mA, V_{IN} = V_{OUT} + 1V, I_L = 1250mA, C_L = 10\mu F, T_a = 25^\circ C$, unless otherwise specified.

| PARAMETER | CONDITIONS | Typ | LM3940 | | Units |
|--|---|-------------------|-----------------------|-----------------------|---------------|
| | | | Min | Max | |
| Output Voltage | $5mA \leq I_L \leq 1.25A$ | 3.3 3.3 | 3.267 3.234 | 3.330 3.366 | V |
| Output Voltage | $5mA \leq I_L \leq 1.25A$ | 5.0 5.0 | 4.95 4.90 | 5.05 5.10 | V |
| Line Regulation | $I_O = 5mA, 4.5V \leq V_{IN} \leq 5.5V$ | 20 | | 40 | mV |
| Load Regulation | $50mA \leq I_{OUT} \leq 1.25A$ | 35 | | 50 | mV |
| Dropout Voltage | $I_O = 5mA$ | 120 | | 180 | mV |
| | $I_O = 1000mA$ | 400 | | 600 | |
| | $I_O = 1250mA$ | 500 | | 800 | |
| Quiescent Current | $I_O = 5mA, V_{IN} = V_{OUT} + 1V$ | 240 | | 350 | μA |
| | $I_O = 1000mA, V_{IN} = V_{OUT} + 1V$ | 22 | | 35 | mA |
| | $I_O = 1.25A$ | 35 | | 70 | |
| Short Circuit Current | $R_L = 0$ | 1.7 | 1.2 | | A |
| Current Limit | $V_{OUT} = 0V$ (Note 4) | 1.7 | 1.5 | | A |
| Output Noise Voltage (10Hz to 100kHz) | $C_L = 10\mu F$ | 400 | | | μV_{RMS} |
| | $I_L = 100mA, C_L = 33\mu F$ | 260 | | | |

BLOCK DIAGRAM

Advance Information- These data sheets contain descriptions of products that are in development. The specifications are based on the engineering calculations, computer simulations and/or initial prototype evaluation.

Preliminary Information- These data sheets contain minimum and maximum specifications that are based on the initial device characterizations. These limits are subject to change upon the completion of the full characterization over the specified temperature and supply voltage ranges.

The application circuit examples are only to explain the representative applications of the devices and are not intended to guarantee any circuit design or permit any industrial property right to other rights to execute. Bay Linear takes no responsibility for any problems related to any industrial property right resulting from the use of the contents shown in the data book. Typical parameters can and do vary in different applications. Customer's technical experts must validate all operating parameters including "Typical" for each customer application.

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