

**1A LOW DROPOUT POSITIVE
 FIXED 2.5V REGULATOR**

FEATURES

- Guaranteed < 1.3V Dropout at Full Load Current
- Fast Transient Response
- 1% Voltage Reference Initial Accuracy
- Built-In Thermal Shutdown
- Available in SOT-223, D-Pak, Ultra Thin-Pak and 8-Pin SOIC Surface-Mount Packages

APPLICATIONS

- Low Voltage IC Supply Applications
- PC Clock Supply Voltage

DESCRIPTION

The IRU1010-25 is a low dropout three-terminal fixed output regulator with minimum of 1A output current capability. This product is specifically designed to provide well regulated supply for low voltage IC applications as well as generating clock supply for PC applications. The IRU1010-25 is guaranteed to have <1.3V dropout at full load current making it ideal to provide well regulated with 3.8V input supply. The IRU1010-25 is specifically designed to be stable with low cost aluminum capacitors while maintaining stability with low ESR tantalum caps.

TYPICAL APPLICATION

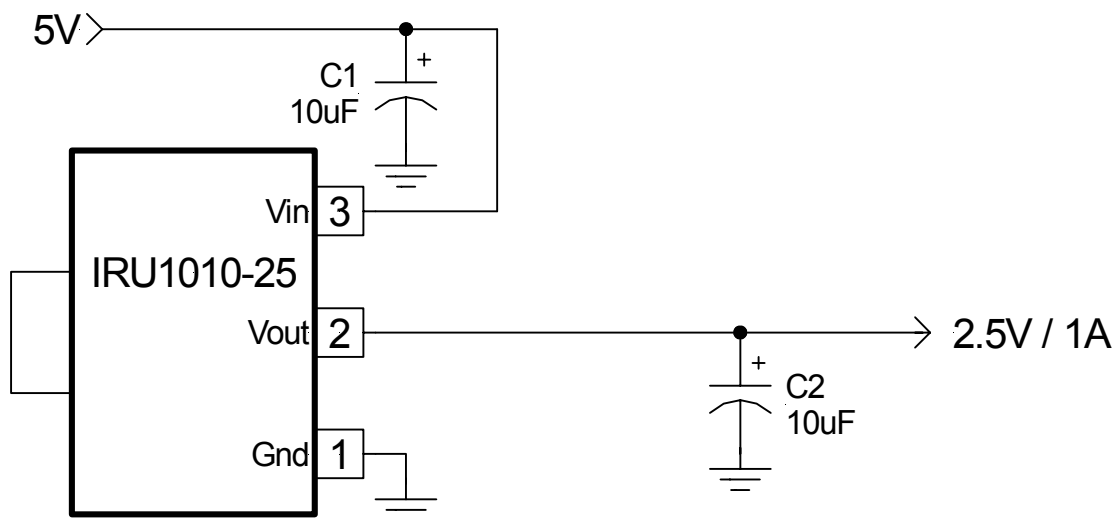


Figure 1 - Typical application of IRU1010-25 in a 5V to 2.5V regulator

PACKAGE ORDER INFORMATION

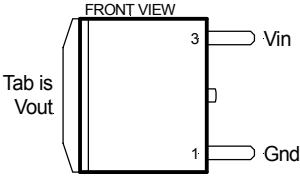
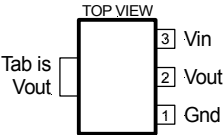
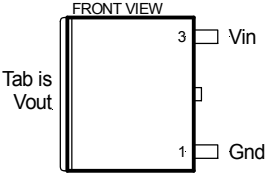
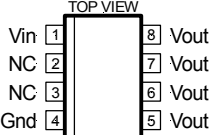
| Tj (°C) | 2-PIN PLASTIC TO-252 (D-Pak) | 3-PIN PLASTIC SOT-223 (Y) | 2-PIN PLASTIC Ultra Thin-Pak (P) | 8-PIN PLASTIC SOIC (S) |
|----------|---------------------------------|------------------------------|-------------------------------------|---------------------------|
| 0 To 150 | IRU1010-25CD | IRU1010-25CY | IRU1010-25CP | IRU1010-25CS |

IRU1010-25

ABSOLUTE MAXIMUM RATINGS

| | |
|--|--------------------|
| Input Voltage (Vin) | 7V |
| Power Dissipation | Internally Limited |
| Storage Temperature Range | -65°C To 150°C |
| Operating Junction Temperature Range | 0°C To 150°C |

PACKAGE INFORMATION

| 2-PIN PLASTIC TO-252 (D-Pak) | 3-PIN PLASTIC SO-223 (Y) | 2-PIN ULTRA THIN-PAK (P) | 8-PIN PLASTIC SOIC (S) |
|---|---|--|--|
|  <p>FRONT VIEW</p> <p>Tab is Vout</p> <p>3 Vin</p> <p>1 Gnd</p> <p>$\theta_{JA}=70^{\circ}\text{C/W}$ for 0.5" Sq pad</p> |  <p>TOP VIEW</p> <p>Tab is Vout</p> <p>3 Vin</p> <p>2 Vout</p> <p>1 Gnd</p> <p>$\theta_{JA}=90^{\circ}\text{C/W}$ for 0.4" Sq pad</p> |  <p>FRONT VIEW</p> <p>Tab is Vout</p> <p>3 Vin</p> <p>1 Gnd</p> <p>$\theta_{JA}=70^{\circ}\text{C/W}$ for 0.5" Sq pad</p> |  <p>TOP VIEW</p> <p>Vin 1</p> <p>NC 2</p> <p>NC 3</p> <p>Gnd 4</p> <p>8 Vout</p> <p>7 Vout</p> <p>6 Vout</p> <p>5 Vout</p> <p>$\theta_{JA}=55^{\circ}\text{C/W}$ for 1" Sq pad</p> |

ELECTRICAL SPECIFICATIONS

Unless otherwise specified, these specifications apply over $C_{in}=1\mu\text{F}$, $V_{in}=5\text{V}$, $C_{out}=10\mu\text{F}$ and $T_j=0$ to 125°C . Typical values refer to $T_j=25^{\circ}\text{C}$.

| PARAMETER | SYM | TEST CONDITION | MIN | TYP | MAX | UNITS |
|--------------------------|-------|---|----------------|----------------|----------------|---------|
| Output Voltage | V_o | $I_o=10\text{mA}$, $T_j=25^{\circ}\text{C}$ $I_o=10\text{mA}$ | 2.475 2.450 | 2.500 2.500 | 2.525 2.550 | V |
| Line Regulation | | $I_o=10\text{mA}$, $4.75\text{V}<V_{in}<7\text{V}$ | | | 7 | mV |
| Load Regulation (Note 1) | | $10\text{mA}<I_o<1\text{A}$ | | | 17 | mV |
| Dropout Voltage (Note 2) | | $I_o=1\text{A}$ | | | 1.3 | V |
| Current Limit | | $dV_o=100\text{mV}$ | 1.1 | | | A |
| Thermal Regulation | | 30ms Pulse, $I_o=1\text{A}$ | | 0.01 | 0.02 | %/W |
| Ripple Rejection | | $f=120\text{Hz}$, $C_o=25\mu\text{F}$ Tantalum, $I_o=0.5\text{A}$ | 60 | 70 | | dB |
| Temperature Stability | | $I_o=10\text{mA}$ | | 0.5 | | % |
| Long Term Stability | | $T_j=125^{\circ}\text{C}$, 1000Hrs | | 0.3 | 1 | % |
| RMS Output Noise | | $T_j=25^{\circ}\text{C}$, $10\text{Hz}<f<10\text{KHz}$ | | 0.003 | | % V_o |

Note 1: Low duty cycle pulse testing with Kelvin connections is required in order to maintain accurate data.

Note 2: Dropout voltage is defined as the minimum differential voltage between V_{in} and V_{out} required to maintain regulation at V_{out} . It is measured when the output voltage drops 1% below its nominal value.

PIN DESCRIPTIONS

| PIN# | PIN SYMBOL | PIN DESCRIPTION |
|------|------------|--|
| 1 | Gnd | Ground pin. This pin must be connected to ground plane using a low inductance short connection. |
| 2 | Vout | The output of the regulator. This pin is also connected to the tab of the package. An output capacitor must be connected to this pin to insure stability of the regulator. |
| 3 | Vin | Input pin of the regulator. |

BLOCK DIAGRAM

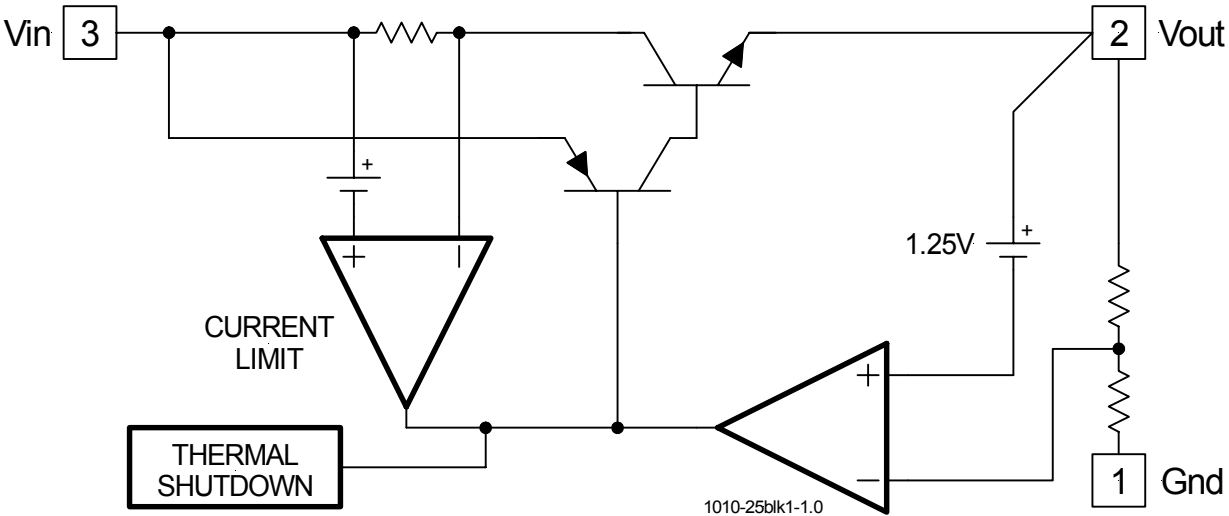


Figure 2 - Simplified block diagram of the IRU1010-25

International
IOR Rectifier

IR WORLD HEADQUARTERS : 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105
TAC Fax: (310) 252-7903

Visit us at www.irf.com for sales contact information.
Data and specifications subject to change without notice. 02/01