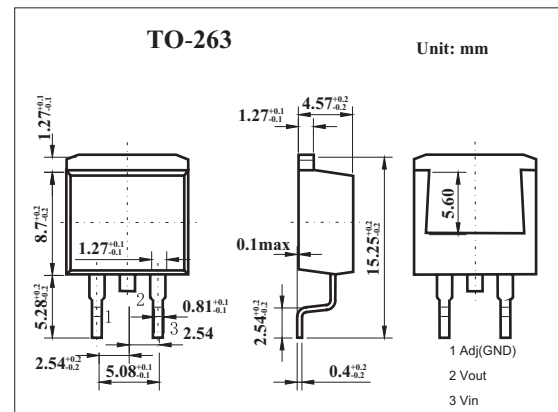


## 1A Low Dropout Positive Adjustable or Fixed-Mode Regulator KMB1117(LMB1117)

### ■ Features

- 1.4V maximum dropout at full load current
- Fast transient response
- Output current limiting
- Built-in thermal shutdown
- Good noise rejection
- 3-Terminal Adjustable or Fixed 1.5V, 1.8V, 1.9V, 2.5V, 3.3V, 5.0V

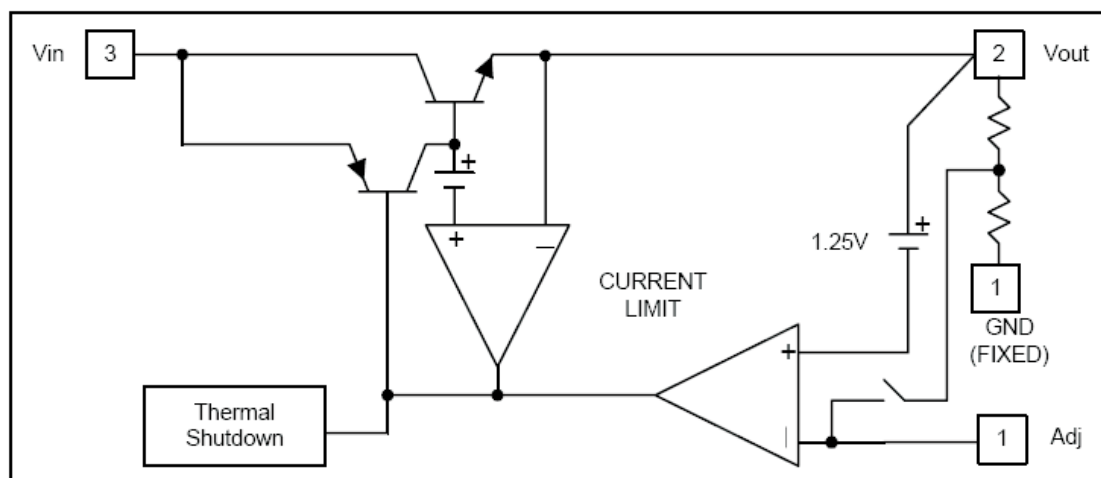


### ■ Absolute Maximum Ratings Ta = 25°C

| Parameter                              | Symbol          | Rating             | Unit |
|----------------------------------------|-----------------|--------------------|------|
| DC Supply Voltage                      | V <sub>in</sub> | -0.3 to 12         | V    |
| Power Dissipation                      | P <sub>D</sub>  | Internally Limited |      |
| Thermal Resistance Junction-to-Ambient | θ <sub>JA</sub> | 85                 | °C/W |
| Thermal Resistance Junction-to-Case *  | θ <sub>JC</sub> | 0.65/2.7           | °C/W |
| Operating Junction Temperature Range   | T <sub>OP</sub> | 0 to +150          | °C   |
| Storage Temperature                    | T <sub>ST</sub> | -65 to +150        | °C   |

\* Control Circuitry/Power Transistor

### ■ Block Diagram



**KMB1117(LMB1117)**

## ■ Electrical Characteristics Ta = 25℃

| Parameter                                            |                                                                | Testconditions                                                                             | Min   | Typ   | Max   | Unit |
|------------------------------------------------------|----------------------------------------------------------------|--------------------------------------------------------------------------------------------|-------|-------|-------|------|
| Reference Voltage                                    | KMB1117-ADJ                                                    | T <sub>J</sub> =25℃, (V <sub>IN</sub> -V <sub>OUT</sub> )=1.5V, I <sub>O</sub> =10mA       | 1.225 | 1.250 | 1.275 | V    |
| Output Voltage                                       | KMB1117-1.5                                                    | I <sub>OUT</sub> = 10mA, T <sub>J</sub> = 25℃, 3V ≤ V <sub>IN</sub> ≤ 12V                  | 1.470 | 1.500 | 1.530 | V    |
|                                                      | KMB1117-1.8                                                    | I <sub>OUT</sub> = 10mA, T <sub>J</sub> = 25℃, 3.3V ≤ V <sub>IN</sub> ≤ 12V                | 1.764 | 1.800 | 1.836 | V    |
|                                                      | KMB1117-1.9                                                    | I <sub>OUT</sub> = 10mA, T <sub>J</sub> = 25℃, 3.3V ≤ V <sub>IN</sub> ≤ 12V                | 1.862 | 1.900 | 1.938 | V    |
|                                                      | KMB1117-2.5                                                    | I <sub>OUT</sub> = 10mA, T <sub>J</sub> = 25℃, 4V ≤ V <sub>IN</sub> ≤ 12V                  | 2.450 | 2.500 | 2.550 | V    |
|                                                      | KMB1117-3.3                                                    | I <sub>OUT</sub> = 10mA, T <sub>J</sub> = 25℃, 4.8V ≤ V <sub>IN</sub> ≤ 12V                | 3.235 | 3.300 | 3.365 | V    |
|                                                      | KMB1117-5.0                                                    | I <sub>OUT</sub> = 10mA, T <sub>J</sub> = 25℃, 6.5V ≤ V <sub>IN</sub> ≤ 12V                | 4.900 | 5.000 | 5.100 | V    |
| Line Regulation                                      | KMB1117-XXX                                                    | I <sub>O</sub> =10mA, V <sub>OUT</sub> +1.5V < V <sub>IN</sub> < 12V, T <sub>J</sub> =25℃  |       |       | 0.2   | %    |
| Load Regulation                                      | KMB1117-ADJ                                                    | V <sub>IN</sub> =3.3V, V <sub>adj</sub> =0, 0mA < I <sub>O</sub> < 1A, T <sub>J</sub> =25℃ |       |       | 1     | %    |
|                                                      | KMB1117-1.5                                                    | V <sub>IN</sub> =3V, 0mA < I <sub>O</sub> < 1A, T <sub>J</sub> =25℃                        |       | 12    | 15    | mV   |
|                                                      | KMB1117-1.8                                                    | V <sub>IN</sub> =3.3V, 0mA < I <sub>O</sub> < 1A, T <sub>J</sub> =25℃                      |       | 15    | 18    | mV   |
|                                                      | KMB1117-1.9                                                    | V <sub>IN</sub> =3.3V, 0mA < I <sub>O</sub> < 1A, T <sub>J</sub> =25℃                      |       | 16    | 19    | mV   |
|                                                      | KMB1117-2.5                                                    | V <sub>IN</sub> =4V, 0mA < I <sub>O</sub> < 1A, T <sub>J</sub> =25℃                        |       | 20    | 25    | mV   |
|                                                      | KMB1117-3.3                                                    | V <sub>IN</sub> =5V, 0mA ≤ I <sub>O</sub> ≤ 1A, T <sub>J</sub> =25℃                        |       | 26    | 33    | mV   |
|                                                      | KMB1117-5.0                                                    | V <sub>IN</sub> =8V, 0mA ≤ I <sub>O</sub> ≤ 1A, T <sub>J</sub> =25℃                        |       | 40    | 50    | mV   |
| Dropout Voltage (V <sub>IN</sub> -V <sub>OUT</sub> ) | KMB1117-XXX                                                    | I <sub>OUT</sub> = 1A, ΔV <sub>OUT</sub> =0.1%V <sub>OUT</sub>                             |       | 1.3   | 1.4   | V    |
| Current Limit                                        | KMB1117-XXX                                                    | (V <sub>IN</sub> -V <sub>OUT</sub> ) = 5V                                                  | 1.1   |       |       | A    |
| Minimum Load Current                                 | KMB1117-XXX                                                    | 0℃ ≤ T <sub>J</sub> ≤ 125℃                                                                 |       | 5     | 10    | mA   |
| Thermal Regulation                                   |                                                                | T <sub>A</sub> =25℃, 30ms pulse                                                            |       | 0.008 | 0.04  | %/W  |
| Ripple Rejection                                     | F=120Hz, C <sub>OUT</sub> =25uF Tantalum, I <sub>OUT</sub> =1A |                                                                                            |       |       |       |      |
|                                                      | KMB1117-XXX                                                    | V <sub>IN</sub> =V <sub>OUT</sub> +3V                                                      |       | 60    | 70    | dB   |
| Temperature Stability                                |                                                                | I <sub>O</sub> =10mA                                                                       |       | 0.5   |       | %    |

**KMB1117(LMB1117)**

## ■ Typical Characteristics

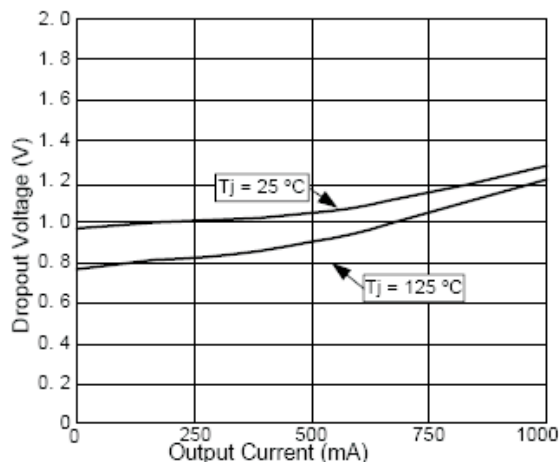


Fig.1 Dropout Voltage vs Output Current

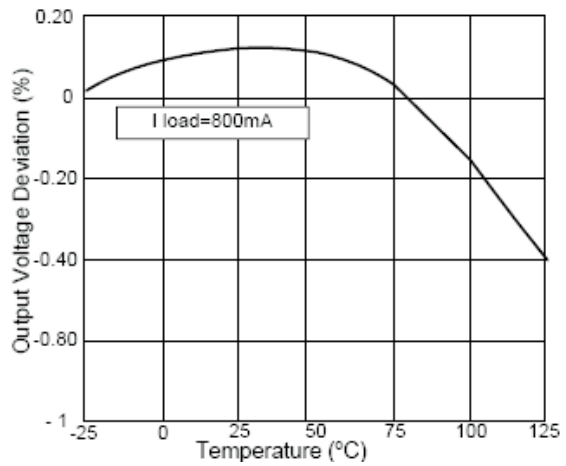


Fig.2 Load Regulation vs Temperature

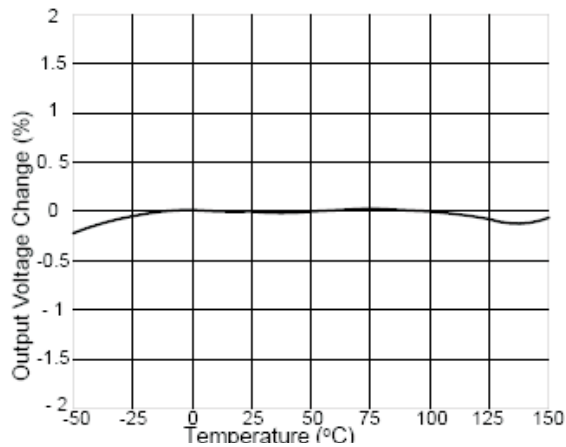


Fig.3 Percent Change in Output Voltage vs Temperature

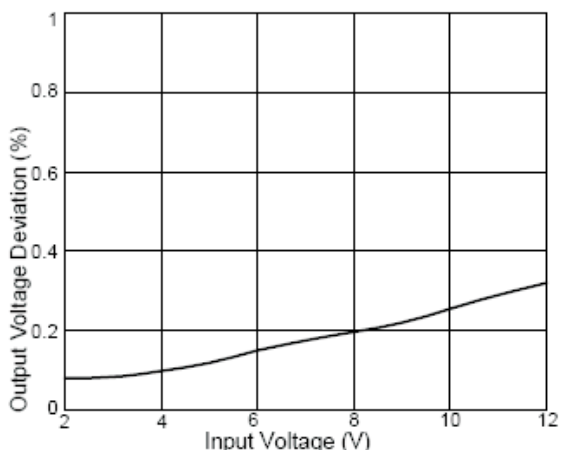


Fig.4 Line Regulation

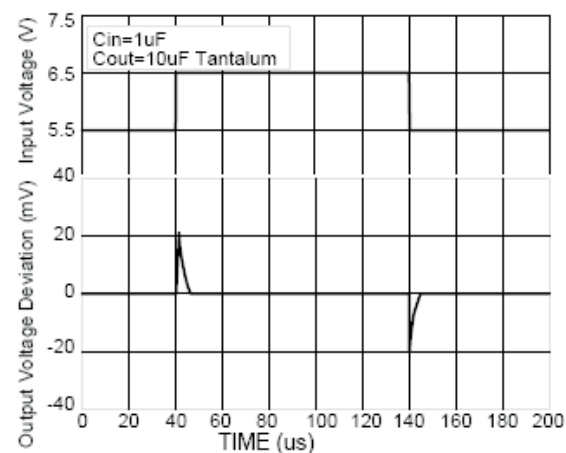


Fig.5 Line Transient Response

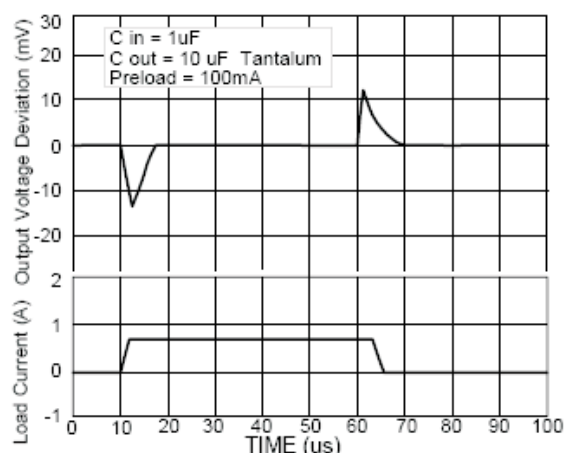


Fig.6 Load Transient Response