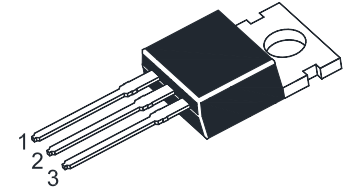


### 3-Terminal 1 A Positive Voltage Regulator

#### Features

- Output Current up to 1 A
- Thermal Overload Protection
- Short Circuit Protection
- Output Transistor Safe Operating Area Protection



1. Input 2. Common 3. Output  
TO-220FB Plastic Package

#### Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

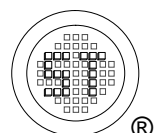
| Parameter                         | Symbol          | Value         | Units              |
|-----------------------------------|-----------------|---------------|--------------------|
| Input Voltage                     | $V_I$           | 35            | V                  |
| Thermal Resistance Junction-Cases | $R_{\theta JC}$ | 5             | $^\circ\text{C/W}$ |
| Thermal Resistance Junction-Air   | $R_{\theta JA}$ | 65            | $^\circ\text{C/W}$ |
| Operating Temperature Range       | $T_{Opr}$       | 0 to + 125    | $^\circ\text{C}$   |
| Storage Temperature Range         | $T_{stg}$       | - 65 to + 150 | $^\circ\text{C}$   |

#### Electrical Characteristics

( $0^\circ\text{C} < T_J < 125^\circ\text{C}$ ,  $I_O = 500\text{ mA}$ ,  $V_I = 10\text{ V}$ ,  $C_I = 0.33\text{ }\mu\text{F}$ ,  $C_O = 0.1\text{ }\mu\text{F}$ , unless otherwise specified)

| Parameter                     | Symbol                  | Conditions                                                         | Min. | Typ. | Max. | Unit                 |
|-------------------------------|-------------------------|--------------------------------------------------------------------|------|------|------|----------------------|
| Output Voltage                | $V_O$                   | $T_J = + 25^\circ\text{C}$                                         | 4.8  | 5    | 5.2  | V                    |
|                               |                         | $5\text{ mA} \leq I_O \leq 1\text{ A}$ , $P_O \leq 15\text{ W}$    | 4.75 | 5    | 5.25 |                      |
|                               |                         | $V_I = 7\text{ V to } 20\text{ V}$                                 |      |      |      |                      |
| Line Regulation <sup>1)</sup> | Regline                 | $T_J = + 25^\circ\text{C}$                                         |      |      |      | mV                   |
|                               |                         | $V_I = 7\text{ V to } 25\text{ V}$                                 | -    | -    | 100  |                      |
|                               |                         | $V_I = 8\text{ V to } 12\text{ V}$                                 | -    | -    | 50   |                      |
| Load Regulation <sup>1)</sup> | Regload                 | $T_J = + 25^\circ\text{C}$                                         |      |      |      | mV                   |
|                               |                         | $I_O = 5\text{ mA to } 1.5\text{ A}$                               | -    | -    | 100  |                      |
|                               |                         | $I_O = 250\text{ mA to } 750\text{ mA}$                            | -    | -    | 50   |                      |
| Quiescent Current             | $I_Q$                   | $T_J = + 25^\circ\text{C}$                                         | -    | -    | 8    | mA                   |
| Quiescent Current Change      | $\Delta I_Q$            | $I_O = 5\text{ mA to } 1\text{ A}$                                 | -    | -    | 0.5  | mA                   |
|                               |                         | $V_I = 7\text{ V to } 25\text{ V}$                                 | -    | -    | 1.3  |                      |
| Output Voltage Drift          | $\Delta V_O / \Delta T$ | $I_O = 5\text{ mA}$                                                | -    | -0.8 | -    | mV/ $^\circ\text{C}$ |
| Output Noise Voltage          | $V_N$                   | $f = 10\text{ Hz to } 100\text{ KHz}$ , $T_A = + 25^\circ\text{C}$ | -    | 42   | -    | $\mu\text{V}$        |
| Ripple Rejection              | RR                      | $f = 120\text{ Hz}$ , $V_I = 8\text{ V to } 18\text{ V}$           | 62   | -    | -    | dB                   |
| Dropout Voltage               | $V_{Drop}$              | $I_O = 1\text{ A}$ , $T_J = + 25^\circ\text{C}$                    | -    | 2    | -    | V                    |
| Output Resistance             | $R_O$                   | $f = 1\text{ KHz}$                                                 | -    | 15   | -    | m $\Omega$           |
| Short Circuit Current         | $I_{SC}$                | $V_I = 35\text{ V}$ , $T_A = + 25^\circ\text{C}$                   | -    | 230  | -    | mA                   |
| Peak Current                  | $I_{PK}$                | $T_J = + 25^\circ\text{C}$                                         | -    | 2.2  | -    | A                    |

<sup>1)</sup> Load and line regulation are specified at constant junction temperature. Changes in  $V_O$  due to heating effects must be taken into account separately. Pulse testing with low duty is used.



Electrical Characteristics Curves

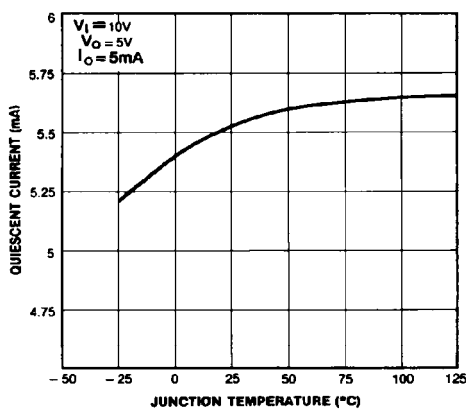


Figure 1. Quiescent Current

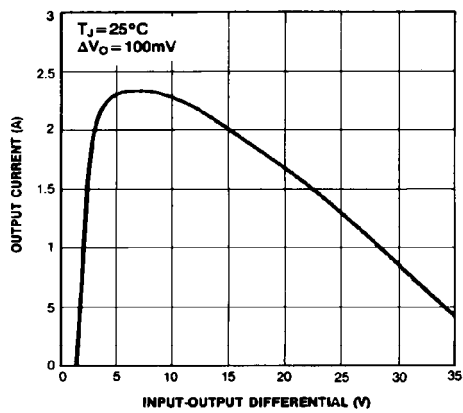


Figure 2. Peak Output Current

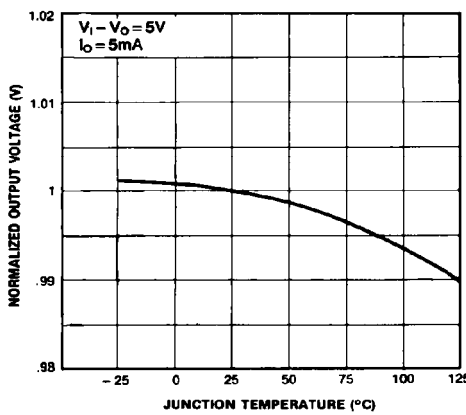


Figure 3. Output Voltage

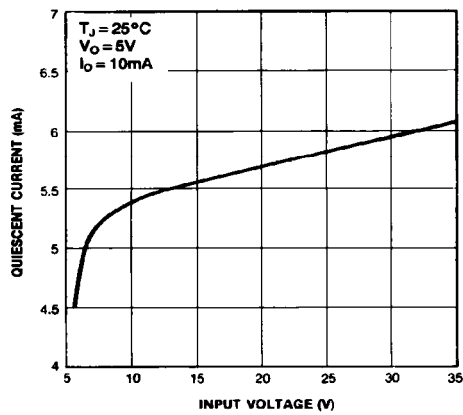
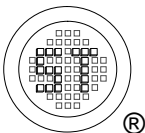
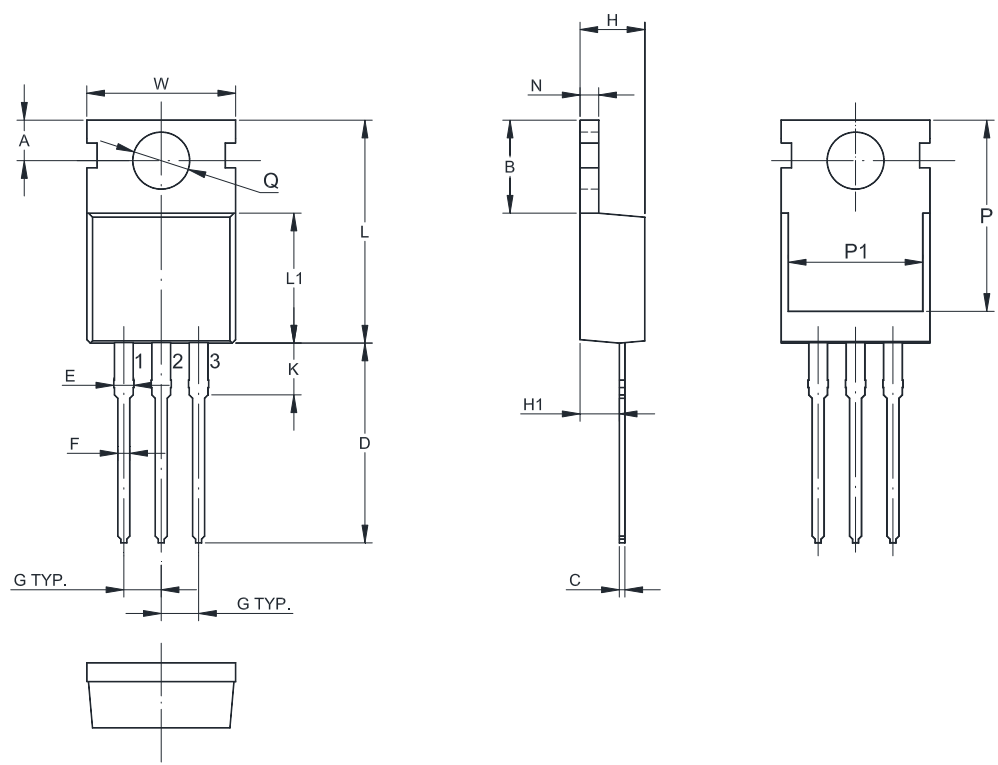


Figure 4. Quiescent Current



Package Outline Dimensions (Units: mm)

TO-220FB



| UNIT | A   | B   | C   | D  | E   | F   | G    | W    | H   | H1  | K   | L    | L1  | N   |
|------|-----|-----|-----|----|-----|-----|------|------|-----|-----|-----|------|-----|-----|
| mm   | 2.9 | 6.8 | 0.7 | 15 | 1.5 | 0.9 | 2.54 | 10.2 | 4.7 | 2.5 | 3.1 | 16.8 | 9.4 | 1.4 |
|      | 2.7 | 6.4 | 0.3 | 11 | 1.1 | 0.7 | TYP. | 9.8  | 4.3 | 2.2 | 2.7 | 14.8 | 9.0 | 1.2 |

| UNIT | P    | P1  | Q   |
|------|------|-----|-----|
| mm   | 13.3 | 8.2 | 3.7 |
|      | 12.7 | 7.6 | 3.5 |

Marking information

" 7805 " = Part No.  
 " \*\*\*\*\* " = Date Code Marking  
 Font type: Arial

