**description**

This series of fixed-voltage monolithic integrated-circuit voltage regulators is designed for a wide range of applications. These applications include on-card regulation for elimination of noise and distribution problems associated with single-point regulation. Each of these regulators can deliver up to 1.5 A of output current. The internal current-limiting and thermal-shutdown features of these regulators essentially make them immune to overload. In addition to use as fixed-voltage regulators, these devices can be used with external components to obtain adjustable output voltages and currents, and also can be used as the power-pass element in precision regulators.

The μA7800C series is characterized for operation over the virtual junction temperature range of 0°C to 125°C.

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Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.
The KTE package is only available taped and reeled. Add the suffix R to the device type (e.g., μA7805CKTER). Chip forms are tested at 25°C.
<table>
<thead>
<tr>
<th>absolute maximum ratings over operating temperature ranges (unless otherwise noted)†</th>
<th>µA78xx</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input voltage, $V_I$</td>
<td>µA7824C</td>
<td>40 V</td>
</tr>
<tr>
<td>All others</td>
<td>35 V</td>
<td></td>
</tr>
<tr>
<td>Virtual junction temperature range, $T_J$</td>
<td>0 to 150 °C</td>
<td></td>
</tr>
<tr>
<td>Package thermal impedance, $\theta_{JA}$ (see Notes 1 and 2)</td>
<td>KC package</td>
<td>22 °C</td>
</tr>
<tr>
<td>KTE package</td>
<td>23 °C</td>
<td></td>
</tr>
<tr>
<td>Lead temperature 1.6 mm (1/16 inch) from case for 10 seconds</td>
<td>260 °C</td>
<td></td>
</tr>
<tr>
<td>Storage temperature range, $T_{stg}$</td>
<td>-65 to 150 °C</td>
<td></td>
</tr>
</tbody>
</table>

† Stresses beyond those listed under “absolute maximum ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under “recommended operating conditions” is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

NOTES: 1. Maximum power dissipation is a function of $T_J$ (max), $\theta_{JA}$, and $T_A$. The maximum allowable power dissipation at any allowable ambient temperature is $P_D = (T_J(\text{max}) - T_A)/\theta_{JA}$. Operating at the absolute maximum $T_J$ of 150°C can impact reliability. Due to variations in individual device electrical characteristics and thermal resistance, the built-in thermal overload protection may be activated at power levels slightly above or below the rated dissipation.

2. The package thermal impedance is calculated in accordance with JESD 51, except for through-hole packages, which use a trace length of zero.

<table>
<thead>
<tr>
<th>recommended operating conditions</th>
<th>MIN</th>
<th>MAX</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input voltage, $V_I$</td>
<td>µA7805C</td>
<td>7</td>
<td>25 V</td>
</tr>
<tr>
<td>µA7806C</td>
<td>8</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>µA7808C</td>
<td>10.5</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>µA7810C</td>
<td>12.5</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>µA7812C</td>
<td>14.5</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>µA7815C</td>
<td>17.5</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>µA7818C</td>
<td>21</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>µA7824C</td>
<td>27</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>Output current, $I_O$</td>
<td>1.5 A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating virtual junction temperature, $T_J$</td>
<td>µA7800C series</td>
<td>0</td>
<td>125 °C</td>
</tr>
</tbody>
</table>
### electrical characteristics at specified virtual junction temperature, \( V_I = 10 \, V \), \( I_O = 500 \, mA \) (unless otherwise noted)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>TEST CONDITIONS</th>
<th>( T_J^\dagger )</th>
<th>( \mu A7805C )</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>MIN</td>
<td>TYP</td>
<td>MAX</td>
</tr>
<tr>
<td>Output voltage</td>
<td>( I_O = 5 , mA ) to 1 A, ( V_I = 7 , V ) to 20 , V, ( P_D \leq 15 , W )</td>
<td>25°C</td>
<td>4.8</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0°C to 125°C</td>
<td>4.75</td>
<td>5.25</td>
</tr>
<tr>
<td>Input voltage regulation</td>
<td>( V_I = 7 , V ) to 25 , V</td>
<td>25°C</td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>( V_I = 8 , V ) to 12 , V</td>
<td>25°C</td>
<td>1</td>
<td>50</td>
</tr>
<tr>
<td>Ripple rejection</td>
<td>( V_I = 8 , V ) to 18 , V, ( f = 120 , Hz )</td>
<td>0°C to 125°C</td>
<td>62</td>
<td>78</td>
</tr>
<tr>
<td>Output voltage regulation</td>
<td>( I_O = 5 , mA ) to 1.5 , A</td>
<td>25°C</td>
<td>15</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>( I_O = 250 , mA ) to 750 , mA</td>
<td>25°C</td>
<td>5</td>
<td>50</td>
</tr>
<tr>
<td>Output resistance</td>
<td>( f = 1 , kHz )</td>
<td>0°C to 125°C</td>
<td>0.017</td>
<td></td>
</tr>
<tr>
<td>Temperature coefficient of output voltage</td>
<td>( I_O = 5 , mA )</td>
<td>0°C to 125°C</td>
<td>−1.1</td>
<td></td>
</tr>
<tr>
<td>Output noise voltage</td>
<td>( f = 10 , Hz ) to 100 , kHz</td>
<td>25°C</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Dropout voltage</td>
<td>( I_O = 1 , A )</td>
<td>25°C</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Bias current</td>
<td></td>
<td>25°C</td>
<td>4.2</td>
<td>8</td>
</tr>
<tr>
<td>Bias current change</td>
<td>( V_I = 7 , V ) to 25 , V</td>
<td>0°C to 125°C</td>
<td>1.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>( I_O = 5 , mA ) to 1 , A</td>
<td>0°C to 125°C</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>Short-circuit output current</td>
<td></td>
<td>25°C</td>
<td>750</td>
<td></td>
</tr>
<tr>
<td>Peak output current</td>
<td></td>
<td>25°C</td>
<td>2.2</td>
<td></td>
</tr>
</tbody>
</table>

† Pulse-testing techniques maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately. All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output.

### electrical characteristics at specified virtual junction temperature, \( V_I = 11 \, V \), \( I_O = 500 \, mA \) (unless otherwise noted)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>TEST CONDITIONS</th>
<th>( T_J^\dagger )</th>
<th>( \mu A7806C )</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>MIN</td>
<td>TYP</td>
<td>MAX</td>
</tr>
<tr>
<td>Output voltage</td>
<td>( I_O = 5 , mA ) to 1 A, ( V_I = 8 , V ) to 21 V, ( P_D \leq 15 , W )</td>
<td>25°C</td>
<td>5.75</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0°C to 125°C</td>
<td>5.7</td>
<td>6.3</td>
</tr>
<tr>
<td>Input voltage regulation</td>
<td>( V_I = 8 , V ) to 25 , V</td>
<td>25°C</td>
<td>5</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td>( V_I = 9 , V ) to 13 , V</td>
<td>25°C</td>
<td>1.5</td>
<td>60</td>
</tr>
<tr>
<td>Ripple rejection</td>
<td>( V_I = 9 , V ) to 19 , V, ( f = 120 , Hz )</td>
<td>0°C to 125°C</td>
<td>59</td>
<td>75</td>
</tr>
<tr>
<td>Output voltage regulation</td>
<td>( I_O = 5 , mA ) to 1.5 , A</td>
<td>25°C</td>
<td>14</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td>( I_O = 250 , mA ) to 750 , mA</td>
<td>25°C</td>
<td>4</td>
<td>60</td>
</tr>
<tr>
<td>Output resistance</td>
<td>( f = 1 , kHz )</td>
<td>0°C to 125°C</td>
<td>0.019</td>
<td></td>
</tr>
<tr>
<td>Temperature coefficient of output voltage</td>
<td>( I_O = 5 , mA )</td>
<td>0°C to 125°C</td>
<td>−0.8</td>
<td></td>
</tr>
<tr>
<td>Output noise voltage</td>
<td>( f = 10 , Hz ) to 100 , kHz</td>
<td>25°C</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>Dropout voltage</td>
<td>( I_O = 1 , A )</td>
<td>25°C</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Bias current</td>
<td></td>
<td>25°C</td>
<td>4.3</td>
<td>8</td>
</tr>
<tr>
<td>Bias current change</td>
<td>( V_I = 8 , V ) to 25 , V</td>
<td>0°C to 125°C</td>
<td>1.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>( I_O = 5 , mA ) to 1 , A</td>
<td>0°C to 125°C</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>Short-circuit output current</td>
<td></td>
<td>25°C</td>
<td>550</td>
<td></td>
</tr>
<tr>
<td>Peak output current</td>
<td></td>
<td>25°C</td>
<td>2.2</td>
<td></td>
</tr>
</tbody>
</table>

† Pulse-testing techniques maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately. All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output.
### electrical characteristics at specified virtual junction temperature, \( V_I = 14 \text{ V}, I_O = 500 \text{ mA} \) (unless otherwise noted)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>TEST CONDITIONS</th>
<th>( T_J \uparrow )</th>
<th>( \mu A7808C )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( I_O = 5 \text{ mA to 1 A}, V_I = 10.5 \text{ V to 23 V}, PD \leq 15 \text{ W} )</td>
<td>25(^\circ)C</td>
<td>V</td>
</tr>
<tr>
<td>Output voltage</td>
<td></td>
<td>0(^\circ)C to 125(^\circ)C</td>
<td>7.7</td>
</tr>
<tr>
<td>Input voltage regulation</td>
<td></td>
<td>25(^\circ)C</td>
<td>7.6</td>
</tr>
<tr>
<td>Ripple rejection</td>
<td></td>
<td>25(^\circ)C</td>
<td>6</td>
</tr>
<tr>
<td>Output voltage regulation</td>
<td></td>
<td>25(^\circ)C</td>
<td>2</td>
</tr>
<tr>
<td>Output resistance</td>
<td></td>
<td>0(^\circ)C to 125(^\circ)C</td>
<td>55</td>
</tr>
<tr>
<td>Temperature coefficient of output voltage</td>
<td></td>
<td>25(^\circ)C</td>
<td>12</td>
</tr>
<tr>
<td>Output noise voltage</td>
<td></td>
<td>0(^\circ)C to 125(^\circ)C</td>
<td>4</td>
</tr>
<tr>
<td>Dropout voltage</td>
<td></td>
<td>25(^\circ)C</td>
<td>8.15</td>
</tr>
<tr>
<td>Bias current</td>
<td></td>
<td>25(^\circ)C</td>
<td>6.17</td>
</tr>
<tr>
<td>Bias current change</td>
<td></td>
<td>25(^\circ)C</td>
<td>2</td>
</tr>
<tr>
<td>Short-circuit output current</td>
<td></td>
<td>90(^\circ)C to 125(^\circ)C</td>
<td>1</td>
</tr>
<tr>
<td>Peak output current</td>
<td></td>
<td>25(^\circ)C</td>
<td>450</td>
</tr>
<tr>
<td>Overflow resistance</td>
<td></td>
<td>25(^\circ)C</td>
<td>2.2</td>
</tr>
<tr>
<td>Temperature coefficient of output voltage</td>
<td></td>
<td>25(^\circ)C</td>
<td>12</td>
</tr>
<tr>
<td>Output noise voltage</td>
<td></td>
<td>0(^\circ)C to 125(^\circ)C</td>
<td>4</td>
</tr>
<tr>
<td>Dropout voltage</td>
<td></td>
<td>25(^\circ)C</td>
<td>8.15</td>
</tr>
<tr>
<td>Bias current</td>
<td></td>
<td>25(^\circ)C</td>
<td>6.17</td>
</tr>
<tr>
<td>Bias current change</td>
<td></td>
<td>25(^\circ)C</td>
<td>2</td>
</tr>
<tr>
<td>Short-circuit output current</td>
<td></td>
<td>90(^\circ)C to 125(^\circ)C</td>
<td>1</td>
</tr>
<tr>
<td>Peak output current</td>
<td></td>
<td>25(^\circ)C</td>
<td>450</td>
</tr>
</tbody>
</table>

† Pulse-testing techniques maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately. All characteristics are measured with a 0.33-\( \mu \)F capacitor across the input and a 0.1-\( \mu \)F capacitor across the output.
electrical characteristics at specified virtual junction temperature, \( V_I = 17 \, V, I_O = 500 \, mA \) (unless otherwise noted)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>TEST CONDITIONS</th>
<th>( T_J \uparrow )</th>
<th>( \mu A7810C )</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output voltage</td>
<td>( I_O = 5 , mA ) to ( 1 , A, ) ( V_I = 12.5 , V ) to ( 25 , V, ) ( P_D \leq 15 , W )</td>
<td>( 25^\circ C )</td>
<td>9.6</td>
<td>10.4</td>
</tr>
<tr>
<td>Input voltage regulation</td>
<td>( V_I = 12.5 , V ) to ( 28 , V )</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>( V_I = 14 , V ) to ( 20 , V )</td>
<td>( 25^\circ C )</td>
<td>7</td>
<td>200</td>
</tr>
<tr>
<td>Ripple rejection</td>
<td>( V_I = 13 , V ) to ( 23 , V, ) ( f = 120 , Hz )</td>
<td>( 0^\circ C ) to ( 125^\circ C )</td>
<td>55</td>
<td>71</td>
</tr>
<tr>
<td>Output voltage regulation</td>
<td>( I_O = 5 , mA ) to ( 1.5 , A )</td>
<td>( 25^\circ C )</td>
<td>12</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>( I_O = 250 , mA ) to ( 750 , mA )</td>
<td></td>
<td>4</td>
<td>100</td>
</tr>
<tr>
<td>Output resistance</td>
<td>( f = 1 , kHz )</td>
<td>( 0^\circ C ) to ( 125^\circ C )</td>
<td>0.018</td>
<td></td>
</tr>
<tr>
<td>Temperature coefficient of output voltage</td>
<td>( I_O = 5 , mA )</td>
<td>( 0^\circ C ) to ( 125^\circ C )</td>
<td>–1</td>
<td></td>
</tr>
<tr>
<td>Output noise voltage</td>
<td>( f = 10 , Hz ) to ( 100 , kHz )</td>
<td>( 25^\circ C )</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>Dropout voltage</td>
<td>( I_O = 1 , A )</td>
<td>( 25^\circ C )</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Bias current</td>
<td>( 25^\circ C )</td>
<td>4.3</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Bias current change</td>
<td>( V_I = 12.5 , V ) to ( 28 , V )</td>
<td>( 0^\circ C ) to ( 125^\circ C )</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>( I_O = 5 , mA ) to ( 1 , A )</td>
<td></td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>Short-circuit output current</td>
<td>( 25^\circ C )</td>
<td>400</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peak output current</td>
<td>( 25^\circ C )</td>
<td>2.2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

† Pulse-testing techniques maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately. All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output.

electrical characteristics at specified virtual junction temperature, \( V_I = 19 \, V, I_O = 500 \, mA \) (unless otherwise noted)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>TEST CONDITIONS</th>
<th>( T_J \uparrow )</th>
<th>( \mu A7812C )</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output voltage</td>
<td>( I_O = 5 , mA ) to ( 1 , A, ) ( V_I = 14.5 , V ) to ( 27 , V, ) ( P_D \leq 15 , W )</td>
<td>( 25^\circ C )</td>
<td>11.5</td>
<td>12</td>
</tr>
<tr>
<td>Input voltage regulation</td>
<td>( V_I = 14.5 , V ) to ( 30 , V )</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>( V_I = 16 , V ) to ( 22 , V )</td>
<td>( 25^\circ C )</td>
<td>10</td>
<td>240</td>
</tr>
<tr>
<td>Ripple rejection</td>
<td>( V_I = 15 , V ) to ( 25 , V, ) ( f = 120 , Hz )</td>
<td>( 0^\circ C ) to ( 125^\circ C )</td>
<td>55</td>
<td>71</td>
</tr>
<tr>
<td>Output voltage regulation</td>
<td>( I_O = 5 , mA ) to ( 1.5 , A )</td>
<td>( 25^\circ C )</td>
<td>12</td>
<td>240</td>
</tr>
<tr>
<td></td>
<td>( I_O = 250 , mA ) to ( 750 , mA )</td>
<td></td>
<td>4</td>
<td>120</td>
</tr>
<tr>
<td>Output resistance</td>
<td>( f = 1 , kHz )</td>
<td>( 0^\circ C ) to ( 125^\circ C )</td>
<td>0.018</td>
<td></td>
</tr>
<tr>
<td>Temperature coefficient of output voltage</td>
<td>( I_O = 5 , mA )</td>
<td>( 0^\circ C ) to ( 125^\circ C )</td>
<td>–1</td>
<td></td>
</tr>
<tr>
<td>Output noise voltage</td>
<td>( f = 10 , Hz ) to ( 100 , kHz )</td>
<td>( 25^\circ C )</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>Dropout voltage</td>
<td>( I_O = 1 , A )</td>
<td>( 25^\circ C )</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Bias current</td>
<td>( 25^\circ C )</td>
<td>4.3</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Bias current change</td>
<td>( V_I = 14.5 , V ) to ( 30 , V )</td>
<td>( 0^\circ C ) to ( 125^\circ C )</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>( I_O = 5 , mA ) to ( 1 , A )</td>
<td></td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>Short-circuit output current</td>
<td>( 25^\circ C )</td>
<td>400</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peak output current</td>
<td>( 25^\circ C )</td>
<td>2.2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

† Pulse-testing techniques maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately. All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output.
electrical characteristics at specified virtual junction temperature, $V_I = 23$ V, $I_O = 500$ mA (unless otherwise noted)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>TEST CONDITIONS</th>
<th>$T_J \uparrow$</th>
<th>$\mu$A7815C</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>MIN</td>
<td>TYP</td>
<td>MAX</td>
</tr>
<tr>
<td>Output voltage</td>
<td>$I_O = 5$ mA to 1 A, $V_I = 17.5$ V to 30 V, $P_D \leq 15$ W</td>
<td>25°C</td>
<td>14.4</td>
<td>15</td>
</tr>
<tr>
<td>Input voltage regulation</td>
<td>$V_I = 17.5$ V to 30 V</td>
<td>25°C</td>
<td>11</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>$V_I = 20$ V to 26 V</td>
<td></td>
<td>3</td>
<td>150</td>
</tr>
<tr>
<td>Ripple rejection</td>
<td>$V_I = 18.5$ V to 28.5 V, $f = 120$ Hz</td>
<td>0°C to 125°C</td>
<td>54</td>
<td>70</td>
</tr>
<tr>
<td>Output voltage regulation</td>
<td>$I_O = 5$ mA to 1.5 A</td>
<td>25°C</td>
<td>12</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>$I_O = 250$ mA to 750 mA</td>
<td></td>
<td>4</td>
<td>150</td>
</tr>
<tr>
<td>Output resistance</td>
<td>$f = 1$ kHz</td>
<td>0°C to 125°C</td>
<td>0.019</td>
<td>W</td>
</tr>
<tr>
<td>Temperature coefficient of output voltage</td>
<td>$I_O = 5$ mA</td>
<td>0°C to 125°C</td>
<td>–1</td>
<td>mV/°C</td>
</tr>
<tr>
<td>Output noise voltage</td>
<td>$f = 10$ Hz to 100 kHz</td>
<td>25°C</td>
<td>90</td>
<td>µV</td>
</tr>
<tr>
<td>Dropout voltage</td>
<td>$I_O = 1$ A</td>
<td>25°C</td>
<td>2</td>
<td>V</td>
</tr>
<tr>
<td>Bias current</td>
<td>25°C</td>
<td>4.4</td>
<td>8</td>
<td>mA</td>
</tr>
<tr>
<td>Bias current change</td>
<td>$V_I = 17.5$ V to 30 V</td>
<td>0°C to 125°C</td>
<td>1</td>
<td>mA</td>
</tr>
<tr>
<td></td>
<td>$I_O = 5$ mA to 1 A</td>
<td></td>
<td>0.5</td>
<td>mA</td>
</tr>
<tr>
<td>Short-circuit output current</td>
<td>25°C</td>
<td>230</td>
<td>mA</td>
<td></td>
</tr>
<tr>
<td>Peak output current</td>
<td>25°C</td>
<td>2.1</td>
<td>A</td>
<td></td>
</tr>
</tbody>
</table>

† Pulse-testing techniques maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately. All characteristics are measured with a 0.33-µF capacitor across the input and a 0.1-µF capacitor across the output.

electrical characteristics at specified virtual junction temperature, $V_I = 27$ V, $I_O = 500$ mA (unless otherwise noted)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>TEST CONDITIONS</th>
<th>$T_J \uparrow$</th>
<th>$\mu$A7818C</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>MIN</td>
<td>TYP</td>
<td>MAX</td>
</tr>
<tr>
<td>Output voltage</td>
<td>$I_O = 5$ mA to 1 A, $P_D \leq 15$ W</td>
<td>25°C</td>
<td>17.3</td>
<td>18</td>
</tr>
<tr>
<td>Input voltage regulation</td>
<td>$V_I = 21$ V to 33 V</td>
<td>25°C</td>
<td>15</td>
<td>360</td>
</tr>
<tr>
<td></td>
<td>$V_I = 24$ V to 30 V</td>
<td></td>
<td>5</td>
<td>180</td>
</tr>
<tr>
<td>Ripple rejection</td>
<td>$V_I = 22$ V to 32 V, $f = 120$ Hz</td>
<td>0°C to 125°C</td>
<td>53</td>
<td>69</td>
</tr>
<tr>
<td>Output voltage regulation</td>
<td>$I_O = 5$ mA to 1.5 A</td>
<td>25°C</td>
<td>12</td>
<td>360</td>
</tr>
<tr>
<td></td>
<td>$I_O = 250$ mA to 750 mA</td>
<td></td>
<td>4</td>
<td>180</td>
</tr>
<tr>
<td>Output resistance</td>
<td>$f = 1$ kHz</td>
<td>0°C to 125°C</td>
<td>0.022</td>
<td>W</td>
</tr>
<tr>
<td>Temperature coefficient of output voltage</td>
<td>$I_O = 5$ mA</td>
<td>0°C to 125°C</td>
<td>–1</td>
<td>mV/°C</td>
</tr>
<tr>
<td>Output noise voltage</td>
<td>$f = 10$ Hz to 100 kHz</td>
<td>25°C</td>
<td>110</td>
<td>µV</td>
</tr>
<tr>
<td>Dropout voltage</td>
<td>$I_O = 1$ A</td>
<td>25°C</td>
<td>2</td>
<td>V</td>
</tr>
<tr>
<td>Bias current</td>
<td>25°C</td>
<td>4.5</td>
<td>8</td>
<td>mA</td>
</tr>
<tr>
<td>Bias current change</td>
<td>$V_I = 21$ V to 33 V</td>
<td>0°C to 125°C</td>
<td>1</td>
<td>mA</td>
</tr>
<tr>
<td></td>
<td>$I_O = 5$ mA to 1 A</td>
<td></td>
<td>0.5</td>
<td>mA</td>
</tr>
<tr>
<td>Short-circuit output current</td>
<td>25°C</td>
<td>200</td>
<td>mA</td>
<td></td>
</tr>
<tr>
<td>Peak output current</td>
<td>25°C</td>
<td>2.1</td>
<td>A</td>
<td></td>
</tr>
</tbody>
</table>

† Pulse-testing techniques maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately. All characteristics are measured with a 0.33-µF capacitor across the input and a 0.1-µF capacitor across the output.
electrical characteristics at specified virtual junction temperature, $V_I = 33\, V$, $I_O = 500\, mA$ (unless otherwise noted)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>TEST CONDITIONS</th>
<th>$T_J^\dagger$</th>
<th>$\mu$A7824C</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output voltage</td>
<td>$I_O = 5, mA$ to $1, A$, $V_I = 27, V$ to $38, V$, $P_D \leq 15, W$</td>
<td>$25^\circ C$</td>
<td>23 24 25</td>
<td>V</td>
</tr>
<tr>
<td>Input voltage regulation</td>
<td>$V_I = 27, V$ to $38, V$</td>
<td>$25^\circ C$</td>
<td>18 480</td>
<td>mV</td>
</tr>
<tr>
<td>Ripple rejection</td>
<td>$V_I = 28, V$ to $38, V$, $f = 120, Hz$</td>
<td>$0^\circ C$ to $125^\circ C$</td>
<td>50 66 66</td>
<td>dB</td>
</tr>
<tr>
<td>Output voltage regulation</td>
<td>$I_O = 5, mA$ to $1.5, A$</td>
<td>$25^\circ C$</td>
<td>12 480</td>
<td>mV</td>
</tr>
<tr>
<td></td>
<td>$I_O = 250, mA$ to $750, mA$</td>
<td></td>
<td>4 240</td>
<td></td>
</tr>
<tr>
<td>Output resistance</td>
<td>$f = 1, kHz$</td>
<td>$0^\circ C$ to $125^\circ C$</td>
<td>0.028</td>
<td>W</td>
</tr>
<tr>
<td>Temperature coefficient of output voltage</td>
<td>$I_O = 5, mA$</td>
<td>$0^\circ C$ to $125^\circ C$</td>
<td>−1.5</td>
<td>mV/°C</td>
</tr>
<tr>
<td>Ripple rejection</td>
<td>$f = 10, Hz$ to $100, kHz$</td>
<td>$25^\circ C$</td>
<td>170</td>
<td>μV</td>
</tr>
<tr>
<td>Dropout voltage</td>
<td>$I_O = 1, A$</td>
<td>$25^\circ C$</td>
<td>2</td>
<td>V</td>
</tr>
<tr>
<td>Bias current</td>
<td>$f = 1, kHz$</td>
<td>$25^\circ C$</td>
<td>4.6 8</td>
<td>mA</td>
</tr>
<tr>
<td>Bias current change</td>
<td>$V_I = 27, V$ to $38, V$</td>
<td>$0^\circ C$ to $125^\circ C$</td>
<td>1</td>
<td>mA</td>
</tr>
<tr>
<td></td>
<td>$I_O = 5, mA$ to $1, A$</td>
<td></td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>Short-circuit output current</td>
<td>$V_I = 27, V$ to $38, V$</td>
<td>$0^\circ C$ to $125^\circ C$</td>
<td>1</td>
<td>mV</td>
</tr>
<tr>
<td></td>
<td>$I_O = 5, mA$ to $1, A$</td>
<td></td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>Peak output current</td>
<td>$25^\circ C$</td>
<td></td>
<td>150</td>
<td>mA</td>
</tr>
<tr>
<td></td>
<td>$25^\circ C$</td>
<td></td>
<td>2.1</td>
<td>A</td>
</tr>
</tbody>
</table>

$^\dagger$ Pulse-testing techniques maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately. All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output.

electrical characteristics at specified virtual junction temperature, $V_I = 10\, V$, $I_O = 500\, mA$, $T_J = 25^\circ C$ (unless otherwise noted)$^\dagger$

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>TEST CONDITIONS</th>
<th>$\mu$A7805Y</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output voltage</td>
<td>$V_I = 7, V$ to $25, V$</td>
<td>5</td>
<td>V</td>
</tr>
<tr>
<td>Input voltage regulation</td>
<td>$V_I = 8, V$ to $12, V$</td>
<td>3</td>
<td>mV</td>
</tr>
<tr>
<td>Ripple rejection</td>
<td>$V_I = 8, V$ to $18, V$, $f = 120, Hz$</td>
<td>78</td>
<td>dB</td>
</tr>
<tr>
<td>Output voltage regulation</td>
<td>$I_O = 5, mA$ to $1.5, A$</td>
<td>15</td>
<td>mV</td>
</tr>
<tr>
<td></td>
<td>$I_O = 250, mA$ to $750, mA$</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Output resistance</td>
<td>$f = 1, kHz$</td>
<td>0.017</td>
<td>W</td>
</tr>
<tr>
<td>Temperature coefficient of output voltage</td>
<td>$I_O = 5, mA$</td>
<td>−1.1</td>
<td>mV/°C</td>
</tr>
<tr>
<td>Ripple rejection</td>
<td>$f = 10, Hz$ to $100, kHz$</td>
<td>40</td>
<td>μV</td>
</tr>
<tr>
<td>Dropout voltage</td>
<td>$I_O = 1, A$</td>
<td>2</td>
<td>V</td>
</tr>
<tr>
<td>Bias current</td>
<td>$I_O = 1, A$</td>
<td>4.2</td>
<td>mA</td>
</tr>
<tr>
<td>Short-circuit output current</td>
<td>$I_O = 5, mA$</td>
<td>750</td>
<td>mA</td>
</tr>
<tr>
<td>Peak output current</td>
<td>$25^\circ C$</td>
<td>2.2</td>
<td>A</td>
</tr>
</tbody>
</table>

$^\dagger$ Pulse-testing techniques maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately. All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output.
### electrical characteristics at specified virtual junction temperature, $V_I = 11$ V, $I_O = 500$ mA, $T_J = 25^\circ$C (unless otherwise noted)†

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>TEST CONDITIONS</th>
<th>$\mu$A7806Y</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>MIN</td>
<td>TYP</td>
</tr>
<tr>
<td>Output voltage</td>
<td></td>
<td>6</td>
<td>V</td>
</tr>
<tr>
<td>Input voltage regulation</td>
<td>$V_I = 8$ V to 25 V</td>
<td>5</td>
<td>mV</td>
</tr>
<tr>
<td></td>
<td>$V_I = 9$ V to 13 V</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>Ripple rejection</td>
<td>$V_I = 9$ V to 19 V, $f = 120$ Hz</td>
<td>75</td>
<td>dB</td>
</tr>
<tr>
<td>Output voltage regulation</td>
<td>$I_O = 5$ mA to 1.5 A</td>
<td>14</td>
<td>mV</td>
</tr>
<tr>
<td></td>
<td>$I_O = 250$ mA to 750 mA</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Output resistance</td>
<td>$f = 1$ kHz</td>
<td>0.019</td>
<td>W</td>
</tr>
<tr>
<td>Temperature coefficient of output voltage</td>
<td>$I_O = 5$ mA</td>
<td>−0.8</td>
<td>mV/°C</td>
</tr>
<tr>
<td>Output noise voltage</td>
<td>$f = 10$ Hz to 100 kHz</td>
<td>45</td>
<td>µV</td>
</tr>
<tr>
<td>Dropout voltage</td>
<td>$I_O = 1$ A</td>
<td>2</td>
<td>V</td>
</tr>
<tr>
<td>Bias current</td>
<td></td>
<td>4.3</td>
<td>mA</td>
</tr>
<tr>
<td>Short-circuit output current</td>
<td></td>
<td>550</td>
<td>mA</td>
</tr>
<tr>
<td>Peak output current</td>
<td></td>
<td>2.2</td>
<td>A</td>
</tr>
</tbody>
</table>

† Pulse-testing techniques maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately. All characteristics are measured with a 0.33-µF capacitor across the input and a 0.1-µF capacitor across the output.

### electrical characteristics at specified virtual junction temperature, $V_I = 14$ V, $I_O = 500$ mA, $T_J = 25^\circ$C (unless otherwise noted)†

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>TEST CONDITIONS</th>
<th>$\mu$A7808Y</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>MIN</td>
<td>TYP</td>
</tr>
<tr>
<td>Output voltage</td>
<td></td>
<td>8</td>
<td>V</td>
</tr>
<tr>
<td>Input voltage regulation</td>
<td>$V_I = 10.5$ V to 25 V</td>
<td>6</td>
<td>mV</td>
</tr>
<tr>
<td></td>
<td>$V_I = 11$ V to 17 V</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Ripple rejection</td>
<td>$V_I = 11.5$ V to 21.5 V, $f = 120$ Hz</td>
<td>72</td>
<td>dB</td>
</tr>
<tr>
<td>Output voltage regulation</td>
<td>$I_O = 5$ mA to 1.5 A</td>
<td>12</td>
<td>mV</td>
</tr>
<tr>
<td></td>
<td>$I_O = 250$ mA to 750 mA</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Output resistance</td>
<td>$f = 1$ kHz</td>
<td>0.016</td>
<td>W</td>
</tr>
<tr>
<td>Temperature coefficient of output voltage</td>
<td>$I_O = 5$ mA</td>
<td>−0.8</td>
<td>mV/°C</td>
</tr>
<tr>
<td>Output noise voltage</td>
<td>$f = 10$ Hz to 100 kHz</td>
<td>52</td>
<td>µV</td>
</tr>
<tr>
<td>Dropout voltage</td>
<td>$I_O = 1$ A</td>
<td>2</td>
<td>V</td>
</tr>
<tr>
<td>Bias current</td>
<td></td>
<td>4.3</td>
<td>mA</td>
</tr>
<tr>
<td>Short-circuit output current</td>
<td></td>
<td>450</td>
<td>mA</td>
</tr>
<tr>
<td>Peak output current</td>
<td></td>
<td>2.2</td>
<td>A</td>
</tr>
</tbody>
</table>

† Pulse-testing techniques maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately. All characteristics are measured with a 0.33-µF capacitor across the input and a 0.1-µF capacitor across the output.
electrical characteristics at specified virtual junction temperature, \( V_I = 15 \, \text{V}, I_O = 500 \, \text{mA}, T_J = 25^\circ \text{C} \) (unless otherwise noted)†

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>TEST CONDITIONS</th>
<th>( \mu \text{A7885Y} )</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output voltage</td>
<td>( V_I = 10.5 , \text{V} ) to 25 , \text{V}</td>
<td>8.5</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td>( V_I = 11 , \text{V} ) to 17 , \text{V}</td>
<td>6</td>
<td>mV</td>
</tr>
<tr>
<td>Input voltage regulation</td>
<td>( V_I = 11.5 , \text{V} ) to 21.5 , \text{V}, f = 120 , \text{Hz}</td>
<td>2</td>
<td>mV</td>
</tr>
<tr>
<td>Ripple rejection</td>
<td>( I_O = 5 , \text{mA} ) to 1.5 , \text{A}</td>
<td>12</td>
<td>mV</td>
</tr>
<tr>
<td>Output voltage regulation</td>
<td>( I_O = 250 , \text{mA} ) to 750 , \text{mA}</td>
<td>4</td>
<td>mV</td>
</tr>
<tr>
<td>Output resistance</td>
<td>( f = 1 , \text{kHz} )</td>
<td>0.016</td>
<td>W</td>
</tr>
<tr>
<td>Temperature coefficient of output voltage</td>
<td>( I_O = 5 , \text{mA} )</td>
<td>-0.8</td>
<td>mV/°C</td>
</tr>
<tr>
<td>Output noise voltage</td>
<td>( f = 10 , \text{Hz} ) to 100 , \text{kHz}</td>
<td>55</td>
<td>μV</td>
</tr>
<tr>
<td>Dropout voltage</td>
<td>( I_O = 1 , \text{A} )</td>
<td>2</td>
<td>V</td>
</tr>
<tr>
<td>Bias current</td>
<td></td>
<td>4.3</td>
<td>mA</td>
</tr>
<tr>
<td>Short-circuit output current</td>
<td></td>
<td>450</td>
<td>mA</td>
</tr>
<tr>
<td>Peak output current</td>
<td></td>
<td>2.2</td>
<td>A</td>
</tr>
</tbody>
</table>

† Pulse-testing techniques maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately. All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output.

electrical characteristics at specified virtual junction temperature, \( V_I = 17 \, \text{V}, I_O = 500 \, \text{mA}, T_J = 25^\circ \text{C} \) (unless otherwise noted)†

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>TEST CONDITIONS</th>
<th>( \mu \text{A7810Y} )</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output voltage</td>
<td>( V_I = 12.5 , \text{V} ) to 28 , \text{V}</td>
<td>10</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td>( V_I = 14 , \text{V} ) to 20 , \text{V}</td>
<td>7</td>
<td>mV</td>
</tr>
<tr>
<td>Input voltage regulation</td>
<td>( V_I = 13 , \text{V} ) to 23 , \text{V}, f = 120 , \text{Hz}</td>
<td>2</td>
<td>mV</td>
</tr>
<tr>
<td>Ripple rejection</td>
<td>( I_O = 5 , \text{mA} ) to 1.5 , \text{A}</td>
<td>12</td>
<td>mV</td>
</tr>
<tr>
<td>Output voltage regulation</td>
<td>( I_O = 250 , \text{mA} ) to 750 , \text{mA}</td>
<td>4</td>
<td>mV</td>
</tr>
<tr>
<td>Output resistance</td>
<td>( f = 1 , \text{kHz} )</td>
<td>0.018</td>
<td>W</td>
</tr>
<tr>
<td>Temperature coefficient of output voltage</td>
<td>( I_O = 5 , \text{mA} )</td>
<td>-1</td>
<td>mV/°C</td>
</tr>
<tr>
<td>Output noise voltage</td>
<td>( f = 10 , \text{Hz} ) to 100 , \text{kHz}</td>
<td>70</td>
<td>μV</td>
</tr>
<tr>
<td>Dropout voltage</td>
<td>( I_O = 1 , \text{A} )</td>
<td>2</td>
<td>V</td>
</tr>
<tr>
<td>Bias current</td>
<td></td>
<td>4.3</td>
<td>mA</td>
</tr>
<tr>
<td>Short-circuit output current</td>
<td></td>
<td>400</td>
<td>mA</td>
</tr>
<tr>
<td>Peak output current</td>
<td></td>
<td>2.2</td>
<td>A</td>
</tr>
</tbody>
</table>

† Pulse-testing techniques maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately. All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output.
electrical characteristics at specified virtual junction temperature, $V_I = 19 \, V$, $I_O = 500 \, mA$, $T_J = 25^\circ C$ (unless otherwise noted)$^\dagger$

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>TEST CONDITIONS</th>
<th>$\mu$A7812Y</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>MIN</td>
<td>TYP</td>
</tr>
<tr>
<td>Output voltage</td>
<td></td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Input voltage regulation</td>
<td>$V_I = 14.5 , V$ to $30 , V$</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$V_I = 16 , V$ to $22 , V$</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Ripple rejection</td>
<td>$V_I = 15 , V$ to $25 , V$, $f = 120 , Hz$</td>
<td>71</td>
<td></td>
</tr>
<tr>
<td>Output voltage regulation</td>
<td>$I_O = 5 , mA$ to $1.5 , A$</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$I_O = 250 , mA$ to $750 , mA$</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Output resistance</td>
<td>$f = 1 , kHz$</td>
<td>0.018</td>
<td></td>
</tr>
<tr>
<td>Temperature coefficient of output voltage</td>
<td>$I_O = 5 , mA$</td>
<td>-1</td>
<td></td>
</tr>
<tr>
<td>Output noise voltage</td>
<td>$f = 10 , Hz$ to $100 , kHz$</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>Dropout voltage</td>
<td>$I_O = 1 , A$</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Bias current</td>
<td></td>
<td>4.3</td>
<td></td>
</tr>
<tr>
<td>Short-circuit output current</td>
<td></td>
<td>350</td>
<td></td>
</tr>
<tr>
<td>Peak output current</td>
<td></td>
<td>2.2</td>
<td></td>
</tr>
</tbody>
</table>

$^\dagger$ Pulse-testing techniques maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately. All characteristics are measured with a $0.33-\mu F$ capacitor across the input and a $0.1-\mu F$ capacitor across the output.

electrical characteristics at specified virtual junction temperature, $V_I = 23 \, V$, $I_O = 500 \, mA$, $T_J = 25^\circ C$ (unless otherwise noted)$^\dagger$

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>TEST CONDITIONS</th>
<th>$\mu$A7815Y</th>
<th>UNIT</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>MIN</td>
<td>TYP</td>
</tr>
<tr>
<td>Output voltage</td>
<td></td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Input voltage regulation</td>
<td>$V_I = 17.5 , V$ to $30 , V$</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$V_I = 20 , V$ to $26 , V$</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Ripple rejection</td>
<td>$V_I = 18.5 , V$ to $28.5 , V$, $f = 120 , Hz$</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>Output voltage regulation</td>
<td>$I_O = 5 , mA$ to $1.5 , A$</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$I_O = 250 , mA$ to $750 , mA$</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Output resistance</td>
<td>$f = 1 , kHz$</td>
<td>0.019</td>
<td></td>
</tr>
<tr>
<td>Temperature coefficient of output voltage</td>
<td>$I_O = 5 , mA$</td>
<td>-1</td>
<td></td>
</tr>
<tr>
<td>Output noise voltage</td>
<td>$f = 10 , Hz$ to $100 , kHz$</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>Dropout voltage</td>
<td>$I_O = 1 , A$</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Bias current</td>
<td></td>
<td>4.4</td>
<td></td>
</tr>
<tr>
<td>Short-circuit output current</td>
<td></td>
<td>230</td>
<td></td>
</tr>
<tr>
<td>Peak output current</td>
<td></td>
<td>2.1</td>
<td></td>
</tr>
</tbody>
</table>

$^\dagger$ Pulse-testing techniques maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately. All characteristics are measured with a $0.33-\mu F$ capacitor across the input and a $0.1-\mu F$ capacitor across the output.
### \( \mu \)A7818Y

**Electrical Characteristics at Specified Virtual Junction Temperature, \( V_I = 27 \text{ V}, I_O = 500 \text{ mA}, T_J = 25^\circ \text{C} \)** (unless otherwise noted)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>TEST CONDITIONS</th>
<th>( \mu )A7818Y</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output voltage</td>
<td></td>
<td>18</td>
<td>V</td>
</tr>
<tr>
<td>Input voltage regulation</td>
<td>( V_I = 21 \text{ V} ) to ( 33 \text{ V} )</td>
<td>15</td>
<td>mV</td>
</tr>
<tr>
<td></td>
<td>( V_I = 24 \text{ V} ) to ( 30 \text{ V} )</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Ripple rejection</td>
<td>( V_I = 22 \text{ V} ) to ( 32 \text{ V} ), ( f = 120 \text{ Hz} )</td>
<td>69</td>
<td>dB</td>
</tr>
<tr>
<td>Output voltage regulation</td>
<td>( I_O = 5 \text{ mA} ) to ( 1.5 \text{ A} )</td>
<td>12</td>
<td>mV</td>
</tr>
<tr>
<td></td>
<td>( I_O = 250 \text{ mA} ) to ( 750 \text{ mA} )</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Output resistance</td>
<td>( f = 1 \text{ kHz} )</td>
<td>0.022</td>
<td>W</td>
</tr>
<tr>
<td>Temperature coefficient of output voltage</td>
<td>( I_O = 5 \text{ mA} )</td>
<td>–1</td>
<td>mV/°C</td>
</tr>
<tr>
<td>Output noise voltage</td>
<td>( f = 10 \text{ Hz} ) to ( 100 \text{ kHz} )</td>
<td>110</td>
<td>μV</td>
</tr>
<tr>
<td>Dropout voltage</td>
<td>( I_O = 1 \text{ A} )</td>
<td>2</td>
<td>V</td>
</tr>
<tr>
<td>Bias current</td>
<td></td>
<td>4.5</td>
<td>mA</td>
</tr>
<tr>
<td>Short-circuit output current</td>
<td></td>
<td>200</td>
<td>mA</td>
</tr>
<tr>
<td>Peak output current</td>
<td></td>
<td>2.1</td>
<td>A</td>
</tr>
</tbody>
</table>

† Pulse-testing techniques maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately. All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output.

### \( \mu \)A7824Y

**Electrical Characteristics at Specified Virtual Junction Temperature, \( V_I = 33 \text{ V}, I_O = 500 \text{ mA}, T_J = 25^\circ \text{C} \)** (unless otherwise noted)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>TEST CONDITIONS</th>
<th>( \mu )A7824Y</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output voltage</td>
<td></td>
<td>24</td>
<td>V</td>
</tr>
<tr>
<td>Input voltage regulation</td>
<td>( V_I = 27 \text{ V} ) to ( 38 \text{ V} )</td>
<td>18</td>
<td>mV</td>
</tr>
<tr>
<td></td>
<td>( V_I = 30 \text{ V} ) to ( 36 \text{ V} )</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Ripple rejection</td>
<td>( V_I = 28 \text{ V} ) to ( 38 \text{ V} ), ( f = 120 \text{ Hz} )</td>
<td>66</td>
<td>dB</td>
</tr>
<tr>
<td>Output voltage regulation</td>
<td>( I_O = 5 \text{ mA} ) to ( 1.5 \text{ A} )</td>
<td>12</td>
<td>mV</td>
</tr>
<tr>
<td></td>
<td>( I_O = 250 \text{ mA} ) to ( 750 \text{ mA} )</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Output resistance</td>
<td>( f = 1 \text{ kHz} )</td>
<td>0.028</td>
<td>W</td>
</tr>
<tr>
<td>Temperature coefficient of output voltage</td>
<td>( I_O = 5 \text{ mA} )</td>
<td>–1.5</td>
<td>mV/°C</td>
</tr>
<tr>
<td>Output noise voltage</td>
<td>( f = 10 \text{ Hz} ) to ( 100 \text{ kHz} )</td>
<td>170</td>
<td>μV</td>
</tr>
<tr>
<td>Dropout voltage</td>
<td>( I_O = 1 \text{ A} )</td>
<td>2</td>
<td>V</td>
</tr>
<tr>
<td>Bias current</td>
<td></td>
<td>4.6</td>
<td>mA</td>
</tr>
<tr>
<td>Short-circuit output current</td>
<td></td>
<td>150</td>
<td>mA</td>
</tr>
<tr>
<td>Peak output current</td>
<td></td>
<td>2.1</td>
<td>A</td>
</tr>
</tbody>
</table>

† Pulse-testing techniques maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately. All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output.
APPLICATION INFORMATION

Figure 1. Fixed-Output Regulator

Figure 2. Positive Regulator in Negative Configuration (V_I Must Float)

NOTE A: The following formula is used when V_{xx} is the nominal output voltage (output to common) of the fixed regulator:

\[ V_O = V_{xx} + \left( \frac{V_{xx}}{R_T} + I_O \right) R_2 \]

Figure 3. Adjustable-Output Regulator

I_O = \left( \frac{V_O}{R_1} \right) + I_O \text{ Bias Current}

Figure 4. Current Regulator
operation with a load common to a voltage of opposite polarity

In many cases, a regulator powers a load that is not connected to ground but, instead, is connected to a voltage source of opposite polarity (e.g., operational amplifiers, level-shifting circuits, etc.). In these cases, a clamp diode should be connected to the regulator output as shown in Figure 6. This protects the regulator from output polarity reversals during startup and short-circuit operation.

reverse-bias protection

Occasionally, the input voltage to the regulator can collapse faster than the output voltage. This can occur, for example, when the input supply is crowbarred during an output overvoltage condition. If the output voltage is greater than approximately 7 V, the emitter-base junction of the series-pass element (internal or external) could break down and be damaged. To prevent this, a diode shunt can be used as shown in Figure 7.
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