

































| <b>Fixed Voltage Regulator</b>  |                    |                            |  |  |
|---|--------------------|----------------------------|--|--|
| Positive-Voltage Regulators in the 78XX Series  |                    |                            |  |  |
| IC Part   | Output Voltage (V) | Minimum V <sub>i</sub> (V) |  |  |
| 7805  | +5                 | +7.3                       |  |  |
| 7806  | +6                 | +8.3                       |  |  |
| 7808  | +8                 | +10.5                      |  |  |
| 7810  | +10                | +12.5                      |  |  |
| 7812  | +12                | +14.5                      |  |  |
| 7815  | +15                | +17.7                      |  |  |
| 7818  | +18                | +21.0                      |  |  |
| 7824  | +24                | +27.1                      |  |  |
| Vin must be higher than Vo by at least 2V for proper operation of the voltage regulator |                    |                            |  |  |

## **Fixed Voltage Regulator**

Negative-Voltage Regulators in the 79XX Series

| IC Part | Output Voltage (V) | Minimum V <sub>i</sub> (V) |
|---------|--------------------|----------------------------|
| 7905    | -5                 | -7.3                       |
| 7906    | -6                 | -8.4                       |
| 7908    | -8                 | -10.5                      |
| 7909    | -9                 | -11.5                      |
| 7912    | -12                | -14.6                      |
| 7915    | -15                | -17.7                      |
| 7918    | -18                | -20.8                      |
| 7924    | -24                | -27.1                      |
|         |                    |                            |



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• Solution  
Voltage Regulators  

$$V_{o(MIN)} = V_{REG} = 8 V \text{ (when } R_2 = 0 \Omega \text{)}$$
  
 $V_{o(MAX)} = V_{R1} + V_{R2} = I_{REG} (R_1) + (I_{REG} + I_{adj})(R_2)$   
 $I_{REG} = \frac{V_{REG}}{R_1}$   
 $V_{o(MAX)|R2=3k\Omega} = \frac{V_{REG}}{R_1} (R_1 + R_2) + I_{adj}(R_2)$   
 $= \frac{8V}{2k\Omega} (2k\Omega + 3k\Omega) + 3mA.(3k\Omega)$   
 $= (4mA).(5k\Omega) + 9V = 29V$ 



















